

Developing an Understanding of Secondary Social Studies Teacher Candidates' Economic Pedagogical Content Knowledge

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Abstract

Social studies teacher candidates will be expected to teach or integrate economics content in their classrooms, yet there is a dearth of research on social studies teacher candidates' preparation to teach economics. This convergent mixed methods study developed an understanding of secondary social studies teacher candidates' economic pedagogical content knowledge. Data were analyzed from teacher candidates' (n=22) participation in a card sort activity and think-aloud, semi-structured interview, and/or the Test of Economic Literacy at a mid-sized Midwestern university. The findings indicated that secondary social studies teacher candidates have nascent economic pedagogical content knowledge and need support to foster its development. Findings also revealed that many candidates have anxiety when engaging in economics that stems from an underlying math anxiety. Key implications for social studies teacher preparation are detailed, including explicitly working with candidates to develop their economic literacy and economic reasoning, and better supporting candidates during their required economics coursework.

Keywords: Economic pedagogical content knowledge, economics education, social studies, teacher preparation.

Introduction

The purpose of economics education is to prepare students to be participatory members of a democracy (Bach et al., 1961; Bernake, 2011; Crowley & Swan, 2018; Joshi & Marri, 2006; Miller & VanFossen, 2008; National Council on Economic Education, 1997; Rivlin, 1999; Walstad, 1998; VanFossen, 2005). To best carry out the mission of economics education, teachers must be fully prepared to help their students become economic citizens. When teachers are better prepared to teach economics, their students have improved learning outcomes (Allgood & Walstad, 1999; Bosshardt & Watts, 1990; Clark et al., 2009; Miller & VanFossen, 2010; Watts, 2005). However, during their training, many social studies teachers do not have the opportunity to deepen their knowledge of economics. Nearly one in five high school social studies teachers never completed an economics course, and, of those that did, they completed an average of only 1.5 economics

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courses (Bosshardt & Walstad, 2019). Even when teachers complete economics coursework, they may not be retaining knowledge from the course (Joshi & Marri, 2006).

This paucity of training for teachers has had a direct impact on student outcomes. The most recent National Assessment of Educational Progress (NAEP) economics assessment found that only 43% of students performed at or above “proficient” levels of economic comprehension (USDE, 2013). However, this under preparation of teachers is not the only contributing factor to students’ performance levels. Around the time of the NAEP assessment, in 2011, only 22 states required a high school economics course for graduation (CEE, 2011). In 2022, this number dropped to 21 states requiring an economics course for graduation, with four additional states requiring economics be integrated into another required course for graduation (CEE, 2022).

To be sure, regardless of whether teachers are in a state that requires economics to be taught, it is crucial for social studies teachers to be prepared to adequately teach economics in their classrooms. This preparation should begin in their teacher education programs. Little research has examined how prepared social studies teacher candidates are to teach economics (Ayers, 2016; Joshi, 2003; Joshi & Marri, 2006; Shanks, 2018; Weidenaar, 1980). In particular, not much is known about their economic pedagogical content knowledge (Ayers, 2018) which includes a teacher candidate’s control of the content as well as their ability to effectively teach the content. The purpose of this study was to develop an understanding of secondary social studies teacher candidates’ economic pedagogical content knowledge and to ultimately learn how to better support them while they learn to teach economics. Specifically, this study answers the following research questions:

- What is teacher candidates’ economic content knowledge and how do they describe what they know?
- What are the ways in which teacher candidates organize economics curriculum and identify what should be taught?
- To what extent were teacher candidates able to assess their own capacity for teaching economics?

Literature Review

This section will begin with an explanation of what standards candidates will be responsible for teaching in the classroom and how the creation of the standards was influenced. Next is a discussion of the demonstrated, persistent deficiency in economics coursework in social studies

teacher education programs. After this is an overview of a tool, The Test of Economic Literacy (Walstad et al., 2013a), that can help capture candidates' economic content knowledge. With this knowledge, in addition to other components of economic pedagogical content knowledge, teacher educators can assess candidates' baseline levels of readiness to teach economics. This section concludes with a summary of the previous research exploring social studies teacher and teacher candidates' pedagogical content knowledge, including economic pedagogical content knowledge.

Economics and Financial Literacy Standards

The Council for Economic Education's (CEE) (2010) *Voluntary National Content Standards in Economics (Voluntary Standards)* are "a resource for states and local school districts, for individual schools, and for teachers, who are responsible for specifying and integrating the curriculum into their schools" (p. vii). The 20 standards cover content regarding the fundamentals of economics, microeconomics, and macroeconomics. The standards heavily influence curricular standards in many, if not most, states as the standards are seen as the official curriculum and official knowledge (Apple, 2000; Quinn, 2010; Sober, 2017) of economics education. Shortly after the development of the economics standards, the CEE (2013) released the *National Standards for Financial Literacy*. The six standards include content on earning, spending, saving, investing, and insuring (CEE, 2013). The national financial literacy standards similarly guide state standards for financial literacy.

Ohio's economics standards are unsurprisingly deeply influenced by the *Voluntary Standards* and the *National Standards for Financial Literacy* (ODE, 2019). These standards include economics and financial literacy standards, with a preference for financial literacy. There are 15 financial literacy standards, eight standards on general economics, and two standards related to economic decision-making. However, economics is not a course required for high school graduation nor is there a required standardized test covering economics content. Nevertheless, candidates graduating from teacher preparation programs who teach in Ohio are required to implement the economics standards integrated in secondary social studies standards.

