ABSTRACT

DAY, STEPHEN HARLAN. How Elementary Teachers Use Classroom Mini-Economies When Guided by the C3 Framework. (Under the direction of John K. Lee, PhD.)

A mini-economy is an ongoing classroom project in which elementary school students apply for jobs, receive simulated income, go shopping at the classroom store, and ultimately create their own businesses. This study uses design-based research methodology to find out what classroom practices emerge when the College, Career, and Civic Life Framework for Social Studies State Standards (C3 Framework) (National Council for the Social Studies, 2013) is used by elementary teachers as the basis for instruction in the context of a classroom mini-economy, and how analysis of those practices can be used to improve instructional design. Design-based research seeks to simultaneously create and analyze teaching materials, with the purpose of improving both the materials themselves and the research literature on which the materials are based. In this case, the goal of the teaching materials was to improve the authenticity and rigor of the teacher-participants' classroom mini-economies. Therefore, the study draws upon research literature in Authentic Intellectual Work, as well as inquiry teaching in social studies, particularly in economic education.

Authentic Intellectual Work (AIW) is a way to think about curriculum, instruction, and assessment. It seeks "to identify some kinds of intellectual work as more complex and socially or personally meaningful than others" (King, Newmann, & Carmichael, 2009). It consists of construction of knowledge, disciplined inquiry, and value beyond school (Scheurman & Newmann, 1998). Inquiry teaching in social studies has taken many forms, most currently in the C3 Framework, which was the approach used in this study. The C3 Framework conceptualizes inquiry as "the disciplinary concepts and practices that support

students as they develop the capacity to know, analyze, explain, and argue about interdisciplinary challenges in our social world" (National Council for the Social Studies, 2013, p. 6). Classroom mini-economies in particular fall within the realm of the social science of economics, so the study pays special attention to the literature on K-12 economic education.

The study reveals ways in which teachers were able to use the C3 Framework to build authenticity in the mini-economy, though it also reveals that teachers were willing to dilute the quality of the inquiry process when it fit with their larger goals. The findings suggest that inquiry as conceived in the C3 Framework can be used as a powerful tool for equipping students for an increasingly complex social world. However, the inquiry process is at its best when lesson materials that use it are carefully designed to meet teachers' desires to provide interdisciplinary and real-world experiences for their students.

Keywords: Mini-economy, design-based research, inquiry teaching, authentic intellectual work, economic education.

How Elementary Teachers Use Classroom Mini-Economies When Guided by the C3 Framework

by
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Dedication

Sarah, when I told you that I was serious about matriculating into a doctoral program, you said, “Great. As if living through my own PhD studies wasn’t enough, now I get to live through yours, too.” Thanks for your wisdom, support, and love these last four years. Happy graduation, my dear!

Biography

Stephen grew up in West Lafayette, Indiana, and stayed there through college. Upon graduating, he moved to Raleigh, North Carolina to teach high school social studies, which he did for eight years. He worked in teacher training while pursuing his doctorate. He and his family now live in Richmond, Virginia.

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Chapter 1: Introduction

Each spring, approximately 1,000 elementary school students set up shop in the nearby university's gymnasium and proceed to buy and sell goods and services of their own creation to one another using play money. This is the university's annual Market Day, the culminating event of the Classroom Mini-Economy program, in which students are able to take their carefully-cultivated classroom businesses and see how they fare in the hustle and bustle of an inter-school market. The atmosphere pulses with energy as sellers with stentorian voices shout out discounts and buyers race from booth to booth trying to find a good deal.

The mini-economy program is popular in the state where this research took place. When Market Day became unable to accommodate all the teachers that wanted to bring their students, several intra-district market days sprang up; one of them involves most of the 3rd- and 4thgrade students in a large suburban county. The mini-economy begins with teachers assigning classroom jobs to students and paying them with classroom money, then auctioning off things from a teacher-made classroom store. As the mini-economy grows, it becomes more complex, usually entailing taxes and government services and eventually leading to the opening of student-run businesses. Students quickly prove themselves adept at producing goods out of materials such as duct tape and toilet paper rolls, creating advertisements, and adjusting prices in response to the shifting tides of supply and demand.

In this study, the researcher partnered with a group of teachers who were seeking to increase the academic depth of their mini-economies. Mini-economies are best used as teaching tools rather than as behavior management systems (Kourilsky, 1976a; Kourilsky, 1983; Cassuto, 1980). They naturally mirror real-world learning environments and thus have the potential to be extraordinary platforms for motivation and content-infusion. But their

implementation is under-researched, and when teachers are actually observed facilitating mini-economies, practice appears to be haphazard. This study makes use of Design-based Research methodology to create new teaching materials and evaluate their implementation in order to draw out design principles to use in high-quality mini-economy instruction (Design-Based Research Collective, 2003). Such an approach is meant to be immediately useful to practitioners as well as informative for future research.

New attempts to jump-start mini-economy-based instruction can make use of recent developments in social studies curriculum and instruction. This study used the C3 Framework as the basis for lesson design and implementation. The C3 Framework is an approach to inquiry-based learning that focuses on an *Inquiry Arc* that consists of four parts, or *dimensions*. Students 1) pursue answers to compelling social questions 2) use disciplinary concepts and tools and 3) use evidence and sources, and ultimately 4) communicate their conclusions and take informed action (NCSS, 2013). The ambition of the C3 Framework is to produce an instructional shift in the way social studies is taught (Swan, Lee, & Grant, 2014). In this study, the C3 Framework is used to give focus and coherence to the lesson materials, to give teachers a way to communicate, to encourage academic quality and rigor, and to make the materials approachable to a wide audience. Principles of design derived from the study focus on the instructional practices that emerge when the C3 Framework is used as the basis for instruction in the context of a classroom mini-economy.

Problem Statement and Questions

This study examined how elementary teachers designed and implemented economics instruction that was based on the C3 Framework. It examined the following questions:

1. What classroom practices emerge when the C3 Framework is used as the basis for instructional design?
2. How can the analysis of these practices serve to improve instructional design?

This project envisioned the immediate usefulness of the C3 Framework as a tool for guiding the design of instructional materials. It investigated the implementation of lessons based on the C3 Framework and created by a partnership of teachers and a university-based center for economic education. The C3 Framework seeks to communicate directly to teachers and hence can be presented as a helpful educational tool. Since the C3 Framework is not a required set of standards, its usefulness in addressing the broad aims of social studies or narrower local goals will be an important part of its success or failure.

Thus, in the early stages of research on the C3 Framework, it is appropriate to analyze teacher implementation of instruction based on it. Because the C3 Framework is in a form that is potentially actionable for mass implementation, such analysis will be most useful if it focuses not on master teachers with extensive C3 Framework training in an ideal environment, but rather on teachers with a realistic amount of training in school systems where the C3 Framework has not been adopted. These teachers need the guidance of someone knowledgeable in the C3 Framework and in the context of a school and policy environment that may pull them in different directions. In this specific context, 3rd-grade teachers were newly required by state legislation to use authentic methods of instruction and assessment of their social studies standards. The C3 Framework was a potential aid in this process, situated as it is in the intersections of authentic intellectual work and discipline-based inquiry. Building authentic instruction in social studies is an example of a situation where the C3 Framework may be employed—thus the need for research. This study met this

need for research by investigating what classroom practices emerged from instruction based on the C3 Framework, and how analysis of those practices could be used to improve instructional design.

Theoretical Framework

This study investigated how 3rd-grade teachers implemented economics instruction that was based on the C3 Framework in the context of a classroom mini-economy. It did this under the general theoretical Framework of constructivist learning as explicated in Authentic Intellectual Work. The study also used the research literature on discipline-based inquiry in social studies, particularly in economic education.

1) Authentic Intellectual Work (AIW): AIW is a way to think about curriculum, instruction, and assessment. It seeks "to identify some kinds of intellectual work as more complex and socially or personally meaningful than others" (King, Newmann, & Carmichael, 2009, p. 44). AIW consists broadly of construction of knowledge, disciplined inquiry, and value beyond school (Scheurman & Newmann, 1998).
2) Inquiry teaching in social studies: The C3 Framework is an approach to inquiry-based teaching and learning in social studies. Inquiry has a deep research and practice base (Bruner, 1960; Schwab, 1966), and any study of the C3 Framework should draw on that. Furthermore, this brand of inquiry uses the methods and practices of the social science disciplines as a way to structure inquiry (C3 Framework, 2013).
3) Economic education: The C3 Framework places the four disciplines of civics, economics, geography, and history on a level field. Economics has its own distinct background as a K-12 academic discipline that has some intersections with inquiry teaching—but not many. It is also a subject area that teachers are unlikely to have

studied much in college (Walstad, 2001; Watts, 2006). Investigating a traditionally difficult discipline will test the limits of the C3 Framework, thus giving us a better idea of what teachers are capable of when they use the C3 Framework.

Purpose and Implications

The purpose of this study is to generate information about implementation of C3 Framework-based instructional materials in order to find ways to make the C3 Framework useful to teachers, and to place it into the larger discourses of authentic intellectual work, inquiry learning, and economic education. The study will investigate a group of 3rd-grade teachers from several schools as they create instruction and assessment using the C3 Framework in order to address their state economics standards.

With the steadily increasing dissatisfaction with standardized testing and with the federal Race to the Top (RttT) initiative releasing states from key sanctions of NCLB, educators are looking for more authentic methods of teaching and assessment. There are many options in the cosmos of education theory and practice that promise to help them along, not least among them being the Common Core State Standards (CCSS). However, the subject of social studies is insecure in this rapidly-evolving scene for many reasons, including its near-absence from the professional development programs established in support of CCSS, the danger of CCSS English/Language Arts literacy skills subsuming the unique disciplinary literacy of social studies, the fact that social studies standardized tests are often the first to be abrogated (e.g. Code of Virginia, 2014; North Carolina Department of Public Instruction, 2012), and ongoing disagreement as regards the purposes and methods of social studies (Nelson, 2001). To address these problems, the National Council for the Social Studies convened various curricular organizations within the field of social studies to create the

College, Career, and Civic Life Framework for Social Studies State Standards (C3 Framework). The C3 Framework is an approach to discipline-based inquiry instruction in social studies. The C3 Framework follows an Inquiry Arc consisting of 1) developing questions and planning inquiries, 2) applying disciplinary concepts and tools, 3) evaluating sources and using evidence, and 4) communicating conclusions and taking informed action.

There is as of yet little empirical data on uses of the C3 Framework. Indeed, instructional materials based on the C3 Framework are only now becoming available, and within the discipline of economics, only a handful of lessons have been created (Meszaros & Emery, 2014; Suiter, Wolla, & Flowers, 2014; Ferrarini & Day, 2014). Teachers would benefit greatly from information on how to create lessons using the C3 Framework, best practices as to how to make them useful in the classroom, and ways that the C3 Framework can be used to create authentic formative and summative assessments.

This study investigated the work of a group of elementary teachers as they sought to develop authentic instruction and assessments to go with their economics standards. There were some aspects of instruction that already existed and were used as a starting place for teaching. For instance, the teachers involved in this study all used some form of classroom *mini-economy*, which they hoped to leverage as a tool for authentic teaching and learning. Intended outcomes of this study included the possibilities of new instructional materials that could be shared with other teachers, design elements for creating new instructional materials for economics, a model for creating professional development, and contribution to theory surrounding authentic intellectual work, inquiry learning, economic education, and the C3 Framework.

Summary of Methodology

This study used design-based research (DBR) as a methodology. DBR is "a series of approaches, with the intent of producing new theories, artifacts, and practices that account for and potentially impact learning and teaching in naturalistic settings" (Barab & Squire, 2004, p. 2). DBR reflects a pragmatic weltanschauung with regards to epistemology. It does not seek to rigorously isolate truth-claims as in a positivist standpoint, nor is it overly concerned with subjective experience as in an interpretivist or social constructionist approach (Hesse-Biber & Leavy, 2011; Petraglia, 1989). Rather, it takes educational theories and products and seeks to investigate and improve on them using the methods most appropriate for the situation, with the overriding goal of usefulness (Dewey, 1938; Barab & Squire, 2004). DBR may borrow from quantitative or qualitative methodology.

Though DBR makes use of many methods, DBR studies generally include the following:

1. They result in the production of theories on learning and teaching.
2. They are interventionist (involving some sort of design).
3. They take place in naturalistic contexts.
4. They are iterative (Barab & Squire, 2004, p. 3).

A few caveats are in order here. This present study is the first iteration in a series of studies that will culminate in a full DBR project. DBR projects usually take place over years, not months, and are comprised of several self-contained studies. This study sought to follow the initial design, implementation, and revision of lesson materials (three iterations) and seeks to inform the next step in the project. It provided evidence about the implementation of C3 Framework-based economics instruction in 3rd-grade classrooms, but did not yet rise to

the level of theory-generation. However, in order to be considered DBR, it must be moving in these directions (Design-based Research Collective, 2003) and should ultimately contribute to our theoretical understanding of authentic intellectual work, inquiry, and economic education.

One area of difficulty in DBR is the need to preserve a "naturalistic" setting while necessarily having the researcher involved in the design of the classroom experience. DBR deals with this through its research methods. One way it does this is through multiple iterations of re-design and re-investigation, sometimes in different contexts. As Barab and Squire (2004) explained: "The goal of design-based research is to lay open and problematize the completed design and resultant implementation in a way that provides insight into the local dynamics" (p.8). Thus thick, rich description of these dynamics is necessary. Furthermore, it is important for a researcher to construct the study in such a way that he or she can make a case for the generalizability of the findings (Design-Based Research Collective, 2003). In this present study, for instance, it is valid for the researcher to be involved in professional development of teachers and helping them design materials since that sort of participation with a content expert or curriculum specialist is something that can occur in other contexts. Further DBR study needs to examine the usefulness of the teaching materials with teachers who have diverse levels of professional development. On the other hand, it would not have been appropriate for the researcher to intervene in classroom instruction since teachers will rarely have this kind of support in-class.

The data were collected as part of an ongoing program with a group of teachers. The program was created to design materials, observe teachers teaching, collect artifacts of student work, and conduct post-interviews with teachers.

Design-based Research denoted the overall philosophy of the project, but did not thoroughly dictate the methods (Wang & Michael, 2011). Because the empirical research on the C3 Framework is only just beginning, it was appropriate to use methods that allowed for the data to speak for themselves, that is, to use as inductive an approach as possible (Creswell, 2007). For this purpose, the study used the constant comparative method as described by Charmaz (2006), an approach that gives maximum authenticity. Though Charmaz's work presents an interpretivist epistemology of grounded theory and sometimes claims that there are "multiple realities," she does admit that "comparative methods are, in many ways, neutral" (p. 9), even if the way that researchers employ them is not. Constant comparative methods have been used within the pragmatist epistemology of DBR in studies by Squire and Barab (2004) and Veletsianos and Kleanthous (2009). For the purposes of this study, the value of the C3 Framework to teachers played out in how teachers use the lesson materials, thus requiring methods that were sensitive to usefulness (pragmatism) and capable of the flexibility that the context demands (Charmaz's conception of constant comparative methods). There was no apparent need to reject the notion of the existence of objective external reality in order to find out what teachers perceived to be useful. Peoples' perceptions of objective reality can differ without these perceptions constituting multiple realities (Splitter, 2009; Sproul, 2009).

This study used a design-based research framework and constant comparative methods. It investigated how elementary teachers implement economics instruction that was based on the C3 Framework in the context of a classroom mini-economy. Specifically, the study asked what classroom practices emerge when the C3 Framework is used as the basis

for instructional design, and how the analysis of these practices can serve to improve instructional design.

Chapter 2: Review of the Literature

In this study, a group of teachers worked with the researcher to develop instructional materials, implement them in the classroom, and revise the materials based on preliminary data gathered from ongoing iterations of the group's work. The work that the teachers and the researcher did was intended both to create educational materials that can be used in the classroom and to add to the relevant research literature.

The research literature in this study situates this study within the ongoing question of the history and purposes of social studies, particularly as they relate to inquiry teaching. The particular academic area within social studies that this study is concerned with is economics, so literature related to the teaching and learning of K-12 economics is also covered. Disciplined inquiry is also an important aspect of Authentic Intellectual Work (AIW), sometimes called Educational Authenticity (EA) (Splitter, 2009), so this literature will discuss how AIW fits together with disciplined inquiry in economic education. The primary aim of the study is to understand how elementary teachers implement economics instruction that is based on the C3 Framework, and this literature review will provide a context for the study.

Scope and Sequence

This literature review seeks to situate this study within the research on inquiry teaching in social studies, economic education, and Authentic Intellectual Work (AIW). The research on inquiry methods in social studies in general, and the C3 Framework in particular, gives specific guidance for educators as to how the methods of the social sciences can be used to create successful instruction. Economic education has its own distinct history and literature base, which must be considered in any study that seeks to investigate K-12

economics instruction. AIW is comprised of a rather broad set of educational constructs, the first of them being constructivism, which is the theoretical Framework for this study. AIW gives shape to constructivism through broad proposals on how classroom instruction should proceed, an important aspect of which is the inquiry method of teaching.

Inquiry Teaching in Social Studies

Wells (2001) defines inquiry as "an approach to the chosen themes and topics in which the posing of real questions is positively encouraged, whenever they occur and by whoever they are asked." Apart from this broad pedagogical definition, the educational universe has myriad definitions of inquiry-based instruction (Friesen & Scott, 2013). For the purposes of this study, inquiry was connoted as discipline-based, which is required as a component of AIW. The Galileo Educational Network, an organization that focuses on inquiry learning, claims that "[inquiry] is the type of work that those working in the disciplines actually undertake to create or build knowledge. Therefore, inquiry involves serious engagement and investigation and the active creation and testing of new knowledge" (Galileo.org, 2014, para. 2). Aspects of these definitions have clear references to constructivist learning. There is a danger here that definitions may become circular or synonymous and thus lose their usefulness. Therefore, it is important to remember that the main feature that gives inquiry its distinctiveness in this context is its rootedness in academic social science disciplines. As part of AIW, disciplined inquiry "[depends] on prior substantive and procedural knowledge considered essential to understanding problems in a field" (Archibald & Newmann, 1988).

This study investigated the uses of a particular version of inquiry-based teaching methods, that is, the *College, Career, and Civic Life Framework for Social Studies State*

Standards. In order to proceed with a study based on the C3 Framework, it is necessary to give an overview of the ways in which inquiry pedagogy has been attempted—and resisted—over the 125-year (or so) history of social studies teaching in the United States. As will be soon, the debate centers not only on whether inquiry should be used, but (if it is) on the extent to which it should be discipline-based.

Early versions of social studies can broadly be named *civic education*. Civic education has existed in many different societies for thousands of years. For instance, the ancient Greeks saw the purpose of education as promoting civic virtue that would fortify the health of the polis. Early American civic education included the Bible, geography, and aspects of philosophy. Late in the 18th century, Webster began to introduce material designed to strengthen the new American union; thus was born the American version of citizenship transmission (Barth & Shermis, 1970; Stanley & Nelson, 1994; Thornton, 2005). In the 19th century, a much more common way of thinking about subject matter was as "history and allied subjects" (Thornton, 2005, p. 11). This discussion took place as a component of the aims talk of several committees that were convened to consider the purposes of public education, as this form of schooling grew in importance. A loose consensus grew around the notion that history, in particular, was good for exercising of the mind, training of students in citizenship, and application to current issues (Thornton, 2005, p. 20). This viewpoint also carried over into the 20th century.

First emerging in English schools in 1884 (Nelson, 2001, 18), one of the earliest American usages of the term social studies appears in an article by Thomas Jesse Jones in the *Southern Workingman* in 1905 (Ross, 2006, 19). Apparently questions about the purposes of the field were already percolating. Ross (2006) quotes Thomas Jesse Jones as claiming that

black and Native Americans would need the social studies in order to "recognize and respond to social power" and therefore win their rightful place in the broader American society (p. 19).

These examples each provide a basis in American educational history for a popular heuristic leading to an understanding of the differences between historical conceptions of social studies which was developed by Barth and Shermis (1970). In their view, social studies has been viewed as either *citizenship transmission, social sciences,* or *reflective inquiry.* In the early nationalistic sources printed by Webster, social studies emerges as citizenship (or cultural) transmission. The social science view is represented in the early conception of social studies as simply the subject of history and its allied subjects. And in the Jones' theorizing that social studies can be used to empower disenfranchised Americans, we see a version of reflective inquiry, which can also be expanded, with help from later sources, to include efforts in education for social justice. The early occurrences of these materials, phrases, and claims provide a sound justification for Barth and Shermis' classic conception.

In the first place, citizenship transmission is commonly associated with an education in traditional values, by means of "description and persuasion," which are "sometimes blended in a subtle amalgam" so that students do not necessarily know which is which (Barth & Shermis, 1970, 744-745). The social science approach is commonly associated with a venerable and condescending dictum coined by Edgar Wesley in 1937: "social sciences simplified for pedagogical purposes" (Nelson, 2001, 18). In this approach, social studies content is distilled from the discoveries of professional economists, geographers, political scientists, and historians, and brought down to the student level. Barth and Shermis (1970) imply that social scientists who get into K-12 education are often insouciantly unaware of the

learning needs of children and the importance of knowledge being salient for students right then, rather than in some future graduate-school classroom (Zumwalt, 1989). The last approach, reflective inquiry, is Barth and Shermis' model of choice. In this, the goal is the process of learning and deliberation, and the method is "the sensing and identifying of significant problems and the serious and consecutive search for satisfactory answers (Barth & Shermis, 1970, p. 749)." Furthermore, and perhaps most provoking, is the claim that "inquiry in the social studies is interdisciplinary" (Barth & Shermis, 1970, p. 749). It is important to recognize, based on the definition of inquiry above, that both the social science view and the reflective inquiry view can lay claim to conducting inquiry. The obfuscation that this these models create regarding the role of academic disciplines calls for a different, and perhaps less well-known, approach.

Thornton (2005, 2008), proposes a simple dichotomy to distinguish an approach to social studies that is discipline-heavy versus one that places more emphasis on the importance of social questions. On one side, he places the *social sciences*, which he characterizes as "curriculum [based] on material already gathered under the rubric of a discipline, material authoritatively endorsed as knowledge." Directly alongside the definition of this approach, he inserts a pointed critique of this approach by quoting Noddings (1995): "The source of the material is considered more important than its likely usefulness in capturing students' interests" (p. 112.) The alternative is the *social education* approach, which he sees in Hertzberg's (1981) definition of social studies. The curriculum "…[ignores] disciplinary boundaries and [is] organized around the needs of society, of students, or some combination thereof" (p. 2). However, Thornton does note that these two approaches overlap,

and that it is the job of teachers as curricular-instructional gatekeepers to decide which way to tilt when picking content and pedagogy.

What other ways are there to conceive of inquiry-based learning and teaching in social studies? Some visions of inquiry are mainly broad theories, frameworks, or approaches to teaching. These approaches seem to be concerned with engaging students in socially relevant discussions, as a proponent of social education may desire—though none of these examples is limited to social studies teaching. They also include science and math; for example, Project-Based Learning includes driving questions, significant content and in-depth inquiry as a part of the Essential Elements of PBL (Thomas, 2000). In the model of the Galileo Educational Network, students are called to use methods of inquiry that are central to the disciplines relating to questions (Clifford & Friesen, 2004). And AIW, which is central to this study, posits that discipline-based inquiry "depends on prior substantive and procedural knowledge considered essential to understanding problems in a field…tries to develop in-depth understanding of a problem" (Archibald & Newmann, 1988 p. 2). In AIW, "the ultimate point…is to move beyond knowledge that has been produced by others" (Archibald & Newmann, 1988 p. 2). The important point about these examples is that discipline-based inquiry is included as a key dimension of each one, but actual descriptions of the substantive and procedural methods of particular disciplines are not provided. Without these, there can be no hope that teachers will use disciplined inquiry, unless they look elsewhere for guidance.

Teachers may look to textbooks, instructional materials, and lesson plans, instead of theories of how to teach. And, it is here that they are most likely to find robust approaches to discipline-based inquiry. For example, geography teachers can draw from curriculum

developed by partnerships between teachers and professional geographers such as *Geographic Inquiries in Global Issues* and the propagation of geographic information systems (Bednarz & Bednarz, 2008). These initiatives have been fueled by conscious demands for inquiry-based teaching methods to grow alongside requirements in geography education (Klein, 1995). In fact, the National Geography Standards themselves call on students to be able to do geography, rather than just to know it, allowing lessons from the National Geographic website to be directly adapted and used for C3 Framework-related inquiry lesson plans (Larson & Schwille, 2014).

In the area of civic-minded education, the We the People curriculum teaches students about the structure and functions of US government by investigating the constitution piece-by-piece. Students re-argue Supreme Court cases that pertain to each area of the constitution (Galston, 2001). Arguing these cases requires that students know the text of the Constitution, the interpretive issues that surround it, and the way that case law works. Debating conclusions gives students the opportunity to clarify pressing issues that regard their own civil rights, for a more authentic learning process (Leming, 1996).

Perhaps the most well-known example of materials that support historical thinking come from the Stanford History Education Group (2014), including the *Reading Like A Historian* curriculum of document-based lesson plans. This curriculum is premised on the idea that disciplines—in this case, history—have particular modes of thinking that cannot be assimilated comfortably into general skills, and thus seeks to build teaching materials designed narrowly to produce thinking and literacy skills in the discipline of history (Wineburg, 1994, Reisman, 2012). The curriculum also includes all the materials necessary

to teach particular lessons, including primary documents with built-in scaffolds for these documents.

The present study makes use of a particular approach to inquiry—the C3 Framework—that has the characteristics of a broad approach to the creation of social studies standards, instruction, and assessments, but which also includes benchmarks for achievement in particular social science disciplinary concepts and tools. That is, C3 Framework attempts to speak both to standards-writers and to teachers (Swan, 2014; Swan, Lee, Mueller, & Day, 2014). However, there is a paucity of published research work covering the C3 Framework. There simply has not been time to write and publish anything that is not merely aspirational. This study will attempt to add to the empirical research base concerning C3 Framework.

Economic Education

K-12 economics instruction tends to avoid the controversies that beset the umbrella field of social studies. There are several reasons for this. First, data on how teachers are actually teaching economics is scant, so there is a real sense in which there is not a lot to argue about. Secondly, economics occupies a rather small space in the total time devoted to teaching social studies (Council for Economic Education, 2011). Thirdly, those who do focus on teaching and learning economics are mostly specialists who are dedicated to this particular discipline (Watts, 2006, p. 4). As such, their adherence to a strong view of economics as a discipline is not in question.

This does not necessarily mean that all is well. As mentioned above, there is not much in the literature to describe exactly what it is that teachers are doing in the classroom from a pedagogy perspective. Several decades of studies on the state of economics teaching discuss teacher preparation at the university level, curriculum, standards, testing, assessment

measures, and the effects of a teacher's gender and race, but give very cursory treatment to methods (Becker, Greene, & Rosen, 1990; Miller & Vanfossen, 2008; Walstad, 2001; Walstad & Watts, 1985; Watts, 2006). More work on this area has been done on the college level, where economics instruction tends to be even more reliant on lecture than are other university subjects (Watts & Becker, 2008). In fact, the titles of several such studies on university teaching methods say it all: "Chalk and Talk" (Becker & Watts, 1996), "Still Chalk and Talk" (Becker & Watts, 2001), and "A Little More Than Chalk and Talk" (Watts & Becker, 2008). While these methods may not translate directly to the K-12 classroom, they do at least describe the kind of education that teachers receive in their undergraduate economics classes—and teachers tend to teach the way they were taught.

This assertion is relevant if teachers actually took an undergraduate economics class, that is. But, it is very likely that they took none at all. While high school teachers who teach the dedicated economics course had a median number of two college economics courses in college, only half of the American states actually have a coursework requirement for economics teachers. Among states that do have a requirement, the average number of courses that someone needs in order to teach high school economics is one (by contrast, many states require 10 history courses if a teacher is to be certified in social studies) (Walstad, 2001, p. 206). Clearly, university instruction in economics is not in a position to have a strong effect on classroom teaching methods since teachers have generally not spent much of their college career in an economics class.

There is some ambient evidence from academic studies from which we can make inferences. Walstad (2001) notes the various pedagogical supports included in popular textbooks, including "graphical aids, inserts of news articles, biographies, pictures, cartoons,

chapter questions, and even a bilingual glossary" (p. 199). It is reasonable to assume that teachers use these. The Council for Economic Education (CEE) conducts teacher training through its 200 university centers and state affiliates on curriculum developed by the CEE. The pedagogy in these books often makes use of simulations, which are a type of classroom experiment that demonstrates economic concepts in real life, though obviously in a controlled setting (Bergstron & Miller, 1997). The workshops are generally well-received by teachers (Becker, Greene, & Rosen, 1990) and are usually associated with positive results on objective tests (Harter, 2013; Sosin, Dick, & Reiser, 1997; Swinton, DeBerry, Scafaldi, & Woodard, 2007), which provides more evidence that they are being used. CEE affiliates trained 55,000 teachers in 2012 and estimates that 5 million students are reached through the workshops each year (CEE website, 2012). Other organizations that provide economic education curriculum and teacher training are the Federal Reserve banks and the Foundation for Teaching Economics, which also tend to rely on simulation-based methods. The number of teachers trained per year would indicate that such teaching methods would be common. However, Walstad and Watts (1985) question whether these methods have really penetrated consistently into classrooms since most workshops are only one-day or a half-day in length. Since teachers lack both confidence and academic background in economics, it is likely that the workshops do not always get the traction that they potentially could.

Elementary-level, and to a lesser extent, middle grades economics, is sometimes taught in the context of a classroom Mini-Economy (Day, 2006) or Mini-Society (Kourilsky, 1983). In the simpler Mini-Economy version, students have classroom jobs and create businesses in which they earn money. In the Mini-Society program, by contrast, students not only do the things that the mini-economy does, but also must create a full-fledged

government system, complete with laws and a legal system. While the Mini-Economy tends to be fluid and open, the Mini-Society was created to be followed according to particular actions done on a strict timetable.

Kourilsky (1976) cautioned that it was important to distinguish between Mini-Societies in which students have agency in solving problems and creating businesses and a "token economy," which she refers to as "imposed behavior management" (p. 1). The former is a teaching program in which teachers are trained to seize teachable moments, while the latter is a tool for classroom management (and a bad one at that). Cassuto (1980) found significantly larger test score gains between elementary students who used the Mini-Society program and those who learned in a more conventional setting. Nevertheless, teachers cite the pressures of standardized testing as a reason not to utilize mini-economies, even if they have received training in using them (Carr, 2003). There is also evidence of important affective changes brought on by student involvement in a mini-economy. Kourilsky and Campbell (1984) found that when girls take part in a mini-economy in which they must create businesses, they are likely to change their perception of entrepreneurship as one that is primarily the domain of males to one where both males and females can be successful. This appears to be affected by students' experience with positive risk-taking in a mini-economy program (Kourilsky, 1976b). Furthermore, students who take part in the Mini-Society program are more likely to use cost-benefit analysis when conceptualizing problems than those who did not (Kourilsky & Graf, 1985), which demonstrates that this type of program may be useful for building student skills in academic inquiry.

