PEDAGOGY

Inquiring Minds: Using the Question Formulation Technique to Activate Student Curiosity

Andrew P. Minigan and Joshua Beer

The Question Formulation Technique, co-created by Dan Rothstein and Luz Santana and described in their 2011 book *Make Just One Change: Teach Students to Ask Their Own Questions*, is an easy-to-use yet powerful instructional strategy that teaches *all* students how to ask and use their own questions.[1] The technique (abbreviated QFT) creates an intellectually stimulating environment that promotes student "ownership," and creates a classroom environment where students feel comfortable participating.[2] Students are taught how to begin historical inquiry by formulating their own questions,[3] and in pursuing their own curiosity students become more engaged learners. As part of the strategy, students generate questions, think critically about their questions, do rigorous work in refining and prioritizing their questions, and then reflect on the process while continuing to use their questions as the lesson or unit progresses. In a 2015 article for *Educational Leadership*, Rothstein, Santana, and Minigan suggest that teaching students how to ask their own questions is not a detour, but a shortcut to deeper learning. [4] The QFT may be easily integrated into a pre-existing or new history lessons to engage students in primary-source investigation and interpretation, to introduce controversial historical claims, and to spark students' investigative thinking.

Through backward planning and anticipating how students' questions are likely to be useful in the lesson, the educator can strategize on how the QFT will address teaching and learning goals. As one middle-school social studies teacher from Lexington, Massachusetts, put it, "I used to say to my students, 'here are the questions I want you to know.' And they would do it, but there's no excitement. [The QFT] puts them in the driver's seat, and the questions they came up with are all the ones I would have come up with. And now, as drivers, it's like, 'let's go find the answers to *our* questions.'"[5] Thus, educators are able to develop students' question-asking and critical-thinking skills while advancing the lesson. This article provides an overview of the QFT, and describes the different ways the QFT has been used in history

classrooms to create a learning environment that actively promotes student-driven historical inquiries.

Selected Literature Review

Many educators recognize the importance of teaching students how to ask their own questions. Dean James Ryan of the Harvard Graduate School of Education mentioned in his 2016 commencement speech, "I would urge you to resist the temptation to have answers at the ready and to spend more time thinking about the right questions to ask. The simple truth is that an answer can only be as good as the question asked."[6] Stuart Firestein, Chairman of Biological Sciences at Columbia University, echoes this notion in his book *Ignorance: How it Drives Science*, writing that ignorance "leads us to frame better questions, the first step to getting better answers."[7] Indeed, while it is important for students to acquire information, to be knowledgeable, and to understand, it is arguably just as important for students to know *how* to acquire information, to be aware of their ignorance, and to identify and explore what they do not yet understand.

A shift in education is underway in which educators are increasingly working to equip students with the skills and the abilities to continue to learn beyond the confines of the classroom. This is reflected in recently developed educational standards and frameworks, including The National Council for Social Studies' *College, Career, and Civic Life (C3) Framework for Social Studies Standards*,[8] *Common Core State Standards*,[9] and *Next Generation Science Standards*.[10] Instructional approaches—including inquiry-based learning and project-based learning—emphasize the development of students' critical-thinking and problem-solving skills. One such skill is that of inquiry.

For example, the *C3 Framework* was created to provide states additional guidance on strengthening social studies curricula to better prepare students for college, career, and civic readiness.[11] The *C3 Framework* is designed on an Inquiry Arc that frames interconnected ideas through the practice of inquiry and the pursuit of knowledge through questions. Dimension 1 of the *C3 Framework*, "developing questions and planning inquiries," focuses on students' ability to formulate and use questions to drive their learning and inform civic action.[12] Analyzing and researching historical texts, considering different historical perspectives, crafting arguments, and making connections

between literature and contemporary issues are all elements that benefit from student-driven inquiry.

Yet there seems to be a gap between educators' intent to teach students how to ask questions and students' real development of this fundamental skill for learning. When asked what a student should gain from attending college, Leon Botstein, president of Bard College, replied, "The primary skills should be analytical skills of interpretation and inquiry. In other words, know how to frame a question."[13] But, in a recent study of undergraduate college students, it was found that, "less than one-third (27%) were in agreement that college had helped them develop the skill of asking their own questions."[14] Students are completing college and heading into the twenty-first-century workforce feeling as though they have not developed their question-asking skills.

Research suggests that traditionally, formal education at every level has overlooked the importance of implementing strategies to nurture students' ability to ask questions. Researchers have found that while younger children tend to ask questions at home, they ask fewer questions in school.[15] Daly, Kreiser, and Roghaar established that students are even less comfortable asking questions during class as they get older, [16] and Dillon found that students are afraid to ask questions during class. [17] Research also finds that teachers ask more questions than students,[18] and that low-achieving middle school and high school students ask fewer questions than their peers.[19] Despite the strong emphasis placed upon inquiry in national standards, and leading educators speaking about the value of asking questions, translating this into classroom practice can be difficult for educators who work with a large number of students and have myriad topics and skills to address.