Economic Content Knowledge in Social Studies Teachers

Studies have consistently shown social studies teachers are not completing an adequate number of economics courses. It has been recommended that social studies teachers need at least four to six

economics courses for the best student outcomes in economics (Allgood & Walstad, 1999; Lynch, 1990). Yet, Bosshardt and Walstad (2019) reported that nearly 20% of high school social studies teachers did not complete an undergraduate economics course. Furthermore, high school social studies teachers completed only one and a half undergraduate economics courses on average (Bosshardt & Walstad, 2019). This deficiency of economics content has persisted for over 25 years, with Lynch (1994) reporting that social studies teachers were taking at most two economics courses. This leads to students in the classroom not sufficiently learning economics because social studies teachers likely do not have adequate economics content knowledge (Schug & Walstad, 1991).

Assessing Economic Knowledge

The Test of Economic Literacy (TEL) (Walstad et al., 2013a) is a way in which economic content knowledge can be measured. The TEL is the “nationally normed and standardized test for measuring the achievement of high school students in economics” (Walstad et al., 2013b, p. 298) and is aligned with the *Voluntary Standards* (Walstad et al., 2013a). The test is typically used in high school classrooms, but it has been used with in-service teachers (Anthony et al., 2015; Grimes et al., 2010) and Walstad et al. (2013b) recommended the TEL be used with pre-service teachers, or as they are referred to throughout this paper, teacher candidates.

Social Studies Pedagogical Content Knowledge Research

Much of the research on preparing social studies teachers focuses on the development of pedagogical content knowledge across social studies’ disciplines with the goal of improving teacher candidates’ pedagogical self-efficacy (Tschannen-Moran et al., 1998). For example, pre-service teachers are prepared to develop students’ historical thinking skills (Monte-Sano, 2011) and their own historical thinking skills (Jay, 2023; Salinas et al., 2011). Kopish & Lane (2019) studied the pedagogical content knowledge of teacher candidates in history and economics. This study found candidates struggle with identifying connections between historical concepts, as well as with economic concepts. Other research has focused on developing candidates’ civic pedagogical content knowledge through service learning (Waterson & Haas, 2010), and increasing their knowledge of current events and their general political awareness (Journell, 2013). Finally,

Ayas (2015) assessed teacher candidates' geographical knowledge and use of technology to teach geography.

There is scarce current research on secondary social studies teacher preparation in economics education. Miller and VanFossen (2010) cited no research from after 2000 in their chapter on teaching and learning secondary economics. In 2003, Joshi discussed intentionally integrating economics into social studies methods courses. A few years later, Joshi and Marri (2006) noted the dearth of studies around teacher candidates' experiences in economics education. Nearly two decades later, the general absence of interest in economics as a discipline of the social studies in secondary education is still prevalent. Swan and Hofer (2011) assessed the integration of podcasting to develop economic literacy employing technological pedagogical content knowledge. Choi (2013) explored candidates' beliefs about economics. They found that candidates believe that making content relevant for students is important, that candidates must experience economics in a non-math focused manner, and that candidates' attitudes towards economics can help their students' attitudes towards economics. Ayers (2016) created an economics methods course and measured the changing attitudes of undergraduate and graduate students towards teaching economics across a semester. In this course, content knowledge was developed alongside pedagogical skills (Ayers, 2016). Finally, Shanks (2018; 2019) has focused on incorporating pluralist viewpoints in economics, as well as using storytelling to teach economics in graduate level social studies methods courses.

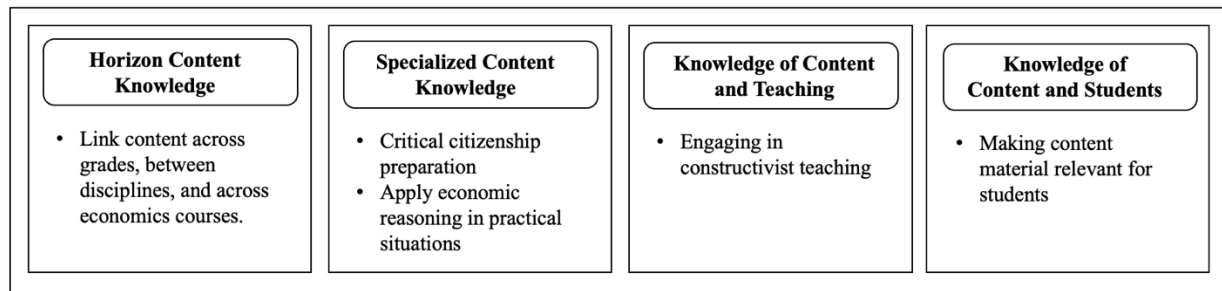
Theoretical Framework

This study uses Ayers's (2018) economic pedagogical content knowledge framework for secondary economics as a guide (See Figure 1 for an abbreviated version of the framework). The framework includes horizon content knowledge, specialized content knowledge, knowledge of content and teaching, and knowledge of content and students (Ayers, 2018; Ball, 1993; Ball et al., 2008). Horizon content knowledge is the ability of teacher candidates to link content across grades, between disciplines, and across economics courses. Specialized content knowledge consists of critical citizenship preparation and the ability to apply economic reasoning in practical situations. Teacher candidates who engage in constructivist teaching in economics have the necessary knowledge of content and teaching. Finally, the ability to make materials relevant for students is

key to mastering the knowledge of content and its relationship to students (Ayers, 2018). The economic pedagogical content knowledge framework provides an outline to assess secondary social studies teacher candidates understanding of the teaching and learning of economics.

