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What Is Classroom Research?

Kurt Lewin (1948) pioneered the concept that regular people, not "scientists" or "researchers," can systematically notice things going on around them, reflect on them, and make plans to change them. Lewin called this *action research*. In the years since Lewin coined the term *action research*, many other labels have been used for research done by teachers and school professionals. I like the term *teacher research* and Lytle and Cochran-Smith's definition of *teacher research* as "systematic, intentional inquiry by teachers about their own school and classroom work" (1990, p. 84). However, I do not want people to think that this book and these ideas are strictly for teachers. Therefore, I choose to use the term *classroom research* throughout this book, emphasizing that Lytle and Cochran-Smith's definition of *teacher research* includes professionals other than teachers—such as literacy coaches, reading specialists, instructional coaches, special education teachers, and others who work in classrooms with teachers and students. My adaptation of Lytle and Cochran-Smith's definition follows.

Classroom research is "systematic, intentional inquiry by teachers and other school/classroom professionals about their own school and classroom work."

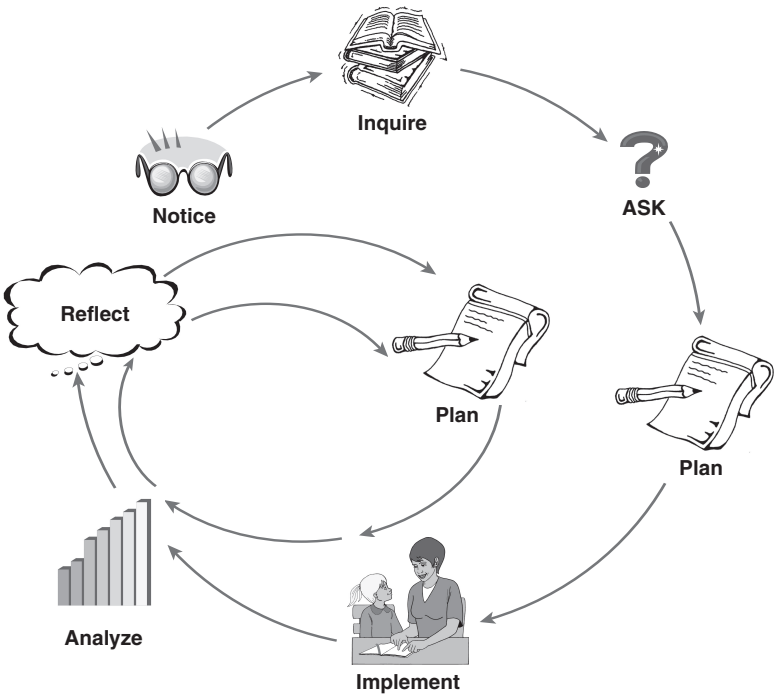
Classroom research is a cyclical process. Schon (1983), in his discussion of reflection, talks about problematizing, acting, and reacting. In its simplest form, these ideas represent the cycle of classroom research. Classroom research is about reflecting, acting, and reacting. It is about

thinking through what you see, taking steps to change practice and learning, thinking about those steps, and taking more steps.

THE STEPS OF CLASSROOM RESEARCH

Classroom research begins with noticing, observing, or identifying something in the classroom—something that you wonder about. Perhaps it is an aspect of teaching and learning that could be going better. This noticing then leads to finding out more, which leads to a more specific question. Once you identify the question, you set out to answer it. You plan what to do, carry out the plan, gather data, reflect on what those data mean, and decide once again on what to do. This cyclical process is reflected in Figure 1.1.

Figure 1.1 The Recursive Steps of Classroom Research



Let us take a look at this process in more detail.

Step 1: Notice. Observe what's going on in your classroom.

The important aspect of Step 1 in the classroom research cycle is to be a good observer—to *see* what you and your students are doing. When observing and noticing your classroom, zero in on something that you struggle with as a teacher and that students struggle with as learners.

