

Appendix B

Discussion Guide

Thinking Through Project-Based Learning introduces strategies and exercises to take inquiry deeper in PBL. The authors recommend discussing these ideas with colleagues to foster professional learning and personal reflection. This discussion guide is intended as a starting point for collegial conversations.

CHAPTER 1: THE WHYS AND HOWS OF PBL

1. Chapter 1 provides a succinct definition of project-based learning. How closely does this 25-word description match your current understanding of PBL? What would you add or change?
2. In Project Signpost 1, the authors ask you to sum up what projects accomplish in a Twitter-sized phrase (140 characters). How did the constraint influence your thinking? Now imagine having students share their understanding in a short phrase or headline. What's the value of writing extreme summaries?
3. In the end-of-chapter exercise, the authors ask you to choose from four projects. Which one do you wish you had tackled as a student? Discuss your reasoning. Now, think about what might be challenging about implementing the same project with your students. As a teacher, how will you decide if a project is worth the effort to overcome potential challenges? What else would you like to know about this project idea before attempting it yourself?

CHAPTER 2: THE INQUIRING HUMAN ANIMAL

1. Table: Applying Mind-Brain-Education Science Insights to Projects summarizes five key concepts that have emerged from the relatively young field of mind, brain, and education science. How do these

concepts influence how you think about teaching and learning? Discuss the implications of mind, brain, and education science for shaping your approach to project-based learning.

2. The exercise “Encourage Executive Skills” asks you to consider the skills and dispositions (habits of mind) that students can develop through PBL. Think about your own skills and dispositions. In the areas where you are strongest, what has helped you to develop particular skills or dispositions? How do you accommodate skills in which you are weaker?
3. What do you notice about your students’ attention cycles? What are some ways you can maximize phases of peak learning?
4. Do you use predictable classroom routines that help to minimize stress for students? What do you notice about students’ responses to these routines?
5. Which of the brain-based project strategies have you tried with your students? What did you notice as a result?

CHAPTER 3: MAKING THE WORLD SAFE FOR THINKING

1. Principal Richard Coote from Birkdale Intermediate School makes a strong case for building student buy-in to projects: “We know that if a project is flat at the outset, it’s going to be six weeks of dragging students along.” What have you done to get students engaged in projects at the outset?
2. Consider the suggestions about school design offered in *The Third Space* (such as: display learning; emulate museums; make classrooms agile). How is your classroom like a museum? How do you display evidence of learning? How easy or hard is it to reconfigure your classroom for different kinds of activities?
3. How have you reinvented learning spaces on a budget? Which of the ideas for “Putting the Pieces Together” might you try in the future? Which seem impractical for your context?
4. What’s at the top of your PBL wish list? Discuss your additions to the table at the end of this chapter.

CHAPTER 4: THE THINKING-OUT-LOUD-AND-IN-VIEW CLASSROOM

1. Teacher Mike Gwaltney uses the phrase “teaching backwards” to describe how he connects students’ current interests to history projects. What might you ask your students to find out about their concerns or interests?

2. Discuss the characteristics of “fertile questions” developed by Harpaz and Lefstein. What might you ask your students if you wanted to stir their thinking with an “undermining” question?
3. Compare how you modified the driving questions in the exercise Make Good Questions Even Better. Explain how your versions are improvements over those offered here. Which one would you expect to generate the most student interest?
4. Discuss the suggestions offered in the section Help Students Build a Thinking Toolkit. Which ones are you most likely to try? Why?

CHAPTER 5: DESIGNING RICH LEARNING EXPERIENCES

1. This chapter suggests two routes to project design: (1) Start with standards and plan learning experiences based on these objectives. (2) “Back in” to the standards, starting with a compelling idea and then mapping it to objectives to ensure there is a fit with what students are expected to learn. Which approach describes how you have planned projects in the past? Do you agree with the authors’ assertion that the second approach may be more generative?
2. Which professions relate to your subject area(s)? How might you expand on real-life connections for projects?
3. Think about your strategies for scaffolding students’ critical thinking (such as use of thinking maps or Socratic seminars). Discuss how you might incorporate these strategies into projects.
4. Share your project sketches with colleagues. How might you revise your project sketch based on critical feedback?

CHAPTER 6: THINKING ACROSS DISCIPLINES

1. The authors suggest that most work that gets accomplished takes interdisciplinary efforts. They write, “It’s hard to think of a career field or profession that operates in isolation.” Do you emphasize interdisciplinary thinking with your students? How?
2. If you have specific content-area expertise, how would you describe the “lenses” of your discipline?
3. Discuss the four features of interdisciplinary work described by Veronica Boix Mansilla and colleagues at Project Zero. How do you talk about the importance of “thoughtful” or “purposeful” learning with your students?