Figure 1

Abbreviated Economic Pedagogical Content Knowledge Framework

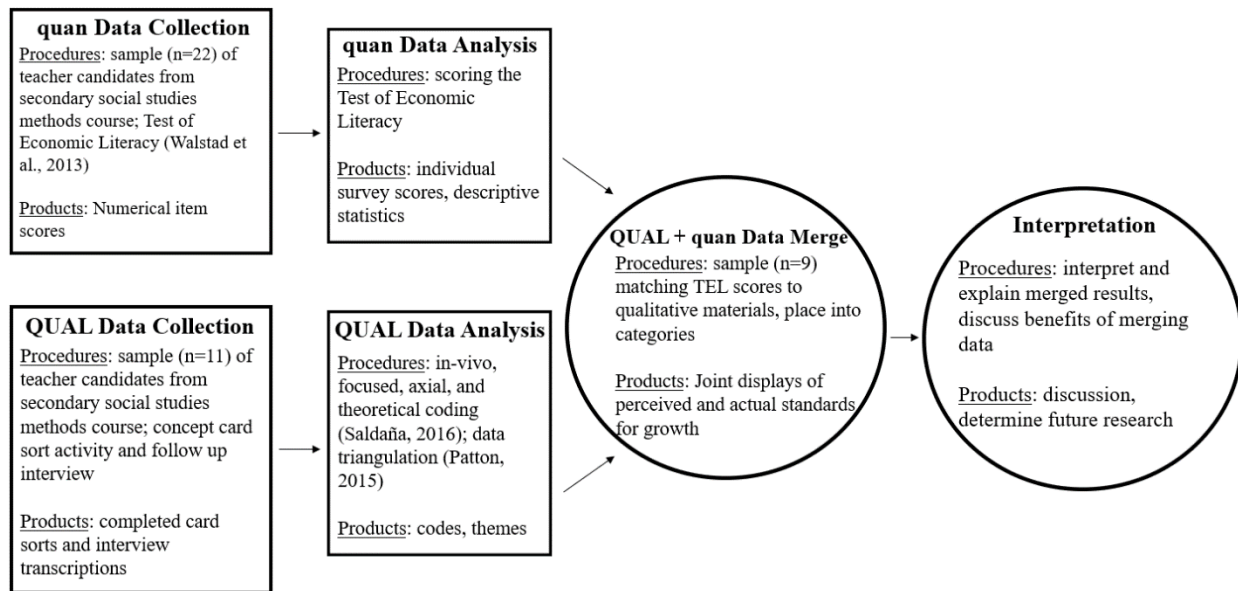


Method

Research Design

The purpose of this study was to develop an understanding of secondary social studies teacher candidates' economic pedagogical content knowledge. This study used a convergent mixed methods design (See diagram in Figure 2). Convergent mixed methods include simultaneous rigorous qualitative and quantitative data collection and analysis, followed by an integration of the two databases for further analysis (Creswell & Plano Clark, 2018). Data was collected through the Test of Economic Literacy (TEL), card sort activities, semi-structured interviews, and field notes. The following questions guided the study:

- What is teacher candidates' economic content knowledge and how do they describe what they know?
- What are the ways in which teacher candidates organize economics curriculum and identify what should be taught?
- To what extent were teacher candidates able to assess their own capacity for teaching economics?

Figure 2*Mixed Methods Diagram for The Study***Study Group/Participants**

The study's participants were recruited from a secondary social studies methods course co-taught by the authors at a midsized Midwestern university. For undergraduate and graduate students, this methods course is typically taken the semester prior to their full-time professional internship. Candidates were invited to complete the TEL, participate in a card sort activity, and participate in a follow-up semi-structured interview immediately after the card sort activity, but candidates did not have to participate in all activities to be included in this study. Because of this, there were different sample sizes for each portion (i.e., quantitative, qualitative, and mixed methods) of the study. Participation in the study was voluntary and unrelated to their final grade in the methods course. Consent was obtained prior to participation. The content courses for the secondary social studies teacher preparation program consist of nine history courses, four political science courses, two economics courses, one geography course, and one sociology course. The two economics courses are microeconomics and macroeconomics. In total, 24 teacher candidates participated in the study. All candidates were White and in their 20s. Further demographic breakdowns are in Tables 1 and 2.

Table 1*Participant Demographics Across Study Portions*

Portion of Study	Number of Participants	Gender Identification		Program of Study	
		Male	Female	Undergraduate	Graduate
Quantitative	22	18	4	20	2
Qualitative	11	10	1	10	1
Mixed Methods	9	8	1	8	1

Table 2*Mixed Methods Participants' Demographics*

Mixed Methods Participant	Gender Identification	Race	Program of Study
Chris	Male	White	Graduate
Henry	Male	White	Undergraduate
Rachel	Female	White	Undergraduate
Matt	Male	White	Undergraduate
Evan	Male	White	Undergraduate
Daniel	Male	White	Undergraduate
Tyler	Male	White	Undergraduate
John	Male	White	Undergraduate
Alex	Male	White	Undergraduate

Qualitative Data Collection and Analysis

Teacher candidates (n=11) completed a card sort activity in which they were asked to organize 22 concepts from state and national economics standards. The candidate organized the concepts as the concepts are connected in their mind. While sorting the cards, candidates were instructed to think aloud. After sorting the cards, candidates identified the three concepts they believed their future students would find the most difficult to understand. Immediately following the card sort activity, teacher candidates participated in a semi-structured interview. A list of concepts for the card sort and questions for the subsequent semi-structured interview can be found in Appendices A and B, respectively.