Try keeping a journal to help you think about what goes on in your classroom and to identify areas of need. Your journal does not need to be formal;

it is a place for you to write down observations of your teaching and your students' participation in your instruction and activities. If you already have an idea for an area of focus, you can concentrate your journal entries on that area of your practice. If not, you might find it helpful to jot down notes about each segment of your instruction. What were you doing and saying? How did students act or react? How did you know students "got" what they were doing? What did students struggle with? As you jot down your observations, also note potential questions to answer in research. You will not identify your specific question here, but identifying some initial thoughts will help you with the rest of the process. For example, you may notice that not all of your students are catching on to something that you are teaching. There are a few questions in that observation: Is this the right program for my students? Am I structuring this instruction so the students can understand? Am I in my students' Zone of Proximal Development (Vygotsky, 1978)? The checklist in Table 1.1 might help you think about noticing things in your classroom.

Literacy teaching is complex and multifaceted. Teachers usually have no trouble identifying literacy issue*s* (plural) they need to investigate; identifying *one* literacy issue proves challenging. In Table 1.2 teachers share some of the issues they have noticed in core areas of literacy identified in the National Reading Panel Report (2000). The ones with an asterisk (*) are included in Part II of this book.

Although the five core areas are critical for practice, they are not the only areas of literacy instruction or investigation. Both students and teachers struggle with students' motivation to read, engagement in reading, and second-language issues; young children may have difficulty with concepts about print, the language of storybooks, and early writing skills; and teachers might struggle with organizational practices or reconciling district mandates with the struggles and progress of their students. These are all possible topics for classroom research. In Table 1.3, teachers share other issues they have noticed in their classrooms.

Step 2: Inquire. Learn about your focus area.

Traditional researchers begin with a review of theory and relevant research in their area of interest. As a teacher conducting classroom research, you should do the same so that you understand *what* you are noticing, *why* it is important to students' education, and *how* it relates to instruction. Whether you formally write about your classroom research or not, you should be able to explain to yourself and others how the research you want to conduct fits within your given area. Researching your area of interest will help you focus on one or two questions and will generate ideas to implement with your students. Figure 1.2 shows a staircase as an example of how to think about moving systematically from your classroom observation through theory and research to practical application. Think of creating a set of guiding principles that lead you from research and theory, to what has been shown in practice, and then to what you want to figure out.

Table 1.1 Questions to Ask When Observing Your Teaching and Students' Learning

How to start:

- Begin by writing down what you notice going on in your classroom. Unless you already have an instructional topic on which you want to zero in, jot down notes about each area of instruction (each subject you teach).
- After a week or two, go back through your notes in each subject area.

Questions to ask first:

- What do I mean to teach? (Make some notes about your specific goals for each area of your instruction.)
- Am I actually teaching what I think I'm teaching? (Note how you know your instruction matches your goals.)
- Are my students learning? (Note how you know students are learning.)
- Are my students fully engaged? (Note how you know students are engaged.)

Narrow down your observations:

- Think about the answers to the questions above. Choose an area of instruction where your answers are not as positive as you hoped.

Now that you have an area of focus, think about these teacher questions:

- Am I using an instructional approach that matches my goals?
- Am I using an instructional approach that students seem to understand? If not, what are they not understanding and how does that relate to my approach?
- Is my pacing appropriate? (Think about your pace with respect to what students are doing. Are they finishing with time to spare? Are they doing the same thing over and over?)
- Am I clearly communicating what I want to teach?
- Am I using different teaching techniques to capitalize on a variety of student learning styles? What approaches of mine match what learning styles?
- Am I really passionate about my teaching in this area?

Think about these student questions:

- Are my students equally engaged and learning? Are some students engaged, but not others? How do I know all students are engaged and learning?
- What are students doing? How are they doing it?
- What is student progress like in this area? How do I know?
- Where are my students with respect to where they are supposed to be? How do I know?

Table 1.2 Teachers' Observations in the Five Core Areas of Literacy

I notice that:

Phonemic Awareness

- My middle school struggling readers can't get words off the page well or play simple language games (Pig Latin, rhyming games, etc.).*

Phonics/Word Study

- I am not reaching all of my students with my current word study instruction.*
- My students are making better progress in reading than in spelling.
- My bilingual students have trouble spelling due to confusions between Spanish and English.
- My kindergartners are supposed to learn sight words, yet we really haven't been teaching these.

Fluency

- My students are not sounding like "good" readers when they read aloud.*
- My ELL students have fairly good word reading skills, but don't seem to know English syntax well enough to chunk text into meaningful phrases, which seems to affect fluency and comprehension.