4. As a group, examine the Venn diagram at the end of this chapter. Suggest careers that are not represented here. Where would they belong? What kind of thinkers would be well-suited for these roles?

CHAPTER 7: LANGUAGE ARTS

1. George Mayo describes the kind of classroom environment necessary for students to be successful writers. He says, “Before you can get students to open up in their writing, you have to make sure they feel comfortable, that they respect one another, and that they will not be put down if they honestly share ideas.” What are your strategies for creating a respectful climate for learning?
2. Nonfiction writer Rebecca Skloot offers a vivid example of how curiosity can take hold and keep us motivated to keep learning. What do you do to nurture your students’ curiosity in the language arts classroom? Discuss and compare strategies.
3. The authors encourage robust discussions—between peers, among groups, and as a whole class—during the investigation stage of projects. How do you encourage “good talk” in your classroom?
4. Tech Spotlights in this chapter suggest tools for curating content and building information literacy. Which tools do you think would be most useful with your students? How do you accomplish those tasks now?
5. Common Core State Standards call for increased emphasis on non-fiction reading. How do you help readers engage with challenging text? If your content area is not language arts, how might you team up with the literacy experts in your school to support your students?

CHAPTER 8: SOCIAL STUDIES

1. The authors point out the shrinking time allotted to the social studies in U.S. schools. What is your experience with finding time in the curriculum for teaching social studies? How do you ensure that students are developing the skills and attitudes to become competent, contributing citizens?
2. What do you think of the observation by historian H. W. Brands that young people tend to focus on the future, not the past? How might you borrow his strategy of using today’s events to connect the study of history with students’ current interests?
3. Discuss the 10 thematic strands of the social studies. Where do you see the strongest connections to your standards? To interdisciplinary opportunities?

4. The Tech Spotlight in this chapter introduces Wolfram Alpha, a computational search engine. Have you used this as a classroom tool before? What ideas for your own projects might you borrow from the Café Coffee Day example?

CHAPTER 9: SCIENCE

1. How do you respond to the authors' question, "Do you consider yourself a scientist?" Compare your response with colleagues.
2. Don't be S-s-scared: The Truth About Snakes offers a good example of a project that goes beyond superficial understanding of science. Reread the project description and discuss what sets this project apart from more elementary science assignments (such as retelling facts about a favorite animal).
3. Chemist Katie Hunt shares some of the early life experiences that whetted her interest in science. When she learned something new, for instance, her father prompted her to ask, "Where else could you use that in something you're trying to do?" How do you help students see the connection between what they are learning today in science and what they might want to accomplish or understand in the future?
4. In their discussion of coupled inquiry, the authors suggest how this approach can be extended into PBL. Discuss a science activity that you have done in the past and imagine how you might remodel it into a project using this approach.
5. Have you ever engaged in citizen science projects—as part of school activities or on your own? What did you gain from the experience? With colleagues, discuss which of the examples could be incorporated into school projects. How might your students' attitudes change if they knew they were making real contributions to science?

CHAPTER 10: MATH

1. This chapter begins with a comparison of routine math procedures versus math concepts. Where do you spend more of your time with students? Discuss the challenges of exploring concepts before teaching procedures. How might students respond if you put concepts first?
2. Think about the finding from Alan Schoenfeld that students' understanding of math methods tends to be "inert." Have you seen students struggle to apply problem-solving strategies to new or ambiguous situations? How do you help them work through this?

3. Computer scientist Jeannette Wing traces her enduring interest math to the puzzles and games she enjoyed as a child. She also credits her parents for providing encouragement for her chosen career field. Compare her experiences as a budding computational thinker to those of your students. Who supports their interest in mathematics? Who are their math role models?
4. Discuss the idea of starting a Math Teachers' Circle. What purpose might this serve in your context? Who might be interested in joining you? How do you extend your math teachers' network with the use of digital tools?
5. What do you think of the authors' suggestion that it's "culturally permissible to be poor at math"? Have you seen evidence of this?

CHAPTER 11: THE PROJECT SPIRAL

1. Has a project of yours ever "spiraled" in directions you didn't anticipate or reach audiences you didn't expect? Share your stories. How do you think your students would react to having a project "go big"?
2. Talking about project experiences with colleagues—in person or online—can help recharge your batteries for the hard work of PBL. Where do you connect with colleagues who share your interest in PBL? Discuss the value of your personal learning networks. How has your teaching improved as a result of connecting?
3. At the end of a project, what evidence of learning do you keep for your classroom archives? How do you use these artifacts (for example, as curated exhibits of learning or as exemplars of student work for future classes to analyze)?
4. Talk about your identity as a PBL teacher or instructional leader. How does the project experience shape how you see yourself as a learner and teacher? Where do you want to go next with your professional learning?