

The Signal and the Noise: Coaching Pre-Service Candidates to Teach with Questions, Tasks, and Sources

Kathy Swan, Ryan Crowley and Gerry Swan

In his best-selling book, *The Signal and the Noise* (2012), Nate Silver investigates the art and science of predicting the future by finding a true signal in the noisy world of big data.¹ He interviews successful forecasters from a range of fields—from weather to sports to the stock market—trying to weave together a theory of what makes these individuals' predictions reliable. What becomes clear in the book is that these experts do not pay attention to all the data points and instead focus on the most salient variables.

Teacher educators are also inundated with “noisy data.” We attend to what seems like a thousand standards documents (e.g., CAEP Standards, SPA standards, and InTASC standards) with what seem like a million discreet ideas about what our pre-service teachers should know and be able to do.² Against this backdrop, we have to make choices on where to place our focus in courses and clinical placements and how to attend to the many details of teaching and learning, while also imprinting our students with the big ideas of the social studies and effective classroom pedagogies.

Inquiry has become the clear signal in social studies. The publication of the *C3 Framework* in 2013 and the recent

adoption of the new *Kentucky Academic Standards for Social Studies* underscore inquiry; so we are “all inquiry,” all the time in our methods classes at the University of Kentucky.³ We teach students about the foundations of inquiry—questions, tasks, and sources—and how to build inquiry-based curriculum and instructional strategies for social studies.⁴ Students begin their student teaching experiences knowing the difference between a compelling and supporting question, the role of a formative and summative performance task, and how disciplinary sources should be curated and adapted for classroom use.

But student teaching placements can also be noisy places with competing and contradictory signals around inquiry. One of the most powerful of these signals is actually from within, consisting of the experiences of student teachers as learners. Most student teachers did not experience inquiry learning as students. Instead, they were likely in classrooms dominated by the lecture, and the read-the-book, and answer-the-questions pedagogies that have long dominated our field. This apprenticeship of observation presents unique challenges but may be countered with a recognition that how we

learn may shape how they teach, along with consistent modeling and support for new inquiry-based approaches.⁵

For years, we used a clinical observation form that gauged general teaching strategies as a way to facilitate conversations between the pre-service teacher, the cooperating teacher, and the university supervisor. Not surprisingly, we struggled to stay on message about inquiry-based teaching. So, we asked ourselves: How do we amplify the inquiry signal when students move from our classes to their student teaching placements? We decided to focus our attention on the observation form, rebuilding it around key signals of inquiry: questions, tasks, and sources.

In this article, we introduce the Questions-Tasks-Sources (QTS) Observation Protocol that we have just deployed in spring 2020.⁶ We begin with a short overview of our teacher education program and the curricular goals and outcomes of our core methods class. In doing so, we set the context for the QTS Observation Protocol and how the foundations of questions, tasks, and sources are operationalized in the instrument. We then walk through the four parts of the instrument, highlighting important



Photo by Amanda Nelson, Co-Director of Communications, University of Kentucky.

Helena Jackson, student teacher in the College of Education at the University of Kentucky.

criteria and the big ideas of each part. We end with a discussion of how we are using the instrument, early lessons we are learning, and suggestions for how the instrument might be used in schools.



Honing in on the QTS Signal

At the University of Kentucky, our secondary social studies students complete a three-semester sequence that earns them a master’s degree along with teaching certification. The program includes two core methods courses and a student teaching seminar that allow us to focus on the curricular, instructional, and assessment aspects of an inquiry-based teaching practice. We do so through a series of projects that build our students’

capacity to focus on “the signal”—questions, tasks, and sources (QTS). Further, the 2019 adoption of the *Kentucky Academic Standards for Social Studies*,⁷ organized around the inquiry practices of questioning, investigating, using evidence, and communicating conclusions, provides even greater encouragement for our students—inquiry is now law in Kentucky!

In terms of curricular design and instructional implementation, our students practice crafting and teaching inquiry lessons, both using the more extensive format of the Inquiry Design Model and crafting smaller-scale inquiries guided by the QTS ethos.⁸ We help students conceptualize how to make inquiry routine in their future classrooms, demonstrating how to anchor a curriculum map with inquiry design models (IDMs) and helping them to see how QTS can be the daily drumbeat of their practice. Even when we task our students with presenting or leading discussions in our methods courses, they are required to arrive with compelling and supporting questions, sources for students to discuss and analyze, and tasks to help organize the discussion and to scaffold interaction with the sources.

