

Pedagogical Content Knowledge in Social Studies:

A scoping review

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Abstract—Since Lee Shulman’s discussion about PCK in the late 1980s, this area of teaching and learning has been well examined in various subject matter. However, while literature on PCK is replete subjects like mathematics teaching, it is not as investigated in the teaching of social studies. Thus, using a scoping review method of literature review, this paper aims to explore the literature on pedagogical content knowledge (PCK) in social studies. Specifically, this paper looks into the various theories and frameworks used to analyze PCK in social studies. Through this exploration, this paper attempts to present the status and extent of PCK research in social studies teaching, and therefrom propose some areas of focus for future PCK-related research studies.

Keywords—*pedagogical content knowledge; social studies; scoping review*

I. INTRODUCTION

Lee Shulman coined the term ‘pedagogical content knowledge’ (PCK) in his works in 1980s, arguing that content and pedagogy should not be perceived as separate concepts when assessing teachers’ skill sets [1,2]. PCK then is a combination of these two knowledge bases, content knowledge and pedagogical content knowledge. Since Shulman’s conceptualization of PCK, research efforts had been more focused in mathematics [3], while studies that focused on social studies PCK were quite limited [4]. This scoping review of literature, therefore, aims to assess research studies conducted on PCK in social studies.

A scoping review aims to “map rapidly the key concepts underpinning a research area and the main sources and types of evidence available, and can be undertaken as stand-alone projects in their own right, especially where an area is complex or has not been reviewed comprehensively before” [5]. Arksey and O’Malley identified four common reasons for conducting a scoping review. These are (1) to examine the extent, range and nature of research activity; (2) to determine the value of undertaking a full systematic review; (3) to summarize and disseminate research findings; and (4) to identify research gaps in the existing literature [6]. The impetus for conducting this scoping review represent the first reason inasmuch as this research seeks to examine the extent, range, nature of PCK research in social studies. This review does not cover a discussion of the research findings and gaps in the literature.

II. METHODOLOGY

This study adapted the five-stage framework in conducting a scoping review proposed by Arksey and O’Malley [3].

A. Framework Stage 1: Identification of the Research Question

This review will be guided by the following research questions:

- What are the characteristics of PCK literature in social studies in terms of publication year, research setting, research design, data gathering methods used and study participants?
- What are the major theoretical frameworks used in understanding PCK in social studies?

B. Framework Stage 2: Identification of Relevant Studies

The search was limited to peer-reviewed academic journals on PCK in social studies found in the Taylor & Francis Online database, managed by the Taylor & Francis Group, which publishes more than 2,500 journals yearly in the areas of Humanities, Social Sciences, Behavioral Sciences, Science, Technology and Medicine sectors. The search term “Pedagogical Content Knowledge” + “Social Studies” were used, with publication year 1986 – 2018 was selected as a filter to look for journal articles that were only published within these years. The year 1986 was used as the base year since PCK was first defined and conceptualized in the 1986 article of Lee Shulman [1].

C. Framework Stage 3: Study Selection

The search conducted yielded to a resulting number of 557 journal articles. Upon browsing through the results pages, titles containing science and mathematics were excluded. To further limit the results to PCK in social studies only, publication filter was used to enable a quick show of titles that do not refer directly to social studies. This trimmed down the results from 100 journals with 557 articles to 42 journals with 226 articles. Abstracts of these 226 articles were read to make sure that the articles to be processed and analyzed meet the purpose of this study. There were 81 articles that focused on either social studies as a subject or specific subject matter that are taught under the social studies curriculum like history, geography and civics. These 81 articles were processed in NVIVO 12, a

qualitative data processing program. Running a text search query for the term “pedagogical content knowledge”, a frequency count for this search term in each article became possible. Articles that mentioned this search five times or more were automatically included in the final analysis. Those that only mentioned this term only four times or below were further read rapidly to ensure that these articles discussed about pedagogical content knowledge in social studies. Discussion of PCK in the context of social studies may be direct or indirect. This means that there are articles that directly talk about PCK in social studies, while there are also those that only used theories on PCK as organizing and/or analytic frameworks of their research in social studies. These were the inclusion criteria that became the basis for the articles to be included in the scoping review. From 81 articles, only 41 journal articles were included for final analysis.