The authors transcribed think-alouds from the card sort activities and interviews. Data from the card sort activities including the think-alouds, interviews, and field notes were triangulated to validate findings (Patton, 2014). Data were coded using in vivo, focused, and axial coding (Saldaña, 2016) from which themes were further developed. Together, the authors worked to code a portion of the transcripts from which further coding followed. Upon coding completion, any discrepancies within the coding were reviewed and edited.

Quantitative Data Collection and Analysis

The Test of Economic Literacy (TEL) (Walstad et al., 2013a) was administered to teacher candidates (n=22). Form A of the TEL was administered either online or in person as was convenient for the individual. The reliability for Form A ($\alpha=0.91$) of the TEL is high (Walstad et al., 2013b). The TEL consists of 45 multiple choice questions covering 20 basic economic concepts. Completed tests were scored and descriptive statistics were generated and analyzed. In preparation for the mixed methods analysis, the quantitative test data was turned into qualitative data. Each concept associated with the TEL questions was aligned to a national economic standard for contextualization of findings and to analyze the quantitative data further against the qualitative data.

Mixed Methods Integration and Analysis

Overall, nine teacher candidates completed both the qualitative and quantitative portions of the study. The quantitative data from the TEL was transformed into qualitative data for the mixed methods analysis. Since each question was associated with a national content standard, candidate performance by standard was calculated. The qualitative and qualitized quantitative datasets were merged and analyzed jointly, juxtaposing the qualitative and quantitative findings in a single table, with a focus on reviewing areas in which candidates needed to improve their economic content knowledge. Merged qualitative and quantitative data provide a more robust image of teacher candidate economic pedagogical content knowledge. The qualitative portion of the study was prioritized. Representative examples of the data analysis are presented in the findings.

The sample (n=9) was cohesive which allowed for data saturation despite the small sample size (Morse, 1995). Data analysis revealed consistent findings across the candidates that resulted in a comprehensive analysis. There are several limitations for this study. Participants opted into the study which could bias findings; however, the consistent findings and saturation indicate the bias may not be an issue. Convenience sampling was used to identify the teacher candidates who would participate in this study. The sample in this study was small, all White, and from a single university. Another limitation is that the TEL was partially administered online. While this was done for convenience for teacher candidates with schedules that did not allow for in-person administration, it is possible that teacher candidates could have gained access to the answers which are readily

available online. Finally, this study is not generalizable, but may be transferrable to other groups of social studies teacher candidates.

Findings

The findings include an exploration of candidates' economic content knowledge, including a comparison of the candidates' content knowledge to high school students, as well as a review of candidates' performance on three main TEL topic areas: fundamentals of economics, microeconomics, and macroeconomics. This section also details the reported anxiety around economics for many teacher candidates. Next, examples are provided to illustrate how teacher candidates understand economic concepts through a conceptual organization of the economics curriculum they will be teaching. The next portion of this section expands upon candidates' self-assessment of their capacity to teach economics. This section concludes with an examination of candidates perceived versus actual preparation to teach economic concepts through an apposition of their performance on the TEL and their self-reported strengths across concepts.

Economic Content Knowledge

Assessment of Economic Content Knowledge

Teacher candidates (n=22) scored 30.09 out of 45 (67%) on the TEL on average with a standard deviation of 8.25. This is higher than an average high school student (23.32 out of 45) scored from the normed sample for the TEL when the most recent edition was standardized; however, it is less than the average for students in advanced courses (34.75 out of 45), specifically those in honors and college level courses (Walstad et al., 2013b).

The TEL includes three main groups of questions grouped by topic: fundamentals of economics, microeconomics, and macroeconomics. Teacher candidates performed best on fundamental topics in economics (e.g., questions on scarcity, economic decision-making, and trade) answering fundamental economics questions correctly 70.1% of the time. Teacher candidates answered 67.9% of macroeconomic-related questions correctly and 63.4% of microeconomic-related questions correctly. The performance by key concept on the TEL varied widely. Teacher candidates performed best on questions about economic incentives (86.4% correct), economic systems (79.5% correct), and specialization and comparative advantage (77.3% correct). Teacher candidates struggled most with the concepts of economic institutions (43.2% correct), economic

role of government (47.7% correct), and markets and prices (54.5% correct). Teacher candidate performance by economic category and key concept is in Table 3.