The Question Formulation Technique

Discrete strategies and tools that deliberately build students' question-asking skills are essential for the twenty-first-century classroom. The Question Formulation Technique (QFT) is a simple yet rigorous process in which students produce, improve, and strategize on how to use their questions. As John Lee, Kathy Swan, and S.G. Grant, authors of the *C3 Framework*, relate, "The Question Formulation Technique allows teachers and students to work with questions in transformative ways as it prioritizes students' interests and provides a collaborative civic space for curiosity and wonder."[20] Boston University

education researcher Shelby Clark has studied the QFT and has found that "initial results indicate that the QFT has a significant positive impact on students' curiosity."[21] Educators effectively engage students in meaningful learning that is relevant to their interests, while also using this increased student interest, engagement, and curiosity as a means for teaching content.

At the beginning of the QFT, students are presented with a Question Focus (called a "QFocus"), a stimulus for jumpstarting student questions. The QFocus may be a statement, phrase, visual piece, aural aid, math problem, or equation. The QFocus is intended to elicit student questions that are relevant to the next steps in the lesson; the educator should consider ahead of time some possible questions that their QFocus might stimulate.

Collaboratively, in groups, students generate and list their questions, following the strategy's four rules for producing questions:

1) Ask as many questions as you can

2) Do not stop to discuss, judge, or answer any questions

3) Write down every question exactly as stated

4) Change any statement into a question

Once question-generation is complete, students begin the rigorous work of analyzing and refining their questions, starting with an exercise in which they identify different types of questions. Going through the list of produced questions, students mark each either with a "C," for *closed-ended* questions—ones that can be answered with *yes*, *no*, or a single word; or an "O," for *open-ended* questions, which require a longer response. Then, students discuss the advantages and disadvantages of the two types of questions, and how the way a question is asked may affect the information that is targeted. Students then proceed to work on changing one closed-ended question to an open-ended one, and vice versa.

The teacher then provides prioritization instructions, such as, "*Choose your three most important questions*." Students revisit their questions with a critical eye, thinking about which will be most useful

as they keep in mind prioritization instructions and move into next steps. While many educators use the prioritization instruction above, these instructions can be adjusted according to the lesson. For example, if the teacher presents a political cartoon as the QFocus, and the lesson is to further investigate the context for the image, prioritization instructions might be, "*Choose three questions that you will work to answer*."

In the final step, students and teachers discuss specifically how students will begin to explore, use, and answer their questions. Thereafter, students will reflect on their questions and their experience with the QFT as the lesson moves forward.

Steps of the Question Formulation Technique

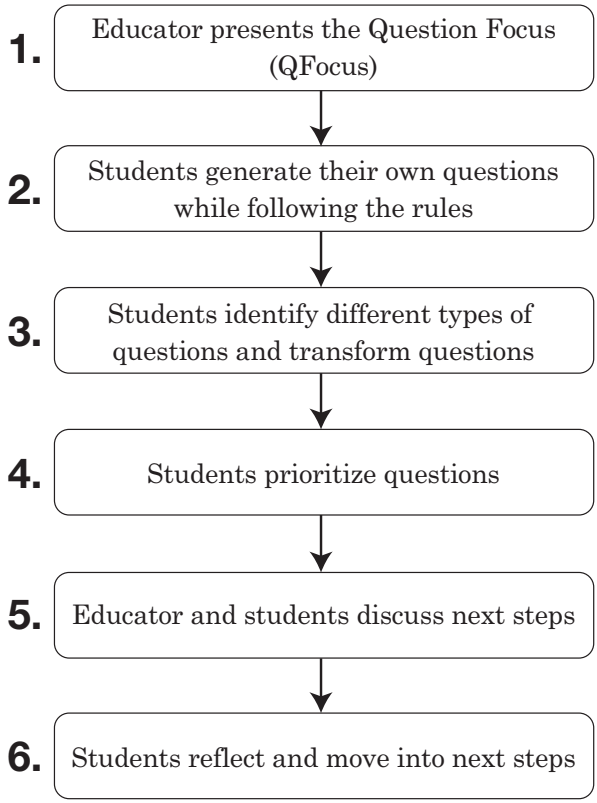


Figure 1. Steps of the Question Formulation Technique

The Art and Science of the QFT

Although the QFT is a simple, consistent, step-by-step protocol, there are still many crucial decisions teachers can make to tailor and innovate on the process, based on their knowledge of their students and their insight into best practices in their classrooms. The QFT is a "science" in that the steps and the rules for producing questions are distilled from best practices proven over many years to produce consistent results. The "art" of the QFT is the style and expertise teachers bring to the strategy. Artful, creative design, particularly at three key points of the design process (i.e. designing the QFocus, developing prioritization instructions, and creating reflection questions), directly impacts the directions students take their questions, and determines the intellectual rigor of the work students will accomplish with their questions.

Rather than a static strategy, the QFT is a dynamic approach that is enhanced through educators' adaptations and design-thinking. The QFT provides a structure upon which educators can build as they consider how best to shape the technique to maximize its effectiveness for their teaching and learning goals. Other possible logistical adjustments (the size of groups, who records or writes down the questions, whether student questions will be posted on the walls of the classroom, if and how to use technology, etc.) should also be considered.