D. Framework Stage 4: Charting the Data

Table 1 organizes the 41 peer-reviewed journals according to publication year, research setting, research design, study participants and data gathering methods used. The major theoretical frameworks used in understanding PCK in social studies are presented in Table 2.

E. Framework Stage 5: Collating, Summarizing and Reporting

III. RESULTS AND DISCUSSION

A. Characteristics of PCK Literature in Social Studies

As presented in Table 1, two thirds of the total number of journal articles reviewed was published between 2010 and 2018, while three in 10 of these journals were published between 2000-2009. Only very few articles (2) were published prior to year 2000. The results indicate that since Shulman’s conceptualization of the pedagogical content knowledge, there had been an increasing interest to study this concept in social studies. However, adapting this theory into the social studies field was rather sluggish in early years since its conception. Data shows that it was only in 2010 that studies in PCK picked up in social studies.

It is also shown in the Table 1 that research studies on PCK in social studies were mostly done in the United States (US) (81%). Only very few research were conducted sporadically in other countries. There were social studies PCK research studies in some Asian countries like Japan, South Korea and Taiwan. Similar research studies were also done in the United Kingdom and Australia. Context of learners is paramount in social studies to accurately assess teaching effectiveness in this subject matter. This dearth of empirical studies calls for teachers and practitioners to conduct research on PCK to improve teaching and learning.

TABLE I. SOCIAL STUDIES JOURNAL ARTICLES ON PCK, 1986-2018

Characteristics of Journal Articles	Frequency (n=41)	Percentage (%)
Publication year		
2010 – 2018	27	65.9
2000 – 2009	12	29.3
1986 – 1999	2	4.9
Research setting (Country)		
United States	33	80.5
Asia (Japan, Korea, Taiwan)	3	7.3
Others (UK, Australia)	3	7.3
Not Applicable (Article review)	2	4.9
Research design		
Qualitative		
	36	87.8
Case study	25	61.0
Phenomenology	1	2.4
Content Analysis	3	7.3
Grounded Theory	4	9.8
Evaluation design	1	2.4
Q methodology	1	2.4
Narrative Inquiry	1	2.4
Quantitative		
	3	7.3
Mixed methods		
	3	7.3
Data collected methods		
Surveys only	3	7.3
Interviews only	2	4.9
Observations only	1	2.4
Q methodology only	1	2.4
Document/Content analysis only	6	14.6
Secondary data analysis	1	2.4
Multi-methods (interviews, observation and/or document analysis)	27	2.4
Study participants by social studies area		
Social Studies teachers (General)	19	46.3
History teachers	11	26.8
Geography teachers	3	7.3
Civics teachers	3	7.3

Study design for PCK research in social studies can be characterized as mostly qualitative. Some studies were done using quantitative (7%) and mixed methods design (7%). For the qualitative type of studies, majority were case studies, which are a combination of single case and multi-case studies. Grounded theory was the next common type of qualitative

design for PCK research in social studies. Content analysis, in the form of article reviews and program and evaluations, was also used as a qualitative design method in three studies. Other qualitative methodologies used were phenomenology, evaluation design, Q methodology, and narrative inquiry. PCK as an area of inquiry can be quite complex as teachers' knowledge can be demonstrated and evaluated in various ways.

Corresponding to the qualitative nature of PCK research in social studies, it is apparent that the most utilized approach to data collection was multi-methods. These methods were a combination of interviews, observation and document analysis. Content analysis or document analysis was also employed in a number of research articles (16%), especially for those that dealt with project or program evaluation and comprehensive article reviews. Other studies included in this scoping review used survey, interview, observation and secondary data analysis. The pervasive use of multi-method approach allows counter-validation of results thus strengthening the results and claims of the research. One drawback of this technique, however, is the difficulty of other researchers to replicate PCK studies with multi-method approach [4].