Table 3

Teacher Candidate Performance on TEL by Economic Category and Key Concept

Key Concepts	Test Questions	Overall Performance
<i>Fundamentals of Economics</i>		70.1%
Scarcity, choice, productive resources	1, 2, 3	71.2%
Decision-making, marginal analysis	4	63.6%
Economic systems and allocation mechanisms	5, 6	79.5%
Economic incentives – prices, wages, profits, etc.	7, 8	86.4%
Voluntary exchange and trade	9, 10	72.7%
Economic institutions	21, 22	43.2%
<i>Microeconomics</i>		63.4%
Markets and prices	13, 14	54.5%
Supply and demand	15, 16, 17	71.2%
Competition	18, 19, 20	68.2%
Labor markets and income	28, 29	70.5%
Entrepreneurship	30	68.2%
Physical and human capital investment	31, 32	59.1%
Economic role of government	33, 34	47.7%
Government failure, special interest groups	35	63.6%
<i>Macroeconomics</i>		67.9%
Specialization and comparative advantage	11, 12	77.3%
Money and inflation	23, 24, 25	62.1%
Interest rates	26, 27	72.7%
Output, income, employment, and the price level	36, 37, 38, 39, 40	66.4%
Unemployment and inflation	41, 42	70.5%
Fiscal and monetary policy	43, 44, 45	65.2%

Economics Anxiety

Most teacher candidates (n=9) expressed economics anxiety during the card sort and in the follow up interview. The common root causes of economics anxiety shared by candidates were math anxiety (n=7) and negative experiences in the college economics courses leading to general anxiety with economics (n=6). Teacher candidates often conveyed their disdain for math. Even the only candidate with the economics classroom teaching experience said she was “scared of the math” going on to claim that “I’m not a math person.” Chris associated economics with math and described teaching a stand-alone economics course, “Economics is a lot of math, and I can’t do math very well. If I struggle with math, then I would struggle to teach my students. I think I could do it... but secretly I would be very scared as I am up there teaching it.” In addition to the math anxiety, teacher candidates (n=5) also stated being uncomfortable with data analysis. Henry

described data as “scary” and data analysis as “something economists do.” The association with economics and math (i.e., economics as a hard science) and failing to understand a relationship between data analysis and social studies creates a barrier for candidates’ confidence in teaching economics and integrating data analysis into their teaching.

Teacher candidates (n=6) discussed the negative experiences they had in the undergraduate economics classrooms. Their microeconomic and macroeconomic courses were “a lot of lecturing” and “not a lot of doing.” Teacher candidates did not feel like they were given the opportunity to practically use economics, instead they were passively lectured at about economics without many real-world examples to contextualize the information. The teacher candidates’ recent experiences in undergraduate economics courses led to their anxiety with economics generally. Teacher candidates noted they “never feel comfortable with anything in economics”, they “just want to push economics away”, and that they “don’t realize economics is important because we just think about how much we hate it.” When asked how teacher candidates felt about economics prior to taking their undergraduate economics, multiple candidates said they had “no feelings towards economics.” This indicates an opportunity to work with candidates before or while they complete their economics coursework to combat negative economics classroom experiences.

Candidates and Economics Curriculum

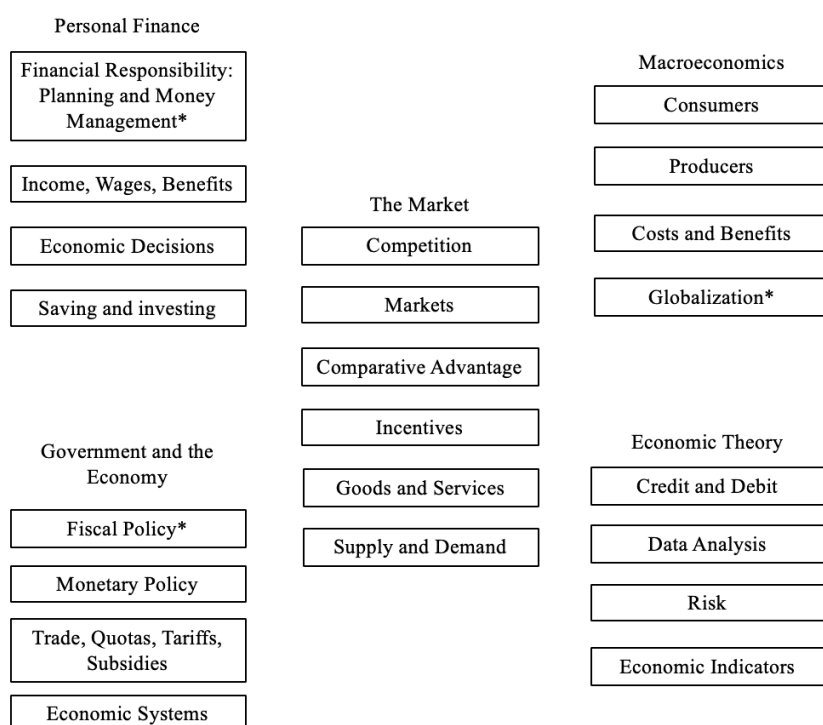
Conceptual Organization of Economics Curriculum

Nearly all teacher candidates (n=10) participating in the qualitative phase began sorting the economic concepts by sorting concepts into categories. The economic concepts are directly derived from the state’s economic standards the candidates will be responsible for in the classroom, assuming they take a teaching position in the same state in which they completed their undergraduate education. Their categorizing frequently contrasted microeconomic concepts against macroeconomic concepts, but teacher candidates infrequently consistently named the topics as microeconomic or macroeconomic concepts. Two examples of card sort activities based on how the teacher candidate would sort the concepts based on their current knowledge of economics are in Figures 3 and 4. After sorting the concepts, candidates were asked to select the three concepts they think are most important in economics. The concepts with an asterisk are the concepts the teacher candidates identified.

The card sort found in figure three is representative of the majority (n=10) of card sort tasks performed by teacher candidates. In figure three, teacher candidate Henry grouped together concepts based on categorizing as previously mentioned. During their think-aloud, Henry read off each concept and divided them into categories, often sidelining concepts to return to later due to not understanding the concept. For example, when deciding where to sort the economic indicators concept card Henry said it was “what indicates an economy. I don’t know what that is actually. I’ll come back to that.” This was common among many teacher candidates. Teacher candidates frequently struggled to articulate what concepts’ basic definitions were and how the concept fit into economics, often relying on broad buckets of economic concepts (e.g., “The Market”) to sort the economic concepts.