QFocus design is often found to be one of the more challenging aspects of the QFT. It can be difficult to choose or conceive a prompt that will be interesting enough to spur divergent thinking, while also not eliciting questions that fall too far afield of the intended lesson. While planning the QFT, educators will sometimes put themselves in their students' shoes and anticipate what questions they are likely to have about the QFocus. Testing out QFoci with colleagues is another way to gauge their effectiveness. Using the QFT can sometimes be perceived as a dramatic shift for educators—a relinquishing of control over their classrooms in favor of a more student-centered approach. However, when designed thoughtfully it can be a shortcut to advancing teaching and learning objectives, and one helpful tool in educators' pedagogical toolbox.

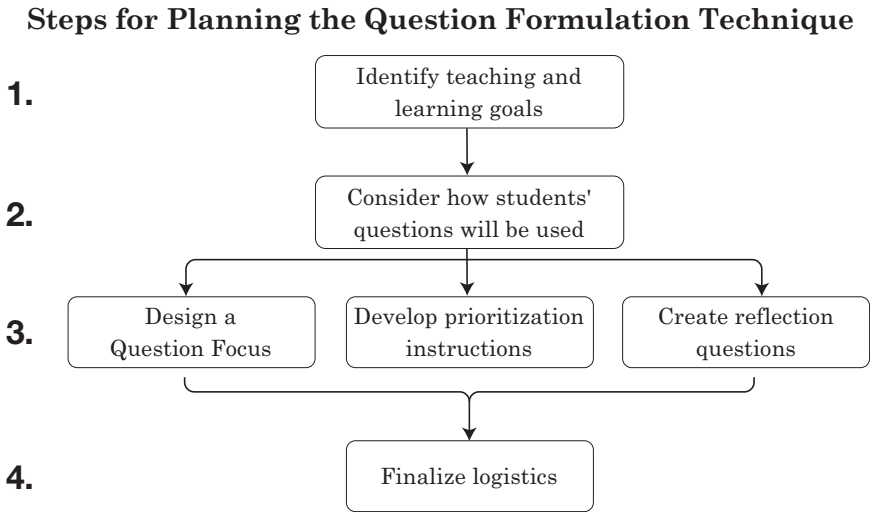


Figure 2. Steps for Planning the Question Formulation Technique

Classroom Examples

The QFT is an easy-to-use strategy that fosters student engagement and can transform how students analyze and investigate primary sources in the history classroom. Primary sources are a critical component in helping students gain context for the events they are studying, and they can provide students with first-hand accounts of events from persons who lived through them, as opposed to after-the-fact textbook discussions. An important aspect of studying primary sources is assessing them critically, without necessarily accepting them as absolute truth. Using the QFT helps students critically question the primary source by stimulating their curiosity about a historical topic and its context.

Historical Texts and Quotes

Understanding the meaning and context of primary sources (such as speeches, treaties, court transcripts, and letters) can be challenging for students. Using the QFT to launch their investigations of primary sources by asking questions, rather than jumping immediately to interpretation, students begin to establish their own learning agenda, while more carefully exploring the context of historical texts.

Daniel Fouts, a high school teacher from Des Plaines, Illinois, used the QFT with his twelfth-grade Government students at the start of a unit on the American presidency.[22] The unit examined times when presidents of the United States faced adversity, such as difficult wartime decisions, impeachment, and battles with Congress. The QFocus was an image of President Abraham Lincoln paired with Lincoln's words, "*Nearly all men can handle adversity; but if you really want to test a man's character, give him power*." Student questions included:

> How does power challenge one's morality?
> What if the person who is qualified for power doesn't attain it?
> What defines good character?
> Why are some people affected by power differently?

Students prioritized their lists of questions, each group choosing the consensus favorite to add to the class list. Then, each individual referenced the list and selected a question to answer as the class moved through the unit. Using videos and other secondary sources, the class conducted research into such themes as "presidential styles," the pressures of presidential press conferences, and how different presidents' personalities affected their performance. Toward the end of the unit, they used their newly acquired knowledge to complete a two-page reflection that answered their chosen question. Students also reflected out loud as a part of a culminating class-discussion on the final day of the unit. Fouts reports that "this discussion [was] rich with original thinking and student engagement, no doubt due to the fact that because students had been answering questions they had developed themselves, they were personally invested in the learning process." Using the QFT to frame the unit places the onus of learning on the students. The dynamic of the classroom was transformed as students worked to find answers to *their own* questions about Lincoln's statement, rather than following a prescribed inquiry outlined by Fouts.

Joshua Beer, co-author of this article, is a high-school social studies teacher in New Hampshire. During his eighth-grade class study of World War II and the Holocaust, he designed a QFT with just a brief sentence as the QFocus: "*It is difficult to know how to begin*." This sentence was the first line of a letter home written by an American soldier who helped liberate the concentration camps at Dachau. Students conjured images in their minds of what the soldier was describing by completing the QFT before getting into a close reading of the primary

source. This way, the students grasped why the soldier wrote the letter, for whom it was written, and the intent of the message. The questions students generated aided them in processing the meaning conveyed in the soldier's letter.

