ABRIDGED

Integrated Curriculum Topic Study & Lesson Study Tools

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This document is designed to guide a group of teachers through the process of Lesson Study. Lesson Study, developed and well established in Japan, is now spreading in the United States. It is a form of professional development grounded in classroom practice that seeks to gradually improve student learning through structured reflection on teaching.

The roadmap consists of sequenced questions and exercises intended to guide your group and draw your attention to key issues. You will design a student centered research lesson that incorporates appropriate content, best teaching practices, and standards. Through implementing the research lesson, the group will collect student learning data that will inform future teaching.

Integrated Curriculum Topic Study

As you progress through the questions below, record the consensus ideas of the group in writing. An electronic template is available.

I. Selecting a Goal for Research

This section is designed to serve as an anchor for members of a group undergoing the process of Lesson Study. Through discussion of the questions below, the group will maintain its focus on student learning. It is intended that you frequently refer back to the work produced in this section.

SUGGESTED TIME: 60 minutes

A. Group Information

Name and contact information for all group members.

B. Establish and Record Group Norms

These will be the standards of behavior that you wish to govern your work as a group (e.g., listen before responding, focus on task at hand).

C. Select a Goal for the Group

As a group, discuss and answer, in writing, each of the following questions. Answers should be concise.

1. What aspirations do you have for your students? What qualities do you want your students to have by the time they leave your school? What kinds of learning behaviors do you want them to exhibit?
2. What gaps do you see between these aspirations and how children are actually developing at your school?
3. As a group, identify a gap that you would like to focus on with your Lesson Study.
4. Write a goal by clearly articulating the quality you would like to develop in your students. The goal must address the gap you identified above. This goal for Lesson Study research will guide the group's work throughout the Lesson Study process.

D. Select a Research Lesson

The research lesson will serve as the context for your work with Lesson Study. You will use the text "Science Curriculum Topic Study" (SCTS) to help develop the research lesson and to connect this lesson to the unit and curriculum, as well as the state and National Science Standards. The emphasis is to generalize what is learned from this research lesson to your practice as teachers of science. The following steps serve as a guide in selecting a lesson for research.

1. Think about the curriculum that you currently use. Consider a major science topic within your curriculum. The topic you select should be one in which the group goal can be addressed and must be a big idea represented in SCTS. Use the index in SCTS (pp. 287-294) to find the page or pages that address this curricular topic. List the topic and page number(s) from SCTS.
2. Identify the curricular kit or unit that you will use to teach this topic.
3. Decide upon a lesson from the kit or unit that will be developed for Lesson Study. This will be the primary context for your research.
4. In what ways is the lesson you have chosen well suited for exploring the group goal for Lesson Study research? (If, upon discussion, it becomes apparent that the lesson is not well matched to the group goal, then you may wish to choose a different lesson.)

☑ **Before the next section, consider the reflective questions in the facilitation guide**

II. Examining the Unit

In this section, your group will analyze the unit in which the research lesson is embedded. The group focus is to examine the learning goals of the unit, the instructional sequence of the unit, and how the group's research lesson connects to other parts of the unit. Base your responses on group discussion. You may need to consult several references, starting with the text "Science Curriculum Topic Study" (SCTS). (If you are unsure of how to use SCTS, consult the guiding questions on pp. 37-39. They may assist you in using the Curriculum Topic Study Guides to analyze the unit.)

SUGGESTED TIME: 90 minutes

A. Unit Information

1. Title of Unit
2. Unit References/Citations (Publisher, Curriculum, Kit, etc.)

B. Learning Goals of the Unit

Outline the sequence of key science concepts, skills, and knowledge in this unit. Describe how students develop these understandings. The *SCTS text* may be of assistance. (Section III of the relevant study guide(s) may be especially useful.)

C. How the Research Lesson Fits into the Unit

This is a description of how the content that is taught in the research lesson relates to content taught in previous and subsequent lessons within the unit. The SCTS may be of use in answering the questions below. (Section V of the relevant study guide(s) may be especially useful.)

1. What prior student knowledge and skills are necessary to learn the content that the lesson focuses on? Where will students develop this knowledge?
2. What new student knowledge and skills can be built from the learning that will occur in the lesson?
3. Describe the relationship of the EALR's to the lesson. What GLE's are addressed in the lesson?

☑ **Before the next section, consider the reflective questions in the facilitation guide**

III. Designing the Research Lesson

In this section you focus in on the specific lesson that forms the primary context for your research. You will first articulate the learning goals of the lesson along with common student misconceptions that have been identified through research. Keeping in mind the group's lesson study goal, you will develop a detailed outline of the instructional sequence of the research lesson.