Figure 3

Organization by Category Card Sort

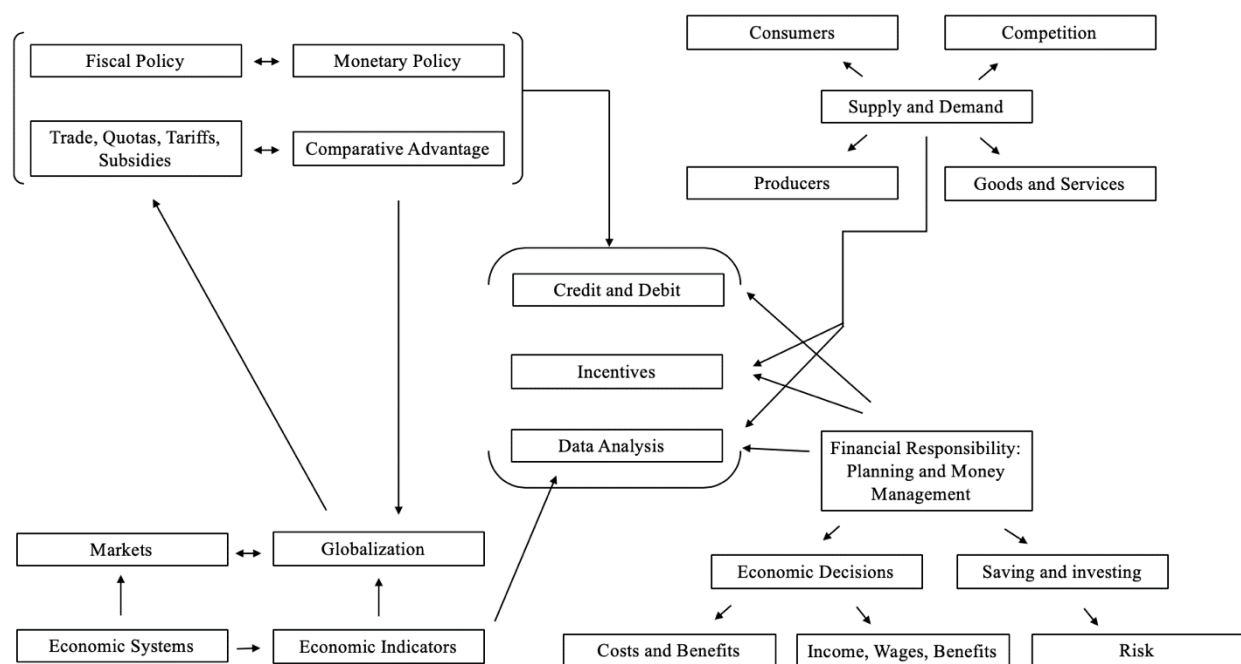


Rachel’s card sort in figure four was an above average example where a teacher candidate was able to make and articulate connections among the concepts. It is important to note that Rachel was the only teacher candidate placed in and actively teaching in an economics classroom. Despite being exemplary for the group, Rachel was able to share basic level understandings of economics but was unable to express connections beyond this basic level understanding. For example, when

explaining supply and demand, Rachel was “thinking of what consumers want and competition and how that drives the supply and demand [of a market], just what goods and services you want to sell [in the market], and who is producing the goods might make it cheaper or more expensive.” Similar to Kopish & Lane (2019), teacher candidates, even the exemplar, sorted concepts into categories with little to no ability to describe the interactions between categories, and also failed to explain why they grouped different concepts in the different categories.

Figure 4

Organization by Economic Thinking Card Sort



During the card sorts, the teacher candidates who reported feeling more confident with economics were most willing to discuss their economic content knowledge. These teacher candidates acknowledged the complexities of economics as a subject that requires higher order thinking, but inadequately explained how economics functions as a system. For example, when considering if individuals are affected by global economics, Matt said, “it’s very unlikely that an individual would deal with tariffs.” Matt also believed the microeconomic and macroeconomic concepts were not going to impact the individual, which is why they believed “how you handle your own personal finances is more important than trying to understand how the larger picture works.” Matt completely erased how individuals are impacted by the system at-large. Rachel said they would

cover fiscal and monetary policy in a week-long mini unit with economic indicators because “there isn’t a lot of content to cover”, watering down the complexities of fiscal and monetary policy.

Economics as an Interdisciplinary Subject

Most teacher candidates (n=9) discussed feeling confident integrating economics content into other disciplines, especially history courses. Teacher candidates described economics as “a different way to explain history” and said, “talking about economic terms within a historical sense... is easier to talk about than discussing specific economics.” When questioned about economics as a stand-alone course, teacher candidates overwhelmingly (n=10) said they would not be prepared to teach as stand-alone economics course. When asked about this lack of preparedness, Harry commented, “It feels disjointed from everything else we do. A lot of us just see it as math. If you make it feel more of a part of social science instead of math, we would feel more comfortable.” Candidates view economics as a hard science rooted in mathematics versus a social science where there is room for interpretation and discussion of the subject.