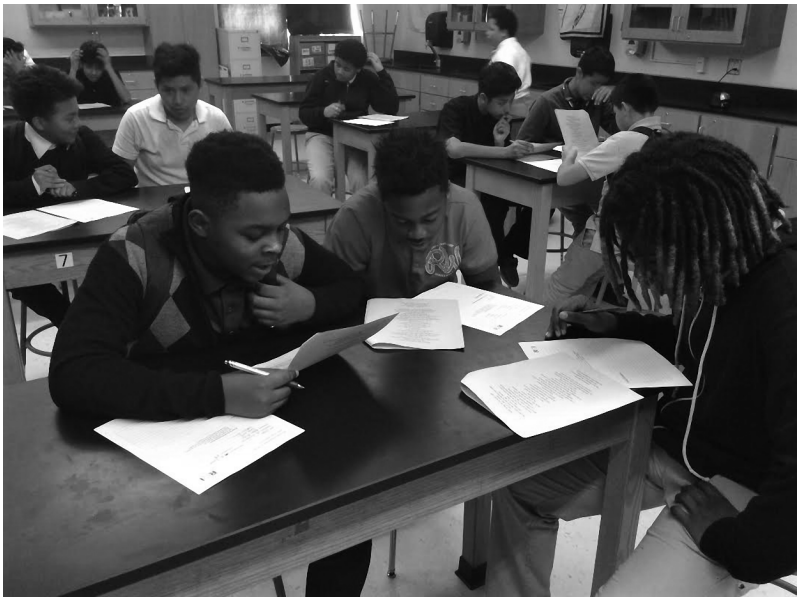
Political Cartoons and Artwork

The QFT can also be a method for students to study political cartoons and artwork in a history classroom. Analyzing cartoons and artwork requires diligence and adequate time to identify different aspects of the work. The QFT creates a space and structure for students to analyze the artwork or cartoon and create questions about what they are observing and what they feel curious about.

James Brewster, a middle-school U.S. history teacher at Gus Garcia Young Men's Leadership Academy, a Title I school in Austin, Texas, used the QFT with his students to examine political cartoons.[23] Brewster's class had completed study of the American Revolutionary era, and this class of students in particular was interested in the United States' alliance with France and the current standing of U.S.–France relations. Following the terrorist attacks on Paris in 2015, Brewster decided to use the QFT and present political cartoons addressing the Paris attacks as the QFocus. Students asked questions about the cartoons, which then led into conversation on the attacks and research into the ongoing news coverage. Brewster shared: "The Monday following the attacks, I provided various political cartoons addressing the Paris attacks as their QFocus. They provided a jumping-off point for students to question, dialogue, engage, and research the event. While some [students] doubted that such a horrific topic could (or should) be addressed in a middle school setting, I assured them that the QFT method was just the vehicle to use because we had invested time in creating a learning environment that was a safe place for discourse. During the group research process, the students engaged in lively debates including whether the U.S. should allow refugees within our borders—a topic especially relevant to Texans. I was transfixed listening to their well thought out arguments and their utilization of questioning during their discourse, such as, '*What if that was you or your mother fleeing a country?*' Student empathy is always powerful."

Toward the end of the lesson, students used their research to create billboards to educate their peers about the attacks on Paris. A

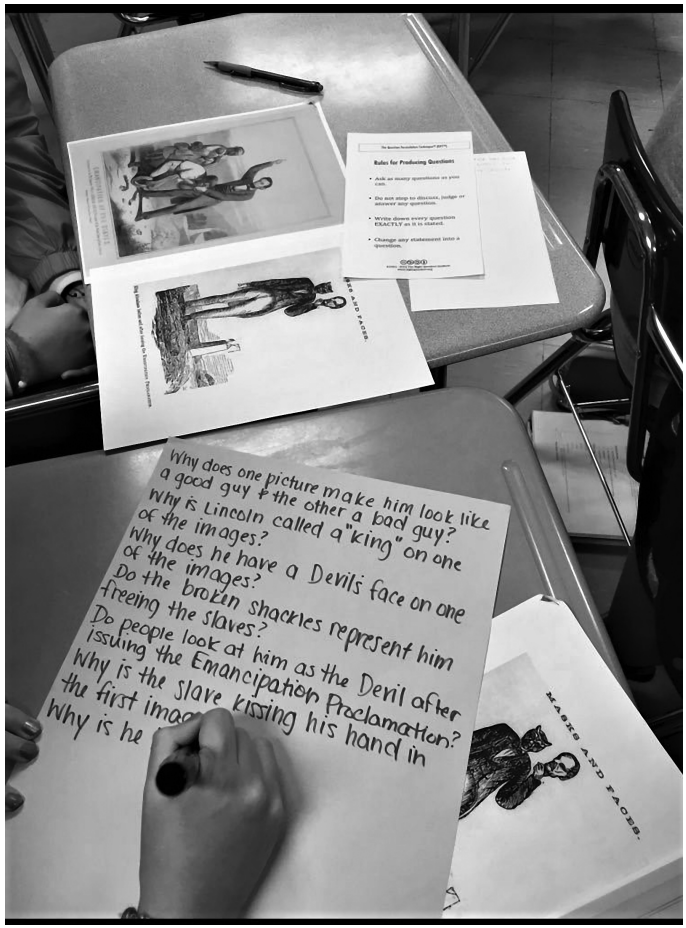
student in Brewster's class stated that the QFT "helps me by getting me to think about questions on my own. Also, it gets my mind in motion to think about the questions other people make." Another eighth-grader shared: "I like creating as many questions as I can in a time limit, without being judged, because it lets my mind flow." Brewster commented that students in other classes who saw the educational billboards were eager to do their own QFT activity.