To determine which specific subject area of social studies is studied the most with regard to PCK, the type of subject that study participants either taught or studied (in the case of preservice teachers) were obtained. As shown in Table 1, almost half of the articles (46%) included in this review studies social studies in general without referring to a specific subject. Twenty seven percent of the articles are research on PCK of history teachers. Other studies looked into the PCK of geography (7%) and civics teachers (7%). Data show that PCK is explored more in social studies and history than in other areas like geography and civics. Obviously, more studies need to be conducted in other social studies subjects like economics.

B. Major Theories used in PCK Literature in Social Studies

Table 2 shows a matrix of theories and literature that served as theoretical frameworks in the articles in this scoping review. Since this review focuses on PCK, discussion of the major theories commences on Shulman's conceptualization of his term. Other theories mentioned in the journal article are discussed subsequently.

Two empirical works of Lee Shulman became the foundation of PCK studies. In his 1986 article, Shulman thoroughly discussed about how knowledge grows in the minds of teachers. Emphasizing on content, he gave three categories of content knowledge, which are: subject matter content knowledge, pedagogical content knowledge and curricular content knowledge. In describing content knowledge, Shulman highlighted the need to go beyond facts or concepts of a domain. Teachers much understand the subject matter's structures as defined by Schwab [5]. Pedagogical content knowledge is the content knowledge of teachers "that embodies the aspects of content most germane to it's teach ability" [1]. For Shulman [1], PCK is "the most useful forms of representation of those ideas, the most powerful analogies, illustrations, examples, explanations, and demonstrations- in a

word, the ways of representing and formulating the subject that make it comprehensible to others" [1]. Shulman suggests that teachers should have "a veritable armamentarium of alternative forms of representations", which they can derive from research and develop from wisdom of practice. For Shulman, teachers who have PCK need to have an "understanding of what makes learning of specific topics easy or difficult; the conceptions and preconceptions that students of different ages and backgrounds bring with them to the learning of those most frequently taught topics and lessons" [1]. Curricular knowledge involves a "full range of programs designed for the teaching of particular subjects and topics at a given level, the variety of instructional materials available in relation to those programs and the set of characteristics that serve as both the indications and contraindications for the use of particular curriculum or program materials in particular circumstances" [1].

In 1987, Shulman wrote another article where he defined seven categories of knowledge base for teachers. These are (1) content knowledge; (2) general pedagogical content knowledge; (3) curriculum knowledge; (4) pedagogical content knowledge; (5) knowledge of learners and their characteristics; (6) knowledge of educational contexts; and (7) knowledge of educational ends, purposes, and values and their philosophical and historical grounds [2]. It can be noticed that in this paper of Shulman, PCK is no longer subsumed under content knowledge, but rather considered as a separate type of knowledge for teachers. For this academic paper, Shulman defined PCK as "that special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding" [2].

Shulman's PCK theory, seemingly, is universally embraced among the researchers in the field of social studies. However, although there was frequent mention of PCK in the articles reviewed, especially in the theoretical portion of the research, there was an apparent lack of specific examples and illuminations as to how these research studies represent or embody Shulman's PCK theory. While articles reviewed in this study refer mostly to Shulman's definitions and conceptualization of PCK, tighter and clearer explanations as to how Shulman's theory could be used to understand social studies teachers' PCK.

In the same article in 1987, Shulman also defined aspects of pedagogical reasoning, which he, in the same year, developed into a theory called the model of pedagogical reasoning with Wilson and Richert as co-authors [2]. This model is cyclical and comprises six stages beginning with comprehension, then transformation, instruction, evaluation, reflection and then ends with a new comprehension. After comprehension of the content, PCK commences through the 'representations' of the subject matter in the transformation stage and further progresses in the instruction, evaluation and then reflection of the teacher. It then ends with a new comprehension of content. In this review, three studies, Reitano & Winter [6], Cunningham [7] and Gudmundsdottir & Shulman [8], employed this model in understanding teaching of history. These three authors have more thorough discussion of how this