Prioritizing Financial Literacy

Teacher candidates tended to avoid general economics concepts and ideas in favor of the “more applicable” subject of financial literacy. Over half of teacher candidates (n=6) began sorting the concepts using the financial responsibility card as an overarching concept. Teacher candidates (n=3) vocalized their preference for teaching financial literacy because they did not see financial literacy as math but thought of “traditional” economics as heavily math related. This preference for financial literacy can be best summarized in this exchange:

Author 1: “To what extent do you feel prepared to teach economics as a stand-alone course?”

Henry: “Is this only financial literacy or [all economics concepts]?”

Evan noted that they find it “more applicable for students to learn money management rather than understanding bigger processes... economics decisions, globalization, and all of that is good to know, but if you don’t know how to balance your checkbook or live month to month it doesn’t really matter.” Similar to Matt’s comment previously, Evan fails to understand how individuals are impacted by the larger system, including, for example, through economic decision-making of politicians and globalization.

Candidates' Self-Assessment Capacity for Teaching Economics

Acknowledging General Needs

In the interviews immediately following their card sort activities, all teacher candidates (n=11) requested additional economics-specific pedagogical content knowledge to be integrated into their social studies methods course, and most teacher candidates (n=9) were interested in taking a stand-alone economics methods course. Teacher candidates (n=4) specifically requested the inclusion of more economics courses as part of their major and some even wanted more support as they take their economics courses (n=2). Most teacher candidates are often placed in history classrooms during their professional internship and other classroom experiences. As a result, most (n=9) teacher candidates will have had no experience observing or teaching in an economics classroom by graduation. One of the two teacher candidates with teaching experience in an economics classroom was in a financial literacy class and said they were “mostly on the sidelines” for the course.

Projection of Inability onto Students

When asked to identify the concepts they believed their future students would have the hardest time understanding, some candidates (n=7) projected their nascent economic understanding onto their future students. Before selecting his first concept, Daniel began with “I’m trying to think of what I don’t have any idea how to do... so I’m thinking about what things didn’t stick with me.” This was common with candidates while they were justifying their choices. Teacher candidates said comments like “I mean, I have a hard time talking about fiscal and monetary policy... I feel like this is something that could just go over their heads” and “I don’t even really understand credit that much.” Because they were insecure about their grasp of different economic concepts, candidates immediately assumed their future students would struggle to learn the same concepts.

Inconsistencies Assessing Capacity

The mixed methods analysis revealed teacher candidates’ inability to assess their own economic capacity. A joint display table of the candidates’ perceived standards to improve compared to the candidates’ actual standards to improve can be found in Table 3. During the card sort activities and concurrent think-alouds, teacher candidates were asked which three economic concepts they would have the hardest time teaching. All candidates identified weaknesses that were concepts they performed strongly with during the Test of Economic Literacy (TEL), with only one teacher candidates identifying a perceived standard to improve that was an actual standard to improve

based on the TEL results. One example of disconnect between perceived and actual standards to improve was with Tyler, who said they would have a hard time teaching fiscal policy and monetary policy and went on to say, “Fiscal and monetary policy, I don’t really know the difference between the two.” This candidate answered all three of the questions related to fiscal and monetary policy correctly on the TEL. The disconnect between the perceived and actual standards candidates struggle with reveals that candidates do not have the economic content knowledge and economic literacy to understand their own strengths and weaknesses in the subject.

Table 4

Joint Display Table: Perceived Standards to Improve vs. Actual Standards to Improve

Teacher Candidate	Perceived Standards to Improve	Actual Standards to Improve	Actual Standards of Strength*	Did perceived struggles align with actual struggles?
Matt	5) Trade; 6) Specialization	None	5) Trade; 6) Specialization	No
Evan	2) Decision making; 7) Markets & prices; 20) Fiscal & monetary policy	8) Role of prices; 10) Institutions	None aligned	No
Henry	6) Specialization; 20) Fiscal & monetary policy	1) Scarcity; 15) Economic growth; 18) Economic fluctuations; 20) Fiscal & monetary policy	None aligned	Partially
Alex	6) Specialization	7) Markets and prices; 10) Institutions; 11) Money and inflation	None aligned	No
Tyler	3) Allocation; 20) Fiscal & monetary policy	10) Institutions; 11) Money & inflation	3) Allocation; 20) Fiscal & monetary policy	No
Rachel	5) Trade; 6) Specialization; 7) Markets & prices	None	5) Trade; 6) Specialization; 7) Markets & prices	No
Chris	3) Allocation; 7) Markets & prices	16) Role of government & market failure	3) Allocation	No
Daniel	4) Incentives; 6) Specialization	10) Institutions; 18) Economic fluctuations	4) Incentives; 6) Specialization	No
John	20) Fiscal and monetary policy	11) Money and inflation	20) Fiscal and monetary policy	No

**Not inclusive of all standards of strength, only includes standards of strength noted as perceived standards to improve*