Another popular way to teach elementary economics is known as the *infusion* method (Watts, 2006). This means that rather than having a stand-alone course in economics,

economics concepts are inserted into other social studies courses. This message may be useful due to time constraints. However, the preponderance of the research has shown that infusion is not useful for increasing student test scores in economics, perhaps due to the advanced skill that would be necessary for a teacher to implement such an approach effectively (Becker, Greene, & Rosen, 1990; Walstad, 2001; Walstad & Watts, 1985). The literature on precollege economics instruction has been very consistent in its criticism of the infusion approach. However, the criticism has been on empirical, rather than on theoretical grounds. The infusion method simply does not seem to get economic concepts across with the same clarity and efficiency as a more pure economics class, though certain isolated studies found limited positive results for infusion. As Watts reports, "A formal secondary course in economics is the safest way to improve students' knowledge of economics, but it is not at all likely that one course in economics is enough to consider students economically literate" (Watts, 2006, p. 1-2). He concluded that "there is still no empirical evidence favoring a particular teaching method or technology at the precollege level" (p. 18).

For the purpose of evaluating economics teaching materials, finding robust student outcome measures is also problematic. Most findings assume that objective test scores, especially the venerable Test of Economic Literacy, are valid tools, but this has come under question as well. Becker, Greene, and Rosen (1990) report that "standardized test scores have not shown any great difference between one method of instruction or program and another. This may simply reflect a shortcoming of these instruments, however" (p. 240). The National Assessment of Educational Progress has also been used, with results concerning teaching methods that are not that much different from the TEL—except for the finding that stock market simulations are in fact the only teaching tool that are associated with gains in

economics knowledge (Walstad & Buckles, 2008). That said, students overall only answer about 50% of the questions on the NAEP correctly, so assuming that this test is an indication of the general economics knowledge of high school students, all is not well.

In one study, Schug (1981) developed a series of open-ended questions that he used to judge whether young children could engage in economic reasoning (and he found that they could), but the study was very small-scale so the outcome measure has not been used to assess wider populations of students.

When judging longer-term impacts of student learning in economics classes once students actually get to college, there is some effect for the stand-alone high school economics course in college test score data. There is also a decay that kicks in after the first college economics course; that is, the rest of the students catch up (Watts, 2006). Another possible outcome measure that could be used is to compare the proportion of students in certain populations (e.g., school districts that receive CEE training versus those that do not) that have economics majors in college. Clearly, more research is needed at the precollege level, both to describe teaching methods and to find new and creative ways to assess student learning of economics.

One place where K-12 economics may look for guidance is the universities. This is because there has been a concerted effort since the mid-2000s on the part of the National Science Foundation (NSF), the American Economic Association (AEA) Committee on Economic Education, and the Science Education Resource Center at Carleton College to improve university teaching methods. Two projects in particular, the Teaching Innovations Program (TIP) of the AEA, and Starting Point: Teaching and Learning Economics of Carleton College, provide research-based and classroom-tested teaching methods to

interested economists. TIP was originally an initiative of the AEA. In this model, veteran economic educators (that is, economists who specialize in economic education) created interactive teaching strategies and demonstrated them in a workshop tour that reached 335 college and university economics instructors (Siegfried, 2010). Seven online modules were developed to act as follow-up to the workshop. Participants did the online modules and implemented the strategies in their classrooms. Mentoring in the teaching techniques was available from the creators of TIP. As a final product, interested instructors were invited to write research papers on their work with TIP and publish their research in an edited volume entitled, *Teaching Innovations in Economics: Strategies and Applications for Interactive Instruction*, edited by Salemi and Walstad (2010).

Starting Point: Teaching and Learning Economics, by contrast, is an initiative of the NSF. Taking note of the comparative lack of student-centered teaching in economics classrooms, NSF sought to fund a project that would take successful pedagogies from natural and physical science teaching and see what carried over to economics (Starting Point, 2014). Therefore, we can see an interesting contrast between the two projects from the beginning: TIP was a product of the experience of economic educators in a field that tends to lack student-centered methods, while Starting Point was an offshoot of active-learning science education methods that generally do not pay attention to economics concepts. The differences in approach are probably a good thing since they provide contrast, though one quickly notices that the two projects overlapped significantly, sometimes actually sharing the same material (Table 1).

Table 1

Teaching Methods Introduced in TIP and Starting Point.

Teaching Innovations Program (TIP)	Starting Point: Teaching and Learning Economics
Cooperative learning	Cooperative learning
Classroom experiments	Classroom experiments
Improving classroom discussion	Interactive lectures
Using formative assessments	
Context-rich problems	Context-rich problems
Teaching with cases	Teaching with cases
Various ways to make large enrollment classroom interactive	Classroom response systems
	Interactive lecture demonstrations
	Interdisciplinary approaches
	Just-in-time teaching (JiTT)
	Quantitative writing
	Service learning
	Teaching with spreadsheets
	Undergraduate student research
	Using media
	Using FRED (Federal Reserve Economic Data)

Sources: Teaching Innovations in Economics (Salemi & Walstad, 2010); Starting Point: Teaching and Learning Economics (2014), serc.carleton.edu

Case study is a method for K-12 economics instruction that encompasses an inquiry approach. There is already a precedent in K-12 CEE materials for using case studies as inquiry, including *Energy, Economics, and the Environment: Case Studies and Teaching Activities* for both elementary and high school, and *The Great Economic Mysteries Book*: *A Guide to Teaching Economic Reasoning*, with both middle and high school versions. These books have been in use since the 1990s and have since been revised and re-published. In *Energy, Economics, and the Environment*, teachers and students are given a healthy dose of up-front material about basic economic problem-solving tools, including scarcity,

opportunity cost, the role of incentives, cost-benefit analysis, marginal thinking, gains from trade, and the uncertainty that people face when making decisions that will affect the future. Thus equipped, they are given cases to study that require a real-world answer. For instance, the question that elementary students may face is, how much should we clean up the local lake? To answer this question, students need to consider the points of view of various stakeholders, weigh the costs and benefits of their decisions, and make a choice about the marginal utility of cleaning the lake. Thus, inquiry is not unheard of in the K-12 economics, though it is not the most common method judging by the relatively few titles that CEE has published that consciously use such methods.

The second reason why case study may work in K-12 schools is the timely publication of the C3 Framework. Though the C3 Framework does not directly stipulate cases as the key mode of inquiry, there are certainly commonalities. Readers who are familiar with C3 Framework will notice the similarities between its methods and the way that the New York City recycling program case study was designed. These similarities can be seen when comparing the "five points of a star-quality case" (Lynn, 1999, cited in Conway et al., 2010) and the four dimensions of the C3 Framework (Table 2).

Table 2.

Comparison of the five points of a star-quality case with the four dimensions of the C3 Framework.

Star-quality case	C3 Framework dimensions
1. Poses problem or decision that has no obvious answer	Dimension 1. Developing questions and planning inquiries
2. Requires reader to use information provided in the case	Dimension 2. Applying disciplinary concepts and tools
3. Has enough information for analysis, synthesis, or evaluation	Dimension 3. Evaluating sources and using evidence
4. Evaluating the problem and reaching a solution requires reader to think and analyze	Dimension 4. Communicating conclusions and taking informed action
5. Identifies actors who must solve the problem	

There are differences between these two approaches. The case approach emphasizes that students are presented with enough information to solve the problem at hand, while the C3 Framework allows more space for students to inquire as to what information they might need, might be missing, and might need to find. Perhaps most importantly, though, a high quality case does not stipulate the need for disciplinary concepts and tools, while this is a central component of C3 Framework. The TIP and Starting Point sources draw their methods for their cases from other disciplines, especially business, and therefore do not include economic concepts directly in their definitions of the overall pedagogy. However, all of their examples show a definite need for students to know and/or learn disciplinary concepts and tools when doing casework in class. Convey et al. (2010) include a section in their chapter on using economic literacy in cases. In their examples of case-based lessons, they take two approaches. In one, where students are asked to consider whether someone should accept a valuable baseball card as payment for washing someone's car, they allow the students to *discover* the economic concepts (in this instance, trade-offs and uncertainty) as they proceed

with the lesson (Bruner, 1960). In another, where students are asked to make a business plan for a new local coffee shop, they front-load the concepts (market structures and competition) and have students use them to solve the problem at hand. Clearly, disciplinary literacy is central to economic cases as described in TIP and Starting Point, even if the integration of such is more formalized in C3 Framework.

There is one other interesting difference between classic case teaching and inquiry teaching such as in C3 Framework. Lynn (1999) writes that a case must identify the actors who are making the choices in the case. This means that role-playing is normal for this method. *Energy, Economics, and the Environment* puts students in particular roles, usually as local politicians. This constitutes a real-world setting for the case, which intersects with the standards for Authentic Intellectual Work. Identifying an actor to solve the problem places the case at hand in the real world; that is, the students must consider the constraints that policymakers, for example, must deal with when making a decision. Buchanan (1962, 2003) theorized that economists should rigorously analyze the political incentives of self-interested politicians, bureaucrats, and other actors when making economic policy prescriptions, rather than making pronouncements about potentially efficient outcomes into a vacuum. It is reasonable to ask our young economists to do the same.

What economics content is appropriate for case teaching and learning? If one glances over the lesson examples in *Teaching Innovations in Economics* or Starting Point, one will find that they are entirely examples from the realm of microeconomics. Colander and McGoldrick (2009) provide an explanation for this in their distinction between “little think” and “big think” in economics instruction (p. 5). Little think questions involve the world of economics that is with us in minute-by-minute decision-making, for instance, “Why are last-

minute Broadway tickets cheaper than normal, while last-minute airplane flights are more expensive" (p. 81)? or "Why are seat belts required in cars but not school buses" (Frank, 2007, p. 124)? Big think, on the other hand, are the social questions that are commonly addressed by politicians, such as "What should we do about increasing income inequality?" Colander and McGoldrick note that most economists do their daily research work in little think sort of questions and may be more interested by them than are students.

At the date of this writing, there are only a few published lesson plans that fall within the intersections of the C3 Framework and economic education. However, analyzing what is available will be important when developing the materials in this research project. One lesson created by staff at the Federal Reserve Bank of St. Louis asks, What made the Great Depression 'great'? (Suiter, Wolla, & Flowers, 2014). In this lesson, students prepare by learning about macroeconomic indicators directly—note the importance of front-loading disciplinary concepts and tools so that students can use them for inquiry. They then pursue the compelling question listed above by discussing what they already know about the Great Depression; it is then the teachers' job to help students synthesize their knowledge with their questions (while correcting any obvious errors) to create supporting questions that are suitable for inquiry. In this particular lesson, there is a heavy emphasis on the students developing questions in an iterative process. Students then examine materials prepared by the St. Louis Fed that help them address such questions. The lesson calls for several clever possibilities for communicating conclusions, including creating a congressional report on the Depression or making a newsreel set in the time period itself.

In general, the literature on economic education shows a number of curriculums and lessons that are conducive to inquiry teaching. However, they are usually not positioned as

such, instead situating themselves in a very economics-specific format. The C3 Framework may provide an opportunity to maintain the disciplinary integrity of economics, while giving it a clear place in a more broad conception of social studies education.

Authentic Intellectual Work

This study argues that authentic intellectual experiences are universally important in a person's education (Archibald & Newmann, 1988; Dewey, 1938; Petraglia, 1998; Wiggins, 1989). Since this is a universal goal, AIW's scope transcends specific disciplinary approaches to learning, though it contains, interacts with, and may be enabled by them. In common English parlance, *authentic* means real or accurate. In the field of education, AIW has been explicated in various ways. This study specifically uses the work of Fred Newmann and his associates (Archibald & Newmann, 1988, Newmann, 1991; Newmann, Marks, & Gamoran, 1996). In this conception, Authentic Intellectual Work (AIW) is comprised of the following, quoted from Newmann, Marks, & Gamoran (1996), which will be elaborated upon later in this section:

1. Construction of knowledge: producing, rather than re-producing meaning or knowledge.
2. Disciplined inquiry: using a prior knowledge base from one or more fields; striving for in-depth understanding rather than superficial awareness; and expressing conclusions through elaborated communication.
3. Value beyond school: aesthetic, utilitarian, or personal value apart from documenting the competence of the learner.

Doug Archibald and Fred Newmann first proposed this notion of authenticity in response to the increasing popularity of standardized testing resulting from the *Nation at Risk*

(1983) study in a book entitled *Assessing Authentic Academic Achievement* (Archibald & Newmann, 1988). Their rationale for positing authenticity as an important component of assessment could have been taken directly from a contemporary appraisal of the educational landscape:

> This mounting pressure [of the educational reform movement] has led to increased reliance on testing to monitor achievement, especially on competency tests and norm-referenced standardized tests developed by authorities beyond the classroom. At the same time, a number of authorities, from teachers to policy makers, have called for alternatives to standardized testing that might offer more informative and authentic indicators of the kinds of achievements schools ought to promote. (Archibald & Newmann, 1988, p. 7).

Recognizing the interrelation of assessment with other aspects of the educational landscape, Fred Newmann and his co-researchers have written many articles that apply versions of AIW directly and specifically to various other aspects of schooling including structural educational reform (not confined to the vehicle of assessments) (Newmann, 1991), standards for creating classroom instruction (Newmann & Wehlage, 1993), and the nature of constructivism in teaching and learning (Newmann et al, 1996). The result has been a whole family of educational constructs that relate to that which is authentic in an educational setting.

Gleeson (2011) summarized the various incarnations of AIW produced by Newmann and his associates in a helpful table (Table 3). Since it can be cumbersome to refer to a group of educational applications with an adjective, Splitter (2009) renders them as a noun by

employing the phrase educational authenticity (EA) when discussing them. This study will proceed using AIW as an umbrella term and will use a specific phrase (e.g., authentic assessment) if that is what is being discussed in particular.

Table 3

Iterations of Authentic Intellectual Work Standards, From Gleeson (2011).

Iterations of Authentic Intellectual Work Standards

	STANDARDS				
CRITERIA	**Authentic Instruction[1]**	**Authentic Pedagogy: Classroom Instruction[2]**	**Authentic Pedagogy: Assessment Tasks[2]**	**Authentic Assignments[3]**	**Authentic Achievement [2]**
Construction of Knowledge	Higher-Order Thinking	Higher-Order Thinking	Organization of Information Consideration of Alternatives	Construction of Knowledge	Analysis
Disciplined Inquiry	Depth of Knowledge Substantive Conversation Social Support for Student Achievement	Deep Knowledge Substantive Conversation	Disciplinary Content Disciplinary Process Elaborated Written Communication	Elaborated Written Communication	Disciplinary Concepts Elaborated Written Communication
Value Beyond School	Connectedness to the World	Connections to the World Beyond the Classroom	Problem Connected to the World Audience Beyond the School	Connections to Students' Lives	

Note. Categories reproduced from: [1](Newmann & Wehlage, 1993); [2](Newmann, Secada et al., 1995); [3](Newmann et al., 2007).

Interest in assessments lies at the root of interest in AIW. Wiggins (1989) describes authentic assessment as performance-based and exhibiting mastery, also stipulating that "'authentic' refers to the situational or contextual realism of the proposed tasks…to call a task 'inauthentic' is…to describe its lack of fidelity to the ultimate performances [that is] being assessed" (Wiggins, 1998, p. 20). Darling-Hammond, Ancess, and Falk (1995) follow

Wiggins' definition and investigate a series of case studies on authentic assessments in action. Newmann (1998) points out that Darling-Hammond et al.'s definition of authentic assessments includes the real world aspect, but does not mention construction of knowledge nor disciplined inquiry, focusing instead on certain types of assessment products. Her work has, for some, formed the core of what is regarded as educationally authentic.

AIW as a guide for constructivist learning is relevant for this present study. Constructivism refers to the role that a learner plays in creating his or her own knowledge (Fosnot, 1996). Newmann, Marks, and Gamoran (1996) argue that their three-part conception of authentic learning is important in order to ensure high-quality intellectual experiences within the purview of constructivism. As Newmann, Marks, and Gamoran, (1996) put it, "Even highly active students can produce work that is intellectually shallow and weak" (p. 281). They bring empirical study to bear on this problem:

> We have observed situations like the following: students working diligently in small groups to complete routine mathematics or vocabulary assignments, but one student gives all the answer for others to copy; students completing interviews of community residents, with all question prespecified by the teacher and the students merely recording respondents' short answers, without trying to interpret their cumulative meaning; and students using the card catalog, computers, and mathematics manipulatives to gain superficial exposure to fragments of knowledge without gaining in-depth understanding of an idea. (Newmann, Marks, & Gamoran, 1996, p. 281).

Newmann, Marks, and Gamoran (1996) go on to argue that all three components of AIW must be present in order to avoid situations like the ones given above, and for authentic

learning to take place (p. 287). Terwilliger (1997), counters that the proponents of authentic assessments are trying to conjure up "word magic" (p. 24), and he writes elsewhere that "no amount of effort to redefine [authentic] in the assessment context is likely to change the association in the minds of readers…authors should attempt to employ more neutral or objective language when contrasting assessment procedures and approaches" (Terwilliger, 1998, p. 22). In other words, one could debate the usefulness of an approach defined by construction of knowledge, disciplined inquiry, and value beyond school, but how can one debate whether or not something should be authentic? In Terwilliger's view, the proponents of AIW are making an end run around the proper scrutiny of their ideas.

Specifically, this review discusses each component of AIW in more depth, which should shed light on the importance, validity, and exclusivity of Newmann et al.'s (1996) version of it.

Construction of knowledge. When Newmann and colleagues write about construction of knowledge, they invoke the theory of Constructivism (Newmann, Marks, & Gamoran, 1996, p. 286). Constructivism is a psychological and philosophical term that emphasizes the learner's contribution to learning (Bruning, Schraw, & Norby, 2011). In the constructivist view, the learner is active in creating meaning and knowledge, rather than a passive receptacle of knowledge (Fosnot, 1996). The extent to which this meaning- and knowledge-making is dependent on external reality is debated, with some scholars seeing learning as an interplay between objective reality and the individual, while others reject an independent reality being known outside of a knower (Martin, 2006). This question has important implications for educational authenticity. Following this line of thinking, Petraglila, (1998) asks if something is more real to someone if she has greater control over its

meaning. While a person might feel that something is more genuine if she owns it completely within her mind, it can be argued that that the definition of real, i.e., authentic, must be connected to what is objective—hence the word reality.

This point gives direction to thinking about the nature of constructivism in the epistemological sense. AIW makes use of disciplined inquiry in order to construct knowledge; social science disciplines assume that there is an external reality that can be known, at least in a contingent sense (Bruner, 1960). Therefore, authentic intellectual work can be seen as a dialectical form of constructivism, that is, a constructed synthesis in which the knower interacts with outside stimuli and lends meaning to them to ultimately create knowledge (Bruning, Schraw, & Norby, 2011; Moshman, 1982).

How does this discussion help address our questions of authenticity? Remember that Newmann, Marks, and Gamoran (1996) claimed that AIW was important in that it lent rigor to constructivist learning. They note the problem, however, that "[constructivism] does not prescribe better ways of constructing meaning, nor does it suggest that some kinds of meaning might be more powerful or adequate than others" (p. 286). Splitter (2009) follows this reasoning by claiming that "if students are involved in genuine discipline-based construction, their work is bound to be more meaningful to them, if we accept that meaningfulness trades on connections between what we experience and what is already judged, in social and cultural terms, to be worthwhile" (p. 141). In short, the discipline-based construction of knowledge is authentic insofar as the disciplines themselves are seeking the answers to important and interesting social questions.

Disciplined inquiry. The question of whether AIW deserves the moniker authentic, then, will depend partly on whether the academic social science disciplines that it uses are in

fact effective tools for interrogating questions that are important and interesting for K-12 students. Scheurman and Newmann (1998) make their position viz. constructivism clear: "[Our view of disciplined inquiry] is contrary to the form of constructivism, touted by some circles in the social studies, that does not require student constructions to conform to knowledge considered authoritative in a field" (p. 3), However, this might be problematic for the concept of AIW: if the content, processes, and conclusions of a particular discipline have already been defined, and if students are wrong if they deviate from these, how can this be judged constructivist? And how can this be judged as authentic?

The answer lies in how John Dewey conceived of democratic education. For him, there was an external reality that was apprehended in a social context. Dewey (1916) claimed that learning was social, but that students should encounter materials that has not been "already been subjected to the perfecting work of the mind," (Dewey, 1916, p. 197) thus requiring a degree of objectivity. He rejected the idea that students should be left to reach their own conclusions without the guiding influence of the teacher and fellow pupils (Dewey, 1902, Dewey, 1916). On the other hand, he cautioned against selecting "material and appliances which forbid a chance for mistakes to occur, restricts initiative, reduces judgment to a minimum, and compels the use of methods which are so remote from the complex situations of life that the power gained is of little availability" (p. 24).

Therefore Dewey approved of "material and appliances" which do provide or encourage learning in a real world, but guided, context. Inquiries must be guided by a teacher in order to achieve the goals of education, namely present joy and interest as well as preparation for adult life, and most importantly, a "socialized disposition" (Dewey, 1916, p. 204). This is what Dewey meant for inquiry to be authentic. If students have engaged in a

process of disciplined inquiry, then they have become privy to the methods that others before them have used to analyze social problems (Splitter, 2009). They have constructed knowledge, and it is new knowledge. So they are now in a position to have an informed opinion, and it cannot be merely the opinion of the experts *per se* since students are actively constructing meaning (Splitter, 2009). They can re-use, re-purpose, or reject the content, procedures, and conclusions of the experts if their inquiries lead them in a different direction (Newmann, Marks, & Gamoran, 1996). They will have achieved an increased measure of agency in the social world, quite apart from that of the experts.

Value beyond school. Splitter (2009) points out that the first two elements of AIW seem that they might render the third one, *value beyond school*, redundant. Disciplined inquiry as Dewey described must have value beyond the classroom. AIW conceives of value beyond the classroom in some ways that disciplined inquiry does not necessarily conceive of value, for instance, personal or aesthetic value (Newmann, Marks, & Gamoran, 1996). The second is that value beyond the classroom can be thought of in the context, as in this case, of social studies as a school subject. Social studies is worth more than the sum of the parts of its disciplines (Stanley & Nelson, 1994). In a social studies classroom, students will be expected to provide value judgments on the implications of their inquiry in the wider social realm. The student of social studies inquires into not only what an economist learns, but what an economist ought to do with her knowledge (Splitter, 2009). Lastly, and most practically, even if there is some essential superfluity involved here, it serves as a helpful reminder to educators who might read disciplined inquiry to be a strict adherence to the processes of academic disciplines such that the purposes of social studies, and indeed the social purposes

of education as envisioned by Dewey, are lost (Nelson, 2001; Thornton, 2005). Value beyond school drives educators to a proper understanding of constructivism and disciplined inquiry.

Value beyond school also appears to be the most popular aspect of AIW, judging by the way it is represented in the literature beyond Newmann's understanding of it. Wiggins (1989) defines authentic assessments as reflecting real-life performance. Students are to conduct the actual work of specialists in a particular field rather than simply learning facts gleaned from the field. (Darling-Hammond, Ancess, & Falk, 1995). In fact, authentic assessments are often defined as performance assessments (Darling-Hammond, 1994; Darling-Hammond & Snyder, 2000; Linn, Baker, & Dunbar, 1991), though Meyer (1992) cautions against this.

Newmann, Marks, and Gamoran (1996) are likewise critical of using the two terms interchangeably. Indeed, that is part of the reason why he and his associates created the three criteria in the first place. As they note, "Construction of meaning through disciplined inquiry is what makes some solutions to real-life problems more intellectually authentic than others" (Newmann, Marks, & Gamoran, 1996, p. 287). That is, a problem can be real-life, but still not constitute an authentic intellectual achievement as reflected in the work of successful adults.

In preparation for this particular design-based research project, AIW showed itself to be useful in several ways.

1. It explicated a particular philosophical form of constructivism (Splitter, 2009) and in turn connected this to specific educational tools (Scheurman & Newmann, 1998). This created a clear theoretical space for the study, which is detailed above.

2. AIW is the primary tool used by several influential studies in social studies inquiry (Saye, 2013). As such, it has carried much of the recent pre-C3-Framework load for thinking about social studies inquiry.
3. In the state where this study was conducted, there is increasing interest in AIW from educational policymakers, particularly in authentic assessments. So authentic instruction and authentic assessments were familiar terms for the teacher participants, and thus useful for communicating the purposes of the project.
4. As will be seen, teachers that participated in this study were compelled by the notion of real-world learning, which is a component of AIW (Darling-Hammond, Ancess, and Falk, 1995; Darling-Hammond & Snyder, 2000).
5. Classroom mini-economies fit comfortably into the scope of the real-world learning envisioned by AIW, and thus connect notions of social studies inquiry to the specific context of the project.

Summary of the Literature

This study is located at the intersection of social studies inquiry teaching, economic education, and Authentic Intellectual Work.

Disciplinary inquiry in social studies classrooms has a contentious history that is rooted in debates over the purposes of social studies as a school subject. One viewpoint, called social education, urges teachers to eschew strict disciplinary boundaries, reasoning that such structure inhibits young people from pursuing important social questions that are not confined to only one area of study. However, an approach to inquiry that makes use of the social science disciplines may in fact be appropriate, given that it is done within a proper Framework that respects the goals of social studies. This was the role of the C3 Framework

in the current study: to find a way to leverage the intellectual tools of the social science disciplines in a way that is consistent with the goals of social studies. The C3 Framework does appear to be appropriate for social studies instruction due to its interdisciplinary nature, its focus on important social questions and informed action, its adherence to an inquiry-based, i.e., authentic approach to teaching, and its care to engage students in a manner appropriate to their age. How well the C3 Framework accomplishes these criteria will be part of what this study investigates.

The study will also look at how teachers implement economics instruction in the context of a classroom mini-economy. K-12 economics instruction has a history distinct from that of the other social studies disciplines. It has not been as contentious as, for instance, history teaching, but it has also not availed itself of a wide range of pedagogical approaches, though much economics instruction in schools can be classified as active learning Finding consistent and robust statistics for the effect of certain curriculum in economics has been hard to come by, though there are ongoing research efforts that may yield interesting findings. On the university level, there have been two recent projects that have attempted to discover more creative and engaging methods for teaching undergraduates. Some of the ideas in these studies have potential for informing K-12 economics pedagogy as well, particularly in areas where there is overlap with the C3 Framework.

Educators are seeking more authentic methods of teaching and assessing than those commonly used in the decade-old bubble-sheet regime. The work of Fred Neumann and his associates provides us with a Framework for creating such instructional materials, entitled *Authentic Intellectual Work*, which is comprised of construction of knowledge, disciplined inquiry, and value beyond the classroom. This approach lays claim to the word authentic

through its prescription that students create meaningful, that is, genuine, knowledge when engaging in work that has personal, utilitarian, or aesthetic value apart from its function as task assessment; and such knowledge is best gained when using processes employed by successful adults, that is, academic disciplines, since these increase the sophistication and explanatory power of student inquiry, thus obtaining a more realistic view of the world in which they live.

Chapter 3: Methodology

This study examined the following questions regarding how 3rd-grade teachers implement economics instruction that is based on the C3 Framework.

1. What classroom practices emerge when the C3 Framework is used as the basis for instructional design?
2. How can the analysis of these practices serve to improve instructional design?

The study is framed with Design-Based Research (DBR) methodology, and uses constant comparative data analysis. This chapter describes the research methods used for collecting and analyzing data, as well as gives a description of related activities such as lesson design, implementation, and revision.

From the standpoint of the teacher-participants, the immediate practical need was to strengthen both the quality of their mini-economies and the rigor and authenticity of their economics instruction. The C3 Framework served as a tool to improve both, that is, as a catalyst by which disciplinary inquiry in economics could be used to infuse a classroom mini-economy with greater depth and meaning. However, the lack of research on the C3 Framework or teaching materials based on it (especially as relates to a mini-economy) meant that the C3 Framework could not be used simply as an intervention. It was an unknown quantity. The situation demanded the simultaneous development of teaching materials, instructional practices, and research outcomes. This is the exact situation for which DBR exists (Adler, 2008; Linn and Hsi, 2000; Linn, Clark, & Slotta, 2003; Wang & Michael, 2011).

Research Framework

Design-based research. Design-based Research uses "theory-driven design to generate complex interventions that can be improved through empirical study and that can contribute to more basic understanding of the underlying theory" (Design-based Research Collective, 2003, p. 7). Given the focus of this research on the C3 Framework and instruction, a DBR approach suggests that instruction based on the C3 Framework needs to be created and implemented. Next, data collected on the implementation had to be analyzed and used to contribute to our understanding of how the C3 Framework could be made more useful, especially in the context of these particular lesson materials. Materials were then revised and implemented again (Lee & Molebash, 2014). The outcomes of the study included improved (but not perfected) lesson materials, a description of design elements that will aid in ongoing thinking about implementation, or *middle-range theories* (Charmaz, 2006), and contributions the research literature in AIW, inquiry teaching in social studies, and economic education. And last, this process was beneficial for the teachers who participated in the study. The methodology of DBR places the needs of the teachers who participate as a central consideration of professional development and the creation of instructional materials, and as an important element of the research outcomes.

DBR is related to both participatory action research and intervention design (Wang & Hannafin, 2005). However, there are important differences. Unlike participatory action research, in which the participants in the research must be the primary generators of theory and practice, the researcher in a DBR study is allowed to play a more direct role. Nevertheless, it is still necessary for him or her not to impose on the study in such a way that it would affect the transferability of the findings. For instance, if a researcher were to instruct

teachers in every step of a curriculum design initiative, then it would not be plausible to replicate such a condition in other settings. On the other side, DBR is somewhat like intervention design in that it seeks to evaluate certain educational practices. DBR consciously seeks to build a theory of practice as the research progresses, rather than contenting itself with giving a thumbs-up or –down to an intervention. It also does not try to isolate one single causal factor (Design-Based Research Collective, 2003). Rather, it takes a broad range of contextual factors into account, thereby making the resulting recommendations for practice more believable (Barab & Squire, 2009).

Constant comparative methods. Design-based Research denotes the overall philosophy of the study, but does not thoroughly dictate the methods, which still need to be selected by the researcher (Wang & Michael, 2011). This study primarily made use of constant comparative methods as envisioned by Charmaz (2006) and to a lesser extent Hesse-Biber and Leavy (2011). Constant comparative methods have their root in Grounded Theory, which is an inductive approach to theory-generation (Glaser & Strauss, 1967). Grounded theory methods "consist of systematic, yet flexible guidelines for collecting and analyzing qualitative data to construct theories 'grounded' in the data themselves" (Charmaz, 2006, p. 2). This makes it an excellent method for use with DBR, which also places iterative theory creation at the forefront.

The primary analytical method used in Grounded Theory is the constant comparative method (Creswell, 2003). In general, the constant comparative method is an approach to qualitative induction that seeks to let the data speak for themselves. Using this method, the researcher identifies meaningful segments of data as he reads it then names, or codes, them (Hesse-Biber, 2011). In this way, the scope and power of the analysis grows as more and

more data are analyzed, eventually leading to a more abstract understanding of the object of study.

Glaser (1978) (quoted in Bogdan & Biklen, 1998) offers a helpful list of steps for understanding how the constant comparative method can proceed:

1. Begin collecting data.
2. Look for key issues, recurrent events, or activities in the data that become categories of focus.
3. Collect data that provide many incidents of the categories of focus, with an eye to seeing the diversity of the dimensions under the categories.
4. Write about the categories you are exploring, attempting to describe and account for all the incidents you have in your data while continually searching for new incidents.
5. Work with the data and emerging model to discover basic social processes and relationships.
6. Engage in sampling, coding, and writing as the analysis focuses on the core categories. (p. 67)

Charmaz (2006) notes that Glaser and Straus (1967) left the door open for others to apply grounded theory techniques in their own ways. Accordingly, she developed a style of the constant comparative method that seeks to understand research participants' implicit meanings and experiential views, that is, an approach that assumes that "any theoretical rendering offers an interpretive portrayal of the studied world, not an exact picture of it" (Charmaz, 2006). This study will build on the pragmatist strains of Charmaz's approach,

which are consistent with DBR (p. 10) and use her constant comparative method guidelines, which are flexible and subtle. These approaches are reviewed in the data analysis section.