TABLE II. THEORIES IN SOCIAL STUDIES JOURNAL ARTICLES ON PCK, 1986-2

Theories	Author	Research studies
Pedagogical Content Knowledge (PCK)	Shulman [1-2]	Baron, Sklarwitz, Bang & Shatara [9]; Fitchett & Heafner [10]; Thacker, Friedman, Fitchett, Journell & Lee [11]; Curry & Cherner [12]; Saito & Atencio [13]; Montesano & Budano [14]; Sung & Yang [15]; Boehm, Brysch & Mohan [16]; Zhang, Torney-Putra & Barber [17]; Harris & Bain [18]; Montesano & Cochran [19]; Wilson [20]; Cunningham [21]; Franklin & Molebash [22]; Kortecamp & Steeves [23]; Fickel [24]; Doppen [25]; Henning & Yendol-Hoppey [26]; Silva & Mason [27]; Fehn & Koeppen [28]
Model of Pedagogical Content Reasoning	Shulman [2] Wilson, Shulman & Richert [29]	Reitano & Winter [6]; Cunningham [21]; Gudmundsdottir & Shulman [8]
Substantive and Syntactical knowledge	Schwab [5]	Sung & Yang [15]; Harris [30]
Content Knowledge	Ball, Thames, & Phelps [31]	Thacker, Friedman, Fitchett, Journell & Lee [11]; Thacker, Lee & Fitchett [32]; Journell [33]; Harris & Bain [18]
Key components of PCK	Grossman [34]	Montesano & Cochran [19]; Fickel [24]; Henning & Yendol-Hoppey [26]
Continuum model of PCK	Gess-Newsome [35]	Saito & Atencio [13]
Technological Pedagogical Content Knowledge (TPACK)	Mishra & Koehler [36]	Curry & Cherner [6]; Hilton [37]; Vaerenyck, Shinas & Steckel [38]; Gomez [39]; Alexander [40]; Hong & Stonier [41]; Debele & Plevyak [42]
SMAR Model	Puentedura [43]	Hilton [37]

model of pedagogical reasoning is carried out in teaching history. The more precise steps, definitions and conceptual boundaries of this model, as compared to the overarching PCK theory, may have allowed these three studies to use in social studies easier and tighter, with clearer examples and explications.

In understanding the content knowledge as one of the key components of pedagogical content knowledge, authors, including Shulman himself, referred to Schwab in his discussion of the substantive knowledge and syntactical knowledge [5]. Substantive knowledge can be thought of as an explanatory framework or paradigm in order to make sense of data and guide in the inquiry of a specific field, while syntactical knowledge refers to the structure of the subject matter knowledge or the epistemological aspect of knowledge, which covers tools of inquiry, within a given discipline, the canons of evidence and proof to warrant a new knowledge in the field. Two articles in this review employed Schwab's knowledge typologies [5]. Sung & Yang [15] and Harris [18]. In history, substantive knowledge can cover political, intellectual, social and cultural histories [44, 45]. New findings of historians become new substantive knowledge in the field [15]. Syntactical knowledge in history, which can be considered as "second-order concept" [45] or conceptions of history [46], may include concepts like history as unfixed and subject to reinterpretation [15].

As shown in Table 2, theoretical frameworks of the many articles in this scoping review have referred to Shulman in understanding PCK in social studies. However, PCK did not stop evolving as way of understanding teacher knowledge as other authors have built on Shulman's works like Grossman [34] and Gess-Newsome [35].

Grossman identified four key components of PCK: (1) overarching conception of teaching a subject; (2) knowledge of instructional strategies and representations; (3) knowledge of student understanding and potential misunderstanding; and (4) knowledge of the curriculum and curricular materials. As Grossman states, "of these four knowledge bases, PCK was anticipated as having the greatest impact on teachers' classroom actions" [34]. With these PCK components, Fickel described a teacher with strong PCK as "having overarching conceptions that resonate with the current thinking in the subject-matter discipline, have an extensive and diverse representations of topics in the field to support student learning, ability to plan instructional units focused on conceptual understanding across and within the curriculum by carefully selecting from among available materials" [24].

In Gess-Newsome's discussion about the nature of PCK, she proposed a continuum model of understanding PCK [35]. On the one hand is the integrative model where teacher knowledge is integration of subject matter knowledge, pedagogical knowledge and contextual knowledge. In this model, PCK does not exist, as teacher knowledge is only an integration of these three constructs. On the other hand is the transformative model, wherein PCK, which is the synthesis of the three types of knowledge for effective teaching, becomes a unique form of knowledge, "the only form of knowledge that impacts teaching practice" [35].