Vocabulary

- Vocabulary is such an issue with my students!*
- My students should be able to use word parts to figure out the meanings of words they don't know.*
- Not only is vocabulary an issue in reading/language arts, it's an issue in math.

Comprehension

- My students need to know what questions are really asking.
- My students need to learn comprehension strategies.
- When my students meet in literature circles, they only talk about their own role. There's no real discussion.
- My students really struggle with expository text.
- The literary language in novels is such a struggle for my students!

Note: An asterisk indicates that this question is presented in more detail in another chapter of this book.

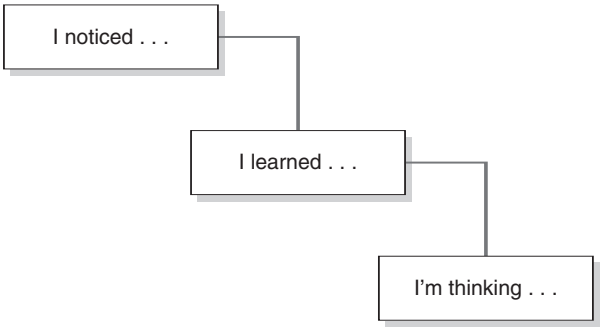
Table 1.3 Teachers' Observations of Students in Other Areas of Literacy

I noticed that:
Concepts About Print
• My kindergartners, who had little exposure to print prior to school, aren't grasping the whole idea of Concept of Word.
Choice and Motivation
• My students continually choose books that are either too hard or too easy.
• My adolescents are not engaged in reading at all, but the books we read really don't relate to their lives.
• I'm having trouble finding books that interest my students and that are easy enough for them to read.
• I don't know whether my special needs students participate in literature discussions in their classroom.
Literacy Practices
• My read alouds just don't seem to generate much discussion.*
• I am having trouble keeping track of assessment information*
• My students' idea of "responding" to literature is to write one sentence, "I think that . . ."
Understanding Students and Teachers
• I can't figure out how word reading, vocabulary, and comprehension go together for my ELL students.
• We just began a professional development project, but I'm not sure teachers think they need it.
Engaging Others in Literacy Teaching
• We are not using volunteers well in our school
• We just began a professional development project, but I'm not sure teachers think they need it.

Note: An asterisk indicates that this question is presented in more detail in another chapter of this book.

There are many sources for information about literacy research, teaching, and learning. Although literacy journals typically focus on either research or practice, the research is about practice and the practice is based on research. In Table 1.4 you will find examples of research and practice journals. You can access many research publications on the Internet using a research search engine such as Google Scholar (http://www.googlescholar.com). There are also many Web sites devoted to literacy practice. As you review the literature, keep in mind the staircase of inquiry (Figure 1.2).

Figure 1.2 Staircase of Inquiry



Step 3: Ask. Narrow your area to a specific question.

Once you have gathered information about your topic, you are ready to narrow it down. What do you want to learn? What do you want your students to learn? If your project involves implementing some type of instruction with students, you should have two research questions—one focusing on your teaching, and one focusing on your students' learning. Teacher questions can be logistical, such as, "How can I implement this idea with my students?" They can also focus on process—on looking more deeply at what you are already doing. For example, perhaps you are teaching your students to ask questions that require higher-level thinking. Yet, despite your modeling and scaffolding, they continue to ask basic, retrieval questions. You might decide that you want to look further into your own teaching and ask, "How am I modeling and scaffolding?" or "What am I saying and how does what I say seem to affect how students respond?" The same is true for student learning questions. You might ask a more product-focused question such as, "If I implement my new idea, will students' performance improve?" You might also ask a more process-focused question, such as, "How do my students talk about a particular text?" Look through Table 1.5 to see the questions that came from the other teachers' noticings about the five core areas of literacy teaching and learning.

Classroom Research Question Guide
Teacher-as-Learner Questions:
How is it that I do what I do?
How can I implement this idea?

Student Learning Questions:
If I implement my idea, how will students respond?
How do students do what they do?