QTS also guides our assessment work. During their student teaching semester, our preservice teachers complete an action research project on improving and assessing claim-writing. Preservice teachers begin with a baseline analysis of initial evidentiary claims their students construct. They develop a series of lessons that target areas that need improvement (e.g., accuracy, clarity, reasoning of claims), implement those lessons, gauge the success of their instructional intervention, and then reflect on the experience. Students do an oral defense of the project as their summative examination, required for graduation from the program.

We also use inquiry as a way to operationalize the themes that guide our program. Our students explore constructivist approaches to teaching and learning by developing questions and tasks that draw out students’ prior knowledge and that allow them to build understanding through peer interactions. We also push our students to use sources that represent multiple perspectives, particularly sources that introduce counternarratives and marginalized voices.⁹ Whether we are helping students to develop concrete instructional practices or to grapple with

big ideas related to equity and inclusivity, QTS guides the way. It is the backbone of everything we do. To bring this way of thinking into how we observe and coach our preservice teachers, we developed the QTS Observation Protocol.

The QTS Observation Protocol

The QTS Observation Protocol is reproduced on pages 105–106. It is comprised of four parts: (1) Use of Questions; (2)

Use of Performance Tasks; (3) Use of Disciplinary Sources; and, (4) Creates and Maintains Learning Environment. Each part of the instrument includes a set of indicators that describes both discrete and intersecting aspects of the overarching idea. While we consider every indicator to be important, we do not expect that all indicators will be demonstrated during each classroom observation. To address this factor without unduly penal-

izing our student teachers, the rating scale includes an ‘N’ option for noting that an indicator was not a focus for the lesson. At the end of this article, we delve more deeply into how the instrument is used in the evaluation cycle. In the sections that follow, we describe each part of the instrument, highlighting important criteria and the way in which they relate to one another.

Use of Questions

Pre-service teachers are expected to frame their instruction with compelling and supporting questions. In the QTS Observation Protocol, we acknowledge the explicit use of these kinds of questions, but also the quality of and relationship between the questions. For example, compelling questions should be academically rigorous, interesting to students, but also functional in the curriculum.¹⁰ Compelling questions set students up for an argumentation task in which they construct evidentiary claims in response. Supporting questions are designed to build up students’ understanding of content that is necessary for answering compelling questions. Student teachers are asked to clearly align supporting questions with the big ideas of the compelling question. In other words, student teachers should demonstrate that questions are an instructional compass providing direction and purpose for inquiry-based social studies.

We also acknowledge other kinds of questions that contribute to the culture of

Table 1: Use of Questions

? Use of Questions	
<input type="checkbox"/>	Teacher uses compelling question/s to frame and guide instruction. The CQ is rigorous, relevant, and provides an opportunity for students to craft evidence-based arguments.
<input type="checkbox"/>	Teacher builds students’ knowledge through the use of supporting questions. SQs are intentionally sequenced and clearly related to the big ideas within the CQ.
<input type="checkbox"/>	Teacher uses supporting questions aligned with tasks and sources.
<input type="checkbox"/>	Teacher provides instructional space for student-generated questions.
<input type="checkbox"/>	Teacher uses questions to check for students’ understanding and to engage students in the content. Questions connect to prior knowledge, promote curiosity, and connect to out-of-classroom contexts.

an inquiry-based classroom. For example, student teachers should create instructional space for student-created questions. In our methods classes, students learn about the Question Formulation Technique (QFT) and other questioning strategies that help students analyze sources, become curious about disciplinary ideas, and frame independent research projects. Additionally, we privilege formative checks for understanding and just-in-time questions that help teachers gauge students’ prior knowledge

as well as whether they are understanding the material.

Student teachers are asked to provide supplementary materials (e.g., lesson plans, ancillary materials) for a classroom observation to situate a particular lesson within the broader curriculum. In this way, an observer should see how a lesson focused on a supporting question relates to the other supporting questions as well as the compelling question. The criteria for *Use of Questions* are listed in Table 1.

Use of Performance Tasks

Pre-service teachers are expected to design formative and summative performance tasks that provide a feedback loop to inform and improve instruction. The tasks should be constructed as performances designed so that students practice argumentation (e.g., claim-making, evidentiary reasoning) and disciplinary thinking skills (e.g., reasoning

spatially, analyzing cause and effect). Argumentation is central to inquiry so students need practice in evidentiary claim-making on a regular basis and they need to receive clear and consistent feedback on improving their argumentation skills.

