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Integrating Primary Sources, Artifacts, and Museum Visits into the Primary Years Program Inquiry Curriculum in an International Baccalaureate Elementary Setting

Sarah A. Coppersmith¹ & Kim H. Song²

Abstract

Questions remain about inquiry instruction, while research confirms that using primary sources can aid students' inquiry learning processes. This study questioned: "How do second-grade teachers at an International Baccalaureate Organization/IBO language immersion setting incorporate inquiry methods in instructional practices?"; "How does training in the use of primary sources, artifacts, and museum visits shape second-grade teachers' instructional practice?" A Library of Congress Teaching with Primary Sources grant supported this university-school social studies partnership, which accessed artifacts, primary sources, and a national archives and museum. Data sources in this mixed methods study were from the SAMPI Inquiry Observation Instrument, interviews, and observations in French and Spanish language settings. Analysis revealed teachers incorporating inquiry learning via museum/archives visits and using primary sources in a study of the history and geography of the French and Spanish Colonial fur trade era. Results revealed a subsequent integration of primary sources and learning kits in the immersion school network's ongoing inquiry curriculum design process.

Keywords: *Primary Sources, Social Studies, History, Inquiry learning; IBO/International Baccalaureate Organization, Primary Years Program/PYP*

Introduction

Inquiry learning is a well-known and respected method in education, yet many teachers around the world still do not employ inquiry methods in instruction (Lawson, 2010). Highly important in the social studies, inquiry now plays a pivotal role in the C3 Framework (College, Career, and Civic Life) of the National Council for the Social Studies (Pellegrino & Kilday, 2013). Yet, often teachers are unaware of how to implement inquiry teaching and learning (Howes, Lim & Campos, 2009). Wells (1999) suggests that inquiry should be positioned within the school curriculum, and the teacher plays an important role in complying with the curriculum and setting up this orientation in the classroom. Therefore, this research describing how teachers

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and students overcome hurdles and use inquiry-based processes in their curricula and classrooms adds an essential dimension of understanding to the world-wide emphasis on inquiry in education.

This study provides evidence from an inquiry-oriented language immersion network's second-grade setting which uses an International Baccalaureate inquiry curriculum called the Primary Years Program of Inquiry (PYP). This research reports how the second-grade French and Spanish language immersion network integrated an emphasis on social studies via primary sources and museum/archives visits to support the network's inquiry curriculum to develop investigations into the historic French and Spanish Colonial fur trade in their region.

The purpose of this study was to examine second-grade teachers' use of inquiry methods, primary sources, museum visits, and objects in their instructional practice at an elementary language immersion charter school setting implementing the Primary Years Programme of Inquiry (PYP) early grades curriculum. Historically, "charter schools were established in the USA in 1993" (Tarman, 2016, p. 88) and this charter school network's PYP curriculum was set forth by the International Baccalaureate Organization (IBO) which designs educational programs and curricular frameworks globally (IBO, 2010). The curriculum focus for the IBO Primary Years Programme is inquiry learning, and this school network has followed an inquiry planning template for developing the curriculum since its opening in 2009.

How do the IBO goals for developing inquirers actually play out within elementary social studies; does the teachers' use of primary source documents, within an inquiry-based school setting, inspire student-generated questioning? Answering this main query within a setting that operates in an inquiry curriculum adds important knowledge for understanding the use of inquiry in elementary educational settings worldwide.

Literature Review

Defining Inquiry

Inquiry and inquiry learning have been defined in a variety of ways over the past century, and with the assortment of definitions "the reader is left to create his or her own images of what constitutes this form of teaching" (Anderson, 2007, p. 3). Minner et al. (2009) maintain that the focus on constructivism in the 1900s became "particularly prominent in science education through the focus on inquiry" (Minner, Levy, Century, 2009, p. 476) and Audet and Jordan

(2005) agree that inquiry is “most commonly associated with science” (p. 6). In this study, the term constructivism is defined within a social constructivist approach which “emphasizes the interdependence of social and individual processes in the co-construction of knowledge” with the goal of understanding learning within a social environment (Palincsar, 1998, p.345).

Edelson, Gordon, and Pea (1999) succinctly refine the definition of inquiry as the “pursuit of open questions” and remind us that “inquiry is active” (p. 393). The definition of inquiry doesn’t end with science, because inquiry is an important theme in learning in all manner of subjects. Levstik and Barton (2005) have defined inquiry as “the process of asking meaningful questions, finding information, drawing conclusions, and reflecting on possible solutions” (p. 16). Moving through the definitions, we see the importance of student questioning as a basis for the inquiry process; the working definition of inquiry for this research is “a process of learning which begins with, preferably, student-generated questions”.

Inquiry and Primary Sources

Within social studies, Barton and Levstik (2004) related the challenges when attempting to engage students in historical inquiries while using primary sources; their research showed that students needed to engage with their own questioning for learning to be meaningful. They offer: “The critical task for the teacher is to help students develop questions that lead them toward inquiries that are meaningful and significant” (Barton & Levstik, 2004, p. 200). They argue that “primary sources can play two important roles in inquiry-oriented history education. First, they can inspire perplexity..... and second, to provide evidence that answers our questions about the past” (Barton & Levstik, 2004, p. 202). Levstik and Barton, (2008) contend that

...although impressive achievements have been made in examining the content of students’ ideas in fields such as mathematics and science, research on their knowledge and understanding of history is still in the early stages – particularly at the elementary level” (p.159).

Primary sources can be accessed now more easily than ever (Mauch & Tarman, 2016), and be used as tools to prompt student inquiries. Teachers should be supported with additional training in how to incorporate technology into social studies (Kilinc et al, 2016), and now the Library of Congress offers training and online supports via technology for using primary sources in social studies teaching. This study adds to the area of elementary social studies learning via inquiry with primary sources, museum visits, and artifacts during a Library of Congress Teaching with

Primary Sources (LOC TPS) funded collaborative project as well as adding to the knowledge base on how inquiry learning is practiced this way in a language immersion context.

