Study Guide

Introduction

The chapters in this book can be used in a variety of settings as the focus for discussion and reflection. One such setting is the teacher study group. Almost always based in a school and focused on common interests, study groups are important vehicles for professional development. There exist many sets of guidelines for implementing teacher study groups, and this overview is not meant to be all-inclusive. Rather, what follows are some brief guidelines for setting up a study group and a set of suggested questions for each part of the book as well as for each chapter.

Study Groups

Organizing a Study Group

Organizing a study group can be viewed as a set of basic steps.

1. Form the study group around a topic of inquiry.

Study groups are generally most effective if the number of participants does not exceed eight and if there is a skilled facilitator (see p. 101). The facilitator might be a teacher leader, curriculum leader, or science or literacy coach. Once a facilitator is identified, the next step is to identify a focus of study—the topic. A group might focus on one of the parts of the book or on one or two of the chapters for a more in-depth study.

2. Develop focus questions that will guide the work of the study group.

Given a focus for the study group, the next step is to identify two or three key questions. The objective of a study group is to provide an opportunity for a group of teachers to deepen their understanding of an aspect of their teaching and to enhance their skills through close analysis of their classroom practice. Too broad a focus defeats the objective; too narrow a focus may not spark rich dialogue. Following this overview of study groups are lists of questions for consideration. These are, of course, only suggestions. The specific context and interests of study group members will play a large role in determining the key questions.

3. Design the action plan.

With a topic and a few initial questions identified, the members of the study group should now establish basic operating guidelines. Following are some important guidelines to set:

- the norms of discussion that the group will follow and some basic expectations (see "Norms and Expectations for Study Groups" below)
- the nature of the specific tasks or actions the group will take between study group meetings (e.g., reading, classroom implementation, collection of student work to share and analyze)
- who will record at each session
- the basic session protocol

In addition, it is critical to develop an overall plan for the work of the study group and a tentative action plan for each session, including some key discussion points and the tasks to be accomplished. While a hallmark of study group work is the flexibility to pursue issues that come up and to take on challenges as they are identified, it is critical to have a basic structure in place. This plan serves as a starting point and can be modified once the study group is under way.

4. Determine what, if any, other resources beyond the readings will be gathered.

The chapters in this book are the core of the study group; however, an action plan may go beyond these. For example, if notebooks are the focus of a group, there are a number of new books and articles on science notebooks that might be useful. If the study group members are practicing teachers, the experience is likely to be much richer if the discussion of ideas in the book is connected with participants' classroom practice and the sharing of student work, classroom video, or other artifacts.

Norms and Expectations for Study Groups

In successful study groups, participants develop a set of group norms and expectations to which they all agree. The group may want to post and revisit these expectations at each study group session and to make changes as needed. While it may seem unnecessary to state these explicitly, experience suggests that the crafting of the list and regular review are important to establishing a culture in which challenging and productive study can take place. Following is an example of such a list.

Study Group Norms and Expectations

- Come regularly and on time.
- Do any assignments for the session.
- Come prepared to share thinking and ideas and discuss the agreed-upon topic.
- Bring any artifacts and examples to discuss.

- Sit in a circle around a table.
- Understand the purpose of the study group, study group format, and norms and expectations for discussion.
- Stay on focus.
- Agree to disagree respectfully.
- Encourage one another to challenge ideas and to have different opinions.

The Facilitator

Study groups are made up of peers; however, they function most productively when there is a designated facilitator. The role of the facilitator is to create a group dynamic where members feel comfortable taking an active role. The facilitator is not in the role of the expert. If the group treats her as an expert or she assumes this role, the study group will become more like a workshop or seminar and be less likely to accomplish its objectives. At the start, the facilitator will probably need to guide the group more strongly, supporting the norms and expectations, keeping the focus clear, and helping establish a culture of collective collaboration. But over time, as the norms are established and the group develops its own learning identity, the facilitator will release responsibility to the group.

Facilitator tasks include

- helping the group adhere to norms for discussion and expectations for participation
- supporting the recorder in documenting the session and keeping facilitation notes for herself (e.g., resources that might have been useful, issues with group dynamics, and new questions that were raised)
- making sure participants leave with tasks to be accomplished and the place and date of the next session
- making sure any needed resources are collected for each of the study group sessions

Documentation of the Work of the Study Group

Documenting the ongoing study group work encourages reflection and synthesis of the ideas discussed at each session. Recording the key points, questions, predictions, and ideas over time provides evidence of a learning trajectory and helps study group members see the progress of their thinking.