The constant comparative method as described by Charmaz involves an initial phase that includes naming, or initial coding, each small segment of data. As patterns emerge, the codes can be re-arranged into focused codes, that is, categories that bring together the initial codes. This process should continue until the codes are saturated; that is, additional data analysis no longer brings sizable marginal returns to the understanding of the issue in question (Creswell, 2007). Though this method was originally conceived for the creation of theory (hence the name Grounded Theory), this study is content to take tentative steps toward understanding the uses of the C3 Framework, rather than to posit a grand theory—what Charmaz (2006) calls middle-range theories. This movement toward theory-generation is important both for the overall philosophy of DBR and of the Grounded Theory, which give us the constant comparative method.

Research Activities

The context for this research is a program of a university center dedicated to economic education, of which the researcher is the director. The researcher organized all portions of the overall program, including professional development, design of instructional materials, classroom observations, and research. However, the teachers contributed instructional materials that they found or created which were subsequently edited (by the researcher) or co-edited (by the researcher and contributing teacher). This research was an integral part of the overall program, though the other parts (i.e., professional development and creation of instructional material) were distinct from it.

The teachers who volunteered to take part in professional development intended to create materials for authentic instruction and assessment, and to receive training in how to best apply these in the context of a classroom mini-economy. As the organizer of this program, the researcher offered the Inquiry Arc of the C3 Framework as the approach for these activities, which had the following structure and schedule (see appendix for flier sent to teachers).

1. (December) First professional development workshop:
    a. Discovering teachers' instructional needs pertaining to mini-economies.
    b. Training in the C3 Framework
2. (December-January) Teachers create a C3 Framework-based lesson using components of their best mini-economy lessons.
3. (January) Second professional development workshop:
    a. Refining goals
    b. Refining and editing lessons
    c. Training in the C3 Framework
    d. Focus group interview
4. (January-February) Researcher further edits lessons, distributes them to teachers, and plans classroom visits.
5. (February-April) Classroom visits
    a. Classroom observations
    b. Teacher post-interview
6. (April-June) Analysis of data

Setting. The initial workshop took place at the university where the researcher's center is based. The classroom observations were conducted in the participating teachers' respective schools. This diversity of contexts lent scope to the study, thus enhancing its validity within the Framework of DBR (Wang & Hannafin, 2005). Bogdan and Biklen (1998) write, "Although those who formulated the constant comparative method suggest their approach is applicable to any kind of data, it is most often used in conjunction with multiple-site, participant observation studies (p. 68). The major reason for this is the thoroughly inductive nature of the method. It is perfectly acceptable and reasonable for the data to snowball as data collection and analysis proceed in tandem, and it is unlike a case study in that the boundaries need not be strictly defined (Merriam, 2009). Rather, data collection and analysis should continue until codes are saturated, that is, until data ceases to tell us anything that the researcher has not already observed and analyzed (Strauss & Corbin, 1998).

Participants. The population for this study was drawn from the teachers who signed up for the program on creating authentic instruction for a classroom mini-economy. Eight teachers participated in the second workshop and the focus group, and five volunteered to be part of the classroom observation and revision of the teaching materials. Of these five, one dropped out due to inclement weather and difficulty in obtaining permission from her school district. For the classroom observation part, students who filled out the informed consent form were also included as participants.

The four teachers who ultimately participated in the classroom portion had varying degrees of experience with mini-economies and authentic instruction (Table 4).

Table 4

Participant experience with mini-economy and other relevant training

Name	How many years teaching	How many years teaching with mini-economy	How many years doing a market day	Training related to authentic instruction
Ms. Pershing	11	6	4	School based workshops once a year, online course on project-based learning, helping to moderate that course.
Ms. Harter	11	11	11	Gifted and talented endorsement with focus on differentiation and problem solving
Ms. Delaney	7	0	0	Project based assessment committee for the school
Ms. Maloney	33	11	11	Gifted & Talented conferences, Destination Imagination training, Master's classes in education

In order to emphasize that the research participants were teachers who were working in a naturalistic teaching environment, they are referred to as teachers rather than participants. However, in general discussions of methodology that does not pertain directly to those who were a part of this particular study, participants will still be used.

All the names of teachers who participated in this study are presented as pseudonyms. Student names are rendered only as numbers (e.g. Student 1).

Data collection

Data were collected over five design phases (Table 5). The first phase included the collecting of lesson plan ideas from the participating teachers, a second professional development session, and a focus group interview. The second design phase consisted of the editing of the lessons by the researcher into a common format based on the C3 Framework's Inquiry Arc. The third design phase constituted the bulk of the observational data; it was in

this phase that the researcher conducted classroom visits and post-observation interviews. In the fourth phase, one of the lessons was further edited in response to assessment of the previous design phase as informed by analytical memos, and one last observation was conducted. In the fifth and final phase, data was collected that covered the university Market Day and final questions about the C3 Framework in light of the previous phases.

Table 5

Data sources in each design phase

Design phase	**Data sources**
Phase 1	1. E-mail from Ms. Fisher, one of the study participants (January 21) 2. Field notes from the second workshop (January 21) 3. Focus group interview transcript (January 21) 4. Research journal (Begun January 21, and progressing throughout the study)
Phase 2	5. Lesson plans and portfolio items (Originally submitted in the week prior to January 21, with ongoing revision)
Phase 3	6. West End class observation transcript and field notes (February 19) 7. West End teacher post-interview transcript (with two participating teachers, February 19) 8. West End class observation transcript and field notes (March 4) 9. East End class observation transcript and field notes (March 4) 10. East End teacher post-interview (March 4) 11. Student work samples from all three locations
Phase 4	12. Rural Elementary class observation transcript of two lessons (March 12) 13. Rural Elementary teacher post-interview (March 12)
Phase 5	14. West End post-interview (conducted on April 3, but dealing with the observation on March 4, with two participating teachers)

In order to best understand how teachers implemented instruction that is based on the C3 Framework, data was collected about both the use and the revision of instructional materials.

Triangulation of multiple data sources provided a more complete understanding of how teachers used the C3 Framework to implement economics instruction (Meijer, Verloop, & Beijaard, 2002). Triangulation is the practice of collecting data from different sources and collecting various types of data, called triangulation of source and of method, respectively. These processes allow some data to corroborate other data, thus making the researcher less likely to get off-track.

Focus group interviews. A focus group interview was conducted at the end of the second professional development workshop, which constituted the beginning of the data collection (the first workshop was done before IRB approval, and so it was not included in the research data). Hesse-Biber and Leavy (2011) write that one common use of focus groups is to evaluate a program, and to "help measure its success, strengths, and weaknesses and also to help qualitatively explain the nature of what is and is not working" (p. 164). Furthermore, focus groups provide a safe space for people who might not otherwise feel empowered to speak about a certain issue. These considerations were helpful for this study, as teachers in a one-on-one interview may have felt that they should not criticize the program we are partnering in too directly. The focus group gave them an opportunity to speak candidly. Lastly, these groups were also good for collecting a large amount of focused data.

Classroom observations. Classroom observations are important because the researcher may see things that the teacher is not likely to report. Whereas focus groups empower the participants, observations empower the researcher. The classroom observations

enabled the researcher to see if teachers were implementing the lessons the way they were drawn up, or how teachers were responding to unexpected circumstances. Given the inductive data-analysis methodology employed in this study, it was important to directly observe the central research question in action—how are teachers implementing the materials?—and allow the data to speak for themselves.

Student products. The C3 Framework calls for students to be "communicating conclusions and taking informed action," and it includes several indicators, or benchmarks, for showing how this should look (National Council for the Social Studies, 2013, p. 59). But C3 Framework does not speak to exactly the kind of products students will make. Authentic assessments call for real-world outcomes, and the teachers agreed that the most useful outcome from the development of the instructional materials would be a capstone assessment piece. They explicated their vision for exactly what this would look like in a collaborative brainstorming session during the second professional development workshop. They wanted what came to be called a *business portfolio assessment*, to be constructed from several assignments that led students to demonstrate mastery of economics content through their mini-economy businesses and stored in the business portfolio.

It was then left for the researcher to create the specific portfolio assignments, or *portfolio items*. These were essentially assignments that could either stand alone as one-off assignments, but ideally would be used to give focus and academic power to the construction of an authentic business portfolio assessment.

After the classroom observations, teachers submitted the student work from the portfolio items to the researcher. In order to preserve the confidentiality of students' identities, teachers cut the names off the top of students' artifacts.

To judge the quality of the assignments, a simple three-point scale was created to examine the extent to which student answers showed whether or not they understood the economic concepts in question. The three levels were no evidence that they had learned the concept, some evidence, and clear evidence.

Post-interviews. In-depth interviews are a part of qualitative research that is issue oriented (Hesse-Biber & Leavy, 2011). That is, the interviews are focused on a particular topic, and thus in-depth. To this end, semi-structured interviews were used, in which planning of questions helped give the conversation direction, yet allowed for flexibility.

In order to get the best interviews possible, an interview guide was created, which included both broad questions and specific ones (Hesse-Biber & Leavy, 2011). As the interviews were semi-structured, not all of the questions were used, but they kept the conversations on-track.

Research memos. Memoing is a central part of the constant comparative method. This means the researcher was not merely taking notes during observations or interviews. Rather, the research memo was tentative analyses of the data, or what Charmaz (2006) calls an "analytic break" (p. 72). DBR focuses on the refining of lesson materials through theory-development, and the constant comparative method is a thoroughly inductive method of investigation. Therefore, analysis proceeds during the data collection process, giving direction to the ongoing research. Research memos give the researcher an opportunity to interact with the data on a more abstract level before the final analysis. In this particular study, the researcher made a memo after he completed a focus group interview and one teacher observation. This served to focus attention on something that was not anticipated as

being an important factor in the research, thus allowing the focus to remain on the subsequent observations.

Outcomes. Design-based research envisions not only contributions to academic literature, but also the creation of educational products that are used in the research and are in turn a practical outcome of it. The various outcomes and products are listed and defined here.

Professional development workshop. The professional development that was necessary to actuate the workshop was also part of the goals of the university center.

Research activities. Activities that directly related to data, analysis, and contributions to academic literature. The research was distinct, if not entirely separate, from the development of instructional materials.

Instructional materials. These phrases refer to the parts of program activities in which classroom materials were made. They may have been created either by the researcher or the participating teachers. These have to do with any and all kinds of teaching materials. They distinguish the research part of the program from the instructional materials part.

Portfolio assessment or business portfolio. The creation of instructional materials included an overarching assessment tool in the form of a portfolio. The portfolio mimics a business plan and is intended to demonstrate that students used inquiry in order to grow their mini-economy businesses.

Portfolio item. This refers to each individual assignment that goes into the portfolio described above. The items were designed to be able to stand as one-off activities, though ideally they are to be used to guide the construction of the business portfolio.

Lessons. This refers to the classroom lessons that teachers designed and implemented. A large part of the data in this study covers the development, editing, and

implementation of these lessons. The portfolio items described above may or may not have been used in a particular lesson.

Analysis of Data

Data were analyzed using a pragmatist paradigm, that is, they were judged by their usefulness for achieving established goals (Dewey, 1938; Barab & Squire, 2004). The research did not seek to rigorously isolate truth-claims, but neither did it reject the notion of objective truth or an external reality that we can to some extent know (Splitter, 2009; Sproul, 2009).

The study used Charmaz's approach to constant comparative methods to analyze the data. Charmaz's methods suggest a first stage of coding data called *initial coding*, or what has elsewhere been referred to as *open coding* (Strauss & Corbin, 1994). This is the process of naming the smallest bits of data available, preferably using gerunds, which denote action. This is to keep the researcher from rushing to conclusions about what is going on. Charmaz (2006) recommends doing this word-by-word or line-by-line, though it can also be done incident-by-incident—but at the risk of missing subtle meanings in words and turns of phrase. Another version of codes that can be used at this early stage are *in vivo codes*. This is when the researcher uses a colloquial phrase or symbol from a research subject that is likely to be densely packed with meaning. Such codes can offer leads or shortcuts into the social world of the research participants.

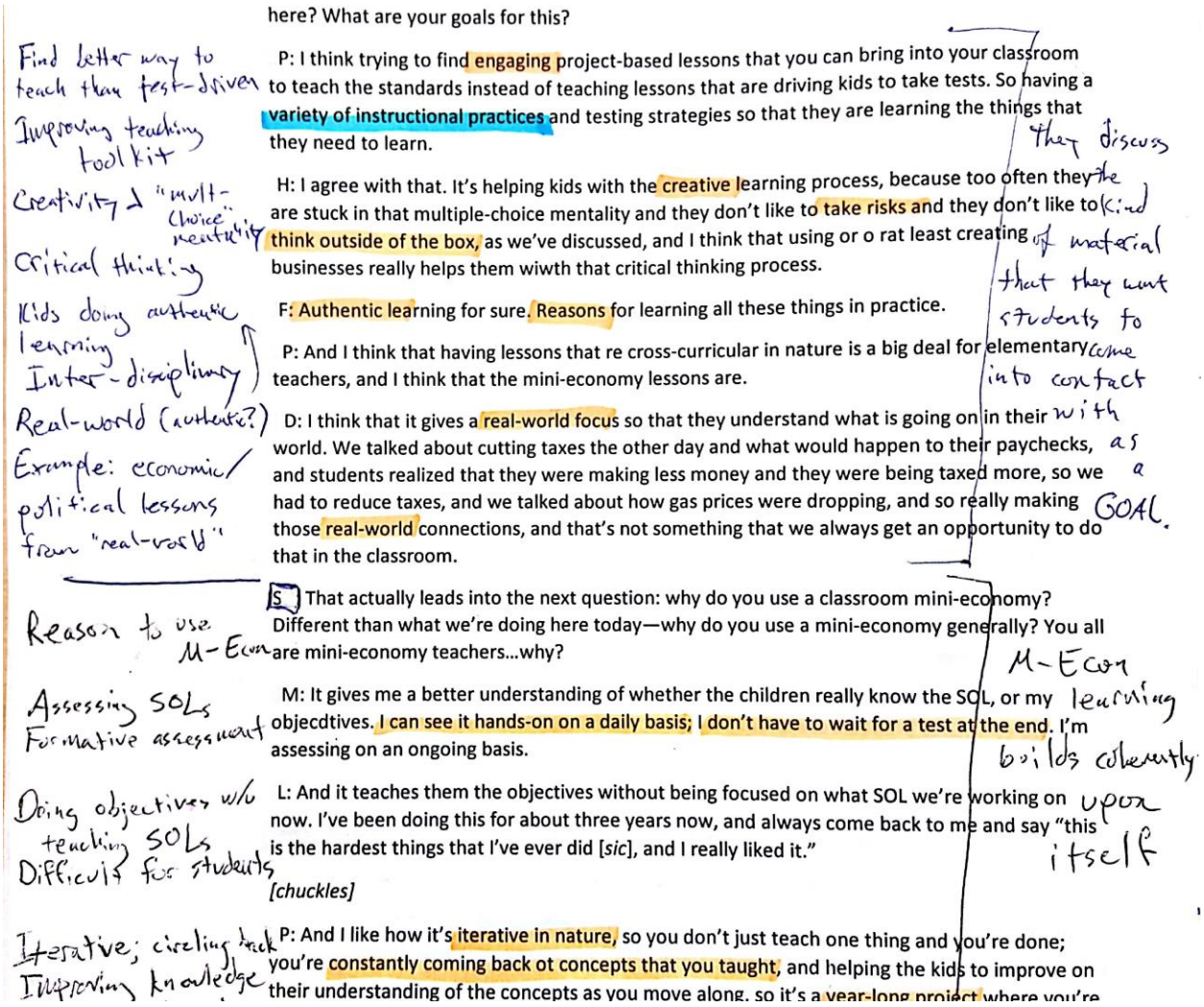
After the researcher has coded a significant amount of data, another kind of coding is necessary to begin building the analytic strength of the initial codes. This next phase of coding is called *focused coding*, which means "using the most significant and/or frequent earlier codes to sift through large amounts of data" (Charmaz, 2006, p. 57). The process

should bring into relief larger chunks of meaning. The hard work of initial coding should keep the focused codes faithful to the data.

The last level of coding, *theoretical coding*, extends the process toward the goal of grounded theory. In this, the researcher re-integrates the focused codes into a complete picture. As Charmaz (2006) explains, "These codes not only conceptualize how your substantive codes are related, but also move your analytic story in a theoretical direction" (p. 63) Note that theoretical coding does not require the positing of grand theory, but can be content with theoretical direction, or middle-range theory. Such coding is consistent with the goals of DBR.

As per the constant comparative method as explained by Charmaz (2006), transcripts of the interviews and observations were analyzed by beginning with initial coding, in which labels assigned meaning to text. In this process, it was important to remain open-minded and to let the text speak for itself to the greatest degree possible. However, so as to bring order to the myriad interpretations that human interaction makes possible, things that were most pertinent to the research questions and supporting literature were given greater scrutiny. Coding was done line-by-line or sentence-by-sentence, though it was also occasionally applied to entire paragraphs, especially in later analysis as codes became saturated. The goal was to find clusters of meaning which could be compared to one another in a second round of focused coding, and hence to construct more broadly explanatory themes.

Text and initial codes that fell along themes were color-coded as the themes began to emerge. This allowed quicker identification of categories that could be used to go back and compared to previously-coded data—hence, the constant comparison of codes to codes, which ultimately strengthened and refined the emergent themes (Figure 1).



here? What are your goals for this?

Find better way to teach than test-driven

P: I think trying to find engaging project-based lessons that you can bring into your classroom to teach the standards instead of teaching lessons that are driving kids to take tests. So having a variety of instructional practices and testing strategies so that they are learning the things that they need to learn.

Improving teaching tool kit

Creativity Δ "multi-choice" mentality

H: I agree with that. It's helping kids with the creative learning process, because too often they are stuck in that multiple-choice mentality and they don't like to take risks and they don't like to think outside of the box, as we've discussed, and I think that using or o rat least creating businesses really helps them wiwth that critical thinking process.

Critical thinking

Kids doing authentic learning

F: Authentic learning for sure. Reasons for learning all these things in practice.

Inter-disciplinary

P: And I think that having lessons that re cross-curricular in nature is a big deal for elementary teachers, and I think that the mini-economy lessons are.

Real-world (authentic?)

Example: economic/ political lessons from "real-world"

D: I think that it gives a real-world focus so that they understand what is going on in their world. We talked about cutting taxes the other day and what would happen to their paychecks, and students realized that they were making less money and they were being taxed more, so we had to reduce taxes, and we talked about how gas prices were dropping, and so really making those real-world connections, and that's not something that we always get an opportunity to do that in the classroom.

they discuss the kind of material that they want students to come into contact with as a GOAL.

Reason to use M-Econ

S: That actually leads into the next question: why do you use a classroom mini-economy? Different than what we're doing here today—why do you use a mini-economy generally? You all are mini-economy teachers...why?

M-Econ learning builds coherently upon itself

Assessing SOLs Formative assessment

M: It gives me a better understanding of whether the children really know the SOL, or my objecdtives. I can see it hands-on on a daily basis; I don't have to wait for a test at the end. I'm assessing on an ongoing basis.

Doing objectives w/o teaching SOLs Difficult for students

L: And it teaches them the objectives without being focused on what SOL we're working on now. I've been doing this for about three years now, and always come back to me and say "this is the hardest things that I've ever did [*sic*], and I really liked it."

[chuckles]

Iterative; circling back Improving knowledge

P: And I like how it's iterative in nature, so you don't just teach one thing and you're done; you're constantly coming back ot concepts that you taught, and helping the kids to improve on their understanding of the concepts as you move along, so it's a year-long project where you're

Figure 1. Sample of coded data.

An example of a focused code was *real-world learning*. This was an important feature of the theoretical framework of this study, and it was a phrase that was on teachers' minds and lips from the very beginning, as can be seen in the excerpt above. The phrase real-world learning was assigned the color orange and was used to group together other phrases that teachers used to describe this concept. In this manner, chunks of meaning were isolated and explored in more depth. Initial codes and notes came together to create a focused code (Figure 2). This broader, more powerful code enabled a better view of how teachers created meaning, while the return to the data and initial codes kept the analysis grounded in the

teacher's actual words. This last, more nuanced analysis produced themes that constitute research findings.

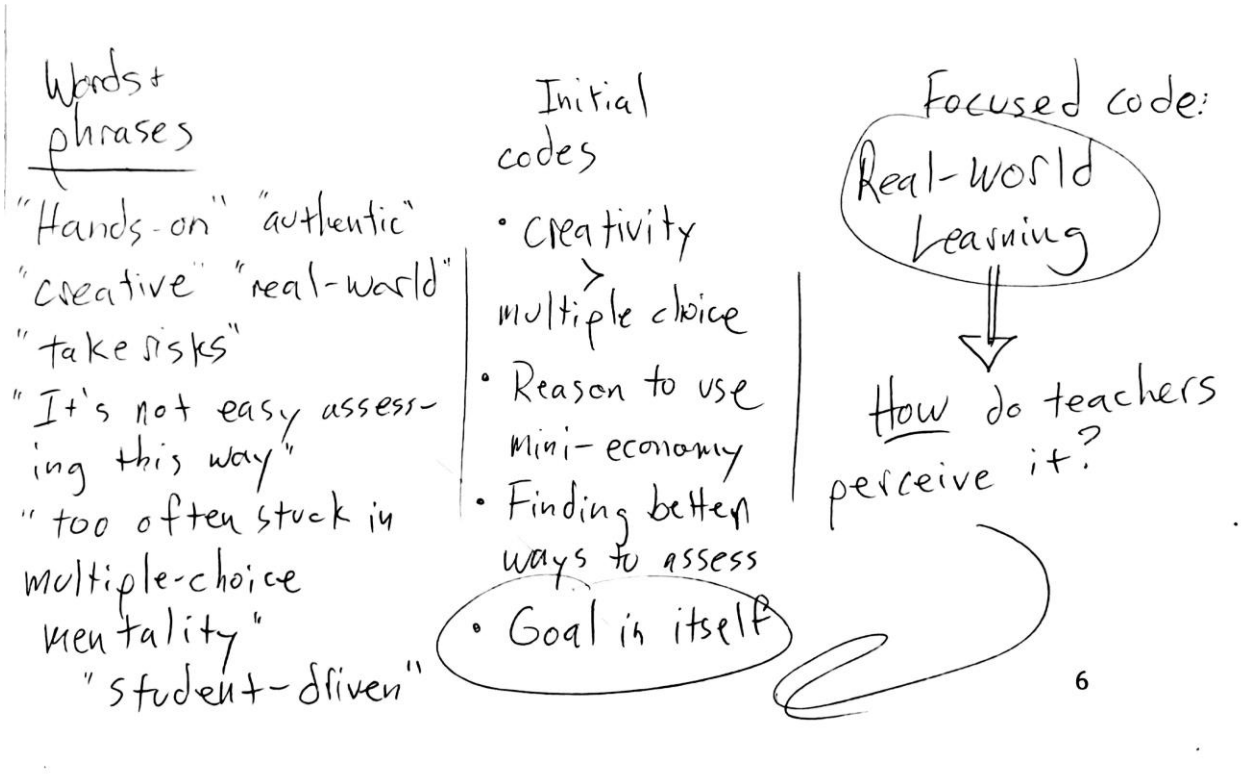


Figure 2. Sample of emergent codes

Reliability, Validity, and Transferability of Findings

Concern for validity and reliability is a chief reason why DBR exists (Design-based Research Collective, 2003). Contrasted with thoroughly constructivist participatory action research on one hand, which has been seen as either being too context-bound to be scalable, and intervention evaluation on the other, which does not pay enough attention to context, DBR is an effort to provide practically applicable, transferable, and flexible advice to practitioners (Wang & Hannafin, 2005).

In qualitative research, reliability has to do with rigor of analysis, as well as the transferability to other settings. In the case of this study, reliability is enhanced by the rigor

of grounded theory, which insists on a close adherence to the data and a continual re-assessment of its meaning (Charmaz, 2006). Furthermore, member checks in each meeting mean that participants have the opportunity to comment on and perhaps amend the meaning of the analysis.

Wang and Hannafin (2005) report that the real-world setting of a DBR study enhances validity, in contrast with a lab setting. DBR consciously observes and reports on issues that may arise during implementation. It is a process uniquely suited for external validity. The Design-based Research Collected (2003) claims that "validity of findings is often addressed by the partnerships and iteration typical of design-based research, which result in increasing alignment of theory, design, practice, and measurement over time" (p. 7). In sum, the various sources and methods of data collection which triangulate different types of data, the iterative process, the need to attend to precision in the face of member checks, and the importance of context all aid in the internal and external strengthening of this particular application of DBR. Nevertheless, there is something of a balancing act to be done in order for DBR to be at its best. As the Design-based Research Collective (2003) points out, "There is a trade-off here between the refinement of a particular innovation to maximize success, and the generalization of findings from an ultimately highly refined enactment" (p. 7).

As discussed above, the triangulation of source and the method of data collection enhance the internal validity in qualitative research (Meijer, Verloop, & Beijaard, 2002), making it more difficult for the researcher and participants to bias the results with personal opinion. Unlike some approaches to qualitative research, DBR does not accept subjectivity and reflexivity as a way to ensure validity (Schwandt, 1994). DBR requires that the

researcher balance himself between the roles of participant and observer (Design-Based Research Collective, 2003).

Summary

Using a Design-Based Research Framework and constant comparative methods, this study sought to investigate how 3rd-grade teachers implement economics instruction that is based on the C3 Framework. The study did this by asking what classroom practices emerge when the C3 Framework is used as the basis for instructional design, and how the analysis of these practices can serve to improve instructional design. Ultimately, the study was guided by the hope that research in the field of curriculum and instruction can both add to the theoretical understanding of important issues and at the same time be immediately useful to classroom teachers. In this sense, it mirrors the ideal of the C3 Framework—that the result of good inquiry is always informed action.

Chapter IV: Findings

Analysis of the data produced a picture of the instructional practices that emerged during the course of this program: teachers used the C3 Framework—or alternately decided not to use it—to the extent that it fit with their goal of a real yet limited shift in their classroom instruction toward real-world learning. In many cases, they consciously used the C3 Framework, but in a watered down or diluted form. Ultimately, analysis showed that the C3 Framework was beginning to have its desired effect—but only to a limited extent. This chapter will elucidate the process by which these emergent themes were discovered and will discuss them in greater detail.

The chapter is organized as follows:

1. Overview
2. Context and Preparation for the Study
    a. First workshop, December 17
3. Design-based Narrative
    a. First design phase
        i. Second workshop, January 21
        ii. Focus group interview, January 21
    b. Second design phase
        i. Lesson revision
        ii. Teacher reception of edited lessons
    c. Third design phase
        i. Lesson implementation: “What should I specialize in?”
        ii. Lesson implementation: “Saving for the Hard Times”

d. Fourth design phase

i. Lesson revision

ii. Lesson implementation: “What should I specialize in?”

iii. Lesson implementation: “Saving for the Hard Times”

e. Fifth design phase

i. Teacher interview: Market Day, and “Saving for the Hard Times”

4. Emergent themes

a. Teachers used the C3 Framework as an approach to inquiry-based instruction.

b. Teachers used the C3 Framework inconsistently.

c. Teacher used the C3 Framework as a means of marginal improvement to their instruction.

d. Teachers used the C3 Framework when it helped them reach their goal of providing real world instruction.

The Context and Preparation for the Study section explains the immediate relevant background for the study so that the reader can understand the factors that influenced the participants. Next, the design-based narrative describes how the iterative nature of the research led to findings that helped inform each subsequent design phase. The last part of this chapter discusses the broad themes that emerged through the coding process.

Overview

This overview is a brief summary of all the events in the overall program, including research, professional development, and creation of instructional materials. It will be described in more detail and in analytical form in the Design-based Narrative section.

This research is situated within the context of a program of a university center that is dedicated to economic education. Therefore, the researcher had the twin mandates of his professional goal of advancing economic education and completing this research effort. Without the research aspect of the program, the professional development workshops and design of instructional materials would still have been done, though probably in a different—and less powerful—form. The program was conceived with the research as an important part of the university center's goals for economic education.

First, a series of two professional development workshops was organized. The stated goal of the workshops was to create authentic instruction and assessments in the context of a classroom mini-economy. The workshops were only advertised to teachers who had participated in past Market Days hosted by the university and to district curriculum specialists. This was so that teachers would come ready to contribute ideas for standards-based teaching in a mini-economy or with stated district needs. The first workshop was held in December 2014. It did not constitute part of the research data as IRB permission had not yet been secured. In this workshop, the researcher taught about and demonstrated the Inquiry Arc of the C3 Framework. Teachers were tasked with bringing an idea or lesson plan that they already use in their mini-economies to share with the group. The researcher added the stipulation that it had to fit with the Inquiry Arc.

The first design phase began with the second workshop, which was held in January 2015, just after IRB approval had gone through. The second workshop (and some e-mail communication from one of the teachers) constituted the beginning of the data collection. During the workshop, a firmer vision for the development of teaching materials was reached by the group—they decided that what they needed was an overarching authentic assessment

piece for their students to complete, and that this should be a portfolio in the form of a business plan. They identified several elements of such a portfolio that they would like to see and tasked the researcher with creating it. After the workshop, there was a focus group session in which all the workshop attendees participated. After the focus group, teachers who were interested in being a part of classroom observations talked about which lessons they wanted to implement, and they reached a consensus on two of them. Around the time of the workshop, all the teachers e-mailed the researcher copies of lesson ideas that they had brought so the researcher could edit them and use them to support the business portfolio.

This began the second design phase. In it, the researcher edited the lessons so that they would fit in better with the C3 Framework. He also created the portfolio assessment according to the elements that were requested by the teachers in the workshop. The portfolio was essentially a business plan that aimed to plan the growth of students' mini-economy businesses through economic inquiry. This overarching task was supported by several prescribed portfolio items, each of which was also based on the C3 Framework.

This concluded the initial creation of the instructional materials. They consisted of 1) a business portfolio assessment, which was supported by 2) several portfolio items, which were in turn supported by 3) lesson plans. These were returned to the teachers, who then planned classroom instruction using them.

The third design phase was the implementation of the teaching materials in classrooms and subsequent post-implementation interviews. One class (team-taught, so it had two teachers) experienced two of the lessons, while a second class experienced only one. These, along with the researcher's research journal, provided rich data that were immediately

analyzed through the process of memoing in order to revise the teaching for the fourth and last design phase.

The fourth design phase began with a conference between the last teacher and the researcher in which the teacher was advised according to the previous classroom observations. She changed her plans for one of the two lessons accordingly, but left another unchanged (she was the author of that lesson). She then taught the two lessons in succession and also conducted a post-interview.

In the end, one of the lesson plans was taught three times and the other twice. There were four teachers involved, in three classrooms.