Table 1.4 Sources of Research and Practice Information About Literacy

Literacy-Specific Journals	**Other Journals That May Contain Literacy Articles**
Theory/Research • *Journal of Early Childhood Literacy* • *Journal of Information Literacy (online)* • *Journal of Literacy Research* • *Journal of Literacy and Technology (online)* • *Reading Psychology* • *Reading Research and Instruction* • *Reading Research Quarterly* • *Research in the Teaching of English* • *Reading and Writing Quarterly* • *Scientific Studies in Reading*	**Theory/Research** • *The Elementary School Journal* • *Journal of Scholarship of Teaching and Learning (online)* • *Journal of Teacher Education* • *Journal of Teaching and Learning* • *Learning Disabilities Theory and Practice* • *The Journal of Special Education*
Practice • *English Journal (Middle/HS Language Arts)* • *Journal of Adolescent and Adult Literacy* • *Journal of Reading Education* • *Language Arts* • *Reading Horizons* • *Reading Research and Instruction* • *The Reading Teacher*	**Practice** • *ESL Magazine* • *Intervention in School and Clinic* • *TESOL [Teachers of English to Speakers of Other Languages] Quarterly* • *Teaching and Learning*
Online Practice Resources Literacy Access Online: http://www.literacyaccessonline.com Online Reading Resources: http://www.stewardinc.com Reading A–Z: http://www.readinga-z.com Read-Write-Think: http://www.readwritethink.org Starfall: http://www.starfall.com	

Table 1.5 Questions Based on Teacher Noticings in the Five Core Areas of Reading

Noticings	Teacher Question	Student Question
Phonemic Awareness My middle school struggling readers can't get words off the page well, or play simple language games (Pig Latin, rhyming games, etc.).*	What are the phonics and phonemic awareness skills of my students? If my students struggle with phonics and phonemic awareness, what should I do for instruction?	Will a program of direct instruction in phonological awareness and word study improve my students' reading skills?
Phonics/Word Study I am not reaching all of my students with my current word study instruction.*	How can I design an effective differentiated word study program for my students?	Will the way I have come up with to differentiate my word study instruction help my students make gains in reading?
My bilingual students have trouble spelling due to confusions between Spanish and English.	What are the connections/ disconnections between Spanish and English?	Will specifically teaching the connections between Spanish and English orthography combined with the *Words Their Way* program help my students learn and generalize English spelling?
Fluency My ELL students have good word reading skills but don't chunk text into meaningful phrases, which seems to affect fluency and comprehension.	How can I teach my students to use English syntax to chunk text into meaningful phrases?	Will teaching students to chunk text improve their reading fluency and comprehension?
Vocabulary My students should be able to use word parts to figure out the meanings of words.*	How can I design instruction to teach Greek and Latin roots?	Will teaching Greek and Latin roots help students understand the meanings of words they come across in text? Will any improvement in vocabulary help students improve comprehension?

(Continued)

Table 1.5 (Continued)

Vocabulary is also an issue in math.	Can I use children's literature to teach mathematical vocabulary?	Will students be able to use mathematical vocabulary in their writing?
Comprehension My students need to know what questions are really asking.	How can I implement the Question-Answer Relationships (QAR) (Raphael, Highfield, & Au, 2006) procedure with my students?	If I implement QAR, will students' comprehension improve?
My students need to learn comprehension strategies.	How can I implement reciprocal teaching with my students?	How will my students' book discussions change as a result of reciprocal teaching? Will their comprehension improve?
The literary language in novels is such a struggle for my students!	How can I design instruction using sign language to teach students literal versus figurative interpretation?	Will teaching students to talk in pictures using sign language increase their ability to interpret nonliteral text?

Note: An asterisk indicates that this question is presented in more detail in another chapter of this book.

Step 4: Plan. Make a plan to implement the instruction and collect data.

Planning is a key to classroom research. However, planning is not static. Although you may have set the best plan in place, you might see things that need adjusting or reconceptualizing. Reflecting on what you do and how the students respond will lead you to make changes. Keep the following mantra in mind.

Classroom Research Planning Mantra
Planning is not static.
If I have planned well but things aren't going well, I can change.

Although your research will be dynamic—that is, you will adjust as you go along—you do need to develop an initial plan.

There are three key facets to planning: instruction, logistics, and data collection.

Planning Instruction

To get the most out of your classroom research, you need to make sure you have planned your instruction so that you can put your energy into carrying it out and watching how it unfolds. When planning your instruction, think about the questions in Table 1.6.

Through planning your instruction, you are oftentimes actually answering your teacher-as-learner question. Questions that start with, "How can I . . ." are questions that are initially answered in the planning stage of classroom research. For example, figuring out how you can assist your students in understanding a particular concept begins with investigating what the research says about teaching this concept and then planning how you will teach it. Of course, you might revise your plan as you are engaged in instruction, but you need to select what you want to teach and devise a step-by-step plan for how you will teach it.

Planning Logistics

When thinking about your instruction, plan not only *what* you will implement, but *how* you will implement it. Think about the questions presented in Table 1.7.

Table 1.6 Questions to Help Plan Instruction

• What idea will I teach?	• What is it that I am noticing I want to improve upon myself, or help my students improve upon?
• What kind of instruction will I provide?	• Will I create the instruction myself? • Is there a program already made that I want to use?
• How will I teach it?	• What specific teaching techniques will I use? • How will I explain the concept? What will I say? • How will I model the concept for my students? • How will I have my students engage in guided practice? What will I have my students do? • How will I release responsibility to my students?

(Continued)

Table 1.6 (Continued)

• What materials do I need to have ready?	• What do I need to prepare before I even begin? • What will I need as I go along? • Do I have what I need?
• What pace will I set?	• How long do I project it will it take me to accomplish my goal? • How often should I work with students on this particular instruction? • How will I know when students are ready to move on to the next level of this instruction?

Table 1.7 Questions to Help Plan for Logistics

With whom will I implement my instruction?	Will I work with the whole class? A group of students? Teachers?
What will the structure look like?	Will I do this every day? Will I have some type of routine—a daily or weekly schedule?
Do I need anyone to help me?	Is this something I can do on my own? If not, what resources (people) do I have to help me?
How will I organize my classroom for this instruction?	If I am working in small groups, how much time will I work with each group? What will the other students do during this time? If I am working with someone else, how will I coordinate our schedules? Do I need to change the format of my classroom (for example, do I need to have my students sitting in a different configuration for this instruction)?
Do I need to preteach any organizational structures?	Will I be asking students to follow a new routine, use new materials, or follow new procedures? If so, when and how will I teach these?

Planning Data Collection

One of the hardest parts of classroom research is planning in advance what data you should collect to be able to make some observations about your teaching and your students' learning. If you begin without a clear idea of what data you will collect, you may have lost the opportunity to collect it. Take, for example, a writing project I implemented when I was a reading specialist. Since class size was large (twenty-seven students), and second graders need quite a bit of assistance, one of my teacher-as-learner questions was how to teach students to help one another, to confer with each other and provide some tips, and to talk like writers. This was, in turn, one of my student learning questions, "Will students be able to offer constructive feedback to each other without teacher assistance?" I collected students' writing to understand their process and progress as writers. I taught students to confer with one another and developed tools that would scaffold independence, such as conference forms students completed when they conferred about their writing. I collected these forms for data as well. I thought I had the information I needed to determine whether what the teacher and I were doing in the classroom was working, but this was only partially true.

The writing portfolios were helpful to me in seeing how students' writing was changing over time. However, the conference forms students completed were too superficial for me to understand, and they actually led my conclusions astray about what was going on. However, one day the teacher and I happened to stop long enough to listen to the talk going on around us. These young writers were engaged, listening to each other, giving good feedback, and using writing talk! But I had no record of this transformation, no way to know whether it had been happening slowly all along or whether this was one of those good days in teaching. Because one of my goals was to get students to help one another and talk like writers, in addition to the writing and the writing conference forms, I should have thought to capture the *actual talk* about writing. Looking back, this seems so obvious, but at the time I was so focused on *products* that I didn't consider the *process*, which I will discuss next.

Process Versus Product Data

There are many kinds of data to answer the many kinds of questions you might have about teaching and learning. When you think about the data you should collect, think first about whether you are asking a process or a product question. By *process*, I mean looking at *how* you or your students are doing what you or they are doing. It might be something like the writing project I just described—how students talk about writing. It could also be something like how students' work is changing over time, how students interact with a specific subject, and so on. By *product* questions, I mean questions of whether students have improved in a specific area or

what students have learned in a specific area. Table 1.8 presents some examples of process- and product-focused questions and the kinds of data that might answer those questions.