SUGGESTED TIME: 120 minutes or longer

A. Lesson Information

Here note the name of the lesson and any important references.

B. Learning Goals of the Lesson

Note that the SCTS text may be of use in answering the questions below.

1. What science concepts, skills and knowledge should students learn in this lesson? (Note that your results from section II.B above may be relevant. Here you may wish to develop a more detailed description of the learning goals for just this lesson.)
2. How will student understanding be assessed during and after the lesson? Discuss formative and summative assessments.
3. What common misconceptions are associated with this topic? (You may find Section IV of the text *"SCTS"* helpful in identifying research related student ideas about your topic.)

C. Revisiting the Group Goal

Now that you have considered the lesson in some detail, take a moment to revisit the relationship between the lesson and the group's goal for Lesson Study research. What evidence will you gather in order to decide the extent to which the group goal has been realized? In particular, what role will the classroom observers play?

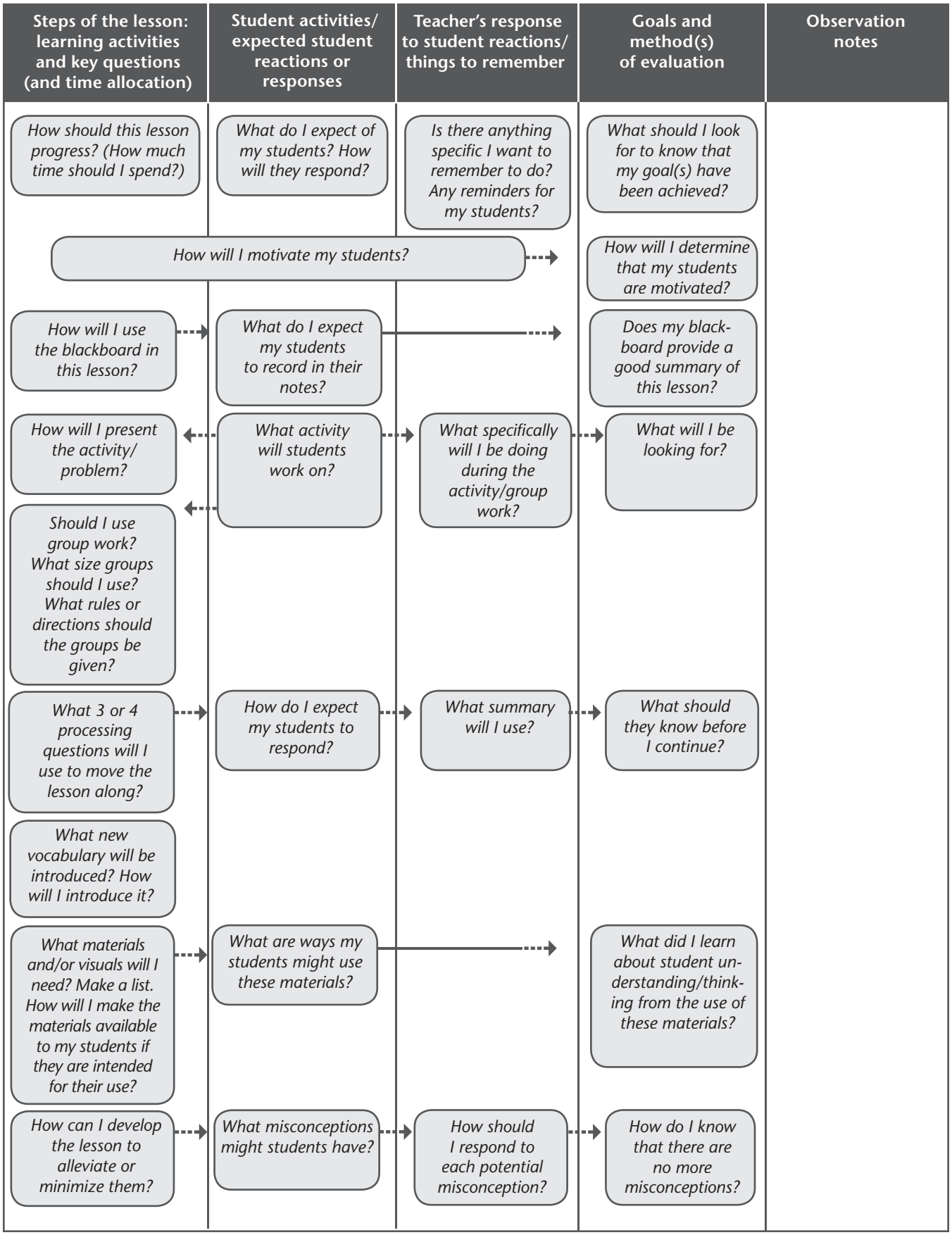
☑ **Before the next section, consider the reflective questions in the facilitation guide**

D. Instructional Sequence of the Research Lesson

Below is a chart of the planned lesson sequence. It describes student learning activities as well as anticipated student responses. As you formulate the instructional sequence, consider your rationale for including each activity. To what extent does the activity improve the chances of having students achieve meaningful understanding?