The fifth design phase was originally unplanned-for. It consisted of a post-interview with the West End Elementary teachers. The interview was delayed due to snow days, and it ultimately occurred after the culminating university Market Day. The Market Day, combined with preliminary analysis of the fourth design phase, necessitated changes to the interview questions. This in turn made another design phase necessary.

This concluded the data collection for the study.

Context and Preparation for the Study

For practical purposes, the program, of which this research is a part, began on November 18, 2014 when it was publicized to district curriculum specialists and former Market Day participants with a flier containing the following workshop description:

> The Classroom Mini-Economy gives students the opportunity to use economic reasoning to construct real-world projects. At the moment, there is no widely-used way to ensure that the classroom businesses in the Mini-Economy lead to the learning of economic concepts, or that students are using economic concepts as they create

> their businesses. In this workshop series, mini-economy teachers will pool their knowledge with the university Center for Economic Education to create instruction and assessments that draw strong connections between economics standard and classroom businesses.

Teachers were selected for this workshop based on their experience with mini-economies. The idea was that such teachers would come with some experience integrating content standards into the mini-economy. This assumption was based on well-established research that standards drive tests, which in turn drive instruction (Ravitch, 2010).

The recruitment materials advertised that participants in the workshop series would receive a $75 stipend if they attended both workshops and contributed lesson ideas. This stipend helped further the Center's goal of making its teacher-partners feel rewarded and valued for their expertise, and it also helped ensure that participants would not drop out of the process after the first workshop, or show up to the second one empty-handed. Ultimately, no district curriculum specialists were able to supply any teachers.

This challenge to recruitment reflected a common theme in the educational landscape, experienced in the context of this study and nationwide. Teachers and curriculum support professionals may be excited to find new ways to improve instruction, but their enthusiasm cools as the school year marches on, responsibilities pile up, and, as in this case, the district or state requirements take their toll on teacher capacity for absorbing more professional development, particularly that which represents a new initiative rather than a way to save time. This sentiment would be reflected early in interviews with teachers who did actually make it to the workshops.

First workshop, December 17. Ten participants attended the first workshop on December 17, 2014. The workshop agenda included four activities (Figure 3):

Workshop agenda, December 17, 2014

4:00	Where we are now: How we use the Mini-economy in our classrooms (organized teacher sharing).
4:30	Authentic assessments and the 3rd-grade standards—What do we need to do?
4:45	Authentic instruction for authentic assessment: Inquiry. • Developing questions and planning inquiries • Using economic reasoning • Evaluating sources and using evidence • Communicating conclusions and taking informed action
5:30	Lesson demonstrations: • *"What should our business produce?" – Economic Wants* • "*How do I know if anyone will buy my stuff?" -- Researching the Market.* • *"How can we sell more stuff?" -- Analyzing Advertisements*
6:45	For next time: Modify one lesson that you already do and be prepared to share it for next time. • It should relate somehow or lead to the M-E. • It should use the inquiry concepts discussed above. • It should tie in with standards.
7:00	Depart

Figure 3. Workshop agenda, December 17, 2014

The workshop was designed to be implemented in two parts, 1) Where we are now: How we use the Mini-economy in our classrooms, and 2) Authentic assessments and the 3rd-grade standards—What do we need to do? Workshop activities were developed to clearly establish the two-part problem we were addressing: 1) the need to enhance the impact of classroom mini-economies while infusing and 2) enhancing the teaching of economics content, especially in light of local interest in authentic instruction and assessments.

The second part of the workshop (authentic instruction for authentic assessment and inquiry) introduced the C3 Framework as the means by which teachers would be supported in achieving the workshop objectives. After introducing the Inquiry Arc, the researcher (acting as workshop facilitator) demonstrated several C3 Framework-based lesson plans that were adapted from a CEE publication entitled *Economics and Entrepreneurship: Operating a Classroom Business in the Elementary and Middle School* (Day, 2008). The idea was to actively involve the teachers in the lesson demonstrations so they would experience them more vividly. In each sample lesson, teachers actively pursued answers to compelling questions as part of the training experience. The lessons pertained to the creation of a classroom business. Teachers created supporting questions to aid in the inquiry, used economic concepts, and analyzed market data that they collected to support their final conclusions about what action to take in their hypothetical businesses. After the inquiries, the group reflected on the C3 Framework-based aspects of what they had just done and discussed how these could be applied to other lessons or to an overall authentic assessment. The teachers were provided with copies of the sample lessons, with C3 Framework dimensions clearly delineated.

To further train teachers in the use of the Inquiry Arc, each teacher received a copy of *Teaching the C3 Framework: A Guide to Inquiry-Based Instruction in Social Studies* (Swan, Lee, Mueller, & Day, 2014). They were encouraged to use the K-5 lessons from the book as guides when they were organizing their own C3 Framework-based lessons for the next workshop session. The group then went over expectations for the next session. Each teacher was to come with a lesson (or at least a lesson idea) that could be edited and molded into a

lesson that would be useful for implementing authentic and inquiry-based instruction was motivated by the overall goal of creating student business in a mini-economy.

Since student businesses in a mini-economy constituted an ongoing authentic curriculum project for the teachers in this study, the teachers thought that the businesses needed a single assessment outcome that would demonstrate evidence of student learning. A workable format for such an assessment was decided upon: a business portfolio that students would develop alongside their mini-economy businesses. Teachers thought that the idea of a business portfolio would satisfy the conditions for authentic instruction and assessment and would have the added benefit of being easily aligned with district project-based learning initiatives. (Project-based learning is an educational approach that bears some similarities to authentic intellectual work.) They also discussed ways that such a business portfolio could be made flexible enough to adapt to local conditions and to day-to-day classroom needs. One such idea was that the portfolio could be comprised of several portfolio items, or assignments, that could be given individually or as part of the overall business portfolio.

Specifics were left for the next workshop. This took place one month later, on January 21, 2015. On that day, teachers also submitted their lesson plans to the researcher. On January 14, IRB conferred exempt status, so data collection could commence.

Design-Based Research Narrative

This section describes research findings that are presented in narrative form so as to capture the ongoing, iterative nature of the design-based research. This structure shows the findings as they developed chronologically and preserves the sense of contingency that the researcher and teachers felt while making decisions about implementation and design.

First Design Phase. The first design phase included two activities: the second professional development workshop, which was conducted on January 21, and a focus group interview following this January 21 workshop. Data collection was planned to begin at the onset of the second professional development workshop. However, just prior to the day of the workshop, there was an important interaction between a teacher scheduled to participate in the workshop named Ms. Fisher and the researcher that provided interesting insights into the teacher's thought process and constituted an important source of data. This interaction came in the form of a frustrated e-mail.

> I just looked over the attached materials. I am afraid that I have been mistaken on the purpose of my participation with your work. I thought the goal was to create lessons that specifically correlate with [our state standards]. I was not aware that you wanted these lessons to be in the C3 Framework's Inquiry format that you designated in your book. I have looked at those lessons and the format doesn't work for my situation. I have some great hands-on and inquiry-based lessons and examples of how the mini economy supports numerous standards in all the curriculum areas. In addition, I will not be participating in your research study. [My district] makes it difficult for the students to participate in research. I believe in the Mini-Economy and want to support it, but this was not what I expected. I am sorry that I didn't understand. I was also mistaken on sharing the lessons since I didn't know you wanted them in this format, which I don't fully understand, and I question whether or not my presence today would be of any value to you. Please advise.

Thank you so much,

Ms. Fisher

The researcher replied to the effect that part of the purpose of the research was to find out if the C3 Framework was useful for teachers, and that if the C3 Framework did not work in her situation, it was acceptable for her to jettison it—this would provide an example of how a thoughtful teacher would implement a mini-economy lesson without using the C3 Framework. Her reply contained even more insight into her thinking:

> It wasn't until your message yesterday that I understood what you really wanted. I have looked over the C3 Framework and can't really get into it. I know it is directed at Social Studies at secondary level. I am a problem-based learning person which has lots of similar elements. I also realize now that you are into the social studies and economics and not promoting mini economy as a whole and how it is cross-curricular. I have done research and understand parameters. I just don't think that C3 Framework fits easily with elementary. However, I may be totally off and the other teachers may be more in your way of thinking. For the record, I am all about inquiry and my saying is that I like to operate at the top of Bloom's Taxonomy (if that means anything to you). I am guessing that C3 Framework is also Common Core, right? I am not against Common Core, but the emphasis is often a bit different.
>
> So, sorry to be a pain…….. and it seems like I am trying to thwart your plan and I sure am not!

These two e-mails revealed several concerns (and actually, opportunities) regarding the usefulness of the C3 Framework. Ms. Fisher's prescient e-mail helped frame several challenges that the teachers encountered as the lesson creation and implementation progressed.

Second workshop, January 21. There were eight teachers present for the second workshop. All had previously signed the informed consent form and agreed to be part of the research. The agenda for the second workshop included four activities (Figure 4). As it happened, the workshop hardly followed the agenda at all.

4:00	Review of concepts: Authentic assessment in the Mini-Economy
4:20	Sharing lesson ideas. Each school team demonstrates part of its lesson (3 x 20 minutes each)
5:20	Working together: Modifying the activities, tying them into the mini-economy, and building rubrics
6:40	Next steps: planning implementation and university center site visit
7:00	Depart

Figure 4. Workshop agenda, January 21, 2015

The second workshop began with some discussion of the required format for a lesson that hinges on the Inquiry Arc. Here, it became apparent that teachers were using different sources for their conception of the Inquiry Arc. One teacher said that she had read the *Teaching the C3 Framework* book. Another teacher referred back the sample lessons that were used in the first workshop. And another said that she had found some C3 Framework lessons online to use. Ms. Fisher, consistent with her previous e-mail, said that she had already used project-based and inquiry teaching, and the mini-economy was similar enough that she could simply "ignore the Inquiry Arc" (her words) and use her own previous training. Ms. Pershing said that she had forgotten to use the Inquiry Arc, but gave herself a refresher in it by reviewing an e-mail from the researcher.

After discussing the different sources from which teachers had learned about the C3 Framework, the group asked to go over the Inquiry Arc again, and upon review, they seemed to be more positive about it, with Ms. Delaney saying, “Oh yeah, I used that!” They had referred to the Inquiry Arc in organizing their lesson plans, but their use of it was haphazard. Though three had intentionally used the Inquiry Arc to structure their lessons, the others only reported that they had used it after they decided that it sounded like something they were doing already. And Ms. Fisher was still skeptical about being asked to use another tool that she saw as redundant.

Each teacher then shared lesson ideas so they would have something tangible from which to work. Ms. Delaney contributed a short lesson that focused narrowly on economic concepts. She had downloaded the lesson from *EconEdLink.org* and decided *ex post facto* that it was a C3 Framework lesson. Ms. Landry and Ms. Maloney chose not to have a narrow economics focus, contributing instead cross-curricular lessons featuring math and reading. Ms. Fisher shared a lesson using the project-based learning format and emphasized that the lessons should not be heavily scripted. The teachers wrote down one another’s lesson ideas. Later, during the focus group session, they revealed that the rush of practical ideas for classroom activities was the best part of the workshop. When Ms. Maloney referenced the amount of time that lesson planning takes and that this part of the workshop “has saved me hours of time,” the other teachers nodded enthusiastically. However, there was a lack of cohesiveness in the lesson formats since teachers had used different sources to inform their conception of C3 Framework, as noted above. And since they envisioned that these lessons would be part of a larger portfolio assessment, it would be important for there to be some

consistency in the way the materials were organized. Part of the ongoing task would be to pull these divergent plans into a coherent authentic assessment.

Since the teachers were still interested in the idea of the business portfolio as an authentic assessment as discussed in the first workshop, they wanted to write down a list of items that could go into such a portfolio. In short order, they contributed about a dozen ideas for portfolio items, mostly pertaining to economics content knowledge (Figure 5). Though they did not place an emphasis on interdisciplinary or cross-curricular items (e.g., including math and English/language arts), in the focus group interview, they began to cite these as important. But as these other items were not included in this list and economics standards were, the main content focus of the first draft of the portfolio items focused on economics.

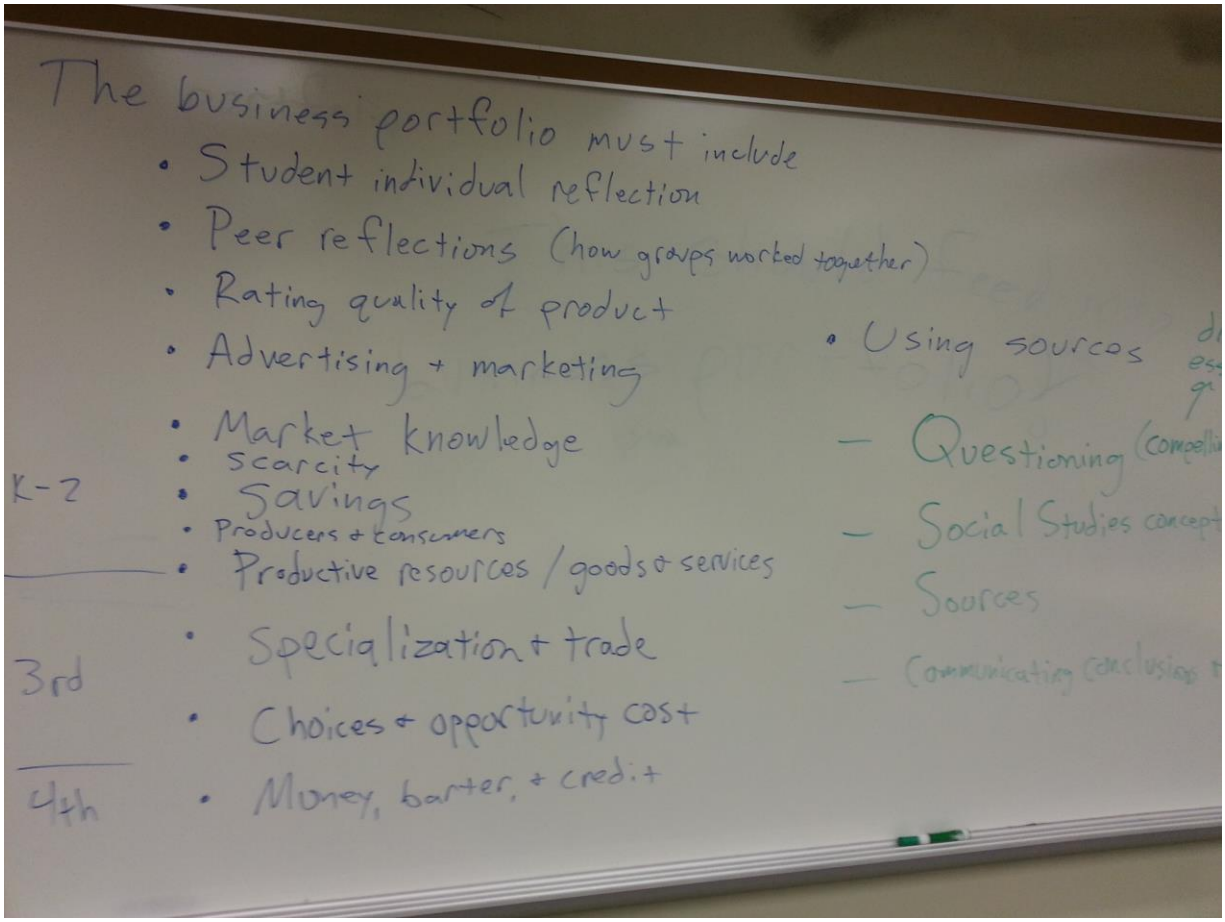


Figure 5. List of items to include in business portfolio.

By the end of the second workshop, and just before the focus group interview, the group had accomplished the refining of their vision for the business portfolio, the production of a disparate collection of lesson plans, and a remediated understanding of the uses of C3 Framework's Inquiry Arc. The focus group interview, which began immediately after the workshop, provided an opportunity to examine the overall status and purposes of the development of other instructional materials, especially the business portfolio assessment.

Focus group interview, January 21. The focus group interview occurred at the end of the second workshop on January 21 and began with a discussion of goals. Much of the discussion in the focus group interview focused on terms and ideas associated with Authentic Intellectual Work. The teachers were attracted to this program because of the mini-economy, which they described as "engaging," "creative," "authentic," "student-driven," "real-world," and "hands-on," allowing students to "take risks," "think outside the box," "solve problems," "reflect on what worked well," "build upon what they learned," and ultimately gain "a sense of accomplishment." The adjective "real-world" occurred the most frequently.

Within the overall vision of a real-world approach to learning, there was concern for providing students with opportunities, as Ms. Pershing explained, to "constantly come back to concepts that you've taught" so that students could "build understanding" and "practice." Ms. Landry said that this allowed students to "tweak their products," while Ms. Maloney said that this helped students "develop skills" toward a "project goal," or as Ms. Delaney put it, "the Big Day"—Market Day. These quotations from several of the teachers suggest that they gave their students opportunities to revise and improve their work.

When asked what the most beneficial part of the collaboration was so far, all the teachers answered quickly, enthusiastically, and unambiguously: the lesson-sharing session.

Ms. Delaney said “The number one thing that I get is this time where all the teachers get to share their ideas. This is what I’m hungry for!” At this, the whole group agreed. Ms. Delaney continued, “I wrote down every one of these lesson ideas, and I’m going to go back to my school and use them.” She also addressed an issue salient to the introduction of new educational initiatives such as the C3 Framework. “Sometimes we look at things like this [development of authentic instruction] and it’s overwhelming…but to have that discussion, to share ideas, that helps me to be able to take that idea back.” Her answer suggested that she perceived small, marginal improvements to instruction in the form of lesson plan ideas as manageable and therefore helpful.

The rest of the group corroborated Ms. Delaney’s overall point. Ms. Pershing said, “When I’m lesson planning I get so many ideas online, but sitting here and hearing other teachers say, ‘This resource is awesome, this is what worked for me,’ that’s worth more than two hours of searching online.” Ms. Maloney agreed, saying that if a professional development session saves time, then “I’m going to commit my time to it. If there is something I can take away and use in my classroom tomorrow, it’s been a success. And this [workshop] has been hours worth of things I can use in my classroom!” The group agreed. Having understood what the teachers saw as the best part of the workshop, teachers were asked to identify parts with which they had been frustrated. Ms. Delaney replied that there was no part that “was a dud,” but that “we all find value in something and we all take away a piece of it.” This was the extent to which they were willing to discuss things that were bad about the program. Rather, they continued talking about the success of the collaborative professional development session because it allowed them to pick and choose what to use in the classroom while also building up authentic assessments. Teachers were interested in

choosing the most useful or time-saving aspects of the workshop activities that would help them achieve their goal of real-world instruction.

The teachers were next asked how they used the Inquiry Arc in their planning. There were two overall responses to this: First, there was general consensus that the Inquiry Arc provided focus, direction, and structure. But secondly, each teacher differed with regard to which of the four dimensions of the Inquiry Arc they found to be the most useful. Ms. Maloney said that this reminded her that she should use a "driving question" (a phrase borrowed from project-based learning (Larmer, Mergendoller, & Boss, 2015)) that she could "incorporate all the way through, including the supporting questions." She also said that the Inquiry Arc made her think about better ways to help her students communicate their conclusions. Ms. Razzoletti reported that the Inquiry Arc "made me consciously think about sources, which I hadn't thought of, which was really important." Ms. Delaney agreed with the point about sources saying,

> We forget about adding primary sources and secondary sources because we are so focused on talking about that vocabulary word that we have to teach them that day. And we forget to add those pieces that are so valuable and so real-world.

Teachers were also asked about the limitations of the C3 Framework. Ms. Fisher explained that she was "distracted by the C3 Framework" because she felt it was redundant with other methods that she simply thought "good teachers teach." "It's just how I teach," she explained, "backward teaching…flipping rooms, whatever you want to call it. And so I just think it's a different way of putting it. But it wasn't new to me." It is noteworthy that in this answer, she conflated several pedagogies and teaching strategies that are not at all alike. There was some brief discussion about how there were other ways that a good teacher

approaches a lesson, including real-alouds, video clips, and other ways to "draw your audience in" (according to Ms. Delaney). Teachers were also asked which were the easiest and most difficult parts of using the C3 Framework. Ms. Fisher replied that it was difficult for teachers to "let go" of control of the classroom and allow students "time to explore and investigate." Ms. Landry explained, to the agreement of the group, that the Inquiry Arc was accessible because teachers could "pick the parts you can use in your classroom" and "combine something new with something that I already do."

Teachers expanded the discussion of C3 Framework into a discussion of the other educational constructs they had been trained in which they viewed as similar. For instance, Ms. Pershing replied to a question about Dimension 1 of the Inquiry Arc (posing questions and planning inquiries) by saying,

> I think we're at a point where all teachers are being pushed towards teaching this way, and assessing in the ways we've discussed in this workshop. Even though some teachers aren't quite on board yet, they are going to be moving towards these types of projects and assessments more and more no matter what.

Ms. Delaney expanded:

> And so if you are a third grade teacher, you have to do a performance-based lesson then you have all the tools right here, and it's a creative way to incorporate STEM and hands-on learning, and 21st Century Skills, so why not incorporate this as your performance-based assessment in third grade? It substitutes for your overall assessment for the year.

Ms. Maloney tied the discussion back to her previous point about Dimension 3: "I've done workshops with primary source documents, and K-3 teachers are very reluctant to use

them…So I think that using this method really ties it in…with something they are already doing."

Teachers reiterated how much time they had saved because of the sharing of lessons and how valuable it was for them to have been able to easily access, as Ms. Delaney put it, "those things that are so valuable and so real-world."

At the end of the interview, the teachers were informed of the classroom part of the research study, which would involve at least one but ideally two observations, a post-interview, and the sharing of student work. This would require collecting IRB permission forms from students and parents. An extra incentive of $200 was also offered for those completing these tasks. Five of them said that they would like to participate in this next phase. They also discussed which of the lessons they had just shared that they wanted to actually teach for purposes of observation. They chose Ms. Maloney's lesson entitled "Saving for the Hard Times" because of the literature and primary source connection, as well as Ms. Delaney's lesson entitled "What Should I Specialize In?" because it featured a fun-looking simulation activity.

This ended the first design phase, which consisted of generation of lesson ideas, communication with teachers prior to the second workshop, the second workshop itself, and the focus group interview after the workshop.

Second design phase. The second design phase was short yet important. In it, the researcher—as part of the design-based research team—edited and re-formatted the lesson plans submitted by the teachers in order to extend and clarify the inquiry-related parts of the lessons. The editing/formatting process was fluid, and hence defies an easy formula for

reporting. The original lesson submissions and edited versions (Appendix A) are a valuable aid for understanding the study's instructional design.

Furthermore, the researcher created new instructional materials. In particular, this meant creating the business portfolio materials for teaching and the assessment of students' mini-economy businesses. Though the researcher was the primary agent in creating the business portfolio assessment and its accompanying portfolio items, each were made in response to the specific wishes of the participating teachers as collected in the second workshop. In this manner, the researcher participated in the creation and not simply the collection of data, which is an essential part of design-based research. As explained by the Design-Based Research Collective (2014), "In design-based research, practitioners and researchers work together to produce meaningful change in contexts of practice. Such collaboration means that goals and design constraints are drawn from the local context as well as the researcher's agenda" (p. 6). Similarly, Wang and Hannafin (2011) write:

> Design-based research challenges the assumption that research is contaminated by the external influence of the researcher. Instead, researchers manage research processes in collaboration with participants, design and implement interventions systematically to refine and improve initial designs, and ultimately seek to advance both pragmatic and theoretical aims affecting practice (p. 5).

It is worth noting that the teachers themselves created the bulk of the materials used in the classroom. The materials that the researcher created in response to teacher input constituted a rather small part of the teachers' eventual lesson practice. Both the lesson revision and the creation of the portfolio items are described below. After revision, the lessons were returned

to the teachers so that they could prepare for the classroom observations in the third design phase.

The workshop and focus group provided preliminary information with which to improve the instructional design, based on the requirements of DBR. This preliminary information included the following

- the lesson plan ideas that the teachers generated after the first workshop,
- a list of ideas for what business portfolio assessment should include,
- an understanding of how the Inquiry Arc can be used as a tool for organizing the lessons, and
- feedback from the focus group with which to begin to understand how teachers perceive the Inquiry Arc can be used in the context of a classroom mini-economy.

Ongoing analysis was also recorded in the research journal.

Lesson revision. Below is a list containing brief descriptions of the lessons that teachers submitted. Though it was not possible to observe all these lessons in the classroom, they are included here as evidence of how teachers interpreted and used the C3 Framework in their lesson planning.

- Ms. Landry had a lesson that used U.S. currency as a primary source. The lesson plan simply tasked students with researching what each image on the one dollar bill meant. It did not include any support or direction for teachers or students on how to do the research or what the images actually meant.
- Ms. Pershing submitted a lesson that asked, “What would it be like to start your own business and be your own boss?” In it, students analyze videos about real-life entrepreneurs in order to figure out what it takes to start one’s own business.

- Ms. Delaney shared her "Tortoise and the Hare" lesson from EconEdLink. This lesson covered the concept of *specialization*. She also added an activity that was previously published in a Council for Economic Education publication. This lesson included a classroom experiment in which the class is divided into a group that uses an assembly line to make hamburgers, and another group in which each student makes an entire burger. The students are then to use the experiment as evidence in their analysis of the advantages and disadvantages of specialization. This is one of the two lessons that was used for the classroom observation.
- Ms. Maloney shared a comprehensive lesson (more like a unit, actually) that revolved around the *Hard Times Jar*, a children's historical fiction book. She had created extensive resources to accompany the lesson including graphic organizers, links to other standards, and lots of extension activities. She also included a picture from the Library of Congress that was to serve as a primary source to lend authenticity to the book. The picture was of a family of migrant workers during the Great Depression, and the lesson used the picture to make a point about saving money. The lesson plan is discussed in detail below, as it was also selected by the participating teachers for classroom observation.
- Ms. Harter shared a lesson that asked, "What economic impact did tobacco have on the settlement of Jamestown?" The lesson plan stated: "Students use collected data…to determine the level of workforce necessary to develop a plan that would make it appealing to individuals in England and elsewhere to come to [farm] tobacco."

- Ms. Fisher shared several published lessons that she thought worked well with inquiry concepts. They were not yet revised to align with the C3 Framework—this was consistent with Ms. Fisher's ongoing insistence that the C3 Framework did not contribute anything new.
- Ms. Razzoletti shared an interdisciplinary lesson on creating a website for student businesses. The lesson instructed students to "create a company website using weebly.com to increase demand for their product," and to "evaluate the effectiveness of their website and other company websites for increasing product demand."

Some of these lessons lent themselves more directly to the Inquiry Arc than others. In particular, lessons that did not include some sort of non-fiction source from which students could draw evidence did not really present any obvious way to fit with the Inquiry Arc without revising the lesson plan beyond recognition. This analysis will focus on these two lessons that teachers chose for observation, namely "What should I specialize in?" and "Saving for the Hard Times." Both lessons had a similar approach to including the C3 Framework. They listed each of the four dimensions in order, with a brief explanation as to how the lesson addressed each one. In both these lessons, economic concepts that appear in Dimension 2 of the C3 Framework were obviously present. Both lessons also had direct applications for student action in a mini-economy. The assembly line lesson asked students to consider changing the production practices of their business, and the saving lesson had students make saving decisions with their mini-economy income and then voting about how to spend money the class had hypothetically saved for a public initiative. However, neither of the first drafts included very compelling questions, nor did they ask students to create questions.

The lesson on specialization included a simulation in which students were divided into two groups which each used different methods to produce Play-Doh hamburgers. One group was to use an assembly line while the other group was to have each student work as an individual craftsman. The point was to find out which method worked better for producing more burgers, and hence to show that specialization can lead to increased productivity. This is similar to a lab experiment in which a behavioral theory is tested, an approach used in the field of experimental economics (Davis & Holt, 1993, p. 19). The lesson did not include the experimental requisite for making a hypothesis before the exercise or the requirement to interrogate the evidence to see how well the data fit the theory after it.

There were several changes that the researcher made to the lesson entitled "What should we specialize in?" First, the "driving question" (as the original lesson called it) was changed to more closely tie in with the students' mini-economy businesses. The original question was "What is specialization? Why do companies specialize in certain products or services?" It was changed to "What should I specialize in?" The original question was relegated to the role of supporting question. Next, changes were made to emphasize Dimension 3 of the C3 Framework (using evidence and sources). Ms. Delaney, who was the compiler of this lesson, did not seem to think that the hamburger assembly line activity constituted a source or evidence. But the researcher did, and so wrote in the activity under Dimension 3. Lastly, for Dimension 4 of the C3 Framework (communicating conclusions and taking informed action), the original lesson plan for "What should I specialize in?" had a short paragraph explaining how the assembly line experiment would be carried out.

> Half the class will use play dough to design a hamburger in an assembly line fashion; the other half of the class will create their own individual hamburger. Each group will

work for seven minutes and count the number of products they created to compare assembly line production to individual production. Regroup and discuss.

The researcher moved the description of how to integrate the experiment to a procedure section outside of the Inquiry Arc outline and wrote two questions that were meant to help teachers use the assembly line to guide the students in hypothesis-creation and -testing. The questions written into the lesson were, “What can we predict about the number and quality of the hamburgers that each group will produce?” and, after the experiment was done, “Was our prediction correct? Why or why not?” These questions were intended to direct students to both use the concept of specialization and test the implementation of the concept itself.

The second lesson—Saving for the Hard Times—presented an editing challenge since it was comprised of nine discrete activities that Ms. Maloney had already created, though the teachers had selected only two for classroom implementation. The activities in this lesson revolved around the children’s literature book entitled *The Hard Times Jar.* After the book was read, the teacher was to discuss the importance of saving money with students and discuss good places in which to save money. Next, they were to do an activity in which students had to reenact difficult decisions that the main character in the story had to make. As an assessment, students were to use a picture from the 1930s as a prompt to decide what advice a Depression-era father might give his children regarding saving.

The researcher did not change the activities themselves, but rather changed the way that the Inquiry Arc was presented in the lesson overview. For Dimension 1 of the C3 Framework, the compelling question was changed from “What is saving?” to “When should I save, and when should I spend?” For Dimension 2 of the C3 Framework, the researcher also

went through each activity to find disciplinary concepts in economics that the teacher had not included in the overview. There were several, and the researcher wrote them into the language of the state standards—all of which aligned closely with the indicators in the C3 Framework.

Dimension 3 of the C3 Framework (using evidence and sources) presented a special problem. This section of the overview had four statements that summarized a large body of classroom instruction.

- How do we save our money?
- What is a safe place to keep our savings?
- Comparing the life of migrant workers and how they save.
- Conduct research and how to use class savings. Analyze data to make decisions.

The first two of these statements were simply discussion questions. The third statement described what students were to do with the picture of the migrant worker family. The last described a skill that students were to display. Given the inconsistency between these four sentences and the fact that Ms. Maloney had already written out the rest of the lesson materials, it is seems likely that she added this C3 Framework alignment as an afterthought. Furthermore, the main source that students were to analyze was a work of historical fiction, that is, a story that followed a family of migrant workers who had to make difficult choices about spending and saving during the Great Depression. As an interview with Ms. Maloney was later to reveal, she had wanted to tap into the vividness and literary power of the fiction (partly for the purposes of her reading and language arts instruction), but faced problems concerning historical authenticity in having students analyze works of fiction. To address this problem she included a photograph from the Library of Congress featuring a family of

migrant workers during the Great Depression. The caption of the photo provided further information for students to consider. The caption read:

> Texas tenant farmer in Marysville, California, migrant camp during peach season. 1927 made $7,000 in cotton. 1928 broke even. 1929 went in the hole. 1930 still deeper. 1931 lost everything. 1932 hit the road. 1935, fruit tramp in California.