Table 1.8 Research Questions and Types of Data That Answer Them

Product-Focused Question	**Product-Focused Data**
Will my students' abilities improve if I implement this program?	Results of a specific assessment
Process-Focused Question	**Process-Focused Data**
How are students discussing text?	Video- or audiotape recordings of discussions

You can gather either process- or product-focused data for both teacher-as-learner and student learning questions. Let us look at these in more detail.

Data That Can Answer Student Learning Questions

Test Scores. Test scores are primarily product-focused. From test scores, you can measure what your students have learned (or can demonstrate on a test) about particular concepts. From test scores you might be able to make some inferences about how your teaching has influenced students' understandings of the concepts, but primarily test data will not help you understand *how* students are learning and responding.

Student Artifacts. There are many artifacts you can collect to assess what's going on in the classroom. Additionally, you can use artifacts in a product- or process-focused way. For example, you can use writing samples to determine whether students' scores on a rubric are improving. This is a product-focused view of writing. In other words, you would not necessarily look at *how* the writing was changing or improving, you would simply chart and analyze the rubric scores themselves. However, you could use these same samples to understand *how* student work is changing over time. This is a more process-focused analysis. How are students showing awareness of audience? How are they using literary language?

Rubrics. Although most rubrics are used as product-focused data, they can provide process information. As a product-focused measure, you can use rubric scores to determine whether students have improved in some area. (For example, you can show that your students moved from a score of 2 on a rubric to a score of 4.) You can get at *process* through the design of the rubric itself. Creating a rubric with incremental criteria for the process you want to see unfold can help you capture each student's progress through that process. It does not matter what numerical value you give to the rubric criteria; what matters is what you include as criteria. You will see an example of a product- versus process-focused rubric in Table 1.9.

Table 1.9 Product- and Process-Focused Rubrics

Product-Focused Rubric					
	1	**2**	**3**	**4**	**5**
Uses Writing Mechanics	Does not apply writing mechanics	Applies some writing mechanics	Applies some grade-appropriate writing mechanics	Applies grade-appropriate writing mechanics	Applies advanced writing mechanics
Process-Focused Rubric					
	Exploring Use	**Emerging Use**	**Developing Use**	**Established Use**	**Well-Established Use**
Uses Story Structure to Tell a Complete Story	Writes a simple beginning story (e.g., "I went to my friend's.")	Uses beginning/ middle or beginning/ end structure in a simple narrative (e.g,. "I went to my friend's. We played ball.")	Uses beginning, middle, end structure including character(s), problem, and solution	Uses five elements of story structure in a story (character, setting, problem, events, solution)	Uses five elements of story structure to tell a complete story in which the events lead logically from the problem to the solution
Synthesizes Information in a Research Paper	Presents facts about the topic, but relies on one source of information	Presents information from two sources separately (e.g., writes about information from Source A, then information from Source B, or writes about Topic 1 then Topic 2)	Presents information from two sources by comparing and contrasting the information	Presents information from two sources by comparing and contrasting the information and wraps up information by recapping the facts gained	Presents information from two sources by comparing and contrasting the information and wraps up information by presenting the reader with new information gleaned from the totality of the sources

Surveys, Rating Scales, and Questionnaires. These can help you find out how students respond to given questions or ideas. You can organize survey data as a scale (for example, a Likert scale of 1–5) or as multiple-choice responses. Many surveys have already been created to measure students' attitudes toward school, attitudes toward reading, reading preferences, and other such school-related issues. Most are in the form of a Likert-type scale. The *Elementary Reading Attitude Survey* (McKenna & Kear, 1990), which asks students to respond to questions about reading (e.g., "How do you feel when you read out loud in class?") by circling one of four pictures of the cartoon character Garfield (very happy, a little happy, a little upset, very upset), is a common survey used in schools. The Second Step middle school attitude survey (Committee for Children, http://www.cfchildren.org/ssf/ssevaltoolsf/pdf/mssurvey.pdf) also uses a Likert-type scale ("don't agree" to "completely agree") to try to discover middle school students' attitudes toward school. You can find many informal surveys on the Web, or you can create your own based on what you want to know. Survey, rating scale, and questionnaire data tends to be more product-focused.

Interviews. You can gain a lot of information from talking to students. You can use interviews to gain either product- or process-focused information, depending upon the questions you include in the interview guide. However, interviews are typically designed as process-focused tools to learn what students think about specific topics or areas, or how students perceive that they do what they do.

Video or Audio Recording. Capturing happenings to review at a later time is a wonderful way to figure out what students are doing and how they are doing it. In hindsight, this would have been the ideal type of data for my writing workshop question about students talking and participating as writers.

Data to Answer Teacher-as-Learner Questions

With some classroom research projects you could be collecting data about other teachers (for example, what do teachers think about such-and-such practice). However, for the most part, you will be analyzing your own teaching. There are several ways you can accomplish this, some of which are the same as you might use for student learning questions.

Video or Audio Recording. Video and audio data captures what is happening in the classroom as it is happening. Because what you say and do is captured in real time, you can actually observe yourself "in the moment." Video or audio recordings are powerful data for helping answer questions you might have about *how* you teach or *how* you interact with students. However, they are inherently messier than other forms of data and require careful reflection to analyze.

Research Journal. A research journal is another form of data to help you understand the process of teaching and learning. Keeping a research journal can help you reflect on your day-to-day activities and instruction,

and provide the basis for you to understand your teaching and your students' learning. Keeping a journal also helps you supplement your other data so you can better understand and analyze it. For example, Gail, an urban middle school teacher was working with her students on vocabulary. She planned to collect product-focused pre- and post-instruction standardized and informal test data to understand whether students were retaining the vocabulary they were studying, and whether focusing on vocabulary would yield any increase in their formal test scores. However, as she was working with the students, Gail noticed the students noticing words. These students, typically reluctant to participate in class, came up to her to use words and to tell her how they had used words. They raised their hands to use words in class. One student, after asking what *scrawl* meant, replied, "That's a great word. Can you write that down for me? I want to use that word." Maybe Gail's students' standardized test scores will improve, maybe not. But there is another story to be told here, one of awakening students' interest in words and language, which cannot be told through test scores. Keeping an ongoing research journal to record each day's instruction and students' engagement can help tell the untold story.

Choosing data is critical to understanding what you want to understand, so make sure that the data you choose match what you want to know.

Step 5: Implement. Implement the plan and collect data.

Once you have your plan in place, you are ready to implement it and begin collecting data. Keep a binder or some other type of system to store lesson plans, data, and any other research-related artifacts. Some teachers keep their research journal on loose-leaf paper, so they can add it to their binder and keep everything in chronological order.

Remember the classroom research planning mantra: **Planning is not static. If I have planned well, but things aren't going well, I can change.**

As you implement your plan, pay attention to the three planning areas: instruction, logistics, and data collection. You might need to adjust your plan. But do not do so without first reflecting on the data you have gathered thus far. Keep detailed notes in your journal regarding your instruction and students' responsiveness, participation, and understanding.

Instruction

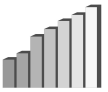
Classroom research is an evolving process. Some teachers find that their instruction flows just fine as planned, others need to adjust their instruction here and there, and still others realize that they asked the wrong question in the first place. This is a valuable learning experience.

Logistics

Although you plan the logistics of your project in advance, you might not anticipate specific problems that will arise. Promptly deal with logistical problems. Identify the problem, stop and think about what is causing it, and revise or reteach the necessary routines.

Data Collection

Hopefully, your plan for data collection can be implemented as planned. But as your project evolves, you may decide to revise the plan. Keep in mind that changing the tool you use to gather *product-focused* data may mean that you are not able to directly compare students' performance from one task to another. For example, let us say that you gave students a particular test at the beginning of the school year, but decided to give a different test at the end of the school year. You might be able to look at both sets of scores and make some statements about student progress, but in all likelihood, the tests are not testing the same exact skills in the same exact way. Before you change the data you collect, make sure you go back to your questions and your original plan and determine if your change will still allow you to answer your questions.



Step 6: Analyze. Analyze and make sense of the data.

Making sense out of data is the beginning of the answer to your research questions. However, your data will only *help* you tell a story; it is up to you to determine what story it is telling. Different kinds of data require different types of analyses. How to analyze different types of data is discussed in more detail in Chapter 3, but some basic tenets of data analysis in classroom research are discussed below.

First, unlike some more formal kinds of research, classroom researchers do not need to wait until an official "end" of their project to analyze their data. Classroom research is meant to inform instruction. It is difficult to inform instruction if that instruction has ended. In classroom research, data analysis is ongoing and recursive. Analysis and reflection on your data will lead you to make changes in your project if needed.

Second, your research journal may be one of the most important sources of data. Your notes about what you are doing and how students are responding will help you decide whether you are on the right course with your project. The best way to begin analysis is to set up an initial timeline for a preliminary or interim analysis of the data that you have collected thus far. Using that, you can reflect (Step 7) to make a plan for where to go from there (Step 8).

Step 7: Reflect. Think about your data and what it means for your instruction.

Reflection is an ongoing part of classroom research. However, I discuss it here as a discrete step to remind you that you need to take time to stop and think. When you are thinking about your interim analysis or a more formal ending analysis, analyzing data can be a tedious process. Sometimes we can get so immersed in it that we lose sight of our questions. We need to remind ourselves to think about what the data mean with respect to teaching, learning, and life in the classroom. It is a time to

go back and revisit your original question. What did you want to learn? What do your data tell you about that?

When thinking about your interim analysis, revisit your initial plan for your project in terms of instruction, logistics, and data collection. Are you satisfied that your initial plan is working well in each of these areas? How do you know? Based on this, you may find that you need to make some changes. Here are some questions to guide your thinking as your reflect on your findings thus far:

- Is my project going in the direction I want it to go?
- What do my data tell me about my
  - instruction?
  - logistics?
  - data collection?
- Do I need to make any changes in my plan with respect to instruction, logistics, or data collection?

Step 8: Plan. Follow up by creating an action plan.

Step 8 of the classroom research cycle is a matter of deciding what to do with what you have already done. Action plans range from deciding to adjust something minor in your initial plan to writing up a formal research report. Because classroom research is recursive, you might find that Step 8 really begins another cycle of Steps 4–8. You use the data analysis and reflection to adjust your instruction, continue to gather data, analyze, reflect, and keep cycling through the process.

Deciding to adjust your instruction or logistics or to gather additional data are plans you might make to improve your project as you go. These typically involve planning for yourself and your students. However, let us say, for example, that you are trying to determine how students respond to a new program so you can make some decisions about whether to keep the program. In these cases, your analyses and your action plan might be more formal and involve other people. You may display your data through charts and graphs, think about what those tell you with respect to the program you implemented, and create a plan to present or share the data with other teachers, an administrator, or a committee. Table 1.10 provides some ideas for action plans based on the kinds of research questions you might have and the analyses you may have made.

WRAP UP

In this chapter, you have viewed the eight recursive steps of classroom research. You have seen how other teachers' observations have led them to questions and to choices in what method of data collection might be

Table 1.10 Action Plans

Question	Analysis/Reflection	Action Plan	Type of Plan
If I implement XX, how will my students do on tests?	Students' scores really improved.	Continue with instruction.	Maintain
		Share your project and results with colleagues so they might implement it as well.	Share
		Present data and analysis to administrators for them to consider with respect to curriculum.	Inform
How do I involve my students in instruction?	I'm asking too many questions and not letting students ask and discover on their own.	Develop and implement a plan to release responsibility to students; gather data on your own progress.	Revise
Does my language arts instruction meet the needs of my students?	Some students did really well, others not so well.	Ask another question: How can I structure my instruction to meet the needs of *all* of my students?	Question

appropriate to answer those questions. There is no one "right" question, no one "right" plan, no one "right" piece of data. There is a good deal of "it depends." The take home message here is that classroom research is recursive and ongoing. You need to observe, inquire, ask, and plan to the best of your ability before you begin, but after you begin, carefully observe and analyze. Make changes as you go, but base those changes on data and your analysis of that data.

YOU TRY IT

Trying Out Research.

Begin to think about classroom research that you might want to conduct. Here are some tasks to get you started:

- Focus on Step 1 of the classroom research cycle—notice. Begin keeping a journal in which you jot down things about your instruction and students' learning that puzzle you, frustrate you, intrigue you, or otherwise catch your attention. Do this for a week or two. Then review your notes. Think about this:
  - Are there any common themes that you see?
  - Is there one thing you are writing about more than others?
  - Is there something that is more curious than others?
- Once you have identified one thing (one topic of instruction), go back and try to more carefully "watch" that particular facet of your instruction and students' learning. Take detailed notes and try to focus on what's really happening.