Steps of the lesson: learning activities and key questions (and time allocation)	Student activities/expected student reactions or responses	Teacher's response to student reactions/ things to remember	Goals and method(s) of evaluation	Observation notes
This column is usually laid out in order by the parts of the lesson (e.g., launch, investigation, consensus building, extension/applications, etc.), and also includes the allocation of time for each of these parts. This column should also include a description of key questions or activities that are intended to move the lesson from one point to another.	This column describes what students will be doing during the lesson, and their anticipated reactions or responses to questions/problems you will present.	This column describes things that you want to remember to do/ not to do within the lesson as well as other reminders to yourself. Also, as you have anticipated student responses and reactions (previous column), this column provides a place where you can think through how you might use those responses and reactions in synthesizing a true learning experience within your classroom.	This column describes the goals that are being focused upon during each part of the lesson, and for each activity/ problem. It should also include a concrete description of how you will determine that you have achieved each of these goals.	

GUIDING QUESTIONS



E. Implementation Logistics

In this section you decide which group member will teach the lesson. (But remember that the lesson design and implementation are a product of the entire group.)

Date:
Grade:
Period and location:
Instructor:

F. Appendix

Here you should attach or include copies of materials, handouts etc. that will be used during the lesson. For materials that will be used but cannot be attached (e.g., manipulatives) provide a written description and/or drawing. You should also include any materials that you have made specifically for the observers to use (e.g., observation tools or seating charts). This appendix is invaluable for observers to acquaint themselves with your lesson prior to entering your classroom. Observers well acquainted with your lesson, materials, and points of evaluation will be able to provide you with useful feedback.

IV. Evaluation

*This section should be completed after **each cycle** of your lesson study. The group should focus on using the evidence gathered by observers during the research lesson to analyze student progress toward the goals. As you progress through the questions below, record the consensus ideas of the group in writing. An electronic template is available.*

SUGGESTED TIME: 60-90 minutes

A. Analysis of student learning

In this section, you will discuss the extent to which your student goals were met during the research lesson.

1. Discuss the extent to which your learning goals were attained and describe the evidence that indicates that these goals were met.

2. Identify what key activities, strategies, or portions of the instructional sequence contributed to students achieving the learning goals. Be sure to explain how you **know** that this occurred (observed evidence of student learning.)

3. From both your observations and those of the lesson study group, identify any activities or instructional strategies that impeded student learning.

4. Did this lesson have any unexpected outcomes in student learning? These could be good things (something went "better" than expected) or things that impacted student learning in a negative way (things did not go as planned, new misconceptions were created, etc.)

B. Assessing the group goal

Refer back to the group goal that was set in the goals section of this document. To what extent do you feel this lesson helped further your students' progress toward this goal? Discuss what observed evidence supports your conclusion.

☑ **Before the next section, consider the reflective questions in the facilitation guide**

V. Revision

The evidence discussed during the evaluation of your research lesson should be considered as you make revisions before re-teaching.

A. What (if any) changes will be made in this lesson before re-teaching?

B. Describe the rational for these changes in the context of your research lesson goals.

C. How do you expect these changes to affect student outcomes?

VI. Reporting

By participating in a lesson study group, you have used your classroom to do research focused on student learning. Developing the knowledge of how students learn can happen not only by collecting data over a lesson study cycle , but also by seeing the data collected by colleagues and by sharing with other groups.

As your group completes a research lesson, you will post the results of your study on the NCOSP Lesson Study web site for use by other grant participants. We encourage every lesson study group to post their work so that this page can become a meaningful addition to our learning community.

1. As you complete your lesson study, continue to use the templates to record your work. ***This template will become your research report and will be posted on the web site.***

2. The first page of your report must include the following information:
   - A descriptive title for the research lesson
   - Grade band (primary, intermediate, middle, high)
   - Subject area (life science, earth and space science, physical science)
   - Kit or curriculum title (if appropriate)
   - Location and contact information for team members

3. Subsequent pages in your report should include detailed responses to the questions posed in Section IV, parts A and B, and Section V of this Roadmap. Particular attention should be paid to generalizing what is learned from this research lesson to your practice as teachers of science.

4. Have one member of your lesson study e-mail the completed research report to NCOSP. You will find the e-mail link on the NCOSP lesson study web page: *www.ncosp.wwu.edu/Resources/Lesson-Study/.*