The photograph connected the book to real life experiences. Students were to analyze the photograph and caption in order to locate information that could serve as evidence to support claims about what a real family of migrant workers might have thought about saving money, given their situation. Saving money was a concept that would certainly have some relevance for the family in the photograph, even though the photograph was not originally intended to relate to savings. Although the photograph was not central to the original lesson, the other teachers were excited about teaching the activity as written because of the literature connection, so this part was left unedited.

These activities were a central part of the lesson as it was to be implemented, so the issues concerning their alignment to the C3 Framework could not be simply edited out by the researcher. Rather, for Dimension 3, parts of each activity that could be construed as evidence and sources were found and listed. These were changed to

- Investigating the life of migrant workers and how they save (Activity #5)
- Keeping a log of personal saving to analyze your personal money habits (Activity #6)
- Conducting research on class opinion and deciding how to use class savings (Activity #6)

The intent was that these would draw teachers' attention to their usefulness as sources, which could affect implementation.

To accompany these two lessons, the researcher also created mini-economy business portfolio items. As mentioned earlier, the teachers' various lesson plans did not necessarily fit together, though in the vision of building toward a portfolio assessment, they needed to. The series of portfolio items that constituted the overall portfolio were designed to include compelling questions pertaining to students' mini-economy businesses, and therefore tied the lesson plans together into the portfolio (Figure 6).

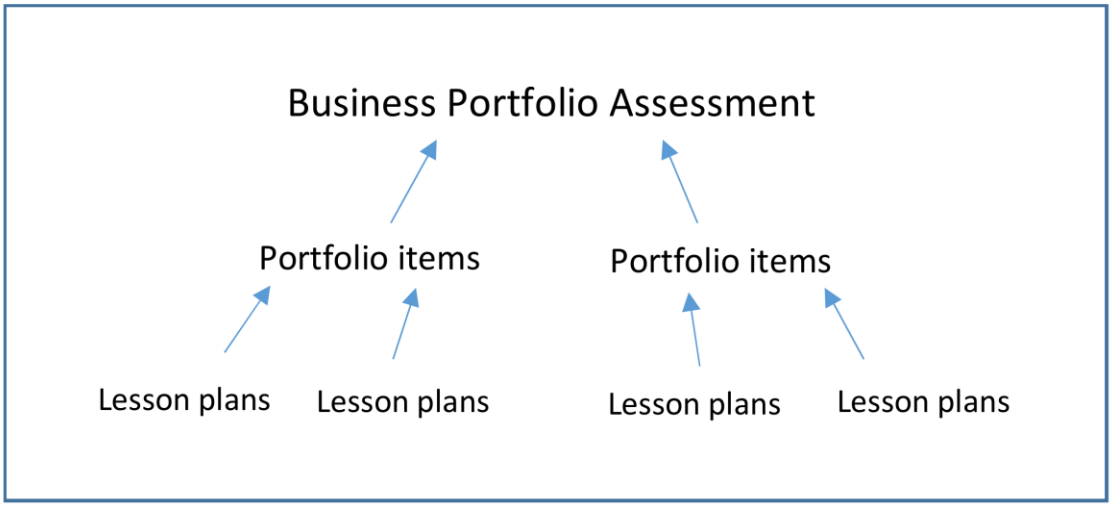


Figure 6. Structure of teaching materials

The portfolio items and the lesson plans were designed to go together to help students develop their mini-economy businesses. They both followed the C3 Framework's Inquiry Arc and were designed help students develop their knowledge of the economic concepts listed both in state standards and the C3 Framework. The portfolio items were designed as a summative assessment of economic content knowledge. The content in those assessments aligned with the content in the lesson plans that the teachers submitted. The way that the portfolio, portfolio items, and lesson plans were designed was intended to provide support for

teachers without being overly constrictive. The compelling questions included in the mini-economy business portfolio were as follows:

- What do people want, and how can I help?
- Why do different countries produce different things?
- What should I specialize in?
- Do we have the resources we need to make our product?
- How can we get people to buy our product?
- How many of our products do people want?
- Save or spend? (What should we do with our mini-economy income?)

The implementation of the portfolio items and lesson plans provided two opportunities to observe teachers' use of the C3 Framework in the context of a classroom mini-economy (Table 6).

Table 6

Implementation of portfolio items and lessons in classrooms

Teacher(s)	Lesson(s)	Instruction and observation date
Ms. Delaney and Ms. Pershing	• "What should I specialize in?" • "Saving for the Hard Times"	February 13 March 4
Ms. Harter	• "What should I specialize in?"	March 4
Ms. Maloney	• "What should I specialize in?" • "Saving for the Hard Times"	April 3 (both lessons)

Teacher use of edited lesson plans. This part of the second design phase concerned how teachers reported that they received the edits to the lesson plans they were to teach, and how they planned to actually teach the lessons. Data to support the conclusions presented here were drawn from the post-observation interviews conducted with the teachers. The substance of the edits made to the two lessons that were taught were made mainly to enhance the visibility of the C3 Framework; thus, the teachers' reactions were mostly related to the C3 Framework.

On the lesson on specialization, Ms. Delaney of West End Elementary reported that she and Ms. Pershing,

> took bits and pieces of the lesson to build out exactly what we were going to do here in this class. The C3 Framework had to be kind of like a central foundational piece of it, and everything we picked to do had to tie into that.

They described their planning process similarly. They picked and chose the parts of the lesson they wanted to use, checking the C3 Framework as they did the planning to make sure that the lesson plan was following the general path set out by the C3 Framework. Ms. Delaney and Ms. Pershing did not indicate that the edits changed the lesson profoundly.

Ms. Harter of East End Elementary felt more of a responsibility to stick with the edited lesson plan on specialization as it was designed. On two different occasions, she talked about how there was a minor discrepancy in her thinking about the lesson and what her normal practice would have been, but she decided to implement the lesson just as it was written. In the first case, she made sure that she set out the assembly line just as it was drawn in the lesson plan rather than giving her students a degree of freedom in deciding how to do it. In the second case, she actually taught third-grade standards to her group of fourth graders

since “it fits in with mini-economy very well, obviously and Market Day, which we’re about to be doing.” She was willing to plan for material not directly related to her grade-level standards if it was within the purview of the mini-economy.

Of the four teachers who were observed, Ms. Harter was the most conversant with the Inquiry Arc. She was able to reference its components accurately and without looking at notes. She talked through each aspect of the Inquiry Arc and showed how she followed it. She said that she found Dimension 4 (communicating conclusions and taking informed action) to be the most difficult part when writing her own lesson (which was not an observed part of this research), and she said that the mini-economy should be credited with providing an avenue to fulfill that part of the C3 Framework. Specifically Ms. Harter said, “I think some lessons lean more toward having something authentic that the kids can do…the final outcome and the informed action is [the students] creating these businesses.” She also responded to the researcher's edits by making sure that her instruction was addressing each part of the Inquiry Arc.

Ms. Maloney at Rural Elementary treated the Inquiry Arc a little more perfunctorily than Ms. Harter had. In her implementation of the specialization lesson and in her subsequent discussion of the lesson, her connection with the Inquiry Arc seemed a little forced. The only part of the Inquiry Arc that she really discussed was the driving questions, by which she meant the Socratic questions that she used in place of direct instruction. She did want to follow the lesson plan when it did not quite fit the flow of what she was doing. In the lesson on savings (of which she was the author), she had a clear vision about what she wanted to do and did not seem to pay much attention to the researcher's edits. However, she had gone to some lengths to try to fit her lesson into the Inquiry Arc initially, specifically in trying to

include a picture from the Library of Congress to add authenticity to a storybook. Her connection with the C3 Framework was not in response to the researcher's edits, but was written imperfectly into the original lesson design, which she followed according to her own conception.

Third design phase. This section reports on two different lessons that were taught by three teachers over seven weeks. The section is organized according to each lesson rather than chronologically so that the reader can more easily compare what transpired in each location.

Lesson plan: "What should I specialize in?" The centerpiece of this lesson was the hamburger-making assembly line simulation or experiment. A version of this lesson was previously published in the Council for Economic Education's *Playful Economics.* The lesson plan written by Ms. Delaney essentially wrapped the Inquiry Arc around this published lesson plan and gave it an implication for the mini-economy. The edits done by the researcher not only clarified the Inquiry Arc aspect of it, but bolstered Dimension 3 of the C3 Framework by adding questions designed to treat the simulation as an economic data source. This was done mainly by having students pose a hypothesis before the experiment and question how the data did or did not align with the hypothesis. The narrative below discusses the findings as they occurred chronologically, though data from the post-observations is interspersed in order to add explanatory power.

West End Elementary. The lesson at West End Elementary was team-taught by Ms. Delaney and Ms. Pershing, the latter being the school's technology resource teacher. A teacher assistant helped them teach the lesson. The classroom observation was conducted on February 13, 2015. The first part of this lesson was led by Ms. Delaney, with Ms. Pershing

sometimes interjecting. They proceeded with Socratic question-and-answer, using the questioning as a means of recall and input of information. They began by asking students if they remembered the story of the Tortoise and the Hare, and if they specifically remembered what each character in the fable was good at, what the role of the character in the story was, and hence what that character specialized in. They asked students if they recalled the word "specialization" (which they had learned previously). They also showed the students a video of the fable of the Tortoise and the Hare. Notably, they did not begin by asking the compelling question from the portfolio item: "What should I specialize in?" That had to wait until after the seven-minute introductory section on the Tortoise and the Hare.

After the video, the two teachers introduced the compelling question and connected the concepts to the mini-economy. They asked the students, "What are you specializing in now? Why are you specializing in that product? Today we going to do an activity to help us remember and understand specialization a little bit better." Essentially, the C3 Framework- and mini-economy-related parts of the lesson began here. The teachers repeatedly used a lot of economics vocabulary that they were targeting, mainly "specialization," "entrepreneur," and "products." As an illustration and in anticipation of the upcoming simulation/experiment, they discussed the assembly line processes used by Burger King and McDonald's. They also explained that the students were then going "to see if we use an assembly line to make hamburgers versus everyone making their own," and asked "Who is going to make more?" The teachers then explained the rules for the experiment: One group was to make Play-Doh hamburgers according to a pre-planned assembly line setup in which each student had a particular job. The students in the other group simply made as many burgers as each student could.

The simulation/experiment began. It became apparent that the student group making hamburgers on their own were creating burgers faster than the assembly line group—which was not supposed to happen according to the design of the lesson. This appeared to be for two reasons: First, the teachers had given more capital resources to the craft group; each student had a ruler and a pencil (for measuring buns and for adding "sesame seeds" onto the Play-Doh buns), while the assembly line only had one ruler and one pencil for the entire group. Secondly, there was a bottleneck at the bun-making station in the assembly line, and hence there was a lot of unproductive time on the part of workers while they waited for more buns to come down the line. A few of the assembly line workers began to shout, "They're going to beat us!" In the end, the craft group did indeed create significantly more burgers.

Ms. Delaney began to de-brief the experiment, and she was clearly flustered by the unexpected result. She pointed out the difference in capital resources between the groups and noted how many of the craft burgers were shaped oddly. She also said that she would have to measure the final burgers to make sure that they were "up to standard," that is, of the right measurements and containing all the correct ingredients. While she did her quality control check, the teacher assistant told a story of how she used to work on an assembly line. The upshot of her story was how repetitive and boring assembly line work is.

When the story was over, Ms. Delaney had done the quality control check. Her assessment of the burgers revealed that many of the craft burgers were not up to standard—there were missing ingredients and lots of mis-measured burgers. She said that she would have to throw those out. In the end, there was an approximately equal number of correctly-made burgers on each side. She proceeded to lead students through a discussion of the costs and benefits of this type of specialization. One of the costs that the teachers pointed out was

that an assembly line might be tedious, according to the teacher assistant's experience. Students had several theories about the differences between groups: The assembly line group claimed: "We went slower but had better quality." They also noted the bottleneck at the bun-measuring station and said that next time they should add another student to that job and take a student off condiment-adding. Students from the assembly line group were primed to discuss how productivity could be increased, while students from the craft group claimed that they simply were better workers. The students asked to switch groups, to which the teachers replied "not yet." (They had no plans to have groups switch; a student who asked looked disappointed.) In the post-interview, the teachers indicated that they had judged the debriefing to be a success, as students had been able to cite evidence in finding the meaning of the outcome of the assembly line.

Next, in accordance with the lesson plan, the teachers handed out the portfolio assignment and asked the students to use it to connect lessons they had learned from the experiment to their own entrepreneur groups. The assignment contained five prompts (Figure 7).

In our business, my job is:

I specialize in this because:

The jobs my business partners have are:

My opportunity cost of taking this job is:

Draw a picture of your production process. Include the *natural resources, human resources* (including each group partner), and *capital resources* that you use, as well as the finished product. Be sure to include everything!

Figure 7. Prompts for portfolio assignments

Upon reading the prompts, the students asked for help with the term *opportunity cost*, which the teachers duly remediated. In the post-observation interview, they talked about how this remediation was a success, in fact, one of the highlights of the lesson. This was because they wanted an opportunity to re-teach something they had already taught in an authentic context. This way, they were not introducing the word right when it was needed. Rather, it provided students a reason to actually use a disciplinary concept that was prescribed by state standards. After re-teaching opportunity cost, the teachers instructed students to do the portfolio item in cooperation with their entrepreneur group, and when they were finished with their portfolio item, to work on creating their products for the next classroom market day. The teachers explicitly told students to use what they learned from the experiment and from their reflection on the portfolio items to analyze the processes they used to make their group's product, and then to change the processes according to their analysis.

As students got to work, they were asked if they planned to specialize in the creation of their products. One group said “yes,” but their explanation showed that they were thinking about specializing in making one product rather than specializing in their particular jobs. The next group flatly said “no.” The two groups appeared to already have an element of specialization that they were continuing to adhere to. One group had the most important change: They had changed their production process as a result of the lesson and had created an assembly line.

The teachers brought the students back together for debriefing. The teachers were satisfied with student answers about their use of specialization. However, the answers concerning opportunity cost were not satisfactory, and the teachers spent a few minutes remediating that concept. They asked which students had or had not decided to use an assembly line as a result of the activity. They also reiterated that specialization brings “pros and cons,” or costs and benefits. They then asked if there were any questions or comments, to which a student replied, “That was really fun!” The teachers ended by telling students to “make sure that you’re walking away today knowing what your role will be in your company next week when you start to work on your products again.”

Immediately after the classroom observation ended, the researcher sat down with Ms. Delaney and Ms. Pershing for the post-observation semi-structured interview.

The interview began with a discussion on how the lesson on specialization fit into their overall instructional plan for the year. Ms. Pershing said, “It fit perfectly,” since it used vocabulary that students were learning in language arts class and since it reinforced earlier social studies learning, specifically their units on Greek, Roman, and Malian economies. They emphasized the importance of vocabulary, which led to a question about their re-

teaching of opportunity cost. Ms. Pershing was actually happy that they had identified something to remediate: “There is so much instructional power in reflecting and allowing the kids to go back and fix something and tweak it when you realize that it’s not quite right.” Ms. Delaney quickly connected this learning to the fact that the activity had made today’s learning realistic and real-world. She noted that before the lesson, students had remembered that “opportunity cost means an opportunity lost,” but it was not until after the activity that they understood “how it connects to me and my life.” Teachers also expressed interest in returning the portfolio items to the students in two or three weeks and reviewing the concepts then (As it happened, they did not do this.)

When asked directly about their application of each of the four dimensions of the Inquiry Arc, Ms. Delaney was enthusiastic about the importance of the “driving question” and how it “facilitates the overall idea of working on specialization.” Specifically, “I think about the tortoise and the hare specializing in their jobs. It helps them to have a connection with what they are doing.” A driving question is a term borrowed from the Problem-Based Learning Framework and is not a term used in the C3 Framework. Ms. Delaney identified the introduction using the Tortoise and the Hare fable as a stand-in for a C3 Framework-focused compelling question.

However, the teachers did think that students were busy asking compelling and supporting questions to support their businesses, including questions such as “What is it that we want to specialize in?” and “What is my job?” These questions were in response to the portfolio item prompts.

As for Dimension 2 (using disciplinary concepts and tools), Ms. Delaney and Ms. Pershing appealed to their constant use of economic vocabulary, namely specialization,

production, and opportunity cost, which was a main goal. They also thought that many of the students applied the concepts to their work.

For Dimension 3 (using sources and evidence), Ms. Pershing described how she, Ms. Delaney, and the students used the assembly line activity as data:

> I think we could have seen kids regurgitate [about specialization] if we had done some kind of lecture…but the fact that they had the…hands-on experience and then time to work with their groups to talk about their specializations, and to have the time to reflect on that…that drives a concept home, and so much more in allowing the kids to apply it in their businesses next week and the week after that, leading up to the mini-market.

The hamburger assembly line was especially meaningful for Ms. Delaney and Ms. Pershing and for their students in that it provided an opportunity for reflection upon the impact of the assembly line on the student businesses. The teachers were also pleased that this particular source did not require reading, making it good for English language learners as well as for students who are not strong readers.

Their reply concerning Dimension 4 (communicating conclusions and taking informed action) was brief. The portfolio item did what it was supposed to in providing students an opportunity to reflect on the assembly line experience, and the mini-economy business gave them an authentic application for what they learned.

Ms. Delaney and Ms. Pershing already had several ideas about how to improve the lesson for next time. Mainly, they wanted to shuffle workers in the assembly line around in order to eliminate bottlenecks. The disjointed assembly line had been an impediment to the

point of the lesson. However, this did not make them want to take more control over the lesson; rather, their next idea was to allow students to explore other ways to improve productivity. They planned to spend more time next year having groups of students think about ways to improve the assembly line and then to apply those ideas to their businesses.

Another item for change that they identified was finding ways to incorporate more standards into the lesson. They felt that the lesson had the capacity to include a great many interdisciplinary concepts, but that the current plan did not allow them to capitalize on those, being narrowly focused on economics concepts. This was left as an opportunity for improvement in the overall design of the portfolio, to be worked on later.

As for student work, the students had done their portfolio items very quickly. The portfolio items were graded according to the three-point scale described in Chapter 3 (Table 7).

Table 7

Evidence of understanding economic concepts in portfolio assessment, by number of students. West End.

	Clear evidence	Some evidence	No evidence
Specialization	No student showed evidence of understanding due to a shortcoming in the design of the assessment		
Opportunity cost	12	2	4
Productive resources	4	11	3

There was a glaring error in the design of the portfolio item. Though it asked students what they and their partners specialized in, it did not included any prompt that would lead them to report if they had understood the potential effect of specialization on production. Rather, the prompt simply had them report their job in the entrepreneur group and explain why they had that job.

The question on opportunity cost yielded the strongest results. This was also the concept that the teachers re-taught just before students did the assignment. The prompt was: "The opportunity cost of choosing [the job I am specializing in] is…" Examples of answers that showed evidence that students understood the concept included the following:

- I could not shred the paper at the same time [as I made the pictures].
- My job is to make play-doh, so I will not be able to make sock puppets.
- I will give up other things that I want to do, like helping my brother with the cows.

The teachers did not address productive resources during the lesson. The students had learned this at one point, but it had not been recently reviewed. Of the 11 students, two showed some evidence of knowing the concept-labeled items on their production pictures as natural, human, or capital resources, but the things they labeled were often unclear. Another concern was that instead of drawing diagrams of their production process, students drew what the prompt called for—pictures, sometimes showing smiley-faced students hard at work, or perhaps a capital resource that they used. This demonstrated that they knew what the resources were, but did not give insight into their use in the production process.

East End Elementary. The class at East End Elementary was a fourth-grade gifted class. It was comprised of about half black students and half white. The teacher, Ms. Harter, taught from the same lesson plan—"What should I specialize in?"—as the other teachers did.

Ms. Harter began her lesson in a fashion similar to that of the West End teachers. She told the students that they were going to be studying specialization, and she motivated the students by asking if they remembered the story of the Tortoise and the Hare. The students said that they did remember it, and she showed them a 7-minute cartoon video of the fable, to

make sure. The lesson did not open with a compelling question, but this emerged later as the lesson progressed.

After the video, Ms. Harter did a question-and-answer session as a means of direct instruction, again in a manner similar to what was done at West End. She taught about specialization by asking at which jobs the hare and the tortoise excelled. There was some disagreement over whether the hare would be a good mail carrier. The teacher intended this as an example of how the hare's speed would be a benefit, but some students thought that his hastiness would lead to mistakes, and so they favored the tortoise for the task. She also told the students to think about how specialization could make them more productive in jobs that they might have. In saying this, she foreshadowed the point of the assembly line activity, though she did not actually have them hypothesize about what would happen.

Ms. Harter then introduced the hamburger assembly line simulation. Unlike Ms. Pershing and Ms. Delaney, Ms. Harter told her students that this experiment was expressly not a race, but that they were going to compare how the two methods worked: one based on specialization, and the other not. In the event, the students very much treated the experiment as a race.

In the same way as the West End version of this activity, it did not transpire as planned. Again, the teacher had given the craftsman group that was making burgers individually their own individual pencils and rulers—despite the recommendation in the lesson plan to give each group only three rulers and one pencil. This gave the craftsman group a distinct advantage, and it was quickly evident that this group was producing more burgers, though those burgers were not as standardized as the ones from the assembly line. "Yours look odd," protested a student from the assembly line, referring to the craft burgers.

Notably, a student noticed a bottleneck in the assembly line early on and asked to switch away from his comparatively slow-pace job (putting on condiments) and over to assist the overloaded students who were making buns. Ms. Harter told him to stick with his job. He was distressed and asked her again if he could move, explaining that the line could be constituted better. As the simulation went on and the assembly line fell way behind the craftsmen, she finally allowed the student to switch.

Though Ms. Harter had not begun the lesson with a compelling question about productivity or specialization, some of the students did begin to create one. As they were making craft burgers and it was becoming apparent that they were going faster than their opponents, one student from the craft group asked another, "Do you think that we broke the forecast? Do you think that we broke the point she was trying to make about the assembly line being faster?" Clearly they had intuited the point from the teaching about specialization at the beginning of the lesson. Like the teachers at West End, Ms. Harter was initially flustered by the unexpected result, partly blaming the newly-discovered imbalance in capital resources, and partly expanding the scope of the lesson by asking the students why the craft group might have produced relatively more than she had admittedly expected. She phrased her question like this: "So the non-assembly line group made nineteen hamburgers and the assembly line group made eight. Who expected these results?" Four students raised their hands. "Who didn't expect those results?" Seven students raised their hands. "What might explain that difference?"

This last question re-directed the lesson to the mystery of why the experiment did not work according to theory. Almost all of the answers came from the assembly line group, who might have been trying to find ways to explain why they lost. One student said that they

needed more workers. Several students attempted to explain that they had a bottleneck, though they described it as “one worker being slower” or “working at his own pace,” causing faster workers on the down the line to have to wait around. After this, they moved on to discuss how they could restructure the assembly line so that it would be faster. They would assign one person as the condiment person rather than three and move the two available workers to help with buns and meat. This prompted one of the students to ask if they could try the activity again.

Ms. Harter then took the students’ answers and explained them, again in a semi-Socratic question-and-answer format using economic terms. She led them to explain that one group had more capital resources, which helped the human resources become more productive. This also helped remediate the concept of productive resources in preparation for the portfolio assignment, which she gave as homework. Ms. Harter noted that they would be brainstorming ways to incorporate what they had learned in this lesson into their entrepreneur groups the next time the class met. The class period then came to an end, and Ms. Harter and the researcher moved on to the post-interview.

As the interview began, Ms. Harter began to think out loud about her decision to wait only until the very end of the simulation to allow a student to act upon his idea of changing places in the assembly line. “He’s very bright and clever,” she mused, “He had an idea…But I think in the beginning they were just following what I [told them to do]. Did I give too much guidance? Maybe I shouldn’t have said so much, like ‘you do this and you do that.’” She followed this theme throughout the interview, interspersing her answers to questions with indications that she should “give the kids more freedom to set up the assembly line.” According to her, allowing the students to take more control over the production process

would not only clarify the point of the lesson—that specialization can increase productivity—but also be "more effective for their problem-solving and critical thinking."

She expanded on this theme by talking about the importance of the mini-economy for "hands-on" and "real-world" learning. She also emphasized that she was able to teach math, science, social studies, and language arts standards using the mini-economy, which she called the "highlight of the year." The assembly line lesson that she had just done—not to her satisfaction—fit well in theory with the mini-economy and, despite the hang-ups that she was still mulling, was the part of the lesson that she considered of the most value. When the researcher asked her why she was willing to teach third-grade standards (e.g., specialization) in her fourth-grade class, she replied that it's "a real-life application [of what they learned in third grade], and it goes along with what we're doing with mini-economy." She was willing to teach standards that she was not accountable to teach, simply because they were germane to the mini-economy program.

The interview then moved on to discuss the role of the C3 Framework in this lesson. Ms. Harter replied immediately that she did use it for her planning, specifically thinking about which C3 Framework dimensions she was weak in and how she could improve.

Ms. Harter used economic concepts and vocabulary to guide students through the question-and-answer session, essentially making them reflect on their experience using an economic way of thinking. For example, Ms. Harter reminded students, "This group had more productive resources, didn't they?" Ms. Harter reported that she did not think she had done well in the "sources and evidence" category, but her students were able to think deeply about the outcome of the experiment, to hypothesize about why the predicted outcome of the

experiment did not materialize, and even to allow students to call the theory (that specialization automatically increases production) into question.

For her part, Ms. Harter claimed that Dimension 1's call to use compelling and supporting questions guided her own thinking about the lesson. This apparently manifested itself in her use of Socratic questioning. She talked several times about how pursuit of the "essential question" (a phrase borrowed from a state standard's document) kept her "bringing it back" toward an "outcome." This, despite the fact that she never actually did pose a compelling (or even an essential) question. But, she was able intelligently discuss the concept to the extent that she actually did think that she had posed one.

One reason for this disconnect may actually have been her emphasis on the importance of the focus in Dimension 4 on communicating conclusions and taking informed action. She had prepared the portfolio item for the lesson entitled "What should I specialize in?" and used the assembly-line lesson to prepare her students to complete it. The portfolio item was to tie in the lesson to the mini-economy and lead students to informed action. But, she explained, she ran out of time because of the Tortoise and the Hare component of the lesson. Ms. Harter did think that "that particular lesson was a great way for them to bring it to the real world and bring that informed action," but she was not able to share the portfolio piece with her students. Students did not get to experience the tie-in between the lesson and the mini-economy; rather, she gave the assignment to the students the next day.

Ms. Harter did not limit her thinking about the benefits of the C3 Framework to this particular lesson. She talked about how she had begun to think about ways to help students in her fourth grade history class to take informed action as well: "I guess the biggest trouble was just kind of the taking informed action—that piece…It would have been kind of cool to

have the kids think about what was around and what was in Jamestown and have them kind of create their own business based on what resources they had there. That was kind of what I thought about afterwards. That was the weakest part for me, the informed action."

Ms. Harter's final statements were aspirational ones. She wanted to give students more control over this particular lesson next time. She wanted to give them more of an opportunity to take informed action by using what they learned in their mini-economy businesses. And she also thought about ways that she could integrate economic concepts into her history class, using the mini-economy as a vehicle. Importantly, when she discussed these things, she used C3 Framework terminology.

She may have missed an opportunity to better integrate the mini-economy into her economics teaching. Unlike the teachers at West End Elementary, Ms. Harter was not able to share the portfolio assignment with her students until after the assembly line lesson was complete. Thus, it was not used as a focus for the lesson, either as a compelling question or as authentic, informed action. Nor did the students benefit from the in-class guidance and remediation of economic concepts that the East End students received. Ms. Harter regretted that she was not able to give students time for the task in class. However, in this case, it is important to remember that the portfolio assignment did not adequately address the central concept of the lesson: specialization. Though the portfolio item did make students think about their businesses, it did not prepare them to do this using the economic concepts of opportunity cost and productive resources, since because the lesson did not match the concepts being assessed. The three-tier approach to assessing the portfolio was used for Ms. Harter's students (Table 8).

Table 8

Evidence of understanding economic concepts in portfolio assessment, by number of students. East End.

	Clear evidence	Some evidence	No evidence
Specialization	No student showed evidence of understanding due to a shortcoming in the design of the assessment		
Opportunity cost	6	0	7
Productive resources	0	3	10

It is important to note that the portfolio item was not intended to be used simply as a worksheet, but this is how the teachers from West End and East End used it when they were short on time.

Lesson Plan: "Saving for the Hard Times." This lesson was markedly different than the previous one on specialization. Whereas the former lesson used the assembly line simulation to lead students to conclusions about how to run their businesses, this lesson revolved tightly around a piece of literature. However, the connection to students' mini-economy businesses in the latter lesson was less obvious. In "Saving for the Hard Times," the story entitled *The Hard Times Jar* followed an African-American girl named Emma as she navigated the demands of being in a family of migrant workers—in which everyone was expected to work—and her extraordinary native curiosity and talent for writing stories. She wrote stories partly so that she could have any books at all, since all of her family's extra money went into "the Hard Times Jar." Emma and her family faced many choices along the way concerning the tension between present and future consumption.

West End Elementary. When introducing the lesson, Ms. Delaney and Ms. Pershing did provide motivation for the lesson by using compelling questions that were connected to their classroom mini-economy:

> We are going to be talking about savings. Yesterday you guys started posting how much money you had in Schoology so that we could get our class average. And some of you noticed that there were students that had a whole lot of money. And some of you felt like maybe I don't have as much money as I would like to have. Today we're going to be talking about savings, so that you can start to think about ways that you can take the money that you have to keep it with you to spend at a later time. So I've got some questions I want you guys to think about. We're not going to answer them right now. But during the whole lesson, I want you to be thinking about how you would answer these at the end. First what is saving? Then, when should you save? I also want you to think about when you would spend.

Ms. Delaney and Ms. Pershing then spent a few minutes reviewing economic terms—in fact, most of the economics vocabulary that is prescribed in the K-3 state standards: productive resources, scarcity, choice, opportunity cost, producers, and consumers. Students did quite well in remembering and defining the terms. They also went about pre-loading the knowledge necessary to understand the story: what is a migrant worker? "Cesar Chavez was a migrant worker" replied a student, "he had to move to another place to plant crops." They also asked students to make predictions about what the book might be about, given that they knew the title, *The Hard Times Jar*, and that the main characters were migrant workers.

Ms. Pershing then began reading the story aloud—the story was really a work of historical fiction—pausing every few pages to make sure that students were keeping up and asking them to "make inferences" about what was happening. For example, she asked, "If they have moving-in boxes around their house and on their floor, what has just happened?" "They moved to another farm," replied one student, "and they're poor." Ms. Delaney and

Ms. Pershing also took opportunities to create empathy with the characters, such as reminding students that the book's main character, a black girl named Emma, was the same age as these third-graders when she encountered certain difficult choices, such as the choice to keep working on the farm or to attend school, the choice of whether to "borrow" books from the school that she was not supposed to, and the choice of whether to accept money from the family's Hard Times Jar to buy a real book.

After the story, the teachers led students in a question-and-answer session, in which they asked where there are effective places to save money, why it's important to save, and the types of things that constitute a wise use of savings, including medical emergencies and helping other people.