Discussion, Conclusion, and Implications

This study developed an understanding of secondary social studies teacher candidates’ economic pedagogical content knowledge. Overall, this study corroborated extant literature that found

teacher candidates to have low economics content and pedagogical content knowledge (Kopish & Lane, 2019; Ayers, 2016; Joshi & Marri, 2006; Shanks, 2018; 2019). There are several findings from the study that contribute to the literature of the field of social studies teacher preparation. Most importantly, teacher educators must address and help ease teacher candidates' anxiety around economics. Reducing candidates' anxiety and overall attitudes towards economics will not only increase the chances they will incorporate economics into their classrooms, regardless of the requirements set forth by the state, but it will also help improve their future students' dispositions towards economics (Choi, 2013). Preferably, this would be done by preventing the anxiety from developing during their required economics coursework, especially since candidates reported neutral feelings towards economics when beginning their program. This prevention work could happen in a variety of ways. Teacher candidates could be more intentionally supported during their economics coursework through, for example, a discussion day or concurrent online modules where candidates review economics course material while seeing applications in a secondary economics classroom. This could include interdisciplinary examples that candidates were more inclined to be receptive to. This interdisciplinary component could help candidates be more intentional making interdisciplinary connections when teaching like Ayers (2016) called for. Alternatively, an education major-specific economics course could be required. In this course, there could be a prioritization of pluralist economics where additional economic perspectives could be introduced to students as suggested by Shanks (2018; 2020). These perspectives allow for teacher educators to again capitalize on teacher candidates' clear preference for taking an interdisciplinary approach to teaching economics and would develop candidates' horizon and specialized content knowledge. Introducing economics as a social science (i.e., in a non-mathematical manner), instead of a hard science as it is taught as in their economics courses, would ease candidates' anxiety around the teaching and learning of economics (Choi, 2013). By providing support to candidates while still relatively indifferent about the subject, teacher educators can improve the chances that candidates, when they become in-service teachers, will teach economics in their classrooms.

The major driver of the candidates' economics anxiety was math anxiety. Consistent with Joshi and Marri (2006), teacher candidates were not comfortable with data analysis and math. Candidates need multiple, on-going opportunities to practice with data analysis in a safe space like the social studies methods classroom. This opportunity to ensure teacher candidate data literacy is important since Dimension 3 of the C3 Framework, Evaluating Sources and Using Evidence,

incorporates the ability to use data effectively and correctly, including the ability to identify trusted data sources (NCSS, 2013). Teacher candidates strongly preferred teaching financial literacy which they thought was more applicable to their future students' lives than economics. Teacher educators must work with candidates to interrogate their biases with economics as it relates to social studies and reintroduce economics content as something directly applicable to our lives.

Through either the prevention of anxiety or supporting candidates through their anxiety, teacher educators should spend more time with candidates developing their economic pedagogical content knowledge. It was clear that candidates needed better control over economics content. Candidates in this study completed 2 economics courses in their degrees, which is slightly higher than the average of 1.5 economics courses completed by the average social studies teachers during their undergraduate degrees (Bosshardt & Walstad, 2019), but they are also completing 12 history courses, 4 political science courses, and 3 geography courses. In order to shift the mindset that social studies is inclusive of economics and to echo the call from Joshi and Marri (2006), candidates need more coursework in economics. However, without the additional support detailed previously, not only would candidates likely continue to retain little information from the coursework (Joshi & Marri, 2006), but this additional coursework could potentially do more harm than good if candidates are becoming more disillusioned with the subject. Candidates' inability to articulate critical meaning of concepts and among concepts indicates a lack of specialized content knowledge (i.e., economic reasoning ability), as well as a lack of knowledge of students and teaching, signifying candidates would likely fail to "identify and address economic content and misconceptions" (Ayers, 2018, p. 77) with their students in the future. In theory, additional economics coursework with the appropriate support would result in candidates improving their economic pedagogical content knowledge.

Ultimately, teacher candidates struggle with their economic literacy and reasoning which is requisite for teaching economics. Teacher educators must assist candidates in building their capacity for economic literacy and economic reasoning. Economic literacy and economic reasoning must be carefully taught and fostered. Without either, candidates will continue to fall short with teaching economics.

Future research should explore the disconnect between perceived preparedness to teach a concept and actual preparedness to teach a concept with a larger sample of teacher candidates. Further research should also interrogate how well teacher candidates are able to integrate economics

content into history, geography, and political science content. Candidates reported feeling confident to do so, but to what extent they actually integrate the material must be explored. This could be done by introducing candidates to pluralist perspectives, whether explicitly or implicitly, or by contextualizing the economics content with place-based examples. Finally, a larger study exploring teacher candidates' economic pedagogical content knowledge in depth could be beneficial for furthering our understanding of how to teach teacher candidates about teaching economics.

When the future social studies teachers are better prepared to teach economics, the benefits for students will not go unnoticed. One must understand economics to be an engaged local and global citizen (Bach et al., 1961; Crowley & Swan, 2018) and an education in economics begins in the social studies classroom.

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Appendix

Appendix A

Concept Cards for Card Sort Derived from Ohio State and National Economic Standards

Consumers	Producers	Supply and demand	Costs and benefits	Markets
Incentives	Goods and services	Competition	Economic systems	Economic decisions
Monetary policy	Fiscal policy	Trade, quotas, tariffs, subsidies	Data analysis	Economic indicators
Globalization	Comparative advantage	Income, wages, benefits	Risk	Financial responsibility: Planning and money management
Saving and investing	Credit and debit			

Appendix B

Semi-structured Interview Protocol

Economic Pedagogical Self-Efficacy

- Describe how you felt completing the previous activity.
- To what extent do you feel prepared to teach economics as a stand-alone course?
- To what extent do you feel prepared to teach economics as an integrated discipline?

Economic Pedagogical Content Knowledge

- Describe your experiences teaching economics.
- Describe how your methods coursework has prepared you to teach economics.
- Describe how your field experiences have prepared you to teach economics.
- Describe your economic coursework experiences in both high school and college.