Another theoretical framework that four articles in this review referred to was that of Ball, Thames and Phelps [31]. Ball et al. distinguished between common content knowledge and specialized content knowledge in mathematics teaching. The former type of knowledge includes the ability to identify correct and incorrect answers and the correct usage of terms and definitions. For Ball et al. this type of knowledge is necessary in dealing with the nuances of the specialized content knowledge, which is a kind of knowledge that is unique to

teaching the understanding of students' conceptions and misconceptions about content and how this relates to instruction. For social studies, the common content knowledge includes current events and politics that are necessary in civic discussions, engagement with controversial public issues and democratic decision-making [33]. For history, this is comprised of facts about historical figures and events [32]. For the specialized content knowledge, this may be exemplified by the ways to help students develop historical thinking, conceptualize historical time and analyze primary sources [32].

A decade later after Shulman conceptualized PCK, Mishra and Koehler [36] developed the Technological Pedagogical Content Framework (TPACK). This model was built on the Shulman's work on PCK and added technology in the interplay of content and pedagogy. For Mishra and Koehler, for teachers to effectively integrate technology in teaching, they must constantly foster growth in all these three knowledge domains: content knowledge, pedagogical knowledge and technological knowledge [36]. From these three major domains, TPCK defined further the intersections between pedagogy and content (PCK), technology and pedagogy (TPK) and technology and content (TCK). The intersection of these three types of knowledge produces the TPACK. Journal articles that included in this review that dealt with technology integration in social studies mostly used this model as a theory to back their research. One research study though used the SAMR model in assessing effective technology integration into the teaching practice as compared with results using the TPACK model. Dr. Puentedura developed the SMAR model in 2012 and has since gained popularity among teachers and researchers [43]. It aims to improve technology integration according to various levels of tasks: substitution, augmentation, modification and redefinition. These four levels are further grouped into two areas: enhancement and transformation. Substitution and augmentation are used to 'enhance' existing tools in the learning tasks through technology. Use of technology in modification and redefinition affords new learning opportunities for students.

IV. CONCLUSIONS AND RECOMMENDATIONS

This scoping review revealed some general characteristics of research studies done so far on PCK in social studies. PCK research studies in social studies had been increasing in recent years. However, these studies were concentrated in within the context of the United States, involving typically social studies and history teachers. These studies were also mostly qualitative in nature using multi-method approach. Thus, more studies outside the USA need to be conducted to gain more insights about social studies teachers' PCK from various cultures and contexts. PCK research should expand to include teachers in other subject areas of social studies like geography, civics, and economics. Research studies that are replicable and generalizable can fill up the abyss in PCK literature, especially in social studies.

Shulman is the primary PCK theorist that empirical research studies refer to in terms of understanding PCK in the field of social studies, while Mishra and Koehler's TPACK framework is the key theory to examine teachers' technology integration in the teaching practice. While these theories are no

doubt the trailblazers in PCK research, with most studies espousing these theories to investigate and evaluate teachers' PCK, empirical studies that challenge and critic these theories are necessary in order to emerge the extent of their application especially in subject matter areas that are very dynamic, diverse like social studies. By doing such, new models and theories may be discovered, which can offer alternative perspectives that can guide inquiries on better and more effective PCK for social studies teachers. One of the important goals of social studies is to instill good citizenship among studies. Certainly, PCK of social studies teachers should not stop in the new comprehension of the content, as what Shulman and Wilson et al. suggest in their model of pedagogical reasoning. Social studies teachers' PCK calls for action and should inspire students to be engaged citizens. Perhaps, development of a theory or model that better captures social studies teachers' PCK in relation to its nature and objectives is timely.

Since this scoping review is limited in breadth (number of studies included) and depth (areas examined), a more thorough review or better yet a systematic review of literature on PCK in social studies is recommended. The systematic review may include the components and development of PCK among social studies teachers. Further, content-specific representations of PCK is necessary. How teachers' PCK impacts students' social studies learning and actions as citizens need to be understood and included future reviews.

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