Ms. Delaney and Ms. Pershing moved on to introduce a classroom assignment. They showed the students a picture from the Library of Congress featuring a real family of white migrant workers during the Great Depression. They read the extended title of the picture, which details the misfortunes of the family by year: "1927 made $7,000 in cotton. 1928 broke even. 1929 in the hole. 1930 still deeper. 1931 hit the road. 1932 fruit tramp in California." The assignment was to use the online discussion board in Schoology to discuss "whether savings would have helped this family."

Their answers were simple and predictable, along the lines of "yes, the family would have been able to keep their house if they had money saved." Indeed, it does not seem that the assignment prompt could have yielded much diversity in student answers.

After they were done with this, the teachers brought them back to the rug to discuss which places would be good for storing savings. They asked about a jar, a bank, a backpack, and your pocket. This yielded intense debate among the students. For example, "If it's in

your pocket then someone might rob you." And, "That's preposterous!" Students were very concerned about money being stolen. Ms. Delaney and Ms. Pershing did not attempt to introduce the concept of interest, likely because it is a more advanced concept.

After this discussion, the teachers introduced one more classroom Schoology assignment having to do with savings. In this one, students were to pretend that their class had saved up a rather large (but undefined) amount of money, and they were to get into their entrepreneur groups and vote to decide how to spend it. This assignment focused not on private saving and spending, but on saving and spending as a group, with a democratic process employed to decide how to use the savings. There was lively debate among groups, with propositions including helping homeless people, building a playground for the school, helping stray dogs, buying school supplies for the class, and buying a car (who was to drive the car was not specified). When they were finished with the discussion and had posted their answers on Schoology, they were permitted to work on their products for the next school mini-market day. (In this particular school, the second grade students were given money to shop at the class's market.)

Students set to work on their products with alacrity. Some students were working on advertisements, some were building products, and some were discussing how to change their products given their experiences in the last mini-market day. A surprising number were engaged in researching market demand so that they could determine what price to charge—there were researchers from about half the groups who were roaming the class, armed with questionnaires. It is notable that this process of data-collection was not required or even suggested by the teachers at that point—students did it because they considered the information indispensable. Indeed, they were willing to let their group-mates off of

production duty in order to research market prices. However, at this point the students were not required by the teachers to integrate any new academic information into their entrepreneur groups. Savings, though ostensibly the point of the lesson, was not integrated at this stage.

The assignment took the class to the end of the class period when students packed up their supplies and went to lunch. Due to time constraints, the post-observation interview was to take place the following week via Google Hangouts. However, more snowfall induced the teachers to postpone the interview, so their interview data was not available to inform the next design phase. For this lesson, only the observation data from West End Elementary was available. However, the observations and interviews on "What should we specialize in?" conducted at East End and West End provided a rich source of data by which the lessons could be modified.

Fourth design phase. Field notes taken in real time at the observations noted two main concerns about the construction of the lesson on "What should I specialize in?" First, the value of the Tortoise and the Hare illustration did not seem to be worth the time spent on it. The opportunity cost of the fable was an additional iteration of the assembly line simulation and subsequent analysis of it. Specifically, students in both classes asked to switch roles so that they could see if their productivity changed depending on their method of production. In both cases, the teachers had said that switching was possible but that they had not gotten around to actually doing it. Before the lesson was implemented at Rural Elementary, the researcher and the teacher, Ms. Maloney, consulted with one another and decided that she would cut back on the Tortoise and the Hare and allow students the chance to try out both methods of Play-Doh hamburger production.

There were no changes made to the Hard Times Jar lesson. This lesson was created by Ms. Maloney from Rural Elementary, and she had her own vision for it.

In addition to the changes to the lesson implementation, there was an addition to the plan for data collection. Analysis of student work along with observations of students working had raised questions about the thought processes in which students engaged while working on assignments. In the fourth design phase, there was extra attention paid to exactly what students were saying and doing in their work groups, which at times required the researcher to ignore what the teacher was doing in order to focus on students. This change in tactics produced richer data, which in turn required richer data analysis. Furthermore, since Ms. Maloney allowed students more chances to practice the assembly line experiment, there was more action to observe and more discussion of it. This had the effect of lengthening the analysis.

Rural Elementary School. Ms. Maloney from Rural Elementary School taught both the lessons—"What should I specialize in?" and "Saving for the hard times" back-to-back. She began her lesson by going over the *Habits of Mind* that students were going to be using that day. The Habits of Mind were general personal and academic traits that the school wanted to foster in students. Interestingly, about a quarter of the 16 Habits of Mind were relevant to the C3 Framework as well as the authentic intellectual work, including "questioning and posing problems," "applying past knowledge to new situations," "thinking about your thinking—metacognition," "gathering data through all senses," and "thinking and communicating with clarity and precision." Others included "striving for precision" and "finding humor."

Ms. Maloney was able to adjust her implementation of “What should I specialize in?” based on the experiences of the other teachers. Thus, she used the mini-economy as a “hook” for the lesson rather than the Tortoise and the Hare, to which she gave short shrift.

However, though she used lots of interesting questions to introduce and provide motivation for the lesson, it was difficult to identify one compelling question that provided students with a goal. Ms. Maloney proceeded with a Socratic-like line of questioning. This excerpt from the discussion shows how the mini-economy worked alongside economic concepts to provide motivation in the upcoming lesson:

> Teacher: I want you to think about Market Day, and about when you were with your teams [i.e., entrepreneur groups]. When we were making our [businesses], when you did your jobs, how many jobs did you have when you were making your item? … Student 1, what was your job when you were making your slides?
>
> Student 1: I had to put water on it and then pour glue on it. No wonder it was sticky!
>
> Teacher: Tell me the steps to make your product.
>
> Student 1: You had to put glue in it. And put carbon dioxide. And then you put in the steering and the food coloring. Then you packaged it.
>
> Teacher: Did everybody do all those jobs or did each person have something that they did?
>
> Student 1: Each person did, like, two things...
>
> Teacher: Each person specialized in two certain things that they did.
>
> Student 2: When your group made Olafs [the snowman from the movie

Frozen], I was in charge of the hot glue, and then what else did we have to do?

Student 2: The rest of the peoples' job was to fill them with cotton.

Teacher: So when you [in the *Frozen* group] did your market day, did you make Olafs, along with erupting snow and reindeer? Did all five of your team members each make those things, or did you specialize in just one thing?

Student 2: We specialized.

Teacher: You [points to a student] specialized in erupting snow. You [points to Student 2] specialized in Olafs. You specialized in reindeer. So did you [points to Student 3] go to the market and only come back with erupting snow?

Student 3: No.

Teacher: It was like a whole world market, wasn't it?

Student 3: We were trading. Because we got the big money.

Using this question-and-answer method, Ms. Maloney showed the students how they had used specialization in their mini-economy business. By asking students if they only came back from the market day with the things that they had created, she began to introduce the concepts of trade and interdependence, though she did not really continue to pursue these concepts in this particular lesson. However, the lesson seemed to be motivated more by the emerging similarities of the concept the students were to be learning in the context of their mini-economies than with a compelling question. However, Ms. Maloney did ask a number

of questions that were effective academic questions and that supported the overall point of specialization being important and students already using it in their businesses.

Having defined specialization and connected it to the students' experience with the mini-economy, she began to show them how specialization was important for increasing productivity. She did this by appealing to students' experience with eating hamburgers at McDonald's and at a local hamburger restaurant called Idlewood's. "If you wanted to get to dance practice in time, you'd go to the fast food restaurant," she explained, "but if you wanted to enjoy your meal and take your time to talk, you'd go to Idlewood's, right? What is the difference?" "McDonald's makes their food faster," reported the students. She then attempted to elicit theories as to why the fast food restaurants were faster. The replies were not generally accurate. Students tended to think that the fast food restaurant had their burgers ready-made in a refrigerator and simply re-heated them upon order. When one student suggested that the restaurants have a team of workers, each with his or her own job, Ms. Maloney zeroed in on the answer and proceeded to question students about how the assembly line process at a fast food restaurant might work.

Then she asked "Do you want to give it a try?"—and then drew back and said "Oh, I forgot. Do you all remember the story of the Tortoise and the Hare?" Unfortunately, she apparently felt compelled by the lesson plan to spend some time on the fable, even though it was at this point completely outside the flow of the lesson. In fact, it was an active distraction, given that she had already effectively led the students to anticipate the assembly line. She used interrogation of the fable in a fashion similar to that of the other teachers: She asked what jobs the hare and the tortoise would excel at. They also debated whether or not the tortoise would be a good mail carrier. However, the teacher was excited to get to the

assembly line simulation, so she quickly left this alone and moved on to train the students in how to do the experiment.

The assembly line simulation proceeded differently than it did in the other two classes. Due to the small class size (12 students), Ms. Maloney could not effectively divide them into two groups, so she instead had them take a turn with each of the two production methods. The lack of a competitive aspect had a marked effect on the mood of the game. It was much more lackadaisical than that of the previous two classes. The students hurried, but they also joked and chatted as they worked instead of urging each other to hurry or barking commands. They also did not take very seriously the teacher's instruction to measure the ingredients precisely. So when the simulation ended, there were many more mis-measured burgers than in the previous assembly lines.

Ms. Maloney had the class sit down in a circle on the rug to debrief. Absent the element of competition, the students displayed a collaborative mood in discussing how they could have improved their processes. There was specific concern about the oversized burgers. Ms. Maloney pointed out, "That was not a $1 hamburger. That's not a kid's meal." She asked them what would happen to the money that McDonald's made if their employees kept making burgers that were bigger than the plan allowed for. She pointed out, "They would have to charge more." Then she asked the students if they would like another chance to try their skill at burger-making, to which they gave enthusiastic replies in the affirmative. She declared that their first round had been practice, sent them back to the assembly line, and began the simulation again.

The students were a bit more focused this time around. The conversation revolved around the process of burger-making, and there were parallel arguments about whether it

mattered if there were top-buns and bottom-buns, and what the appropriate bun size actually was. The subsequent debriefing continued the debate, with the bun-measurers being the targets of pointed critique from their co-workers. One thing it did not cover, surprisingly, was the number of burgers that the assembly line actually created. Ms. Maloney did not broach this subject. She moved on by asking the students, "Now that you've worked at McDonald's, do you want to see what it's like to work at Idlewood's?" In response to this prospect, the students cheered! A beleaguered bun-measurer sighed, "We can take our time." Ms. Maloney had to explain to the students what it meant for them to be craftspeople—the training was short, and students seemed a little confused about what making an entire burger entailed.

The confusion manifested itself in the implementation of this round of the simulation. Students initially attempted to organize some kind of division of labor, and the more attentive students had to remind their classmates that they had to make the whole burger themselves. Students struggled to find a rhythm—so much so that the scarce capital resources, such as the rulers, were occasionally not being used at all. When the simulation ended, there were hardly any completed burgers at all, though Ms. Maloney again did not call attention to the actual number that the students had created.

The slow pace and confusion of the round did not seem to lead to a poor debriefing session. In fact, it may have actually helped. Students did not seem to like the craft process at all, instead favoring the coherence and organization of the assembly line. "Everybody was crowding around all the stuff," reported one student, "so you didn't have a specific job, and it was hard to do all those things at the same time." "I was trying to measure my bun because I forgot to, but then I had to wait for a ruler," complained another. "I forgot to put sesame seeds on," said a third.

Ms. Maloney wondered if there were any advantages that the craft process had over the assembly line. One student noted that the assembly line could be compromised "if somebody did not show up." Another thought that it might not be fair if one worker had to do harder work than the others.

Ms. Maloney noticed the clock and saw that she needed to switch to the "Saving for the Hard Times" lesson immediately if she was to have time for it. And so, without returning to the mini-economy or summarizing the point of the simulation regarding specialization, she abruptly said, "All right! Hands on your head; hands on your shoulders; hands in your lap…new lesson! Ready? New lesson."

She then went directly to the lesson entitled "Saving for the Hard Times." Her implementation is described below.

"Is this lesson fun?" asked a student. "Not as fun as the last one," replied Ms. Maloney, and the class groaned. Ms. Maloney proceeded to read *The Hard Times Jar*. Unlike the teachers in other schools, she read it straight through, without a give-and-take discussion along the way—perhaps due to concerns about time.

When the book was done, Ms. Maloney asked if there were any questions. "Were they slaves?" asked one student. "No," replied another before Ms. Maloney could respond, "because this was the 1920s." Ms. Maloney praised the student for being able to use historical inference in the way that he answered, and she explained, "I don't know how you knew that but…they were migrant workers." "Like Caesar Chavez," added another student.

Ms. Maloney also explained that the book was a work of historical fiction. She then called students' attention to a "real-life picture" that she found on the Library of Congress website. She read the caption, which explained how the family fell into poverty at the

beginning of the Great Depression and wound up as "fruit tramp[s] in California." The students seemed compelled by the family's story and asked several questions about them. After answering them, Ms. Maloney explained that students needed to make a speech bubble in which the father of the family was explaining something to his children about saving.

Students went back to their desks and worked on the assignment individually. All but one or two were finished in less than one minute, and Ms. Maloney called on them to give their answers, which were as follows:

1st student: Save up your money so that you won't become like this family and be a migrant worker. [Calls on another student]

2nd student: Don't spend your money; you'll lose it all.

3rd student: Save your money so when you're older you can buy a lot of things.

4th student: We're out of money and losing our house. Don't be like this family.

5th student: Spend this dollar if you need it.

6th student: Save your money for better goods.

7th student: Save your money to buy awesome things that you need.

8th student: When you grow up you might be a migrant worker.

9th student: Save this money. It will give you good luck.

10th student: Save this money. For now, keep it.

11th student: Save your money for what you need.

12th student: Saving is like farming; spending is like butchering.

In response to the last student, Ms. Maloney asked "spending is like butchering…what do you mean?" The student explained that when you "butch" a pig (his word), it is gone and you cannot use it anymore, but when you farm, you cultivate your crop for later. Following his reply, Ms. Maloney again moved abruptly to the next section. There had been almost no discussion of the answers. Ms. Maloney explained in the post-interview that she had been satisfied with the answers and concluded that she did not need to spend further time on that particular activity.

She introduced the final activity of the day. In it, each student received "choice cards" explaining a choice that Emma (the girl from the story) faced. The students were charged with weighing the relative merits of the two alternatives then writing an answer. They were aided by a picture of scales as well as little boxes guiding them to write down the alternatives and their final answer. She let the students go back to their desks to work in groups of two or three, and they quickly got on task.

One pair of girls had a brief discussion that went as follows:

> Student 1: Emma had a choice: She could work in the field picking apples, or she could hide and write in her storybook. OK, so choice #1: she could work in the field. Choice #2, it says she could hide and write in her storybook.
>
> [Partner writing things on their cost/benefit decision-making model, which was provided by the lesson in the shape of weigh-scales.]

Student 2: She can earn money… or she can write in her storybook. So she would not get money. So on this one you would get money; on that one you would not. The decision I would say would be that you would work in the field… [Writes it down.]

Student 1: There, done.

Teacher: Done already? Awesome! You're done, too? Awesome! Come to the rug.

At this point, the class was streaming toward the rug to de-brief. The whole activity took them about one or two minutes—similar to the work rate of the activity with the Library of Congress picture. However, there was a group of three boys who stayed at their desks and continued to debate the choice that Emma faced.

The boys were debating the morality of the alternatives that Emma had to consider. Their card read: "Emma has a choice. She can take [steal] the store-bought books from the school room and/or she can use the money from the Hard Times Jar to buy one of her own." One of the students thought that taking the books from the school was bad because it was stealing. The second thought that using the family's Hard Times Jar money was wrong because buying a book did not constitute a family emergency. In the book, Emma took the school book but was caught by her mother, who made her return it with apologies to the teacher. But then the mother gave Emma money from the Hard Times Jar to use for her own store-bought book. The third student was only partially engaged. At one point, the debate grew heated enough that one student erased what the other one had written. After the rest of the class had been de-briefing for almost five minutes, the boys were still prosecuting their discussion with earnestness.

Student 1: If Emma watched the kids then her parents could work, and they would get money, and that would be positive. But if they didn't do that, then bad things would happen.

Student 2: But both of the things in the story are sort of bad.

Student 1: But this one is not about having less money. It's about what you want to do. So get her own book, or get in trouble? Which one is better?

Student 2: But then it's less money.

Student 1: That's a different situation.

Student 2: But she taking it out of the Hard Times Jar, and the Hard Times Jar is for when something bad happens.

[At this, all three students sat in silence for a moment, thinking. As the researcher moved off to video the rest of the class debriefing, the boys finally wrote down an answer.]

At the end of the general de-briefing, it was apparent that the rest of the class's hastily-written answers all had one common theme: They chose the money-making or money-saving option over other legitimate but nonpecuniary alternatives, such as Emma should work in the fields instead of going to school. Emma should watch her siblings so the parents could work instead of writing her own storybook. She should do her chores instead of sitting and reading. The aforementioned group of three boys who returned to the carpet were the only ones who seemed to be seriously considering the alternatives as being equally valid, or as one of them put it, "both sort of bad."

Ms. Maloney asked them what they had decided, to which Student 1 replied, “It’s hard, but you have to do the right thing.” When the teacher asked them what that was, they replied that they would have used the money from the Hard Times Jar. Student 2 added, “I was arguing over Choice 2 [to take the school books] because that’s probably what I would have picked.”

> “You would have stolen the books?” pressed Ms. Maloney.
>
> “Yeah, and then returned them,” rejoined the student indignantly.
>
> Ms. Maloney laughed: “Now I understand why it took your team a long time to make that decision!”
>
> The first student followed up: “It’s hard because if they use the money for the books, they wouldn’t be able to save money…And [taking the school books] is also a risk, but that’s what life is about. Taking risks and getting through it.”
>
> “Very good,” Ms. Maloney encouraged them, “I gave you the hard one on purpose.”

With this, the class period came to a close. Ms. Maloney gave end-of-class instructions—which did not include the mini-economy portfolio item—and the class was dismissed. She and the researcher then sat down for the post-observation interview.

From the very beginning of the interview, Ms. Maloney was already buzzing with ideas about how it went and how to improve. She sprinkled the interview with mentions of small changes she would make to both lessons the next time that she used them. Her first thoughts were on the assembly line. She would have divided the class into two competing groups—not to encourage competition, but because she thought that there were too many

steps in the assembly line, which made it all "a little more chaotic" than she expected. She also compared this activity to a similar lesson that she did in which students made paper hats. However, that lesson included an element in which the creativity involved in the creation of a hat was important—not just the number of identical hats the students produced. She was not sure what she would do with these two lessons for next year, but she saw an immediate connection with the mini-economy. She talked about how the assembly line lesson helps students understand that quality and quantity are both important for the creation of their Market Day products. She said that she would use it as an object lesson that "no one wants to buy trash." Again, however, there was a disconnect between plan and practice; she did not discuss either quality or quantity with her students, even though the lesson plan called for throwing out sub-par burgers and counting the number that each group created.

After Ms. Maloney had expressed her initial thoughts about the double-lesson, she discussed each dimension of the Inquiry Arc and how it affected her instruction. Like Ms. Harter from East End Elementary, she said that the most impactful part of the Inquiry Arc was "definitely the questioning part of it." "I was trying to make sure that I was using those 'driving questions,'" she explained, borrowing a term from the Problem-Based Learning approach as a stand-in for C3 Framework's Dimension 1. But then she drifted back to practical thoughts about how the lesson went, rather than how she was using the C3 Framework, "They hadn't had the economic terms for a while… so with specialization, [the driving questions] definitely got them back in the right frame of mind…I did not get 'interdependence' in as I had wanted." She also discussed how she was satisfied by the way that students "made a decision based on an economic choice" in the Hard Times Jar lesson. By way of pulling her back to thinking about the Inquiry Arc, I noted that she had already

answered my next question, that is, how she used C3 Framework's second dimension (using disciplinary concepts and tools). As the other teachers had done, she explained that she tried to consistently integrate the disciplinary terminology. She was also impressed by the way that the lessons motivated students to "apply past knowledge to new situations," which was one of the Habits of Mind encouraged by the school.

As for Dimension 3 of the C3 Framework (evaluating sources and using evidence), Ms. Maloney was pleased with the way that students critiqued their own performance on the assembly line and thought about how they could re-structure it in order to be more productive. She also pointed to the way that students were able to effectively use the *Hard Times Jar* story to make decisions about Emma's choices. At this point, she seemed to become aware that the work of historical fiction that she used for the Hard Times Jar lesson did not constitute a primary source.

> When I use a historical fiction book I like to put a real picture there with it so that they've got that frame of reference…that [the story] is based on something that really happened. There were really people who had to leave their home and go away, and this is a picture of them, and here's the timeframe that goes with it. They came from the Library of Congress, right here to say that these are facts that really happened. Then being able to match it with their quotation, what the father might have said, and then having that evidence that they can use.

Historical authenticity was important to her, but having a vivid story that would grab the students' interest and provide a resource for reading comprehension was more important. And so she settled on a hybrid.

As for Dimension 4 of the C3 Framework (communicating conclusions and taking informed action), Ms. Maloney was happy with the results of both assignments, despite the brevity of the students' work with them. "They were quite thoughtful," she said, "The piece of paper is just validation that they did it. But being able to observe, record, have them explain—all of those things helped in knowledge in the evaluation piece that they got the gist of the lesson. They understood why saving is important, to be able to buy things that you want or need, or save money for later." For her, the students certainly communicated conclusions in a satisfactory manner. Concerning the mini-economy and informed action, however, she regretted that they were not able to tie either lesson back in to their businesses. She had intended to have the students do the group decision-making about how to collectively spend class funds, but they ran out of time. For the purposes of these two lessons, the mini-economy served as an effective "hook" (as she called it), but did not re-enter the lesson after the introduction.

Fifth design phase. The original plan for data collection did not include a fifth design phase. However, a rash of snow days pushed back the interview at West End Elementary about discussing implantation of "Saving for the Hard Times." This in turn cluttered Ms. Delaney's and Ms. Pershing's schedules, causing still more delay. The effect was that the interview occurred much later than planned, in fact, after the culminating Market Day held by the university. There were no changes or edits made to the teaching materials during this time. However, the fourth design phase at Rural Elementary School affected the questions that the researcher asked during the interview—having done a brief analysis of the Rural Elementary interviews, the researcher decided to be more pointed about questions regarding use of the C3 Framework. Furthermore, the perspective that the teachers had on the overall

mini-economy program was enhanced by their experience with the university Market Day. Therefore, a fifth design phase was necessary that accounting for analysis of these new events.

West End Elementary. Ms. Delaney and Ms. Pershing's post-interview had the distinction of following soon after the university's culminating Market Day event, in which the West End Elementary class was featured alongside more than 1,000 other students. The teachers' minds were still on the Market Day, and this figured into their thinking about their classroom mini-economies and the implementation of the teaching materials.

They also were both short on time and had bad colds, and so the interview, conducted remotely via Google Hangouts, turned out to be a brief one.

The teachers began by explaining the reflections in which they engaged their students. The students had said that they were taken aback by the level of quality of many of the other schools' products and would have put more time and thought into increasing their own product quality. They would have also worked to make more sophisticated and clever marketing and presentation of their products. The students would have also paid closer attention to their pricing, actually adjusting prices downward more quickly. It is interesting to note that they would not have started with lower prices, but would have waited to see if they got any high-price-takers before putting the goods on sale in order to attract more price-sensitive buyers—a clear instance of price discrimination, which standard economic theory would predict in a market with less-than-perfect competition.

The teachers were also flush with the positive feedback they received from parents. They spoke about an e-mail from one mother who was "extremely impressed with the kinds of business opportunities that her daughter was able to learn from this experience…This is

one of those life-long experiences, and she couldn't believe that we were doing it in the third grade." The teachers also recalled how one of their students was able to verbalize her group's business plan so thoroughly and persuasively that she won the group their school's "Entrepreneur Award" (which judges at the Market Day award to one group from each school). According to Ms. Delaney and Ms. Pershing, the girl had explained to the inquiring judge that their product was designed to appeal to both girls and boys and thus take advantage of the widest possible market. They had noticed in previous in-class markets that most of their competitors had more gender-targeted products.

When asked about each dimension of the Inquiry Arc, the teachers continued to speak positively of their experience with it, particularly because it provided structure to their planning and thinking.

As Ms. Delaney explained, "I feel that as we were taking bits and pieces of the lesson to build out exactly what we were going to do, [that] the C3 Framework had to be a kind of central foundational piece of it, and everything we picked to do had to tie into that."

Ms. Pershing elaborated: "The activities and the Framework in a way supported each other. I do think that the Framework made the lesson better, and that we were thinking…"

"…About the overriding question!" interrupted Ms. Delaney, "It will help remind us what our goal is, what is it that we're trying to find. And that's always that guiding question."

Ms. Delaney's invocation of "overriding" and "guiding" questions were the fourth and fifth synonyms, respectively, used for "compelling question" by teachers over the course of the research. They did bring in the compelling question after the Tortoise and the Hare reading and discussion, though this later introduction had the effect of rendering the question to one of secondary importance. However, Ms. Pershing went on to claim that "the

questioning piece was huge." The way they talked about questioning, it became apparent that they meant the Socratic question-and-answer sessions that they used in place of direct instruction.

As in previous lesson observations, the disciplinary concepts and tools piece was stronger. The teachers were able to explain their goals with respect to economic vocabulary and thinking and were able to respond to pointed questions about how they assessed such thinking by saying that they had re-taught the concept of opportunity cost several times over the course of the year and were just recently satisfied with the students' fluent use of it: "We could all just see them applying it more," explained Ms. Delaney,

> It wasn't just a regurgitation of a definition. They were actually able to say "this is what I'm losing because of this [choice]." And so going back and just having that discussion again was reaffirming, because we had to keep pulling from them what it meant and giving them examples. You know, more ways to understand it. But we didn't have to do that [during the Market Day debriefing].

In discussing Dimension 3 (evaluating sources and using evidence), Ms. Pershing and Ms. Delaney casually referred to The Hard Times Jar as a primary source. They were conversant in the ways in which they made sure it was "fitting into the [C3] Framework." "The kids had to talk about the economic choices that the girl in the book made," added Ms. Pershing, and "For me it was the questioning, and constantly having to think about how you will tie this back to the primary source." Thus they fluently discussed three of the four dimensions of the Inquiry Arc in one short statement—though in practice only one of the dimensions had been applied with any precision.

The last issue they addressed before they left to pick up their students from the lunch room was about how they would modify the lessons for next time. They answered confidently: They would look for ways to add in more reading and language arts standards into the lessons. That is what they liked so much about The Hard Times Jar book. The more that language arts could be integrated into the lessons, the more valuable this would be for elementary teachers.

Emergent themes

This research investigated how the research participants used the C3 Framework in the context of a classroom mini-economy. The analysis revealed several interesting themes.

Theme 1: Teachers used the C3 Framework as an approach to inquiry-based instruction. In many ways, teachers used the C3 Framework as its authors envisioned—as a way to think about, plan, and implement inquiry-based social studies instruction. This theme deals with exactly how they did that.

Teachers used the Inquiry Arc to guide instructional planning. From the very beginning and through until the end, teachers were consistent in their claim that the four-dimension Inquiry Arc added structure to their lessons. In the focus group interview, Ms. Delaney said that she used,

> the four components…to help focus. Had I not had that, I wouldn't have been able to focus my overall lesson idea as clearly as I did. It provided structure, and sometimes I need a direction as to where I'm going.

In the final post-observation interview, they said something very similar. "The C3 Framework had to be a kind of a central foundational piece, and everything we picked to do had to tie into that." When pressed as to whether the C3 Framework might have added a layer

that was unnecessary or over-complicated, Ms. Pershing replied, “No, I think it helped to make the lesson better.” Ms. Delaney added, “It just helped guide and structure the lesson in a way that made sure we hit the components that we needed to hit for economics, and the overall main concepts of what our goal was. It’s always that guiding question.”

Her mention of “that guiding question” evinces another aspect of the structure-giving property of the C3 Framework. When asked how they used the C3 Framework to give structure, teachers reported different aspects of it as the most helpful part. Ms. Delaney mentioned the driving question. Ms. Pershing mentioned the “primary sources and economic concepts.” During the focus group, Ms. Maloney reported that she used “those driving questions to get them back in the right direction,” while in her post-observation interview she said that “it helped me with communicating conclusions…having that as one of the components and including that in my plan…really tied it together.” It was not the entire Inquiry Arc that gave structure so much as it was the particular dimension around which each teacher chose to build her lesson.

Teachers used the Inquiry Arc as a checklist to remind them of things that [they] should be doing anyway. While the teachers tended to focus on a particular aspect of the C3 Framework around which to structure the lesson, they did not ignore the other dimensions altogether, but gave them less weight in their planning decisions. They used one dimension to guide the overall lesson, and the others they used as a checklist to make sure that they were doing what they already perceived as high-quality pedagogy.

They did not view the C3 Framework as being entirely unique, but as a helpful approach to reminding them of good social studies teaching. In the focus group, they discussed the importance of using effective questioning techniques, economic reasoning,

primary sources, and real-world projects, which they conflated with informed action. In her post-observation interview, Ms. Maloney discussed the importance of the C3 Framework in reminding her to get students to properly communicate conclusions. In Ms. Harter's post-observation interview, she regarded the use of compelling questions as "an educational foundation that I'm used to. I did use that throughout the lesson, wanting to really focus on the C3 Framework, which is just good practice in general." Their nomenclature did not fit that of the C3 Framework exactly, but they did not seem overly-concerned with this. The C3 Framework was a good thing to them since it was an easy way to remind themselves of important educational practices.

This attitude is consistent with current theorizing about the use of the C3 Framework. Swan, Lee, and Grant (2014) write, "The C3 Framework represents ideas and practices that ambitious social studies teachers have long believed and practiced." According to these writers, fulfilling this ambition requires teachers to "shift instruction," a process which can be guided by the C3 Framework. But in this sense, the teachers in this study did not use the C3 Framework to shift instruction as part of a concerted inquiry process. Rather, they used the Inquiry Arc in a piecemeal fashion, as a checklist.

Teachers used economic concepts to inform action through and for the mini-economy. There was one sense in which the study participants did enact the C3 Framework as part of a concerted inquiry process, and it was enabled by the use of a classroom mini-economy. The teachers displayed several successful instances of employing economic vocabulary, concepts, and/or thinking in order to lead their students to take informed action, namely, the refinement of their mini-economy businesses. The ways that they enacted this were patchy, yet promising.

Ms. Maloney used the mini-economy businesses to motivate the initial discussion about specialization. She questioned her students about the details of their production processes, and they seemed to take pride in explaining what they had done and how they did it. She motivated them by insinuating that the economic concepts they were learning were going to enhance the productivity of their businesses. It was in the context of past and future informed action in their businesses that students found meaning in the concept of specialization.

Ms. Harter probably enacted the most effective teaching on the concept of specialization—her students used the concept to interrogate the hamburger simulation. Ms. Harter had an effective plan for rolling this knowledge into their mini-economy business work. As she explained in her interview, she used the "What should I specialize in?" portfolio item to organize the content of her lesson and to set up a conversation with her students about what product they made and what their specific role in their respective business was. Her plan was to proceed next to an investigation of how students could use their new knowledge of specialization—both its costs and benefits—in changing their production practices, exactly as envisioned in the portfolio item. Though she was able to explain her plans very cogently and without notes, she was not able to enact them on the day of the observation.