Inquiry and Historical Thinking

Levstik and Barton's (2011) studies revealed that children as young as six were capable of engaging in historical thinking. When personal linkages were made, connecting to family histories or allowing children to interpret historic photographs, children could indeed learn history in the first grade (Levstik & Barton, 2011). Levstik and Barton (2011) found that visual images played an important role when children learn history, which was based on an epistemology of historical/temporal ways of knowing, and children have "multiple and parallel constructions" of time, not simple, separate understandings (Levstik & Barton, 2008, p.63). Thus, they can understand concepts such as "close to now", "long ago" and "really long ago" (Levstik & Barton, 2011, p.98). Building on Levstik and Barton's work (1996), Fallace, Briscoe and Perry (2007) found that second-graders develop historical ideas at a variety of rates, yet their ideas are not yet solid or comprehensive, so additional studies at this grade level are beneficial.

Several sources disprove the prior assumption about young children's inability to learn history (VanSledright, 2004b). Elementary students can practice some of the work of historians by using primary sources and by examining and questioning the various perspectives represented in the sources. Historians use historical thinking when analyzing an assortment of evidence to piece together stories (VanSledright, 2004a). Learning to question evidence requires skill in using inquiry processes and historical thinking, by both historians and elementary students alike. Teachers and students need to use historical thinking and to understand history ("history literacy") (Bickford III, 2017, p. 180). While there has been a recent focus on using primary sources in teaching (Mauch & Tarman, 2016), there is a need for improved professional development for teachers to learn how to effectively participate in historical thinking in order to engage students in authentic historical inquiries (Cowgill & Waring, 2017) to effectively learn history.

Inquiry, Language, and the IBO

There is no current research on using primary sources in the IBO PYP language immersion setting to study the French and Spanish fur trade era in the U.S., though there are a few studies on the IBO PYP that inform this work. Twigg's (2010) qualitative study reviewed an IBO school's "culture of inquiry" in an IBO school in Turkey (p. 51) and describes challenges

teachers face meeting requirements for inquiry within the curriculum in the IBO PYP; the author calls for research in other PYP schools to look more closely at inquiry learning in those situations (Twigg, 2010).

Looking at inquiry learning in IBO settings, Hartland (2006), notes that inquiry is understood theoretically but not often in a practical way within classroom settings. Hartland (2006) uncovered one teacher and her students working around the difficulties of switching from teacher-centered to student-centered questioning, yet this project focused on the work of one teacher. No mixed methods research exists on inquiry within the IBO PYP within French and Spanish language immersion settings using primary sources.

This research is situated in the theoretical framework of the study of history learning with young children (VanSledright, 2004b) based in a constructivist system (Palincsar, 1998) appropriating inquiry methods within social studies, in an IBO language-school structure (Pozuelos et al, 2010). Constructivism, in this project, was the framework used at the school to allow teachers to help students “participate in the research processes” (Çalışkan, 2015, p. 50), explore and communicate in a student-centered environment (Çalışkan, 2015).

Methodology

The project operated during the 2010-2011 school year with a partnership between the university, social studies methods course, a National Park Service archives and museum and the Language Immersion Charter School (LICS) second-grade French and Spanish immersion schools network which offered kindergarten, first-grade, and second-grade. The network features Spanish and French via full language immersion which means that the teachers and students use the immersion languages all day. The network is located in an old building in an urban neighborhood serving a mix of about 50% African-American students, 30% White, 10% Hispanic, and 10% multi-ethnic or other.

Participants

The purposeful sample (Patton, 2002) was used as a result of the researcher’s involvement with the school through the university research group. A purposeful sampling method allows researchers to select the “most productive sample to answer the research questions” (Marshall, 1996, p. 523). This purposeful sample (Patton, 2002) included three second-grade teachers (one French immersion teacher, Maxime, from France, and two Spanish immersion teachers, Calendaria and George, from the U.S.), one Spanish teacher assistant, Jose,

from Spain, and one Spanish student teacher, Melinda, from the U.S. The participants were regularly involved with the university researchers on projects. An initial sample of three second-grade teachers and one teacher assistant was selected. The sample expanded to include one student teacher mid-project by way of opportunistic/emergent sampling, offering the researcher “new opportunities during data collection” (Patton, 2002, p. 240).

The criteria for choosing these participants included their involvement in the Library of Congress Teaching with Primary Sources Project, where they received funding and training. The national archivist, along with the pre-service teachers and their instructor, (the researcher and Principal Investigator on the grant) led training and designed activities to accompany two learning resource kits featuring objects and replicas from the fur trade era, with books, digitized archival maps and clothing which are housed at the school and university international library. The focus on the French and Spanish colonial history, set within a local geographic context, supported the school’s inquiry curriculum using the Spanish and French language.

The literature reviewed for this work was largely qualitative, from the important work of Levstik and Barton (2006) to VanSledright (2004a) and others. Barton (2008) noted that he “settled on interviews as our means for collecting data”, (p. 65). Pozuelos, Gonzalez, and Canal de Leon (2010) executed qualitative research to study inquiry internationally at two Spanish primary schools. None of the studies mixed qualitative data with quantitative data to understand inquiry learning using primary sources in early elementary immersion classrooms, thus this mixed-methods study adds important knowledge to the field.

Research Questions

During the project, questions arose on how teachers employ inquiry methods as directed by the inquiry curriculum, enhanced by primary sources, supported by training and visits to an archive and museum, while using objects in a learning kit to support historical understanding. Twigg’s (2010) research on inquiry learning with IBO teachers in Turkey resulted in a plea for further research on inquiry in PYP schools. In response, this study explored the use of inquiry learning in PYP schools to inform elementary learning settings worldwide. If inquiry can be used as an organizing theme in the curriculum, (Anderson, 2007) the researcher wondered what inquiry would look like in an elementary classroom operating within a school-wide curricular context based on inquiry learning.

The two research questions that guide this study were:

- 1) How do second-grade teachers at an International Baccalaureate Organization/IBO language immersion setting incorporate inquiry methods in instructional practices?
- 2) How does training in the use of primary sources, artifacts, and museum visits shape second-grade teachers' instructional practice?

The design used in this mixed methods study to answer the research questions was the convergent (parallel/concurrent) design which allowed qualitative and quantitative data to be collected simultaneously to answer the research questions (Creswell, 2012, p. 540). In this type of design, qualitative and quantitative data are collected concurrently, analyzed separately, and integrated in the final report. This design allowed collection of data in the school setting in the form of observations and interviews concurrently, and the timeframe was delineated based on the teachers' schedules. In alignment with the convergent design, data collection and analysis are listed separately in this report, with data being triangulated, converged, and integrated in the integration section below. Data related to the individual research questions are listed in the separate qualitative (interviews) and quantitative (SAMPI lesson observation) sections.

Data Collection

At the school, observation data included conventional observations with field notes at six professional development meetings in September and October, 2010, and six classroom inquiry observations from three classes (two per class) in November and May, 2010. Field notes were recorded at planning meetings as the second-grade French and Spanish teams worked to integrate the school's PYP inquiry curricular goals with the project goals, at a primary sources training at the archives, and during the school museum visits. For the classroom inquiry observation, the researcher used the SAMPI lesson observation instrument.

Semi-structured interviews were conducted for each of the five participants to understand their viewpoints and to elicit the interviewee's subjective ideas (Flick, 2006). These multiple data sources were triangulated for deeper understanding (Ivankova, Creswell, & Stick, 2006), to provide "more comprehensive evidence" (Creswell, Plano Clark, 2007, p.18), to broaden understanding (Creswell, 2009), and to allow "stronger inferences and divergent views" (Teddlie & Tashakkori, 2009, p. 33).

Interview protocol. Using pre-identified questions helps maintain flexibility in the interview situation (Merriam, 2009). Interview questions were designed to address the research questions and interview times were arranged for the most convenient time for teachers. French

teacher Maxime, Spanish Teacher George, Spanish student teacher Melinda and her supervisor Calendaria were interviewed, as was teacher assistant Jose. The five interviews were recorded in classrooms and lasted from 15 to 25 minutes each during the school day.

The interview protocol included:

1. In your regular classes, not just this project, when and where do you see inquiry learning with your students?
2. How do you feel that the artifacts or the primary sources – that we talked about - helped or hindered the students’ learning in that project?
3. Has this project influenced student Inquiry Learning? If yes, then please explain how.
4. What are some of the challenges you face in having students being actively engaged in their own learning?

SAMPI inquiry lesson observation system. SAMPI, (2003) tested and approved for reliability and validity, is a “comprehensive protocol for observing, analyzing and reporting data from observations in kindergarten through twelfth grade classrooms” (p. 3) designed by Western Michigan University to examine the use of classroom inquiry (p. 1). “On 120 sets of scores on all measures resulted in Cronbach’s Alpha .8769, and high (90 – 100%) interrater agreement” was found (SAMPI, 2003). This Likert-based scale measures twenty-three items in five categories: *lesson and classroom, planning and organization, lesson implementation, content and culture* on a 7-point scale. To document each teacher’s inquiry practice, two observations in each of the three second-grade classrooms (n=6) were made to find mean scores using SAMPI criteria that are useful for assessing instructional practice (Rudy, 2006). SAMPI data was collected in three second-grade classrooms in October and June during the 2010-2011 school year. Times for observations were determined by each of the participants for when inquiry could be observed. Observations ranged from 20 to 45 minutes. Data were recorded for each lesson via means (from a Likert-type scale, where ratings of 1-3 show “needs improvement”, 4-5 demonstrate “making important progress”, and 6-7 represents “well done” (SAMPI, 2003).

SAMPI scale criteria are:

1. *SAMPI Lesson and Classroom.*
2. *SAMPI Planning and Organization.*
3. *SAMPI Lesson Implementation.*
4. *SAMPI Content.*

5. *SAMPI Culture*. (SAMPI, 2003).

Field observations. Field observations were made during six professional development meetings as participants worked to understand the Primary Years Programme of Inquiry to develop an inquiry learning unit incorporating museum and archives resources.

Data Analysis

In alignment with the convergent mixed methods design (Creswell, 2012), qualitative and quantitative data were analyzed separately, and are reported separately, then integrated. In this type of analysis, both types of data strengthen the other, and are given “equal priority”, symbolized as QUAL + QUAN (Creswell, 2012, p. 540). To illustrate one example, this design allowed different types of data to answer the research questions based on teachers’ reports of using inquiry in the classroom (qualitative) compared to actual classroom inquiry lesson observations (quantitative). The convergent mixed methods design allowed for collection of the data separately, and a convergence or triangulation of the data in the final phase.

Interview Data Analysis

A preliminary examination of the data was accomplished with grounded theory data analysis, starting by “looking line-by-line” (Strauss & Corbin, 1998, p.57) permitting a “detailed analysis”, allowing researchers to focus on what is stated in each line (Strauss & Corbin, 1998, p. 57). From the initial analysis, a complete listing of concepts from the interviews was made. Questions arose: “Were all of the teachers saying similar things? How did participants’ views differ?” Concept maps were designed for the developing ideas which supported a “detailed type of analysis” to “discover initial categories and discover relationships among concepts (Strauss & Corbin, 1998, p. 57). Concept maps also supported axial coding (Strauss & Corbin, 1998, p. 126) by presenting a visual analysis of how categories “relate to each other” (p. 126), which allowed the next step of defining properties of the categories.

The list of initial interview concepts was culled, categorized, and connected: “inquiry”, as “used by the teacher”; found “within instructional plans”; in the “PYP curriculum”; and as a tool for “generating questions”. The “inquiry process” emerged as “questioning”; within “instructional decision making”; in “learning activities”, and as having a range of “quality of questions”. The “learning process” was the first theme represented in the concept maps, with elements of a “timeframe” for learning, “thoughts and feelings” about; “teacher and student

interactions” as important within, and with “primary sources” used. Another theme from the concept maps was the “learning kit” with elements of a “content focus” as important; with “student engagement” as related to;” museum visit/s” as part of, and “quantity of student questions” as another focus.

Interviewees revealed a range of inquiry learning and student conceptual development over time. Axial coding noted how the categories “might relate to one another” (Strauss & Corbin, 1998, p. 126). From the themes, a category of “Learning Resource” arose, with the subcategories of learning tool kit, museum, and ‘resource provided by the teacher’. While inquiry was important in the social studies curriculum, the curriculum itself evolved as a category, with the subcategories of PYP, the subsequent curriculum (after the project), and content focus helping to detail the category further (Table 1).

Teachers saw the inquiry process as important and believed in student-led questioning. The quantity of student questions was noted, as was when and how questions were generated. Questions were related to student conceptual understanding, which varied over a range of levels. The main categories of *teacher* and *student* developed, with inquiry process as a subcategory of *student*, with properties and dimensions of questioning, conceptual understanding, engagement, and timeframe for inquiry being finally labeled. The inquiry process, thoughts and feelings, instructional plans, and personal learning were the subcategories developed under *teacher* in Table 1.

Table 1

Main Categories and Subcategories

Student	Teacher	Learning Resource	Curriculum
Inquiry Process	Inquiry Process	Learning Tool Kit	PYP
Level of Learning	Thoughts and Feelings	Museum	Subsequent inquiry curriculum
Demonstration of Learning	Instructional Plans Learning (teacher’s)	Provided or Developed by the Teacher	Content Focus

Teachers used the kit to spur inquiry thinking, such as at centers. Teachers provided additional resources to support student understanding, via natural dyeing materials, student reading comprehension books in the target language, and clay for making Osage village models.

Student social studies question topics ranged from geography to history to literacy. Music from the kit enabled language practice and supported the PYP curriculum. Thus, the subsequent categories of *learning resource* and *curriculum* were labeled, along with their properties of artifacts, support for inquiry utilized in learning activities, and properties of student engagement, support for inquiry, and conceptual connections.

SAMPI Lesson Observations Analysis

To answer Research Question 1: “How do the second-grade teachers at the IBO school incorporate inquiry methods in their instructional practices”, quantitative data was collected in classrooms using the SAMPI Observation Instrument. The researcher received training on SAMPI, which has been tested and approved for reliability and validity. The twenty-three criteria on these measures were recorded for two observations for each of the three classroom teachers: *learning interactions*, *lesson implementation*, *content*, and *classroom culture*. Mean scores were determined for each lesson (from a Likert-type scale, where ratings of 1-3 show “needs improvement”, 4-5 demonstrate “making important progress”, and 6-7 represents “well done” (SAMPI, 2003) (Appendix A). In addition, observation data from six meetings were examined for the themes and then related to the interview concepts: PYP, curriculum process, unit of inquiry and defining content concepts.

Interview and field observation data was analyzed alongside the SAMPI lesson observation instrument data from each classroom to compare, contrast, and integrate participant views and classroom inquiry practices to form a developing picture of inquiry learning supported by primary sources, museum visits and a learning kit in this unique setting.

Results

Interviews

The interview protocol was designed to elicit the teacher’s perspective on student inquiry learning with the intent of later comparing perspectives with actual classroom inquiry observations using SAMPI (Research Question 1), and to learn how the primary sources training, use of artifacts and museum visits shaped their practice, (Research Question 2). After data analysis, results revealed that the interview data helped answer both research questions as noted in the following results.

Results showed that one teacher, George, reported that he observed his students using inquiry daily and he recognized student-generated inquiries as important. He implied that he and

the students have planned learning together. George shared that students frequently have a lot of inquiries themselves. This evidence explains the category of *teacher* and their role in the inquiry process. George described the inquiry learning process as having an *instigation* or *genesis* at a particular point in time. He said: “as soon as the topic comes up they have questions” and “when students can feel something it kinda sparks these questions, comparisons, and inquiries.”

George saw inquiry on a continuum from the genesis of the idea, to focused questions to a quantity of questions to student responses to questions. This continuum of questioning was a dimension of the property of questioning, in the subcategory of inquiry process, under the larger category of *student*.

Teacher Maxime mimicked this idea of inquiry instigation, or “provocation” from the PYP curriculum process: “We also start the inquiry with the PYP, with the provocation we call it” (M42). Maxime provided evidence to answer Research Question 1: How do the second-grade teachers at the IBO school incorporate inquiry methods in instructional practices? Maxime incorporated inquiry methods by using an inquiry starter to begin, directly within the PYP curricular framework. This gave evidence to the importance of the curriculum and the teachers’ use of the curriculum in supporting the inquiry process.

George noted: “As soon as the topic comes up they have questions”, and he described the timing and process of inquiry as supported by the teacher: “they know it with a little supervision.” Student questions often led to more inquiry and could even guide teacher preparation and planning. George showed his belief in student-centered inquiry: “You cannot think as a teacher, OK. Well this is what they will learn and understand in this way.” This statement suggested that perhaps George tried this in his classroom in the past with limited success.

George described the use of the learning tool kit as “Sooo unbelievably helpful” and “the kit was awesome and we were able to integrate it into our centers.” He answered Research Question 2 regarding the use of the resources in instructional practice from their viewpoint. He not only integrated the resource into the curriculum, he designed centers’ learning stations to incorporate the kit materials and concepts. This explanation fit under the category *learning resource*. From Maxime we also learned that the centers allowed children to demonstrate the knowledge gained, such as through sewing, writing, making tools and designing scripts for a play. This result was situated within the subcategory of ‘*demonstration of learning*’.

George discussed a variety of student learning levels and challenges, however. The *levels of student learning* are explained further in the conceptual development property of the inquiry process below.

Melinda addressed the question on incorporating inquiry methods in instructional practices:

“We take the PYP and we revolve everything around it except for math unless we can apply it to math. So, in the morning we have shared reading and in that we find a book that relates to the PYP and we read it as a class.”

Melinda’s interview showed the second-grade team using inquiry – they “revolve everything around it”, like when they “dyed hats” because the students had questions....

“...about how they dyed their clothes...and they said if sheep are white why are their - Indians’ - clothes different colors?” “So that’s why we did the dyeing to show them that they used things from nature to dye their clothes.... we used fruits, blueberries, raspberries I think, coffee grounds, sweet potato...we boiled them for a while and then just dipped them in and let them dry.

This gave further evidence to how teachers incorporate inquiry into their instructional planning and practice (Research Question 1) and relates to Research Question 2 about the use of the objects, artifacts and resources in their teaching – the learning kit contained some cloth and fibers dyed with Osage Orange tree fruits and local plants from the region. Did the students and teacher have an inquiry provocation from observing the dyed materials in the learning kit?

With Melinda’s data we learned more about the assessments to demonstrate understanding, and also that Calendaria, her supervisor, developed reading comprehension and assessment materials for each grade level with concepts from the project. This answered Research Question 2 on the use of the resources in teachers’ instructional practice.

We found Calendaria’s perspective: she desired to re-do this same unit next year; she enjoyed using the kit and ordered another learning kit for a subsequent unit (mammoth kit from South Dakota), and she also observed different levels of student learning:

“A lot of the kids may have come from another school where it’s pretty traditional, so it’s a different way of learning and some of the kids are really reluctant to try it.”

Student inquiry was also ignited by student-generated questions in Calendaria’s room, beginning at the start of the day. Calendaria said: “But very much when we are brainstorming at

the beginning, scaffolding, there's a lot of inquiry there for introduction time." To recapture Levstik and Barton's (2005) definition, we know that inquiry learning is "the process of asking meaningful questions, finding information, drawing conclusions, and reflecting on possible solutions" (p. 19). This interview data supported the importance of student questioning as the origin of the inquiry process, which took place on a continuum, and included varieties of levels of learning.

In addition, Jose noted, "it wasn't very right, you know", regarding students' initial ideas and misconceptions. He described a continuum of learning and conceptual development, from hypothesis generation to later understanding. This range of inquiry on a continuum is an important development found in the evidence. Jose responded: "It's about the questions they had before, their hypotheses...and then later when they know more they check if they were right or wrong." The students grew in conceptual knowledge: "they drew the Spanish and the French trading with the Native Americans...they definitely got that", and their level of questioning progressed also "It's not so much the why questions anymore, it's the how; we go straight to those 'how' questions." In these responses, data took the research to a richer level of understanding the dimensions of inquiry learning possible in second-grade.

Maxime shared "Now we can actually combine two activities because their mind is more mature", while Melinda noted positively: "I think they're becoming a little more pensive and a little more curious and asking these questions"; "It's so much smoother now because they've been into it the first time." Students became more familiar with the learning and questioning process when the teachers involved them with the PYP curriculum for subsequent studies, yet learning was either helped or hindered by their reading level. "I think the major thing I see playing into that (challenges with inquiry) is reading level.... there are 3 levels; basic = need more help; next is on grade level = they know with a little supervision; last level can really take off, work independently, come up with great questions."

By sifting, defining, and connecting the elements, properties, and dimensions of inquiry, we better understand student inquiry in the content areas of history, geography and reading as they were intertwined. Student queries give a glimpse into cognitive processes such as when we learn "They had a lot of questions about that (fur trade)"; "They had a lot of questions about the Indians and their way of life (houses and food)." "One of the best questions was if the Indians used wool why were their clothes colorful? So, when we did research on how they colored

clothes; we actually dyed cloth.” This spoke to the importance the teachers placed on student questions and showed that learning activities could be developed as a result of student-generated questions. The evidence also confirmed Levstik and Barton’s (2005) assessment that when early elementary grade students are allowed opportunities by their teachers to make connections with their own personal lives, they are able to engage with history learning. The evidence for this were the students’ questions on the patterns of clothing, homes, and food use by the Osage in their region, relating the ideas of everyday living to a different culture and to a distant time in the past.

The fact that the students’ questioning led to the teacher’s instructional plan which included a subsequent hands-on activity to help answer their questions cannot be understated. Many teachers are continually unaware of how to implement inquiry teaching and learning (Howes, Lim, & Campos, 2009). The process of student questioning was also initiated through using resources and artifacts from the learning tool kit. As Maxime related,

“It’s absolutely essential, it’s the props – it’s what we need; that’s you know what the heart of everything – so we had many different afternoons which were of pure observation – of what the artifacts were – so we let them first, you know, observe what they were and ask questions as to why we were showing that...and that triggered a lot of questions”.

Jose, from Spain, offered a glimpse of the teachers’ own learning in the project “For me, I learned an awful lot; I didn’t know the history.”. This supported the social constructivist approach which “emphasizes the interdependence of social and individual processes in the co-construction of knowledge” with the goal of understanding learning within a social environment (Palincsar, 1998, p.345). Teachers and students worked together to allow the inquiry process to develop: “It was all because of them...they came up with it and then we went with it”. It seemed teachers and students both were simultaneously engaged in inquiry learning in this project.

SAMPI Data

The researcher visited each of the three second-grade classrooms twice using the SAMPI Lesson Observation Instrument. Each SAMPI scale was recorded for the 45 to 60-minute lessons. From the data tables for each SAMPI observation for each participant, ratings of high and low were culled for reporting. Ratings of 1-3 show “needs improvement”, 4-5 demonstrate “making important progress”, and 6-7 represents “well done” (SAMPI, 2003). A snapshot of

relevant scores is listed here. Lesson times were selected by the teacher for observing inquiry learning.

The Lesson and Classroom scale showed that Maxime organized the classroom for learning centers on a variety of subjects, and for the Planning and Organization scale Maxime received a score in the “well done” category for *classroom resources*. One language lesson was not organized to provide substantive *teacher-student interaction*, though one lesson was, and showed evidence of students asking questions. *Investigative tasks* were evident in one lesson, with students focused, prepared and working. Maxime’s lessons received the highest mean score (7) for *confidence of the instructor, lesson pacing, worthwhile content, teacher knowledge, connection to other lessons* and “*students encouraged to participate*”. Her lowest scores (4, 4.5) were in *lesson wrap-up* and the use of *abstractions*. Scores in the 6 to 6.5 category (“well done”) were evident in the other categories. Maxime’s lessons did not have any scale measures in the “needs improvement” category.

George’s room arrangement was in the “making important progress” category and there were adequate classroom *resources* (6 on the scale), however one lesson was teacher-directed with a call and response pattern used and no *investigative tasks* evident. The next lesson did allow for some *teacher-student interaction* but not *student-to-student interaction* during investigative tasks. George rated high (7) on: *confidence of the instructor, lesson pacing, worthwhile content, and teacher knowledge*. George’s lowest mean score (2) in the ‘needs improvement’ area was in *student interactions*, and next, with a 3.5 in *teacher and student interactions*. These scores can be compared to George’s high score of 6.5 in *students collaborate* and *students and teacher collaborate* - a different measure than student interactions - which reflects more of a focus on conversation around ideas and communicating than on helping and collaborating on a task. So, while students showed respect for each other and the teacher (mean score 6.5), student interactions showed room for improvement.

Calendaria rated high for *room arrangement facilitating student interactions* and an organized lesson to *provide substantive teacher-student interactions* and *student to student interactions*, though investigative tasks were not evident during these particular lessons. Calendaria’s high mean scale scores (7) were on: *lesson pacing, content worthwhile, students engaged with ideas, teacher knowledge, connection to other lessons, students encouraged to participate, and teachers and students collaborate*. Her lowest score was in *connection to other*

subjects and real-world applications, though these scores were in the making important progress range.

SAMPI data showed teachers arranged the learning environment for student-centered learning, leading students through cooperative investigative tasks. Evidence also portrayed a need for improving student to student interactions and offering time for extended substantive conversations between students and between the teacher and the student.

Field Observations

Data analysis of field observations revealed that after participating in PYP professional development at the archives/museum, the second-grade team adapted these IBO PYP concepts for their unit: ‘Where we are in place and time’ with ‘relationships between, and the interconnectedness of individuals and civilizations, from local and global perspectives’’. Teachers struggled to develop the PYP unit, but saw the inquiry process as important and believed in student-led learning through questioning. Teachers discussed the quantity and conceptual level of student questions, when and how questions were generated, and used the resource kit and museum archives materials to spur inquiry. After museum and archives visits and training in the use of primary sources, teachers designed and provided additional resources, such as natural dyeing materials, reading comprehension books in the study language, and clay for making Osage village models. Music from the resource kit enabled students to practice language skills, supported by the PYP unit.

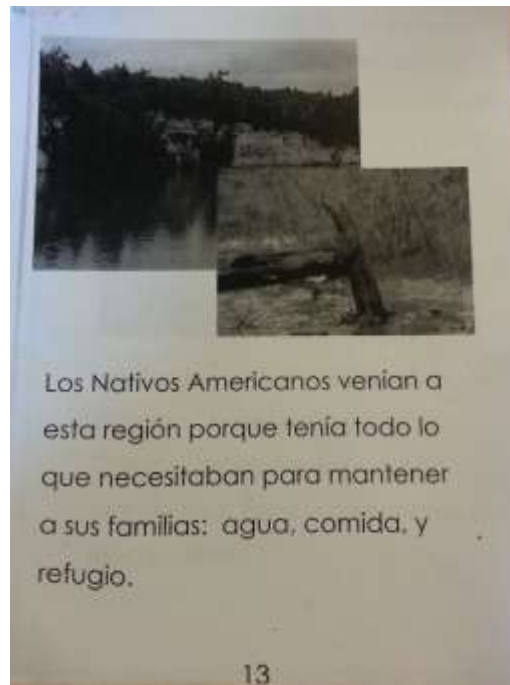


Image 1. From teacher-designed booklet to support the fur trade curriculum unit.

Data Integration and Implications

The qualitative data was compared, contrasted, converged, and integrated with the quantitative data for interpretation (Creswell & Plano Clark, 2011, Creswell, 2012). SAMPI supported the interview data to answer the research questions (Teddlie & Tashakkori, 2009). Field observations aided interpretation by situating teachers' aims in the museum and classroom context; teachers' goals included understanding PYP requirements and determining ways to embed this project's goals into that curriculum, answering Research Question 2. Classroom observations with SAMPI informed of teachers' progress in implementing student-centered inquiry strategies in instruction, answering Research Question 1, supporting the semi-structured interviews and field observations data.

The results also demonstrated that the participants:

- Valued student-generated inquiries and planned learning together with the students.
- Identified the genesis of the inquiry learning process by saying: “as soon as the topic comes up they have questions” “when students can feel something it kinda sparks these questions, comparisons and inquiries.”.

- Explained inquiry on a continuum from the genesis of the idea, to focused questions, to a quantity of questions to student response to questions.
- Utilized primary sources and objects to spur inquiry, such as Osage and French structures (LOC, 2010), and replicas of Osage and French clothing and fur trade items.
- Used museum and archives visits and the learning kit to support the inquiry process during the development of the curriculum.
- Based curricular planning on student ideas and questions generated from the museum visit and subsequent use of primary sources, such as when they did natural dyeing based on student questions after viewing museum and archive images... “about how they dyed their clothes...and they said ‘if sheep are white why are the Indians’ clothes different colors?’” “So that’s why we did the dyeing...we used fruits, blueberries, raspberries I think, coffee grounds, sweet potato...”
- Said students became more familiar with the inquiry questioning process (for subsequent curricular units).
- Admitted that they learned along with the students: “For me, I learned an awful lot; I didn’t know the history.”
- Could extend learning to support student interactions to ignite substantive conversation and questioning.

Teachers’ high SAMPI scores on ‘*providing worthwhile content*,’ ‘making connection to other lessons’, and ‘encouraging students to participate’ may relate to their understanding of inquiry processes learned in the professional development meetings at the archives and museum, the training in using primary sources, and saturation with the historic content. Calendaria’s high score on ‘*encouraging students to participate*,’ and ‘*teachers and students collaborate*’ was evidenced through allowing students to take the lead in the learning process after questioning about clothing dyes and subsequent natural dyeing activities, as well as her design of leveled, illustrated reading booklets about the Osage, in Spanish, and her provision of French explorer’s caps and shirts copied from authentic replicas, knitted and sewn by a family member. The use of objects and primary sources, provided by a teacher newly trained in the use of primary sources and objects to spur historical questioning, led to second-grade student inquiry and engagement.

To review, Maxime exclaimed that the learning kit was “absolutely essential” to student learning in the classroom, thus we see the importance of the learning kit, containing fur-trade era

objects, books, and laminated copies of primary sources (maps, images) to the learning process (Appendix B). When asked to describe challenges - teachers stated: “It was hard for the students...to make a relation about (it) or “It was very surprising for them to know that this happened here in this area.” The range of data allowed us to see the challenges inherent in the process.

Contributions include an understanding of inquiry in second-grade immersion classrooms, and how the teacher-designed PYP unit has been incorporated into the official curriculum for coming years. Additional grades now use primary sources and museum kits in the PYP instructional design process. Teachers note: “they’re familiar with the questions, and they form the same questions but now at different levels”. Inquiry learning is “the process of asking meaningful questions, finding information, drawing conclusions, and reflecting on possible solutions” (Levstik & Barton, 2005, p. 19). This research transports us from the current knowledge that inquiry is important to an understanding that museum visits and primary sources can be used to support early grades in developing historical inquiries. In addition, primary sources sanction second-grade students’ use of inquiry skills within a Primary Years Programme of Inquiry in language immersion contexts. Simultaneously, teachers grew in their own historical literacy (Bickford III, 2017) as they learned about their region and led students in constructivist (Palincsar, 1998; Çalışkan, 2015) historical inquiries (Cowgill & Waring, 2017) in the research process (Çalışkan, 2015, p. 50).

We know that inquiry learning is “the process of asking meaningful questions, finding information, drawing conclusions, and reflecting on possible solutions” (Levstik & Barton, 2005, p. 19). We saw the importance of student questioning as a basis for the inquiry process, and we saw inquiry as a *process* on a continuum beginning with student-led questioning.

This study illustrated how teachers incorporated social studies inquiry learning supported by resources. Students’ inquiry skills improved, as noted by Maxime “they’re familiar with the questions, and they form the same questions but now at different levels” (M165); students became familiar with asking questions and were able apply the same cognitive process to subsequent learning situations but at a more advanced level. “So now when we do it (inquiry) we get much more relevant questions”.

While Calendaria liked the project, she noted that “it was stretched out too long”, yet Maxime exclaimed (that the learning kit) was “absolutely essential” to student learning in the

classroom. The positive and negative views gave credence to teachers' ability to answer questions honestly. In describing challenges, teachers noted that some students did not understand the process: "We had students saying 'Why am I doing this'?", or they had a hard time initially "It was hard for the students...to make a relation about (it). "It was very surprising for them to know that this happened here in this area." The array of data allowed the honest interpretation in these findings.

Unexpected outcomes included learning of students' conceptual development and inquiries over time, different levels of student-led learning, and a variety of levels of student engagement in the IBO PYP setting. Practitioners, including teacher educators and K-12 educators, will be able to use these results to inspire inquiry learning supported by primary sources, artifacts, and museum visits within the curriculum beginning in early grades. Hartland, (2006) notes there is research on the theoretical basis for inquiry learning but "very little research on the practicality of using such theories and approaches in the classroom" (p. 5). This research answers that demand and adds knowledge to inform practices for improving inquiry learning in settings as diverse as our local school immersion network all the way to IBO schools worldwide.

References

- Anderson, R.D. (2007). Inquiry as an organizing theme. In S.K. Abell & N.G. Lederman (Eds.), *Handbook of research on science education*. Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Audet, R. H., & Jordan, L. K. (2005). *Integrating inquiry across the curriculum*. Thousand Oaks, CA: Corwin Press.
- Barton, K. & Levstik, L. S. (1996). “Back when God was around and everything”: The development of children’s understanding of historical time. *American Educational Research Journal*, 33(2), 419-454.
- Barton, K., & Levstik, L. (2004). *Teaching history for the common good*. Mahwah, N.J: Lawrence Erlbaum Associates.
- Barton, K. (2006). *Research methods in social studies education*. Greenwich, CT: Information Age Publishing.
- Bickford III, J. (2017). The curriculum development of experienced teachers who are inexperienced with history-based pedagogy. *Journal of Social Studies Education Research*, 8(1), 146-192.
- Çalışkan, H. (2015). An investigation into the organization levels of social studies teachers with regard to constructivist learning environments in terms of several variables. *Journal of Social Studies Education Research*, 6(1), 49-83.
- Cowgill, D., & Waring, S., (2017). Historical thinking: An evaluation of student and teacher ability to analyze success. *Journal of Social Studies Education Research*, 8(1), 115-145.
- Creswell, J., & Plano, V. (2007). *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage Publications.
- Creswell, J., (2009). *Research Design: Qualitative, quantitative and mixed-methods approaches* (3rd ed.). Thousand Oaks, CA: Sage Publications.
- Creswell, J., & Plano Clark, V. (2011). *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage Publications.
- Creswell, J., (2012). *Educational research: Planning, conducting and evaluating quantitative and qualitative research* (4th ed.). Boston, MA: Pearson.

- Edelson, D. C., Gordin, D. N., & Pea, R. D. (1999). Addressing the challenges of inquiry-based learning through technology and curriculum design. *The Journal of the Learning Sciences*, 8(3), 391-450.
- Fallace, T. D., Biscoe, A.D., & Perry, J. L. (2007). Second graders thinking historically: Theory into practice. *Journal of Social Studies Research*, 31(1), 44-53.
- Flick, U. (2006). *An introduction to qualitative research*. London, England: Sage Publications.
- Hartland, C. (2006). Inquiry-Based learning: Why? Where? How? *Reflecting Education*, 2(1), 5-18.
- Howes, E. V., Lim, M., & Campos, J. (2009). Journeys into inquiry-based elementary science: Literacy practices, questioning, and empirical study. *Science Education*, 93, 189–217. doi: 10.1002/sce.20297
- IBO. (2010). International Baccalaureate Organization. www.ibo.org
- Ivankova, N. V., Creswell, J. W., Stick, S.L, (2006). Using mixed-methods sequential explanatory design: From theory to practice. *Field Methods*, 18(1), 3-20.
- Kilinç, E., Kilinç, S., Kaya, M., Başer, E., Türküresin, H., & Kesten, A. (2016). Teachers' attitudes toward the use of technology in social studies teaching. *Research in Social Sciences and Technology*, 1(1), 59-76.
- Lawson, A. E. (2010). *Teaching inquiry science in middle and secondary schools*. Los Angeles, CA: Sage.
- Levstik, L.S., & K.C. Barton (2008). *Researching history education*. New York, NY: Routledge.
- Levstik, L.S., Barton, K.C., (2011, 2005). *Doing history; Investigating with children in elementary and middle schools* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Mauch, J. & Tarman, B. (2016). A historical approach to social studies laboratory method. *Research in Social Sciences and Technology*, 1(2), 55-66.
- Marshall, M. (1996). Sampling for qualitative research. *Family Practice*, 13(6), 522-525.
- Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. San Francisco, CA: Jossey-Bass.
- Minner, D. D., Levy, A. J., & Century, J. (2010). Inquiry-based science instruction--What is it and does it matter? Results from a research synthesis years 1984 to 2002. *Journal of Research in Science Teaching*, 47(4), 474-496.

- Palincsar, A. (1998). Social constructivist perspectives on teaching and learning. *Annual Review of Psychology*, 49, 345-75.
- Patton, M. Q. (2002). *Qualitative research and evaluation methods*. Thousand Oaks, CA: Sage Publications.
- Pellegrino, A. M., & Kilday, J. (2013). Hidden in plain sight: Preservice teachers' orientations toward inquiry-based learning in history. *Journal of Social Studies Education Research*, 4(2), 1-26.
- Pozuelos, F., Gonzalez, G. T., Canal de Leon, P., (2010). Inquiry-based teaching: Teachers' conceptions, impediments and support. *Teaching Education*, 21(2), 131-42.
- Rudy, D. W. (2006). *Mid-Michigan Mathematics Partnership Evaluation Report 2 of 2; Summative Evidence and Findings*, Central Michigan University. Retrieved from: <http://www.lakehouse.org/images/M3PFinalEvaluationReport.pdf>
- SAMPI *Lesson observation system: Observing lessons in K-12 classrooms using standards-based inquiry-focused criteria*. (2003). Kalamazoo, Michigan: Mallinson Institute for Science Education, Western Michigan University.
- Strauss, A. & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Thousand Oaks: Sage Publications.
- Tarman, B. (2016). Innovation and education. *Research in Social Sciences and Technology*, 1(1), 77-97.
- Teddlie, C., & Tashakkori, A. (2009). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences*. Los Angeles, CA: SAGE.
- Twigg, V. V. (2010). Teachers' practices, values and beliefs for successful inquiry-based teaching in the International Baccalaureate Primary Years Programme. *Journal of Research in International Education*, 9(1), 40-65.
- VanSledright, B. (2004a). What does it mean to think historically, and how do you teach it? *Social Education*, 68(3), 230-235.
- VanSledright, B. (2004b). Inquiry. In K.C. Barton & L.S. Levstik, (2004). *Teaching history for the common good*. Mahwah, N.J.: Lawrence Erlbaum Associates.
- Wells, C. G. (1999). *Dialogic inquiry: Towards a sociocultural practice and theory of education*. New York, NY: Cambridge University Press.

Appendix A.

Mean SAMPI Observer Ratings for the Spanish and French Immersion Classroom Lessons Observed

INDICATOR/Name n=number of lessons observed Total lessons observed = 6 (2 per teacher)	Maxime French School		Mean	Inquiry Level	George Spanish School		Mean	Inquiry Level	Calendaria Spanish School		Mean	Inquiry Level
<u>Observation</u>	Obs 1	Obs 2			Obs 1	Obs 2			Obs 1	Obs 2		
Implementation												
Instructor confidence	7	7	7	High	7	7	7	High	6	7	6.5	High
Teacher-student interaction probing	7	4	5.5	Mid	1	6	3.5	Low	3	7	5	Mid
Classroom management	5	6	5.5	Mid	5	7	6	High	6	5	5.5	Mid
Pace	7	7	7	High	7	7	7	High	7	7	7	High
Student-student interaction	7	6	6.5	High	1	3	2	Low	7	6	6.5	High
Reflection on lesson	7	3	5	Mid	7	4	5.5	Mid	3	7	5	Mid
Wrap-up of lesson	6	2	4	Mid	n/a	4	4	Mid	3	7	5	Mid
Content												
Importance of content	7	7	7	High	7	7	7	High	7	7	7	High
Intellectual engagement of students	6	7	6.5	High	6	6	6	High	7	7	7	High
Portrayal of subject matter	6	6	6	High	4	5	4.5	Mid	3	6	4.5	Mid
Instructor competence	7	7	7	High	7	7	7	High	7	7	7	High
Connections to lessons in unit	7	7	7	High	7	6	6.5	High	n/a	7	7	High
Connections to subjects	7	6	6.5	High	2	6	4	Mid	1	7	4	Mid
Application to real-world	5	n/a	A5	Mid	1	7	4	Mid	1	7	4	Mid
Use of abstractions	5	4	4.5	Mid	5	7	6	High	6	7	6.5	High
Culture												
Active participation of students encouraged	7	7	7	High	6	7	6.5	High	7	7	7	High
Teacher's respect for student ideas	6	7	6.5	High	5	7	6	High	6	7	6.5	High
Student's respect for other students' ideas	6	4	5	High	4	5	4.5	Mid	5	5	5	Mid
Students encouraged to generate ideas	7	6	6.6	High	2	4	3	Low	2	7	4.5	Mid
Student-student collaborative relationships	7	5	6	High	4	4	4	Mid	5	6	5.5	Mid
Teacher-student collaborative relationship	7	6	6.5	High	5	7	6	High	7	7	7	High

INQUIRY: Ratings from SAMPI Observation System. Alignment with inquiry-based methods: 1-3 = low or poor alignment, 4-5 = mid or some alignment, 6-7 = high alignment with inquiry-based instruction. Also categorized as: Needs improvement, making progress, or well done in SAMPI (2003, p. 4).

Appendix B. Map digitized for this project. National Park Service, JEF-10543. 1721 by John Senex."