Students from James Brewster's class asking questions

In eastern Kentucky, there has been widespread adoption of QFT, and entire schools are now using the technique routinely. The Kentucky Valley Educational Cooperative has even established a cadre of educators who provide QFT professional development to educators across the region. Effie Stidham, a teacher at Hazard High School in Perry County, Kentucky, presented her students with two Civil-War-era political cartoons. One was "Masks and Faces" from 1862, which depicts the devil holding a Lincoln mask, with the caption, "King Abraham before and after issuing the Emancipation Proclamation." [24] This was juxtaposed with another cartoon, "Freedom to the Slaves," from 1863,[25] also concerning the Emancipation Proclamation. This image shows a former slave kissing Lincoln's hand. One group of students started off their QFT by asking:

Why does one picture make Lincoln look like a good guy and the other like a bad guy?
Why is Lincoln called a "king" on one of the images?
Why does he have a devil's face on one of the images?
Do the broken shackles in one image represent him freeing the slaves?
Did people look at him as the devil after he issued the *Emancipation Proclamation*?
Why is the slave kissing his hand in the first image?



Students from eastern Kentucky generating questions using a pair of political cartoons as the QFocus

The groups in the class selected, refined, and prioritized their questions as follows:

1. Are the two faces of Lincoln representative of the two different opinions of Lincoln?

2. Why does "Masks and Faces" refer to Lincoln as "King"?

3. Why were there people that *really* didn't like Lincoln and/or his policies, specifically the Emancipation Proclamation?

4. How did the slaves view Lincoln?

5. What happened to the freed slaves?

After using the QFT to compare two political cartoons offering different perspectives on Lincoln's Emancipation Proclamation, the students' questions were used to direct a debate about Lincoln's policies during his presidency, especially with regards to the Civil War and slavery. Students found that the QFT shifted the learning dynamic. As one student in the class reflected, "The QFT was rewarding for me because it challenged me to broaden my thinking as an active participant in my learning, rather than simply sitting, listening to a lecture. The 'no-judgment zone' made me feel at ease, so I was open to more opportunities for learning." Another student "felt empowered because I was the one coming up with the questions, not just the teacher."

Historical Photographs and Images

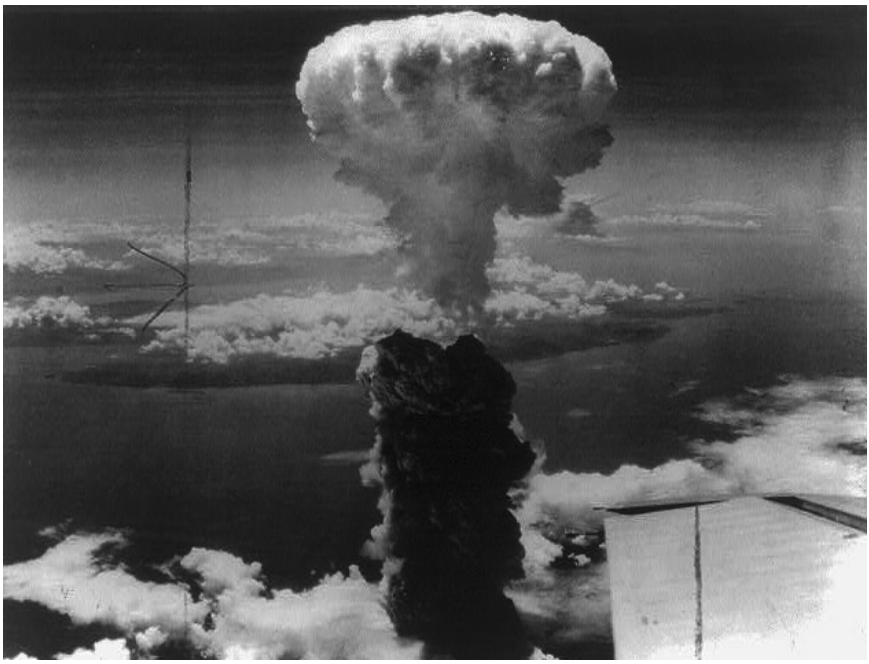
Facilitating a QFT using a historical photograph or artwork as a QFocus gives students an opportunity to delve into the finer substantive and aesthetic details of an image, which can then directly tie into objectives for the lesson. Rather than simply making inferences, students work systematically to hone their observation skills and ask questions about what they are seeing. The QFT is a protocol that encourages close reading of images and checking of assumptions.

Kelly Grotrian, an eleventh-grade U.S. history teacher in East Brunswick, New Jersey, used the QFT to help students learn about the end of World War II. Students generated their own questions ahead of a discussion about whether the United States was justified in dropping

the atomic bomb. Grotrian also had students use their questions for a homework assignment via *Google Classroom*. Her QFocus was an image depicting the 1945 atomic bombing of Nagasaki, Japan.[26]

1. What is this?
2. Who did this?
3. How did this affect people?
4. What were the environmental and economic implications of dropping the bomb?
5. How many people were hurt?
6. Is that a plane wing in the bottom right?
7. Did the people in that plane drop the bomb?
8. Did the people dropping the bomb know what they were doing?
9. Did they make the bomb?
10. Who was responsible for dropping the bomb?
11. What led to this event?
12. What happened as a result of dropping the bomb?
13. Where was the bomb dropped?
14. Had people been given warning?
15. How long did it take to notice effects of the bomb?
16. When did this happen (at what point in the war)?
17. How many lives were lost as a result?

These are far-reaching, relevant inquiries. During question-generation, students quickly moved into inquiring about the impact of the event depicted in the primary source. Questions 3 and 4—"*How did this affect people?*" and "*What were the environmental and economic implications of dropping the bomb?*"—show how immediately students were compelled to seek deeper understanding of the context.



(Photo: Library of Congress)

One student observed something resembling the wing of a plane in the lower right corner of the image (question 6). This prompted another student to ask whether the wing in the photo belonged to the plane that had just done the bombing (question 7). The next student question (question 8) was an ethical one: "*Did the people dropping the bomb know what they were doing?*"

Students' questions about cause and effect (such as question 17, wherein a student asked how many lives were lost) stimulated student thinking and lines of inquiry that led directly to where Grotrian planned to take the lesson next—a discussion about the justification of

dropping the bomb. After going through the QFT and asking questions about different aspects of the primary source, students were better prepared for the class discussion, because Grotrian had provided them the space and structure to do their own critical thinking.

In another example, co-author Joshua Beer used the QFT with middle school students as they learned the importance of legends, symbols, and metaphors in culture and religion.[27] He used an artwork showing Saint Patrick expelling the snakes from Ireland, with the label "St. Patrick," as the QFocus. The QFT allowed students an open environment in which to craft questions that probed both the themes of the artwork and the finer details. The structure of the QFT gave students the space to interpret the image of Saint Patrick in their own ways, and students' questions provided various perspectives that other students perhaps had not considered. Curiosity and critical thinking are what we as teachers hope all students experience in our classrooms, and the QFT provides a healthy environment for both.

The News

History teachers have many opportunities to work current events into the historical topics their classes are studying. In our current times, it is important to be able to ask questions about the news, to consider the information presented, to weigh the validity of the source, and to scrutinize the author's argument. The QFT can cultivate students' information-literacy skills and develop students' ability to think critically about information they come across in an increasingly media-saturated world.

Connie Williams, a librarian at Petaluma High School, in California, wanted students in her information literacy class to consider the importance of citing and sourcing. She used as the QFocus the statement "Everyone must be information-literate" to elicit students' questions. These included:

> Is it more important to understand information/use literacy now than it was in the past?
> How information-literate do we need to be?
> What information do we need to know?
> What will happen if we are not information-literate?
> When does someone know all about something?

Does everyone need to be information-literate?
Does having more information help in situations that do not require it?
How does becoming information-literate help/affect society as a whole?

The next week, Williams had students bring in their class readings on articles questioning the legitimacy of various photos taken during Hurricane Sandy. With the articles providing context, the class discussed the answers to some of the questions they raised during the QFT. Williams thinks the technique helped her students to "think more about their readings and question them," while also discovering the value of proper sourcing of information.

In another example, Mr. Beer wanted his fifth-grade students to gain insight into how geography and culture affect economics. Beer had students listen to an NPR piece on the increase in the price of limes, and how it affected the Mexican and American economies.[28] Before listening to the broadcast, however, Beer wanted students to have additional context and some prior knowledge of the issue. He thought the QFT would be a perfect introductory exercise for students to process basic ideas of supply and demand, and to understand how one product can affect economies in two different countries. Students were presented as the QFocus the headline of an article: "In Mexico and U.S., lime-lovers feel squeezed by high prices." The speaking and listening components of the QFT helped warm-up the students for an attentive listen to the four-minute radio broadcast. The questions that students created, along with the subsequent discussion and practice in critical listening, helped the students synthesize information that they had learned in class with the complex material presented in the NPR piece.

The QFT for Assessments

Crafting the right questions is critical not only when digging into any historical topic, but also when assessing student learning. Using questions that students have generated through the QFT gives students greater agency and involvement in the process of demonstrating their learning.

For a unit on American imperialism, Mr. Beer let the students create the questions for the end-of-unit summative assessment.[29] He

believed using the QFT to generate questions for the summative test would be a productive way to give students a voice in what they would be tested on, while also letting them demonstrate to the class (and themselves) how much they learned. The QFocus was "*Questions to be asked about American Imperialism at the turn of the twentieth century*." After the groups produced their questions, students prioritized them following the instructions, "*Choose three questions you think are the most important for understanding American Imperialism at the turn of the twentieth century*."

The next day, the class reviewed each group's top-three questions, and then whittled the list down to the top ten. Though Beer reserved the final say over the list, he reported being "truly impressed. I couldn't have designed better questions myself." The ten questions the students produced were concise and reflective of the most important themes and topics covered during the unit. Using the QFT at the end of the unit gave students the chance to reflect upon and demonstrate what they, individually and as a collaborative group, had learned.

Teaching *All* Students to Inquire

The QFT can be useful for nurturing equity in the classroom so that all students are able to participate and actively engage in their own education.[30] From large urban districts such as the Los Angeles Unified School District, the New York City Department of Education, and Chicago Public Schools, to rural New Hampshire and eastern Kentucky; from preschoolers in Melrose, Massachusetts to undergraduate and graduate students at Kyoto Sanyo University in Japan, educators at all levels have used the QFT to engage all students. Jay Sorensen, a Coordinator of Educational Technology at Oxnard Union High School District, in Oxnard, CA, has seen firsthand how the QFT can be used with English Language Learners (ELLs) in English Language Development classes in his district, and how the QFT is a "great equalizer for students of all levels because all are engaged and actively participating."[31] Jennifer Brickey, a Teacher-Librarian at Oxnard, has used the QFT successfully with her students as well. Brickey shares that she "noticed how easily the kids are engaged in the activity. Because of the protocol and the rules, the students are able to really express themselves without fear of being judged or feeling self-conscious about the language that they use. So, you have students that may be at a higher reading level versus [others in] a lower reading

level, but because they're in their groups . . . the rules allow them to share at their ability, rather than feeling self-conscious about perhaps their inability—or what they would perceive to be their inability."[32] The strategy can also be tailored for dual-language courses; Diann Espinoza, a dual-language teacher at South Meadows Middle School, in Oregon, has adapted the strategy for her students.[33]

Further, the QFT is also effective for special education classrooms. Esther Lee, a special education teacher from New York City, used the QFT with her class, which "consisted of nine to twelve years old with mild to severe disabilities of various kinds."[34] Lee was reflecting on how the classroom culture affected student learning when she came across the QFT; she thought it might be a useful tool to engage her students. Lee provided a QFocus—a black-and-white picture depicting child laborers—to groups of three or four students. During the QFT, Lee was amazed by her students' civility, critical thinking, connection-making, and communicating: "My students' disabilities did not hinder them from learning. QFT helped these students focus on their own strengths and truly learn the way they are comfortable learning."[35] Having the space and structure to engage at their own levels without fears of being judged, students from all backgrounds are able to unleash their curiosity, and establish an active role in their own learning.

Conclusion

When students use the QFT to interrogate primary sources, they are learning how to inquire, how to "think in questions." They are honing their speaking and listening skills, their problem-solving skills. And, importantly, they are nurturing the democratic habits-of-mind that question-formulation promotes. Not only are students developing essential proficiencies, such as creativity, critical thinking, communication, and collaboration,[36] they are also engaging more deeply in the content being taught in the classroom. As Harvard Professor Paul Harris notes in his 2012 book *Trusting What You're Told*, questions are important for cognitive development as well as for targeting and gathering information.[37] The ability to craft a question is incredibly important for the classroom, employment, and life.

Joshua Beer adds: "Using the QFT these past five years, I have also discovered a profound change in me as a teacher, and even

as a person. I always knew questioning was important, and it was something I encouraged in my students. However, my experiences with the QFT have shown me not only how powerful questions are for instruction but also for self-reflection and classroom management. A classroom that is open, inclusive, and safe from judgement is the best environment for producing high-quality, thoughtful discussions and positive learning experiences for our students. The QFT creates dispositions in students that empower them to speak up and share their thoughts, which in turn allows the conversations to go deeper and investigations to become richer. The QFT is one way an instructor can access the incredible, natural curiosity all children are capable of when given the opportunity."

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Joshua Beer is a social studies teacher at Fall Mountain Regional High School, in Langdon, New Hampshire, who has been using the Question Formulation Technique since 2011. His work with the QFT has been featured in the Library of Congress, *Education Leadership*, and in various conferences and classrooms throughout New Hampshire.

NOTES

1. Dan Rothstein and Luz Santana, *Make Just One Change: Teach Students to Ask Their Own Questions* (Cambridge, MA: Harvard Education Press, 2011).

2. Andrew P. Minigan, "Cultivating Curiosity by Deliberately Teaching Students How to Ask Questions," *Education Week* (blog), 7 October 2016, http://blogs.edweek.org/edweek/global_learning/2016/10/cultivating_curiosity_by_deliberately_teaching_students_how_to_ask_questions.html.

3. John Lee, Kathy Swan, S.G. Grant, Dan Rothstein, and Luz Santana, "Questions, Frameworks, and Classrooms," *C3 Briefs* (2015). www.c3teachers.org.

4. Dan Rothstein, Luz Santana, and Andrew P. Minigan, "Making Questions Flow," *Educational Leadership* 73, no. 1 (2015), 70–75.

5. Andrew P. Minigan, "Creating Equitable and Curiosity-Filled Classrooms Through Students' Questions," *Center for Collaborative Education* (blog), 18 April 2017, http://cce.org/thought-leadership/blog/post/question-formulation-technique-student-voice.

6. James Ryan, "Good Questions," (commencement speech, 2016 Harvard Graduate School of Education Presentation of Diplomas and Certificates, Cambridge, MA, 26 May 2016,) http://www.gse.harvard.edu/news/16/05/good-questions.

7. Stuart Firestein, *Ignorance: How it Drives Science* (New York, NY: Oxford University Press, 2012).

8. National Council for the Social Studies, *The College, Career, and Civic Life (C3) Framework for Social Studies State Standards: Guidance for Enhancing the Rigor of K–12 Civics, Economics, Geography, and History* (Silver Spring, MD: National Council for the Social Studies, 2013).

9. National Governors Association Center for Best Practices, Council of Chief State School Officers, "Common Core State Standards" (Washington D.C.: National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010).

10. *Next Generation Science Standards*, http://www.nextgenscience.org/.

11. National Council for the Social Studies, *The College, Career, and Civic Life (C3) Framework*, 17.

12. Ibid.

13. Kate Zernike, "Tests Are Not Just for Kids," the *New York Times*, 4 August 2002.

14. Alison J. Head, "STAYING SMART: How Today's Graduates Continue to Learn Once They Complete College," *Project Information Literacy Research Report* (5January 2016), 1–112.

15. Paul L. Harris, *Trusting What You're Told: How Children Learn from Others* (Cambridge, MA: The Belknap Press of Harvard University Press, 2012).

16. John A. Daly, Pamela O. Kreiser, and Lisa A. Roghaar, "Question-Asking Comfort: Explorations of the Demography of Communication in the Eighth Grade Classroom," *Communication Education* 43, no. 1 (1994), 27–41.

17. J. T. Dillon, "A Norm Against Student Questions," *The Clearing House: A Journal of Educational Strategies, Issues, and Ideas* 55, no. 3 (1981), 136–139.

18. Edwin Susskind, "Encouraging Teachers to Encourage Children's Curiosity a Pivotal Competence," *Journal of Clinical Child Psychology* 8, no. 2 (1979), 101–106.

19. Thomas L. Good, Ricky L. Slavings, Kathleen Hobson Harel, and Hugh Emerson, "Student Passivity: A Study of Question Asking in K-12 Classrooms," *Sociology of Education* 60, no. 3 (1987), 181–199.

20. Lee, Swan, Grant, Rothstein, and Santana, "Questions, Frameworks, and Classrooms," 5.

21. Shelby Clark, "Cultivating Classroom Curiosity: The Importance of Student Questions," *Center for Collaborative Education* (blog), 24 October 2016, http://cce.org/thought-leadership/blog/post/cultivating-classroom-curiosity-the-importance-of-student-questions.

22. Daniel Fouts, "Lincoln, Power, and the Question Formulation Technique (QFT)," *The Right Question Institute* (blog), March 14, 2016, http://rightquestion.org/blog/lincoln-power-question-formulation-technique.

23. James Brewster, "My QFT Journey: Putting Students' Minds into Motion with Their Questions," *The Right Question Institute* (blog), 21

October 2016. http://rightquestion.org/blog/my-qft-journey-putting-students-minds-into-motion-with-their-questions/.

24. "Masks and Faces," Abraham Lincoln's Classroom, accessed April 21, 2017, http://www.abrahamlincolnsclassroom.org/cartoon-corner/emancipation-and-slavery/masks-and-faces/.

25. "Emancipation of the Slaves, Procla[i]med on the 22nd September 1862, by Abraham Lincoln, President of the United States of North America," Library of Congress, accessed 21 April 2017.http://www.loc.gov/pictures/item/2003677940/.

26. "The Atomic Bomb: Hiroshima and Nagasaki," Teaching History, accessed 21 April 2017, http://teachinghistory.org/history-content/beyond-the-textbook/25485.

27. Joshua Beer, "St. Patrick Expelling the Snakes from Ireland: Using the QFT During Question Week," *The Right Question Institute* (blog), 23 March 2016, http://rightquestion.org/blog/st-patrick-social-studies/.

28. Joshua Beer, "So Much More to Learn: Boosting Student Engagement in Middle Schoolers," *The Right Question Institute* (blog), 7 October 2014. http://rightquestion.org/blog/learn-boosting-student-engagement-middle-schoolers/.

29. The Right Question Institute, "Video: The QFT and 'Summative Assessment,'" *The Right Question Institute* (blog), 28 August 2015. http://rightquestion.org/qft-summative-assessment.

30. Minigan, "Creating Equitable and Curiosity-Filled Classrooms."

31. Jay Sorensen, "A Pen-and-Paper Technique for the EdTech Enthusiast," *The Right Question Institute* (blog), 25 May 2017. http://rightquestion.org/blog/a-pen-and-paper-technique-for-the-ed-tech-enthusiast/.

32. Jennifer Brickey, interview by Carlo Godoy, May 2017.

33. Diann Espinoza, "The Question Focus Technique," *Classroom Musings: Contemplaciones de la Aula* (blog), 15 July 2017, https://classroommusingscontemplacionesdelaaula.wordpress.com/2017/07/15/the-question-focus-technique/.

34. Esther Lee, "Building Student Engagement in a Special Education Classroom," *The Right Question Institute* (blog), 7 October 2013, http://rightquestion.org/blog/student-engagement-special-education-classroom/.

35. Ibid.

36. Andrew P. Minigan, "The Importance of Curiosity and Questions in 21st-Century Learning," *Education Week* (blog), 24 May 2017, http://blogs.edweek.org/edweek/global_learning/2017/05/the_5th_c_curiosity_questions_and_the_4_cs.html.

37. Harris, *Trusting What You're Told*.