Ms. Delaney and Ms. Pershing were the most successful at actually carrying out their plans. They did the assembly line experiment, debriefed it, remediated economic terms that students had forgotten how to use effectively, had their students work on the portfolio items as a group, and set aside a rather long time for students to work on their products at the end of the class period. The strongest parts of this inquiry process were in Dimensions 2 and 4 of

the Inquiry Arc. For example, when students were not able to initially use the term opportunity cost effectively, the teachers did not simply remind them of the definition, but rather talked them through the proper use of the term in the context of the assignment. When they were done, students used the term within the vein of proper economic thinking. Their knowledge was reflected in the high-quality answers about opportunity cost that they gave on the portfolio item (unfortunately they were not as strong with the part on productive resources, which had not been remediated). These answers were not about arbitrary or contrived economic conditions, but related directly to their work in the mini-economy. As students moved on to work with their entrepreneur groups, several of them were able to discuss their production processes in terms of specialization.

Though it seemed that teachers were already experienced in teaching economic concepts, they had not previously used these concepts as tools for inquiry. The design of the lessons motivated them to think of the concepts not as an end in themselves, but as something that could be used in the service of informing action.

Teachers attempted to use sources and evidence. Teachers explicitly discussed the importance of the C3 Framework as a reminder to have their students interrogate sources. Though teacher planning in the use of sources and evidence was imperfect (this will be discussed below), the fact that they were thinking of the assembly line simulation and the *Hard Times Jar* as sources changed the way that they used the sources—they were used not as facts to be remembered, but as sources of information that students could use to answer broader questions.

The better example of this in each class was the assembly line simulation. The way that the lesson was designed led students to question the extent to which outcomes

conformed to theory. When the outcome of the experiment did not actually conform to theory in two of the observed classes, students benefitted from the opportunity to investigate why the expected outcome did not happen. This is a key part of reasoning using evidence in the social sciences.

Though *The Hard Times Jar* did not constitute a proper social science source, students were asked to use it like one. They appealed to the text to gather evidence to use alongside economic reasoning. Here we see that as teachers used the Inquiry Arc as a checklist for "good teaching," this forced them to consider if they were using sources and evidence—something they considered they should be doing anyway. Their use of inquiry teaching as envisioned in the C3 Framework was far from perfect. This is the subject of the next group of findings.

Theme 2: Teachers used the C3 Framework inconsistently. While teachers did use the C3 Framework in the ways listed above, their practice could flip quickly from a way that was fully in line with the C3 Framework vision of inquiry to one which was certainly not. Juxtaposing how teachers did use the C3 Framework against the ways that they deviated from it helps bring the research findings into sharper relief.

Teachers did not use compelling questions in the way that they said they did. There was a sharp divergence between what teachers reported they did with regards to questioning and what they actually did. In the focus group interview at the very beginning of the study, teachers recognized the value of compelling questions—though they had a cornucopia of adjectives other than "compelling" to describe the question that motivates each inquiry, with "driving" question being the most popular. In the focus group, Ms. Maloney said, "My driving question was 'what is savings and how do we use it?' So I tried to incorporate that all

the way through, including the supporting questions." But she began the Hard Times Jar lesson simply by announcing "new lesson," and reading the book, after which she asked some low-level reading comprehension questions.

Ms. Harter began her lesson on specialization by asking students if they remembered the story of the Tortoise and the Hare, and used that as motivation for the lesson. However, in the post-observation interview, she described in detail how she thought she had used questioning. "Yes, the compelling question," she explained, "I did specifically focus on that, and I tried to keep coming back to it." She also talked about how she used "supporting questions," though, like the other teachers, she meant the give-and-take of Socratic questioning that moved the lesson along. Interesting, a compelling question did emerge in her classroom: "Why didn't the assembly line work the way that it was supposed to?" As mentioned above, students wondered this aloud during the simulation itself and intelligently discussed alternative explanations during the debriefing.

Ms. Pershing and Ms. Delaney's implementation was similar. They did not use a compelling question initially, though they brought one in later in the lesson. They used Socratic questioning as supporting questions, and their students developed proper compelling questions related to specialization on their own as the lesson progressed, as motivated by the mini-economy.

When asked how they used Dimension 1, Ms. Delaney said, "I think the driving question facilitates the overall idea of working on specialization. They were able to pull something away from that idea, then to question how the tortoise and the hare specialize in their jobs. It helps them to have a connection with what they are doing."

“It is helpful to have the questions prepared ahead of time,” Ms. Pershing added, “like with the tortoise and the hare lesson. [It helps] to give your lesson a little more direction; having the supporting questions and a prewritten plan was helpful.”

Ms. Delaney continued: “I think somewhat toward the end, when they were evaluating what they specialized in, they started asking each other, ‘What is it that we want to specialize in?’ ‘What is it that our group should be focused on?’ ‘What is my job?’ They started to really think about what their job was, and what their role was.”

From this exchange, we see them conceiving of the role of questioning as 1) facilitating the lesson and giving it direction, 2) actively moving the lesson in that direction while keeping students engaged, and 3) making an authentic connection in which students take informed action.

Their explanation of how to use a compelling question was in line with the vision of inquiry laid out in the C3 Framework. But rather than actually pose a question and follow it, they used the Tortoise and the Hare as a hook or anticipatory set, which for the purpose of motivating the lesson and giving it direction was the same as a compelling question. Their conflation of the idea of a compelling question and a hook or anticipatory set is interesting, and evidence for why they might have done this will be presented in the next section.

However, the teachers were able to identify when students began to develop academically important questions that were related to the informed action that they were taking. Here, students were approaching the pinnacle of quality inquiry work. They were posing their own compelling questions. For example, the question, “What is it that our group should be focused on?” used the economic concept of specialization, which was actuated by evidence in the form of the assembly line experiment, for the purpose of informed action

through their entrepreneurial decisions in the mini-economy. The dichotomy between teacher practice and their ability to identify quality inquiry work was jarring.

Teachers' plans to use economic concepts and tools for the mini-economy were mostly not observed. The C3 Framework asks teachers to use disciplinary concepts as tools for inquiry, rather than as goals in their own right. In other words, the academic concepts that students learn are to be seen as means rather than ends. Instead of learning a concept and then testing to see if students learned it, teachers are to encourage students to use that concept to aid the process of investigating important social questions.

As discussed above, teachers talked about disciplinary concepts as a tool for inquiry in interviews. But it is noteworthy that the actual implementation of this was only observed in two lessons (the specialization lessons at West and East End schools) out of five. There were two reasonably high-quality examples of using disciplinary thinking as a tool for inquiry that were actually observed, and thus the idea was not only aspirational.

Teachers' conception of sources and evidence was extremely broad. The teachers in this study viewed a work of children's historical fiction (*The Hard Times Jar*) as a disciplinary source. The one who actually created the lesson, Ms. Maloney, was aware that it probably did not count for the purposes of inquiry in social studies. She sought to vitiate the problem and demonstrate the authenticity of the subject matter by introducing a picture from the Library of Congress. But even then, the approach to the picture that she designed—having students fill in a speech bubble for what the father in the picture might be saying--was not one that would fit within the scope of sourcework for the purposes of inquiry. If the teachers noticed the shortcomings of the story as a disciplinary source, then they must have believed that the benefits that it offered outweighed the costs of its inauthenticity. Indeed,

Ms. Maloney discussed how the story offered a vivid picture of the historical time period, and Ms. Delaney and Ms. Pershing mentioned how they liked the connection to literature and language arts.

In general, the teachers used the Inquiry Arc as sort of a grab-bag of teaching strategies which they saw as good and helpful, but not imperative. With the exception of Ms. Fisher's early protests, they were consistently positive in their reception of the C3 Framework, but they were not consistent in its application.

Theme 3: Teachers used the C3 Framework as a means of marginal improvement to their instruction. The teachers who participated in this program were experienced, confident, well-trained, creative, and hard-working. They were also interested in improving the quality of the educational experience that they gave their students, which made them good candidates for an initiative that used inquiry-based learning and authentic instruction. These advantages were balanced against the overriding sense that their time was precious. And these attributes combined to create an attitude that was open to change, but only change that would yield clear outcomes in a manageable amount of time. New instructional materials had to compete with other options, and the other options were tested and of good quality. In other words, these teachers had a toolbox of lessons and instructional practices from which to draw, and they did not seem to think that their toolbox was in need of a complete overhaul so much as it was in need of a few new tools.

Therefore, the teachers were interested in professional development and instructional materials that improved their instructional practice *marginally* rather than *profoundly.*

Ms. Pershing averred the importance of time in relation to lesson preparation in the very first statement of the focus group interview: "[My goal] is…having a variety of

instructional practices." She continued later by saying, "When I'm lesson planning I get so many ideas online, but sitting here and hearing other teachers say 'this resource is awesome, this is what worked for me,' that's worth more than two hours of searching online." "Time is very valuable," Ms. Delaney agreed, "We all find value in something and we all take away a piece of it."

The marginal approach to improving instruction was apparent during the focus group interview. In response to a question about how they viewed the C3 Framework in their planning and implementation, Ms. Pershing said that it was "one of the components [that I] included in my plan." She tried to "incorporate those kinds of things into my lesson," and "I did pull some things out from it." Ms. Pershing encapsulated the marginal mindset completely when she said that "the idea [is to] create menu items. That's going to make it accessible for so many more teachers. So it's not this one piece that you have to use. You're going to do what all teachers do anyway: pick the parts you can use in your classroom." Ms. Delaney concluded the point by saying, "I think what makes it accessible is that most teachers can take something that they can use and say…that can fit in here, and this is how I can combine something new with something that I already do…. I was taking something I already do and looking at it in a new way." As the focus group interview ended, all the teachers agreed heartily with Ms. Delaney that the best part of the workshop was that she "just sat here and got seven new ideas, and saved lots of time over the weekend."

Theme 4: Teachers used the C3 Framework when it helped them reach their goal of providing "real world" instruction. Teachers' motivation for whether or not to grab a C3 Framework tool seemed to come from something other than an interest in shifting their

social studies instruction to a thoroughgoing inquiry-based model. The goal was to teach in a way that is more "real world."

This was apparent from the very start of the initial focus group interview. Teachers wanted their students to be involved in work that was "engaging," "creative," "authentic," "student-driven," "real-world," and "hands-on." In particular, the term *real world* occurred a total of 10 times in the focus group and post-observation interviews. Teachers also linked this term to their use of assessments, saying that they were trying to get out of the "multiple-choice mentality" and to test in a more "authentic" way, as Ms. Pershing put it. They fully embraced recent state statutes that obliged school systems to begin moving toward authentic assessments and were willing to participate in professional development and development of new instructional materials not only to meet the requirements, but because they thought that such constituted what good teachers do. Insofar as the C3 Framework helped them move in that direction, they were amenable to using it—as long as it did not take too much time, or better, if it actually saved them time.

However, their concept of what was real-world was rather broad. The term real world tended to co-occur with phrases such as 21st Century Skills, project-based lessons, and hands-on, engaging or student-driven activities. Indeed, they tended to lump together various curricular-instructional concepts in which they had been trained, including general ideas of student-centered instruction. These also served as tools in their respective toolboxes.

For these teachers, real world also meant interdisciplinary. The term real world also co-occurred with the phrase cross-curricular and interdisciplinary. This was apparent from the very beginning in the frustrated e-mail from Ms. Fisher. For her, the C3 Framework's focus on social studies undermined a large part of her goal for real world learning—she

mentioned explicitly that this included interdisciplinary material. In other cases, teachers echoed the sentiment that part of the real world value of the mini-economy was its many tie-ins to valuable lessons outside of the economics content.

This explains why teachers were so quick to embrace lessons on the *Tortoise and the Hare* as well as the fictional *Hard Times Jar*: These stories fit with their English/language arts curriculum in a way that had a connection to the mini-economy. Faced with a C3 Framework that asked them to use non-fictional evidence and sources to answer social questions, they simply decided not to follow the C3 Framework too strictly in that case and to declare that the fictional stories fit the C3 Framework criteria.

In short, these teachers had to deal with a cacophony of instructional requirements and student needs, against which they could employ a diverse array of educational options, of which the C3 Framework was one. These options were subservient to the overall goal of creating a real world learning experience for their students.

Theme 5: Teachers diluted the C3 Framework in order to fit it with their instructional goals. The first four themes listed above deal with specific findings from the research, and they point to a process by which teachers selected curricular and instructional tools for implementation in their classrooms. These next two themes (Themes 5 and 6) show the overall effects of the teachers' choices. These themes are more general, dealing with data interpreted in light of the first four findings. This is a feature of the constant comparative method: Findings are compared with other findings, codes, and data in order to raise analysis to a more general level. This is a particular strength of the constant comparative method (Hesse-Biber & Leavy, 2011, p. 222; Charmaz, 2006).

Teachers diluted the Inquiry Arc in order to marginally improve their instruction in pursuit of a more real-world teaching approach. In this program, teachers continually made curricular/instructional decisions which often resulted in a watered-down implementation of the Inquiry Arc:

1) Teachers consciously used questioning to move their lessons forward, but did not focus on a compelling social question to direct the overall lesson.
2) Teachers used evidence and sources to investigate how to improve mini-economy businesses, but their evidence and sources were sometimes drawn from fiction.
3) Teachers did not use evidence and sources in a manner consistent with the C3 Framework. In the Hard Times Jar lesson, the picture from the Library of Congress was not used for analysis but as a way to make summative assessment more vivid. In other words, the teacher could simply have had the students write their answers on a worksheet, but instead chose to have them write answers into a speech bubble on the picture.
4) Though two teachers did directly use economic concepts to inform the mini-economy, with the others, the concepts were only theoretically linked to the mini-economy, and hence did not yet constitute informed action.

The teachers' motivation for these practices was described in interviews. They repeatedly said that C3 Framework reminded them of things they "should be doing anyway."

Ms. Fisher said that these are just "things that good teachers do." These comments evince the teachers' belief that C3 Framework is not completely unique in its approach.

After deciding that C3 Framework was similar to other authentic or student-centered tools that they had, they tried to find the shortest distance between the C3 Framework and what they already knew. Ms. Harter explained: "[The compelling question] is similar to the essential questions. It's kind of similar to the educational foundation that I'm used to. I did use that throughout the lesson, wanting to really focus on the C3 Framework. But I think that's just good practice in general. I mean, the C3 Framework is different for me, but I think you always want your kids to make connections, to take action, and have it relate to everyday real life." In this statement, we see all five of the themes described so far. First, Ms. Harter noted the similarities between the C3 Framework and what she already knew, then looked to find what the C3 Framework had to offer that was distinct and add this to her instruction in the service of "real life" learning.

Teachers were able to discuss their use of the C3 Framework, and they consistently noted its helpfulness. But the C3 Framework that they described is a blend of the actual C3 Framework and a host of other educational constructs drawn from their previous experiences.

Theme 6: The use of the C3 Framework produced a real yet limited effect on teachers' instructional practice. Swan, Lee, and Grant (2014) claim that the "ideas and practices" represented in the C3 Framework "require teachers to shift instruction," and they describe "Instructional Shifts" that teachers can make. It would be too much to say that the use of the C3 Framework evoked an instructional shift on the part of the teachers in this case. But it may have produced an instructional budge. There is evidence that teachers engaged in

thinking and teaching practices that they would not have if it were not for the influence of the C3 Framework. The changes were small, but they seemed to be going in the right direction.

First, the recurring claim that the Inquiry Arc was a good "menu" or "checklist" meant that it was comprehensible. Teachers did not shy away from it or regard it as obscure. Even the claim that this is just "what good teachers do" dovetails with the observation of Swan, Lee, and Grant (2014) that many C3 Framework-related practices are things "that ambitious social studies teachers have long believed and practiced." Teachers were able to make connections to their beliefs of what constituted good practice, and their use of the Inquiry Arc as a four-part checklist increased the chances that they would actually engage in good practice.

This does not mean that they viewed the C3 Framework as a simple re-hashing of previous ideas. In Ms. Harter's words, the C3 Framework is "similar to the educational foundation I'm used to." She added, "The C3 Framework is different for me," and the prescription for informed action is "the best piece of the C3 Framework." Ms. Harter was explicit in saying that as she prepared a lesson to submit, she struggled with the part of Dimension 4 that calls for informed action, but despite this being her favorite part, she was happy that she could access it using the mini-economy. These are not the thoughts of someone who is trying to simply write off or ignore an educational tool.

The use of the assembly line simulation as experimental evidence showed a relatively sophisticated instance of social studies inquiry. The teachers might have forgotten to carefully follow a compelling question, but their use of economic thinking to decipher the simulation led students to develop questions on their own. In Ms. Maloney's class, students had the opportunity to compare their own performance using different production methods.

In Ms. Harter's class, the teacher allowed students to explore different explanations for the strange outcome of the simulation. In Ms. Pershing and Ms. Delaney's classroom, the teachers led students to integrate their findings from the simulation debriefing into their thinking about their mini-economy businesses. Having a C3 Framework-based checklist enabled the teachers at West End Elementary to structure the lesson in such a way that interpreting a source using economic thinking led to informed action in the context of an authentic classroom project.

In other cases, the effect of the C3 Framework was aspirational rather than realized. Teachers were better at talking about certain aspects of C3 Framework than actually doing them. The foremost example of this is with the questioning aspect, in which teachers were able to explain their planned technique for posing questions and planning inquiries without actually doing it. But having a coherent plan is better than not having one. Likewise, they were all able to discuss how they were going to integrate their teaching into the mini-economy in order to create informed action. One of the classrooms achieved this, while the other two ran out of time. Considering that the classroom businesses were in fact created and the market days moved forward, it is not too difficult to imagine that given more time, teachers could put their plans into effect.

It was not only teacher instruction that budged in the direction of improved authentic social studies inquiry—their work will help improve the mini-economy and the C3 Framework through the design-based research process. The findings in this chapter show that teachers were willing to pick and choose aspects of the C3 Framework that they felt were helpful to the steady enhancement of their curricular toolbox. But this study cannot say whether or not the teachers were wrong to do that. Indeed, much of the reason why the

changes in teacher practice were diluted by other approaches was that the quality of C3 Framework-based practice is still in its infancy, and has yet to be used to its full potential. The work in which the teachers were engaged produced findings that will help other educators use the mini-economy and the C3 Framework more effectively. The implications of these findings are explored in Chapter 5.

Chapter V. Discussion and Implications

This study examined how 3rd grade teachers designed and implemented economics instruction that was based on the C3 Framework. The study examined the following questions:

1. What classroom practices emerge when the C3 Framework is used as the basis for instructional design?
2. How can the analysis of these practices serve to improve instructional design?

The findings were analyzed both in a narrative fashion and according to six broad themes. The narrative provides a close examination of what teachers and students did in light of the research literature. The six themes that emerged give a more global view of the data.

1. Teachers used the C3 Framework as an approach to inquiry-based instruction.
2. Teachers used the C3 Framework inconsistently.
3. Teachers used the C3 Framework as a means of marginal improvement to their instruction.
4. Teachers used the C3 Framework when it helped them reach their goal of providing "real world" instruction.
5. Teachers diluted the C3 Framework in order to fit it with their instructional goals.
6. The use of the C3 Framework produced a real yet limited effect on teachers' instructional practice.

Considering these themes and the narrative analysis in light of the research literature reveals several important implications for ongoing research and practice. This section discusses these

implications with specific attention on the second research question: How can instructional design be improved from the knowledge gained through the findings? This chapter discusses the design-based narrative and the six themes in light of how they contribute to the research literature. Improving instructional design and contributing to theory are, after all, the twin goals of design-based research.

Discussion and implications for instructional design

Since the C3 Framework was used as the basis for the creation and implementation of teaching materials in this study, design implications are presented according to the four dimensions of the Inquiry Arc.

Inquiry-based lessons should emphasize the importance of the lesson's compelling question (Dimension 1). The teachers' failure to use compelling questions may be partly the result of a lesson plan design. A C3 Framework-based inquiry lesson should depend on the compelling question. If the lesson can be taught without the compelling question, then not only are students missing out on an important motivational piece, but the lesson itself can lose direction. Inquiry-based lessons may need to foreground the compelling question with a brief preamble explaining why the question is important. In fact, the very first indicator (standard) in the C3 Framework deals with the importance of particular questions for the student and for the field of study.

Another option is for lesson plan writers to include a reminder of the compelling question at the tail-end of the lesson, e.g., What answers (or further questions) did students discover for the compelling question? or Ask students to develop a one-sentence response to the compelling question. Such prompts would also serve as a simple assessment of learning.

Inquiry-based lessons must provide support for teachers to use disciplinary concepts as tools for answering compelling questions rather than as the goal of instruction (Dimension 2). The teachers in this study were quite conversant in economic concepts and were quick to provide appropriate correction to students who misused them. They were also somewhat successful in actually using the economic concepts as tools to aid students in answering questions about their mini-economy businesses. It is this connection that is key for using academic concepts in inquiry; it makes the concepts serve the higher purpose of aiding the interrogation of important problems in social studies.

This sort of teaching does not come naturally. Disciplinary concepts are often the end of instruction rather than a means. In the case of this study, the mini-economy provided a goal toward which teachers could point their students as they learned economic material. Additionally, the portfolio items provided direction and support. This is in contrast to the approach of the original Mini-Society program, which depended on teachers pouncing on teachable moments as they presented themselves (Kourilsky, 1976). This sort of approach, while admirable, requires extremely deep knowledge of the academic content and a level of comfort using economics that few possess. In contrast, the instructional materials created during this program used portfolio items to guide students and teachers toward the use of economic concepts in the creation of classroom businesses.

Sources and evidence must be carefully chosen for both authenticity and ease of use (Dimension 3). This study encountered two starkly contrasting instances of teacher use of sources and evidence. In the lesson, “What should I specialize in?” there was some evidence that teachers used the simulation to guide students to interrogate the usefulness of specialization in the creation of their mini-economy products. This is one of the more

successful instances of inquiry-based teaching that occurred in this study. On the other hand, the lesson entitled “Saving for the Hard Times” included a source (a work of historical fiction) that was not actually appropriate for this sort of inquiry.

The findings of this research suggest that teachers diluted the C3 Framework in order to meet their other instructional goals. The design-based narrative shows that they likely did this in order to find activities that were pedagogically compelling (the assembly line) or sources that helped them reach other teaching goals (the fiction book). The assembly line experiment from the lesson “What should I specialize in?” gives an example of teachers using a non-watered-down version of the C3 Framework since the simulation provided a real world experience that tied into the mini-economy. On the other hand, the fictional book from “Saving for the Hard Times” lesson demonstrates how quickly teachers will back away from a strong approach to social studies inquiry if an opportunity to infuse a literature connection presents itself. But if lesson plans include authentic social studies sources for students that are accessible, teachers might not feel so drawn to children’s literature.

Furthermore, compelling questions can be hard to answer. If a source is too broad or complex, it can limit the extent to which teachers are able to lead their students to satisfactory answers. Therefore, the best sources and evidence might be those that are not only authentic social studies sources, but are also accessible.

The discipline of economics has some advantage here over, for example, history. While inquiry in history deals largely with documents (and old documents at that), it can lay a heavy reading burden on students in addition to the requirements of historical thinking. This intersection of reading and historical fiction requires an extensive support apparatus if students are to glean pertinent information (Monte-Sano, 2006; List, 2011). Economics, on

the other hand, can make use of graphs, in-class experiments, or surveys conducted by students, all of which were used by the teachers in this present study. The liability is that economics requires its own unique form literacy that students must learn before they can use it to interrogate the sources. But the sources themselves need not be very intimidating. The literature in economic education does not seem to include an analysis of the types of sources that could be used in inquiry, leaving an opportunity for further research.

Informed action can be greatly aided by the presence of an authentic project goal (Dimension 4). Ms. Harter reported that Dimension 4 of the Inquiry Arc (communicating conclusions and taking informed action) was the hardest part for her when designing an inquiry-based lesson to share with the other teachers. However, she also reported,

> some lessons lean more toward having something authentic that the kids can do, and they are really gung ho about it. Like in mini-economy they're creating this business. The final outcome and the informed action is them creating the businesses.

For her, the connection to the mini-economy was key to creating the opportunity for informed action. Without that, creating such opportunities was very difficult. The findings above discuss the ways that teachers were able to use disciplinary concepts to lead to informed action in the context of the mini-economy.

It is possible that difficulties with creating opportunities for informed action exist for other lesson-writers who want to use the C3 Framework as well. Informed action may not lend itself well to one-evening homework assignments. By contrast, an ongoing project provides constant opportunities for action. Other possible examples of projects that could be used in conjunction with economics instruction might be to fix an externality in the

community (e.g., What can we do about litter in the creek behind the school?), create a class business that serves the school (e.g., serving morning coffee), improve the process by which a group makes decisions and takes action (e.g., school clubs or teams), or create a human capital improvement plan to be implemented on an ongoing basis. In each of these cases, the teacher would not have to continually think of new opportunities for action and could simply concentrate on planning how to inform student action using inquiry-based lessons.

Further Discussion and implications.

While the first few implications of the findings pertained directly to instructional design that is guided by the C3 Framework, the next few contribute more generally to the research literature that supports this study.

Economic education. The teachers in this study were dedicated to real world instruction, and the classroom mini-economy certainly constituted real world instruction. As such, the teachers displayed a willingness to sacrifice instructional time in order to implement complex mini-economies. The importance of this becomes more apparent when it is considered along with the well-established evidence that teachers are consumed with preparing for high-stakes tests (Ravitch, 2010). The teachers had high-stakes tests for which to prepare their students, but they still devoted considerable time to the mini-economy. Furthermore, they did not already possess a repertoire of lessons that could be used teach state standards in the context of the mini-economy. They saw the potential in the mini-economy for real world and interdisciplinary instruction—in one case, Ms. Delaney mentioned that that was the sort of thing they were "hungry for"—but when tasked with providing just one such lesson to share with others, they either had to design a lesson from scratch or repurpose one that did not originally address the mini-economy directly. But for

them, quality standards-based material must include material that addresses diverse standards—that is, content outside of social studies. The inclusion of such content may help teachers decide whether or not to use a lesson. The implication is that social studies educators who wish to promote high-quality elementary inquiry instruction should take interdisciplinary connections very seriously and should take steps to ensure that the math and literacy connections in their lessons are equally high-quality. This may require the enlisting of experienced math or literacy educators from the very beginning of a particular curriculum initiative.

The teachers in this study were simultaneously interested in standards-based instruction and dedicated to real world learning. But even experienced mini-economy teachers had a dearth of high-quality standards-based material to integrate into the mini-economy program. This has further implications for the use of ongoing authentic projects as discussed above. The teachers' interest in this authentic project highlights a gap in the literature on economics pedagogy. The two studies discussed in the literature review that were commissioned to find and create student-centered teaching materials for the college level did not include a single recommendation for an ongoing authentic project (Salemi & Walstad, 2010; Starting Point: Teaching and Learning Economics, 2014). This presents an opportunity for future research and lesson-creation.

The struggles that the teachers had with compelling questions may be addressed with materials already available within the field of economic education. As mentioned in the literature review, economic mysteries is a concept that already exists and is included in published materials such as the Council for Economic Education's *Ecodetectives* and *The Great Economic Mysteries Book*, as well as *The Economic Naturalist* (Frank, 2007). Another

promising source is NPR's *Planet Money Podcast*, which investigates mysteries in a journalistic fashion with explicit use of economic concepts. It is not clear whether any of these high-quality materials are used regularly in the economic education community, but further research could find out if they are, and if not, what opportunities are available for making them accessible in pedagogical form to large numbers of teachers and students. In the immediate term, teacher trainers who want to use the C3 Framework would do well to find sources like these to help with the development of compelling questions.

Professional development. Darling-Hammond & Richardson (2009) write,

> Professional development is more effective when schools approach it not in isolation (as in the traditional one-shot workshop) but rather as a coherent part of a school reform effort. To avoid disparities between what teachers learn in professional development work and what they can actually implement in their classrooms, schools should seamlessly link curriculum, assessment, standards, and professional learning opportunities (p. 2).

This statement encapsulates the intended approach of the professional development that this program provided.

Taking the opportunity provided by the state to use alternative authentic assessments rather than multiple-choice tests, the teachers who signed up for this program were not only responding to state requirements but actively creating the types of curriculum and assessment that they could use, and subsequently implementing and revising the materials that they had created. One of the teachers (Ms. Maloney) was asked by her district administrators to use the business portfolio assessment that she helped develop as the alternative assessment option to offer to her entire district.

There were certainly aspects of the overall program that could be improved upon. Schnellert, Butler, and Higginson (2006) conducted a program/research study similar to this one, but were able to more effectively involve their study participants in an analysis of lesson implementation. In this present study, the analysis was conducted entirely by the researcher. Further studies should include the teacher-participants if they are to effectively improve upon their instruction.

In a similar vein, follow-up with teachers could include not only data analysis but more professional development. Research findings showed areas of both strength and weakness in lesson implementation. Another professional development session would be a good opportunity to shore up these areas and to build upon those areas that were successful.

Using this program and others like it (e.g. Schnellert, Butler, & Higginson, 2006) as a model, further professional development/curriculum development/assessment development opportunities could be constructed like this:

1. Professional development – vision for instructional materials and future professional development
2. Collection of teaching materials and creation of authentic project outline
3. Professional development – learning how to implement shared teaching materials
4. Revision of materials
5. Implementation of lessons
6. Revision of materials
7. Analysis of data from implementation

8. Professional development – reflection and revision of materials

Another area in which this program could have been improved was the amount of professional development in which teachers participated prior to creation of the instructional materials. In teacher professional development, longer duration is usually associated with more lasting results (Birman, Desimone, Guskey & Yoon, 2009; Porter, & Garet, 2000). Some of the difficulties that the researcher and the teachers encountered could probably have been overcome with increased time spent on learning about the C3 Framework and authentic instruction. This is an implication that can still be applied to this particular group of teachers—true to the spirit of DBR, the collaboration can still continue, but this time with the next segment of professional development informed by the results of the research study. The research found that the teachers in the study did budge their instruction in the direction of C3 Framework-based inquiry. Perhaps more sustained professional development could continue this movement.

That said, the teachers reported unanimously that their favorite part of the workshop was the sharing of practices and lesson ideas among like-minded and experienced teachers. Not only is there extensive research that supports a professional learning community model for professional development (Brodie, 2013; Jones, Stall, & Yarbrough, 2013; Roberts & Pruitt, 2009), but the findings from this research support the idea that this is a way that professional development practitioners can get buy-in from teachers.

Authentic Intellectual Work. This present research study also has implications for how authentic intellectual work is implemented viz. disciplinary inquiry. Specifically, this study provides evidence of a real world (authentic) project that used the C3 Framework as a guide to disciplined inquiry in social studies.

The definition of Authentic Intellectual Work that is used in this study cannot only mean real world. Newmann, Marks, & Gamoran (1996) and Scheurman and Newmann (1998) proffer criteria for intellectual achievement that is considered authentic. Their list consists of 1) construction of knowledge, 2) disciplined inquiry, and 3) value beyond the classroom. Newmann, Marks, & Gamoran (1996) envision the careful use of disciplinary concepts and tools, or "using a prior knowledge base from one or more fields" (p. 283). Their view precludes a notion of authenticity that is non-disciplinary or that does not consciously use components of at least one academic field of study.