Student teachers should also demonstrate that students extend their understanding by communicating the results of

inquiry through expressive performance tasks (e.g., Socratic discussions, documentary making). Additionally, student teachers should include opportunities for their students to take informed action. These opportunities need not be elaborate; they could include something as simple as having an informed conversation with others about the civic ideas that surface during instruction.¹¹ The timing

of class observations might preclude supervisors from seeing these types of experiences firsthand, so we expect that our student teachers demonstrate how their instruction is regularly leading students to authentic learning opportunities in social studies.

It is also expected that student teachers give thought to the balance between individual and collaborative tasks and that, over the course of the student teaching placement, there are different student grouping structures present during the observations (e.g., partners, small group). We also encourage our students to develop whole-group-worthy collaborative tasks that are open-ended, require problem solving, and promote both individual accountability and positive group interdependence.¹²

These criteria represent the full plate of performance tasks. Realistically then, it

Table 2: Use of Performance Tasks

Use of Performance Tasks	
<input type="checkbox"/>	Teacher uses a variety of formative performance tasks to provide students feedback on their progress and to check for understanding.
<input type="checkbox"/>	Teacher uses formative tasks to target argumentation skills and other important disciplinary work within the social studies.
<input type="checkbox"/>	Teacher uses argumentation as a cornerstone of the students' summative evaluation.
<input type="checkbox"/>	Teacher is clear about the qualities of a good argument (evidentiary, reasoned, accurate, and clear) and helps students in building better arguments by providing meaningful feedback.
<input type="checkbox"/>	Teacher provides opportunities for students to express their understanding through extension tasks and by taking informed action.
<input type="checkbox"/>	Teacher provides opportunities for cooperative learning experiences that promote individual accountability and group interdependence.

is perfectly acceptable for a single, hour-long observation to only reveal 1–2 criteria. The larger goal of the observation instrument is to act as a set of cues for students to think about the individual parts of assessment (e.g., formative tasks), to

connect them to the larger aims of assessment (e.g., summative assessment), and to hear a loud and unmistakable signal that argumentation should be at the center of their instruction. (See Table 2 for the *Use of Performance Tasks* criteria.)

Use of Disciplinary Sources

Preservice teachers are expected to provide a variety of sources (e.g., images, text, video) for their students to analyze in order to construct responses to compelling and supporting questions. Sources act as the raw material for every lesson the preservice teachers teach. Analysis of sources should be integral to the completion of the formative and summative performance tasks that ask students to engage in oral or written argumentation and other disciplinary thinking skills.

The QTS Protocol also emphasizes source selection and adaptation. Preservice teachers serve several masters in this process. Their source curation must demonstrate knowledge of the subject matter, inclusion of multiple and marginalized perspectives, understanding of the importance of instructional scaffolds and source modification, and utilization of different source modalities.

As an example, an inquiry lesson related to United States involvement in the Spanish-American War could include sources that capture significant events such as the sinking of the USS *Maine* or

Table 3: Use of Disciplinary Sources

Use of Disciplinary Sources	
<input type="checkbox"/>	Teacher uses a variety of source types to engage students (e.g., images, text, video).
<input type="checkbox"/>	Teacher uses sources that demonstrate multiple perspectives (e.g., inclusion of marginalized perspectives, conflicting evidence on a topic).
<input type="checkbox"/>	Teacher adapts sources (e.g., excerpt, annotate, modify) and creates instructional scaffolds to address learner needs.
<input type="checkbox"/>	Teacher uses sources that help students complete formative and summative tasks in order to answer compelling and supporting questions.
<input type="checkbox"/>	Teacher uses sources that demonstrate deep knowledge of the subject matter.

the role of yellow journalism in stoking fervor for war. Sources could also demonstrate anti-imperialist rhetoric within the United States and the experiences of those in Cuba or the Philippines who were impacted by the war. Student teachers also need to demonstrate the ability to adapt sources (e.g., excerpt, annotate) and scaffold them to meet the needs and abilities of the students in the classroom. Finally, sources should be varied in type, e.g., the text of a newspaper editorial, a political cartoon, historical photographs, or even a video clip of a historian discussing events related to the war. Table 3

Sources act as the raw material for every lesson the preservice teachers teach.

lists the criteria for *Use of Disciplinary Sources*.

Creates and Maintains Learning Environment

The fourth component of the QTS Observation Protocol directs preservice teachers to consider the overall learning environment. Although we expect that questions, tasks, and sources will drive their lesson planning, we expect that knowledge of their students' unique characteristics, abilities, and backgrounds will drive their pedagogical decisions as well. Supervisors should note whether the preservice teacher relates to a wide array of students in a respectful and compassionate manner while communicating high expectations. They should also be able to see student teachers engage in positive redirections when students are off task as well as other community-building practices such as the facilitation of discussions and cooperative learning experiences.

Table 4: **Creates and Maintains Learning Environment**

Creates and Maintains Learning Environment	
<input type="checkbox"/>	Teacher demonstrates command of subject matter and connects learning to the real world.
<input type="checkbox"/>	Teacher communicates high expectations for all students.
<input type="checkbox"/>	Teacher demonstrates knowledge of students' diverse backgrounds and individual learning needs.
<input type="checkbox"/>	Teacher facilitates individual and cooperative learning experiences.
<input type="checkbox"/>	Teacher is proactive and positive when redirecting off-task student behavior.
<input type="checkbox"/>	Teacher uses technology and other classroom tools to enhance student learning.

Although these indicators may seem more subjective than those in the previous three categories, we view the scores that student teachers receive here as conversation starters for post-observation conferences. We also view these aspects

of teaching as aspirational rather than fixed destination points due to the complex human dynamics of high school classrooms. (See Table 4 for the criteria for *Creates & Maintains Learning Environment*.)

Coaching for Inquiry

The QTS Observation Protocol is meant to focus the conversations among members of the teaching triad (student teacher, cooperating teacher, and university supervisor) that occur before and after classroom observations. At the University of Kentucky, student teachers are required to have six documented observations during the field experience, at least four of which are completed by the university supervisor and two by the cooperating teacher over the 14-week school placement.

The QTS Protocol has four levels of quality as scoring options—basic, developing, satisfactory, exemplary (see Table 5). There is also a “Not a Focus (N)” option that allows items to go unscored on a single observation. Student teachers have agency in this process, as they can ask the observer to focus on just one part of the instrument for an observation (e.g., use of questions). Although individual items are rated, no overall score or grade needs to be given to a student. Instead, the use of scores on individual indica-

Table 5: **Scoring Options for the QTS Protocol**

N - Not a focus. If the item should have been present but was missing, mark it 1.
1 - Observed with implementation at a basic level
2 - Observed with implementation at a developing level
3 - Observed with implementation at a satisfactory level
4 - Observed with implementation at an exemplary level

tors allows for the university supervisor or cooperating teacher to provide targeted rather than global feedback.

Looking Ahead

The QTS Observation Protocol is being piloted in our teacher education program, and early data tell us the instrument is helping student teachers (and their supervisors) focus on the signals, rather than the noise, of teaching. In a future column, we will share a case study on the “QTS Observation Protocol in Action,” demonstrating the role the instrument is playing in improving our coaching in the field.

Going forward, we plan to engage with our university supervisors, student teachers, and cooperating teachers about possible revisions to the QTS Observation Protocol. We hope

to use data generated from spring 2020 student teaching observations for purposes of program improvement as we refine aspects of the methods courses in our certification program. Additionally, we are in discussions with districts about using the QTS Observation Protocol for in-service teacher development, helping social studies educators and administrators as they engage in walk-throughs, peer observations, and instructional coaching.

The rollout of inquiry-based standards in Kentucky will drive changes in both pre-service and in-service teacher development. Our hope is that the QTS Observation Protocol adds to the dialogue about the nature of inquiry in social studies and instantiates a language of questions, tasks, and sources for our field. ●



Questions-Tasks-Sources (QTS) Observation Protocol

N - Not a focus. If the item should have been present but was missing, mark it 1.

- 1 - Observed with implementation at a basic level
- 2 - Observed with implementation at a developing level
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- 4 - Observed with implementation at an exemplary level



Use of Questions

- Teacher uses compelling question/s to frame and guide instruction. The CQ is rigorous, relevant, and provides an opportunity for students to craft evidence-based arguments.
- Teacher builds students' knowledge through the use of supporting questions. SQs are intentionally sequenced and clearly related to the big ideas within the CQ.
- Teacher uses supporting questions aligned with tasks and sources.
- Teacher provides instructional space for student-generated questions.
- Teacher uses questions to check for students' understanding and to engage students in the content. Questions connect to prior knowledge, promote curiosity, and connect to out-of-classroom contexts.



Use of Disciplinary Sources

- Teacher uses a variety of source types to engage students (e.g., images, text, video).
- Teacher uses sources that demonstrate multiple perspectives (e.g., inclusion of marginalized perspectives, conflicting evidence on a topic).
- Teacher adapts sources (e.g., excerpt, annotate, modify) and creates instructional scaffolds to address learner needs.
- Teacher uses sources that help students complete formative and summative tasks in order to answer compelling and supporting questions.
- Teacher uses sources that demonstrate deep knowledge of the subject matter.



Use of Performance Tasks

Teacher uses a variety of formative performance tasks to provide students feedback on their progress and to check for understanding.

Teacher uses formative tasks to target argumentation skills and other important disciplinary work within the social studies.

Teacher uses argumentation as a cornerstone of the students' summative evaluation.

Teacher is clear about the qualities of a good argument (evidentiary, reasoned, accurate, and clear) and helps students in building better arguments by providing meaningful feedback.

Teacher provides opportunities for students to express their understanding through extension tasks and by taking informed action.

Teacher provides opportunities for cooperative learning experiences that promote individual accountability and group interdependence.



Creates and Maintains Learning Environment

Teacher demonstrates command of subject matter and connects learning to the real world.

Teacher communicates high expectations for all students.

Teacher demonstrates knowledge of students' diverse backgrounds and individual learning needs.

Teacher facilitates individual and cooperative learning experiences.

Teacher is proactive and positive when redirecting off-task student behavior.

Teacher uses technology and other classroom tools to enhance student learning.

Comments:

Notes

1. Nate Silver, *The Signal and the Noise: Why So Many Predictions Fail—But Some Don't* (New York: Penguin Books, 2012).
2. For examples of standards documents commonly used in teacher education programs, see CAEP Standards: <http://caepnet.org/standards/introduction>, SPA standards: www.socialstudies.org/standards/teacherstandards, InTASC standards <https://ccsso.org/resource-library/intasc-model-core-teaching-standards-and-learning-progressions-teachers-10>
3. C3 Framework, www.socialstudies.org/c3; Kentucky Department of Education. *Kentucky Academic Standards for Social Studies*, https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Kentucky_Academic_Standards_for_Social_Studies_2019.pdf
4. S.G. Grant, Kathy Swan, and John Lee, *Inquiry-Based Practice in Social Studies Education: The Inquiry Design Model* (New York: Routledge and C3Teachers, 2017); Kathy Swan, John Lee, and S.G. Grant, *Inquiry Design Model: Building Inquiries in Social Studies* (Silver Spring, Md.: National Council for the Social Studies and C3Teachers, 2018); Kathy Swan, S.G. Grant, and John Lee, *Blueprinting an Inquiry Based Curriculum: Planning with the Inquiry Design Model* (Silver Spring, Md.: National Council for the Social Studies and C3Teachers, 2019).
5. Alicia R. Crowe, Todd S. Hawley, and Elizabeth W. Brooks, "Ways of Being a Social Studies Teacher: What are Prospective Teachers Thinking?" *Social Studies Research & Practice* (Board of Trustees of the University of Alabama) 7, no. 2 (2012).
6. Kathy Swan, Ryan Crowley, and Gerry Swan, "The Questions-Tasks-Sources (QTS) Observation Protocol," www.c3teachers.org/qts-protocol/
7. Kentucky Department of Education. *Kentucky Academic Standards for Social Studies*, https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Kentucky_Academic_Standards_for_Social_Studies_2019.pdf
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9. Ryan Crowley and LaGarrett King, "Making Inquiry Critical: Examining Power and Inequity in the Classroom," *Social Education* 82 (2018): 14-17.
10. Grant, Swan, and Lee, *Inquiry-Based Practice in Social Studies Education*.
11. Swan, Grant, and Lee, *Blueprinting an Inquiry Based Curriculum*.
12. Elisabeth Cohen and Rachel Lotan, *Designing Groupwork: Strategies for the Heterogeneous Classroom* (Teachers College Press: New York, 2014)

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KATHY SWAN, RYAN CROWLEY, and **GERRY SWAN** are faculty in the Department of Curriculum & Instruction in the College of Education at the University of Kentucky. Kathy and Ryan co-chair the Secondary Social Studies Education program. Gerry teaches courses in Instructional Systems Design and is an Assistant Dean for Program Assessment. The three amigos co-developed the QTS Observation Protocol in an effort to improve alignment between program assessments and program goals.

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