The documentation of the sessions ultimately becomes the story of the study group's work. It is advisable to have a structure or template for the recorder so that the documentation is consistent and includes important elements of each session. These

forms can be filled in and sent out to all members immediately following each session. They also are kept by the facilitator along with other study group artifacts.

Key Questions

SECTION ONE Essentials

General Questions

- According to your experience and the reading, what are some connections between science and literacy?
- What are some similarities in the approach to teaching and learning between inquiry science and balanced literacy?
- How does inquiry-based science with strong literacy connections support diverse learners?
- What are the benefits to student science learning when there are many opportunities to talk and write?
- What are the benefits to student literacy learning when students talk and write in science?

Chapter Questions

Science Inquiry

- Based on your experience and the reading, how would you define science inquiry?
- What are some of the benefits for students' science learning when they engage in inquiry?
- In what ways is science in your classroom inquiry based? How might you increase the opportunities for students to engage in science inquiry?
- What challenges do you face in implementing science inquiry in your classroom? How might you overcome them?

Balanced Literacy and Science Inquiry

- Based on your experience and the reading, what do you think are important elements of balanced literacy?
- In what ways do you incorporate some or all of these elements into your classroom practice?

- What instructional strategies from literacy do you use in your science teaching?
- What literacy skills and strategies do your students use in their science work?

Teacher Questions That Support Inquiry

- Based on your experience and the reading, what do you think makes a question productive?
- To what extent do you ask productive questions? What are some examples?
- What strategies might you use to improve your questioning?

Science Inquiry and English Language Learners

- According to your experience and the reading, what instructional strategies support ELLs in the science classroom?
- In what ways do support strategies for ELL students benefit the learning of all students?
- What support strategies do you use in different areas of the curriculum? In science?

SECTION TWO The Role of Talk in Science Inquiry

General Questions

- Based on your experience and the reading, what do you think is the role of talk in learning science?
- How do whole-group discussions support students' science learning?
- What skills and strategies do you and your students need to learn for effective whole-group discussions?
- What challenges do you face in implementing whole-group science discussions? How might you overcome these?
- How do talk and writing interact in science teaching and learning?

Chapter Questions

A Culture of Talk

- Based on your experience and the reading, what do you think characterizes a culture of talk in the classroom?

- Two strategies are highlighted in the chapter: the circle and wait time. How do these contribute to the effectiveness of whole-group discussion? How might you implement these strategies in your classroom?
- What norms and expectations do you have in your classroom, how were they established, and how do they support effective discussion?
- To what extent do students talk with one another in discussions? What strategies might you use to increase their interaction?
- How do you or might you engage the more reluctant speakers?
- In what ways are the discussion skills and strategies students use in literacy and in science the same or different?

Classroom Talk: Gathering-Ideas and Making-Meaning Discussions

- Based on your experience and the reading, what do you think are some important characteristics of group discussions that take place during each of the four stages of inquiry?
- How would you compare and contrast the purposes and the characteristics of gathering-ideas discussions and making-meaning discussions?
- What are some facilitation strategies you use or might use at each stage of inquiry? How and why are they different? How are they the same?
- What scientific reasoning skills are students developing through their discussions at different stages of inquiry?
- In what ways are discussions that take place during literacy the same as discussions that take place in science? How are they different?

SECTION THREE Writing in Science

General Questions

- According to your experience and the reading, why is it important to write in science?
- What challenges have you experienced in getting students to write in science? How might you overcome these?
- What instructional strategies that you use in writing might you use in teaching science writing? How do writing skills you teach in literacy transfer to writing in science?

- How do talk and writing interact in science teaching and learning?
- In what ways does writing in science develop students' literacy skills as well as their science understanding?

Chapter Questions

The Science Notebook

- According to your experience and the reading, what is the role of the science notebook in science learning and what are some essential characteristics of the science notebook?
- How do students learn the skills and understanding they need to keep effective science notebooks?
- In what ways can you make the use of science notebooks authentic?
- Writing reflections and developing conclusions can be very challenging to students. What science reasoning and writing skills do students need to learn to be successful? What are some instructional strategies you could use?
- How do you provide feedback to students about the recording they are doing in their notebooks? Why is it important?

Science Writing: Beyond the Notebook

- Based on your experience and the reading, how do you think writing beyond the notebook enhances students' science learning?
- What are the benefits and drawbacks for science learning of writing from direct experience and of writing from secondary sources?
- What do you see as an appropriate balance among different approaches to science writing?
- How might you make a connection between your writing program and the writing students do in science?