But inquiry is difficult, and each discipline has a different set of concepts and tools that it uses in the pursuit of compelling questions. What sort of support do teachers have for this? Newmann and Wehlage (1993) and Newmann, Secada, and Wehlage (1995) provide guidance for teachers who want to implement their conception of authentic intellectual work. They describe five standards for authentic instruction, namely 1) higher-order thinking, 2) depth of knowledge, 3) connectedness to the world beyond the classroom, 4) substantive conversation, and 5) social support for student achievement. These standards are set at a rather conceptual level. They do not provide support for any discipline in particular. Scheurman and Newmann (1998) do apply their thinking directly to social studies, but their more specific examples of what constitute disciplined inquiry are brief and do not include a model for thinking about disciplinary thinking in the social studies. The Social Studies Inquiry Research Collaborative (Saye et al., 2013) used Authentic Intellectual Work as a guide for evaluating social studies instruction. However, the question of whether or not the teachers in their study were using disciplinary thinking properly was not investigated. Rather,

Saye et al. (2013) judged the lessons on the basis of whether they met the non-disciplinary Five Standards mentioned above.

So the question of how to implement disciplinary inquiry in the context of AIW remains unanswered by the existing literature. The literature review of this study does identify ways that disciplinary inquiry is being used, though it is not generally within the umbrella of AIW. In other words, if teachers want to use AIW properly, they have to search for inquiry tools outside of the model of AIW.

This study demonstrates a way that AIW can be implemented using the C3 Framework as the catalyst for disciplinary inquiry. The C3 Framework provides specific descriptions of the concepts, tools, and skills that students need if they are to answer compelling questions in the realm of social studies. In this study, teachers made a modest movement toward the kind of inquiry teaching suggested in the C3 Framework. For example, they used the economic concept of specialization to test an experiment, which in turn gave them real-life applications and in some cases made them question the concept of specialization itself. This instructional budge would have been difficult to achieve without the guidance of the Inquiry Arc and suggests that AIW may be better thought of as a higher-level educational concept than as a rubber-meets-the-road guide to inquiry teaching. If the specific thought processes that are unique to academic disciplines are important in order for instruction to be authentic, then AIW needs ground-level support to be fully realized.

This is in no way to disparage AIW as an important construct. AIW has been shown to be quite useful. It helps educators think broadly about the kinds of overarching educational experiences that they want their students to have. Furthermore, it provides educators from different disciplines with a language by which they can communicate about common

elements in instruction and assessment. In this study, AIW contributed a connection between the theoretical framework of dialectical constructivism and educational practice. It also served as an educational philosophy by which the researcher could interpret teachers' constant appeals to real world learning. Authentic Intellectual Work showed itself to be a useful overall approach that benefitted from the specific inquiry tools provided by the C3 Framework.

Social studies education. Of course, not everyone would agree that the particular use of disciplinary tools is important in social studies education (Nelson, 2001; Thornton, 2005). This is abundantly clear from the century-long intramural debate on the nature and purposes of social studies. Those who follow the social education model rather than the social sciences model might prefer to use a less particular approach to educational authenticity than Newmann's. This is completely valid given the definitions of authentic work laid out by those favoring the social education definition. But the C3 Framework—a major initiative of the National Council for the Social Studies—is an approach that fits within the social sciences conception of inquiry, while offering an olive branch to social educators. This study contributes to the ongoing discussion of how social studies should be conceived with empirical findings on the actual use of the C3 Framework.

The findings have relevance in answering the concerns of those who favor the social education approach. Those concerns might be summarized as follows.

A. Social science creates artificial silos in which to store thought (Nelson (2001; Thornton, 2005).
B. Social science does not sufficiently address issues of social injustice (Nelson, 2001).

C. Social science “too easily devolve[s] into knowledge transmission” (Thornton, 2005, p. 13).

D. Social science cannot address the things that students need at their particular stages of development, since it consists of knowledge created by experts (Dewey, 1902, Thornton 2008, pp. 20-21)

To the first concern, it must be admitted that the teachers in this study indicated that they desired more interdisciplinary content. When asked to use a framework for social studies inquiry, they were quick to dilute its prescriptions in order to fit in content that met their goals for English/language arts.

Can the C3 Framework be used to create a robust interdisciplinary lesson? It is important to note that the interdisciplinary material that teachers in this study desired would include math and English/language arts, and hence would require an even broader reach than social educators tend to describe. And yet the C3 Framework does describe quite thoroughly how to meet literacy goals using social studies. The teachers in this study touched on math connections in encouraging students to collect statistics on their classmates’ demand for their products. As for the connections among the different aspects of social studies, the academic disciplines of economics, geography, government, and history are all laid out in the C3 Framework as equals, part of the same dimension of social studies. The four-part structure of the Inquiry Arc might make the Framework flexible enough that teachers can pick the necessary tools for a given inquiry, thus reducing the tendency of disciplines to stay in individual silos. The disciplines are not put into a hierarchy, which was a concern of Nelson (2001). Further research will need to find the extent of the interdisciplinary affordances of the C3 Framework.

Secondly, as for concerns about social justice, it is true that the C3 Framework does not speak directly to them. The instructional materials created in this program did not either, except incidentally (e.g. the *Hard Times Jar*'s focus on the plight of black migrant workers). Furthermore, the creation of for-profit businesses as the outworking of informed action as the end goal of compelling questions might raise hackles. Whether or not the creation of private businesses is a legitimate goal of social studies is outside the scope of this study, but it is worth noting that the inclusion of economics as a distinct discipline inside social studies gives space for such an outcome. Creating businesses is certainly a practical outworking of the study of economics.

The C3 Framework does not guarantee which types of social questions will be asked. However, Dimension 1 (developing questions and planning inquiries) gives students and teachers the chance to interrogate issues of power and equity. It invites them to begin "moral conversations in social studies [that] are really dialogues about the question, 'How shall we live together?'" (Darling, 2006, p. 276). C3 Framework explicitly calls for questioning that is socially relevant to students.

Furthermore, Dimension 4 of C3 Framework calls for informed social action, which addresses a concern of social educators directly, since it says explicitly that movements should be encouraged to address societal problems, to critique claims, and generally to amend aspects of society that are not as good as they could be—opportunities which are particularly lacking for low-income students (Levinson & Levine, 2014). These cannot be the standards set forth by those who spurn an actively critical role for students in society. Nevertheless, this study raises more questions than it answers about the role of social science-based inquiry in questions of social justice.

Thirdly, do social sciences, and by extension the C3 Framework, encourage transmission pedagogy? This study did not reveal any findings that would add to that concern. On the contrary, the times when teachers were adhering most closely to the Inquiry Arc was when they were furthest away from simply transmitting knowledge. Students were active creators of knowledge—even to the point of being invited to critique applications of the economic concept of specialization that was the focus of the lesson. In fact, avoiding a transmission pedagogy is one of the reasons for the existence of inquiry teaching in general and the C3 Framework in particular. The demand for authentic learning and inquiry puts makes adherence to a transmission pedagogy unlikely.

Lastly, do the social sciences ignore the developmental needs of students? This study did not find any evidence of this either. Quite to the contrary, inquiry learning, when at its best, was quite effective for teaching content standards, arousing student curiosity, and motivating students to action. For its part, C3 Framework makes a direct effort to address the developmental needs of students. It advances an argument about student intellectual development that is tied in directly to social studies, and indeed, particular disciplines, using the research of Berti (1995), Wineburg, Mosberg, Porat, and Duncan (2007), Vansledright (2011), and others. This research shows that children have naïve views of the way society works, and that students can learn more accurate and helpful ways of thinking through inquiry as they develop, especially if provided with appropriate scaffolding (Bruner, 1960; Parker et al., 1989).

Indeed, it is this concern for developmentally-appropriate instruction that has underlain the whole history of inquiry teaching from start to finish. Bruner (1960) spends much of his book discussing exactly the processes that students engage in as they develop in

age and expertise, and C3 Framework draws heavily from Bruner. Even young students try to make sense of the world around them, and therefore use some sort of inquiry approach, even if it superficial or naïve (Brush and Saye, 2007). Furthermore, the cognitive processes of knowledge-building are tied to finding better ways to do inquiry (National Council for the Social Studies, 2013). For example, Miller and VanFossen (2008) discuss research showing that young children can learn an Economic Way of Thinking that, far from being a crass preparation for graduate school someday, is completely appropriate for learning in their age-range and useful for them in their stage of life. The C3 Framework is organized in such a way that questioning, process, content, and informed action are tied closely together; these ingredients are present in knowledge-creation with students at any age (Bruning, Norby, & Schraw, 2011). The C3 Framework explicitly seeks to use them well.

In short, initial observation of the C3 Framework in action shows that it has the capacity to assuage the concerns of social educators, while past efforts have failed to do so. This appears to be because it contains the essential elements of social education—using inquiry to pursue answers to compelling social questions, and then encouraging students to use what they have learned to take informed action. It does this through age-appropriate use of the social science disciplines. It shows balance and even elegance in the way in which it effectively reconciles the competing visions of social studies.

Social studies has too many threats from without to be weakened by wars from within (McGuire, 2007). The C3 Framework is remarkable in that it constitutes an approach to creating curriculum that was created with the full cooperation of the various disciplines, which have historically had their own internecine squabbles (Swan & Griffin, 2013). It will certainly be shown to have flaws, and weary educators will not and should not see it as a cure

for all of social studies' problems. But in the C3 Framework, we have a useful vision that makes the field relevant for the larger society and the education establishment, that is distinctly a product of the social studies, that is large enough in scope and philosophy to accommodate the different ways to conceive of social studies, and at the same time that has obvious practical value for teachers. This does not mean that social studies educators of diverging philosophies will suddenly come to agree with each other. But it does mean that we can perhaps take something from our own teaching, and find some practicable solutions to social problems—that is, to start acting not as warring parties, but as active and responsible citizens who have the responsibility to live life together.

Conclusion

The teachers who participated in this study were not motivated by a desire to reconcile questions about the nature and purposes of social studies. Their immediate ambition was to create a real world learning opportunity for their students. They already had experience with a classroom mini-economy, and they wanted to expand the academic depth of their mini-economies to the point that these could be used as authentic assessments. The program that they signed up for sought to create that academic depth through inquiry-based instruction as envisioned in the C3 Framework's Inquiry Arc.

The participants in this program were experienced and dedicated teachers who were willing to take risks in order to create new opportunities for their students. But they were also shrewd judges of educational tools and were sharply conscious that their time was limited and therefore precious. The opportunities that they created for their students would be reached marginally, with each option carefully evaluated, rather than in a big shift. Therefore, they were open to using the C3 Framework as one tool to help them meet their

goal of real world instruction. But they were equally willing to set this tool down and choose a different one, depending on the situation and the perceived quality of the alternative tools at hand.

As a design-based study, this research is not finished. It is one part of a larger, ongoing investigation. This part of the study yielded findings that informed design principles that can in turn be used in the next iteration of curriculum development and classroom implementation. The C3 Framework showed promise in its capacity to guide elementary classroom mini-economies to a greater level of authenticity. But, the C3 Framework will need to do even more if it is to be the primary tool that savvy teachers use in creating a real world learning experience for their students.

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APPENDICES

Appendix A

This appendix shows lesson plans as originally submitted by participating teachers and the edited versions that were returned to the teachers by the researcher. Lessons are marked as “original” or “edited” in brackets.

[Original submission]

Mini Market Lesson on Specialization

Driving Question:

What is specialization? Why do companies specialize in certain products or services?

Economic Concepts:

Standard 3.8

The student will recognize that because people and regions cannot produce everything they want, they specialize in what they do best and trade for the rest.

Using Evidence and Sources:

Use this link to introduce: http://www.econedlink.org/lessons/index.php?lid=284&type=student

Read the Story "The Tortoise and the Hare!"

Ask pre-reading questions.

Have a discussion, read the story, and discuss the extension activity questions.

Communicating Conclusions and Taking Informed Action:

Now think about the products you have been making in class. How have you specialized in making a product? Why do you think you did specialize in one product?

How and why do businesses specialize in producing one product?

Make a classroom product using an assembly line. Compare the accuracy and speed of production with that of making the products individually.

On a black line world map, show/draw goods produced by different countries. Write a paragraph entitled, "Why Countries Specialize in the Goods and Services They Produce," or "Why Specialization and Trade Make Countries Interdependent."

Regroup and Discuss

[Edited lesson]

Business Portfolio Components: Specialization, design process, market knowledge, producers and consumers

What should I specialize in?

This part of the classroom business project draws on the fable of The Tortoise and the Hare and a classroom simulation to introduce the concept of *specialization*. Specialization is when people concentrate on producing one or just a few goods and services. This allows them to *produce* more of them at a higher level of quality than if they would have divided their time and talents among many different tasks. However, people need to *consume* many different things—what if they are only producing one thing because of specialization? What to do? The answer is: *trade* the thing they produce for the things they consume (people do this using money).

Posing questions for inquiry:

Compelling questions:

- When we make our mini-economy products, what should I specialize in?

Supporting questions:

- What is specialization?
- Why do people specialize in certain products or services?
- How can people produce just one (or a few) things, but consume many different things?
- Can whole countries—not just people and companies—specialize, too?
- What are some advantages and disadvantages to producing things using an assembly line?
- Are you using specialization in your classroom business? How?
- Are there any other ways that specialization can be useful in your classroom business? Why or why not?

Economic concepts:

History and Social Studies standards

Standard 3.8 The student will demonstrate an understanding of different cultures and their use of natural, human, and capital resources in the production of goods and services.

Standard 3.9

The student will recognize that because people and regions cannot produce everything they want, they specialize in what they do best and trade for the rest.

Using evidence and sources:

Use this link to introduce: http://www.econedlink.org/lessons/index.php?lid=284&type=student

Read the Story "The Tortoise and the Hare!"

Ask pre-reading questions from online lesson plan.

Have a discussion, read the story, and discuss the extension activity questions from the lesson plan.

The extension activity using the *Playful Economics* hamburger assembly line involves a classroom simulation. Simulations such as this one are a powerful and authentic data source for students to analyze.

Communicating conclusions and taking informed action:

Use "What Should I Specialize In?" from the Mini-Economy Business Plan website. Students explain their personal areas of specialization within their classroom business. They also map out their production processes focusing on natural, human, and capital resources. They then use what they have discovered to plan improvements to the production process of their own business.

Extension option 1: Use "Why Do Different Countries Produce Different Things?" from the Mini-Economy Business Plan website. In this case study, students create an example of what someone in ancient China might produce, focusing on the resources unique to China. They also explain how China differs from Rome in its areas of specialization.

Procedure:

1. Read the Story "the Tortoise and the Hare!" Ask pre-reading questions.

Have a discussion, read the story, and discuss the extension activity questions from the lesson plan.

2. Now think about the products you have been making in class. How have you specialized in making a product? Why do you think you did specialize in one product? *[Maybe students have unusual skills that help them make a scarce good or service (e.g., hair braiding or duct tape wallet-making). Other times people specialize in things for which they don't have particularly unusual abilities, but that others don't have time to do (e.g., cleaning up desks)].*

3. How and why do businesses specialize in producing one product? *[Businesses specialize for the same reasons that individuals do: They can produce more when they specialize and can often produce better-quality things, too.]*

<u>Extension Option 1:</u>

Ask: "Can whole countries—not just people and companies—specialize, too?"

Explain that ancient Greece had very little land to farm on, but was right next to the sea.

Ask: "What might a country like ancient Greece specialize in?" *[Fishing, and services such as ship-building and pottery-making. Sometimes countries that have poor natural resources can become rich by becoming skilled at making services.]*

Explain that ancient Mali was in the middle of a large continent, but had access to gold mines.

Ask: "Is gold a natural, human, or capital resource?"

Ask: "What might Mali have specialized in?" *[Gold. Also, their location in the middle of a continent meant that people needed to travel through their country and buy their other goods and services.]*

Explain that Rome had both good farmland and was located next to a river.

Ask what Rome may have specialized in. *[Both services such as fishing and ship-building, and farming, too. Sometimes countries are successful at concentrating on several things rather than just one thing.]*

Categorize the things these countries produced into natural, human, and capital resources: *[Fish, farmland, and gold are natural resources. The people who produce things and their talents are human resources. For instance, the ability to make ships requires special human resources. Ships and pottery are capital resources since they are goods that help produce other goods and services.]*

On a black line world map, show/draw goods produced by different countries. Write a paragraph entitled, "Why Countries Specialize in the Goods and Services They Produce," or "Why Specialization and Trade Make Countries Interdependent."

Extension Option 2: Make an assembly line to demonstrate specialization. Half the class will use play dough to design a hamburger in an assembly line fashion, while the other half of the class will create their own individual hamburger. (You can also do this activity for almost any other product, for instance, paper hats or construction-paper flowers.) Each group will work for seven minutes and count the number of products they created to compare assembly line production to individual production. See Lesson 8 from *Playful Economics.*

Before the simulation, ask: "What can we predict about the number and quality of the products the two groups create?"

After the simulation, ask: "Was our prediction about the assembly line correct?"

"Which group made more items?"

"How does the quality of the items compare?"

"Are there any other differences between the items the groups made?" *[Oftentimes the group with the individual craftspeople has more diverse products]*

"Can you use specialization to help you make your product for Market Day? Why or why not?" *[Sometimes specialization doesn't work perfectly for every good or service. That's OK—let students know that specialization is one option they can use to improve their classroom businesses. Also, specialization doesn't always involve an assembly line; some tasks require a diversity of talents—like being a teacher!]*

"If you had to make any change to this assembly line experiment, what would it be? Why?

[Original submission. Since student assignments were not edited, they are only included in the original version.]

Saving for Wants and Needs: The Hard-Times Jar

1. Developing questions and planning inquiry
    - Compelling question: "What is saving?"

   Developing supporting questions:
   - Students will read *The Hard Times Jar* and determine how money is saved and what it is saved for. (Activity #1)
   - Students decide what they would use their savings for if they collected their own money in a Hard Times Jar. (Hard Times Jar Activity #2)
2. Using disciplinary concepts and tools (economic thinking)
   - Compare the life of migrant workers in the book and primary source pictures of migrant workers, (Activity#3)
   - What is the opportunity cost of making one choice over the other? (When we have to make a choice- Activity#4)
   - Is it a natural, capital, or human resource? (Seek and Find using the pictures in the book - Activity #5)
   - How safe is your money? Where do we store money? (Activity #6)
3. Evaluation sources and using evidence
   - How do we save our money?
   - What is a safe place to keep our savings?
   - Compare the life of migrant workers and how they save.
   - Conduct research on how to use class savings. Analyze data to make decisions.
4. Communicating conclusions and taking informed action
   - Students conduct a survey to determine the best way to use their savings.
   - Students create a presentation to inform others about their donation/buying suggestion.

Vocabulary:
Natural Resources
Capital Resources
Human Resources
Scarcity
Economic Choice
Savings

State economics standards:

3.9 The student will identify examples of making an economic choice and will explain the idea of opportunity cost (what is given up when making a choice).

2.7 The student will describe natural resources (water, soil, wood, and coal), human resources (people at work), and capital resources (machines, tools, and buildings).

2.9 The student will explain that scarcity (limited resources) requires people to make choices about producing and consuming goods and services.

1.8 The student will explain that people make choices because they cannot have everything they want.

1.9 The student will recognize that people save money for the future to purchase goods and services

Activity 1:
Rubric Line Item: Savings

Discussion: In *The Hard Times Jar,* Emma and her family are migrant workers and money is tight. Emma dreams of owning store-bought books, but for now she must write her own stories. Emma has a plan to save all her money that she earns from picking apples on the farm in Mama's Hard Times Jar. With the extra money, Emma will be able to convince Mama about her for extra wants, like store- bought books. Emma's plan is changed when she has the opportunity to attend school for the first time. She must now make an economic decision. If she attends school during the day, she will not be able to save money in the Hard Times Jar.

Students will listen to the book *The Hard Times Jar* and participate in a discussion about what life would be like as a migrant worker and making decisions about saving and spending.

Materials: Book *The Hard Times Jar*, by Ethel Footman Smothers (ISBN# 978-0-374-32852-8)

Procedure:

1. Read students the book *The Hard Times Jar*. Ask students to think about what life would be like as a migrant worker.
2. What kind of a house did Emma and her family live in?
3. Would this house be like the one that you live in today?
4. What kind of chores was Emma responsible for?
5. How did Emma's chores compare with the chores that you have to do?
6. How did Emma earn money?
7. What did Emma do with the money that she earned?
8. What was Emma's family saving money for?
9. What do you think Emma did with the 6 shiny quarters that her mother gave her?
10. Would you like to live the way that Emma lived? What would you miss the most? How would your life be different? What economic decisions would you have to make?

You have just filled your Hard Times Jar with coins. It has taken you over a year of hard work to fill the jar to the top. What would you now do with your money?

_____

_____

_____

_____

_____

_____

_____

_____

Activity 3:

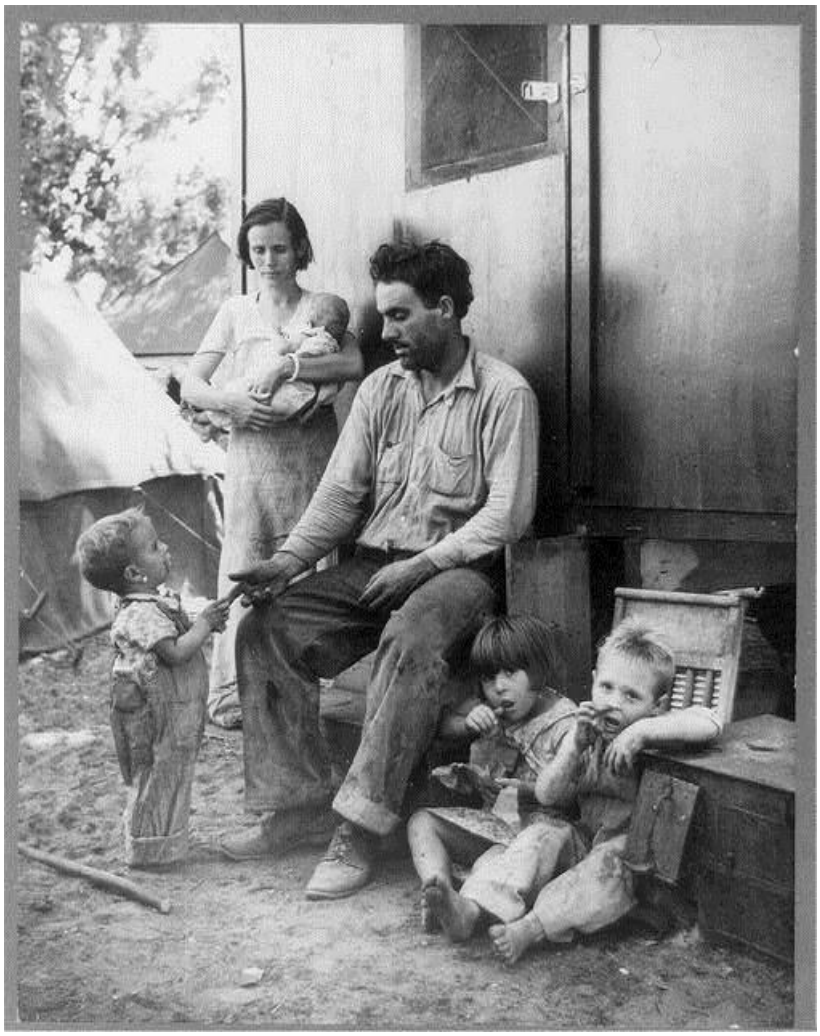
Texas tenant farmer in Marysville, California, migrant camp during the peach season

- **Digital ID:** (b&w film copy neg. of pint) cph 3a00973 http://hdl.loc.gov/loc.pnp/cph.3a00973
- **Reproduction Number:** LC-USZ6-1026

Repository: Library of Congress Prints and Photographs Division Washington, DC 20540 USA http://hdl.loc.gov/loc.pnp/pp.print

These photographs appear in the Library of Congress and were probably taken by the U.S. Government to see what work was like for migrant workers during the Great Depression.

Its title is "Texas tenant farmer in Marysville, California, migrant camp during the peach season."
"1927 made seven thousand dollars in cotton.
1928 broke even.
1929 went in the hole.
1930 still deeper.
1931 lost everything.
1932 hit the road.
1935, fruit tramp in California."



Describe details of what you see in the picture.

If they had a Hard Times Jar, what might they use their savings for?

What do you think the father is saying to his son?

Is this picture helpful for knowing this family's situation? What other information would be helpful for answering these questions?

What clues helped you make your decisions?

Activity 4: When We Have to Make a Choice

Overview:

Students will evaluate choices made by Emma by considering the pros and cons of her decisions. Use the Decision Scale to help you make your decisions.

Rubric Line Item: Economic Choice/Opportunity Cost

Materials:

Emma's Decision Cards for each group of students

Decision Scale for each group of students

Procedure:

1. Explain to the students that when we make decisions, we consider the good and bad points of a choice. As good decision makers, we make decisions when there are more good points than bad.
2. Emma had to make choices in her young life that were often very difficult. Put yourself in Emma's position and consider the choices that she had to make.
3. Give each group of students a set of decision cards and have them identify the economic problem in the scenario. Record the problem in the box on the top of the scale.
4. Have the students write good and bad choices that they have to make about the problem.
5. In the end, have the students use the points to make an economic decision.
6. Students may share their decisions and good points with the rest of their classmates.

Decision 1: Emma has a choice. She can watch her little brother and sister while her mother works in the field or she can read the stories that she has written.	Decision 2: Emma has a choice. She can take the store-bought books from the school room or she can use the money from the Hard Times Jar to buy a book of her own.	Decision 3: Emma has a choice. She can use her extra time to do chores for extra money for the jar or she can use the extra time to practice her reading.
Decision 4: Emma has a decision. She can go to the school and learn with the other children or she can stay with her family and earn money for the Hard Times Jar.	Decision 5: Emma has a choice. She can work in the fields picking apples and earn money for her family or she can hide in the fields and write in her storybook.	Decision 6: Emma has a choice. She was given 6 shiny quarters by her mother. She can spend the money on a store-bought book or she can put the money back in

		the jar for family needs.

Activity 7: Action Plan - What do we do with our saving?

Discussion: Emma's mother kept her savings jar for things that were needed during hard times.

If the class were to save pennies for 1 year, what could we do with them?

How much money do you think that we could save?

How could we make that decision?

Where would you store our money?

Have students brainstorm ideas for things that they could buy for the classroom, support a local or national fund, donate money to a special need.

Narrow the ideas down to several ideas. Have the students conduct a survey to determine the final two. Have the students divide into teams to create a plan to present to the other team. The plan must contain how the item or donation will benefit the class or organization. The presentation must be limited to 5 minutes.

After the presentation, students will make a decision using the decision scale to justify their reasons for the selection.

Decision Scale

The Economic Problem

Place your choice card here

Choice 1

Choice 2

And the decision is…

[Edited lesson. Student activity sheets were not edited, so they are only included with the original submission above.]

Business portfolio components: Saving, resources, opportunity cost

Saving for the Hard Times

This lesson introduces the concept of *saving* with *The Hard Times Jar,* by Ethel Footman Smothers, in which a family of migrant workers makes tough decisions about when to spend and when to save. The lesson uses the book as a "hook," or a springboard to a variety of activities that use economic thinking in which students analyze the decisions that migrant works face, and ultimately analyze their own personal decisions regarding delayed gratification. In the culminating activity, students use surveys and classroom deliberation to decide what should go into their class's own Hard Times Jar.

Posing questions for inquiry

Compelling question:

- "When should you save—and when should you spend?"

Developing supporting questions:

- "What is saving?"
- "Why might someone want to save their money instead of spending it on things they want?
- "Why can saving money help you buy bigger things?"
- "What would you do if you ran into Hard Times?"
- "How can you decide how much to save and how much to spend?"

Economic concepts

- 3.10. The student will identify examples of making an economic choice and will explain the idea of opportunity cost (what is given up when making a choice).
- 2.8. The student will describe natural resources (water, soil, wood, and coal), human resources (people at work), and capital resources (machines, tools, and buildings).
- 2.10. The student will explain that scarcity (limited resources) requires people to make choices about producing and consuming goods and services.

- 1.8. The student will explain that people make choices because they cannot have everything they want.
- 1.9. The student will recognize that people save money for the future to purchase goods and services.

Using evidence and sources

- Keep a log of personal saving to analyze your personal money habits. (Activity #6)
- Investigate the life of migrant workers and how they save. (Activity #5)
- Conduct research on class opinion and decide how to use class savings. (Activity #6)

Communicating conclusions and taking informed action

- Students conduct a survey to determine the best way to use their savings. (Activity #7)
- Students create a presentation to inform others about their donation/buying suggestions. (Activity #7)
- Students do the "Save or Spend" activity from the Mini-Economy Business Plan website, in which they keep track of when they saved and when they spent. They also weigh the opportunity costs of their choices.
- Students use a democratic process to decide how to best use class money.

Vocabulary:
Natural Resources
Capital Resources
Human Resources
Scarcity
Economic Choice
Savings
Producing
Consuming

State Standards for History and Social Studies:

3.10 The student will identify examples of making an economic choice and will explain the idea of opportunity cost (what is given up when making a choice).

2.8 The student will describe natural resources (water, soil, wood, and coal), human resources (people at work), and capital resources (machines, tools, and buildings).

2.10 The student will explain that scarcity (limited resources) requires people to make choices about producing and consuming goods and services.

1.8 The student will explain that people make choices because they cannot have everything they want.

1.9 The student will recognize that people save money for the future to purchase goods and services.

Activity 1:
Rubric Line Item: Savings

Discussion: In *The Hard Times Jar,* Emma and her family are migrant workers and money is tight. Emma dreams of owning store-bought books, but for now she must write her own stories. Emma has a plan to save all of the money that she earns from picking apples on the farm in Mama's Hard Times Jar. With the extra money, Emma will be able to convince Mama to make purchases for extra wants, such as store-bought books. Emma's plan is changed when she has the opportunity to attend school for the first time. She must now make an economic decision. If she attends school during the day, she will not be able to save money in the Hard Times Jar.

Students will listen to the book The Hard Times Jar and participate in a discussion about what life would be like as a migrant worker and making decisions about saving and spending.

Materials: Book *The Hard Times Jar*, by Ethel Footman Smothers (ISBN# 978-0-374-32852-8)

Activities for use with *the Hard Times Jar:*

Procedure:

11. Read students the book *The Hard Times Jar*. Ask students to think about what life would be like as a migrant worker.
12. What kind of a house did Emma and her family live in?
13. Is her house like one that you might live in today?
14. What kind of chores was Emma responsible for?
15. How did Emma's chores compare with the chores that you have to do?
16. How did Emma earn money?
17. What did Emma do with the money that she earned?
18. What was Emma's family saving money for?
19. What do you think Emma did with the 6 shiny quarters that her mother gave her?
20. Would you like to live the way that Emma lived? What would you miss the most? How would your life be different? What economic decisions would you have to make?

Appendix B.

This appendix consists of one of the portfolio items that was created by the researcher according to the requests of participating teachers. This is the item that was used in the lesson entitled “What should I specialize in?” which was observed in classrooms.

Economics standards: K.7, 1.8, 2.8, 2.9, 3.8, 3.9 Name: _____

What Should I Specialize In?

What is *specialization*?

In our business, my job is:

I specialize in this because:

The jobs my business partners have are:

Does specialization help in producing your product? Why or why not? (Your answer must show that you know what specialization is.)

Draw a diagram of your production process. Include the *natural resources*, *human resources* (including each group partner), and *capital resources* that you use, as well as the finished product. Be sure to include everything!

Ask a grown-up what he or she specializes in at work!

Example of a production diagram: