thousand dollars to teach keyboarding, so the problem became, "How does keyboarding instruction enhance students' ability to use word processing, database, spreadsheet, and draw functions?"

Looking at the literature proved to be a formidable problem because there wasn't a good academic library in the area. The local community college had one online computer to access ERIC (Educational Resources Information Center) through the World Wide Web if I gave search terms to the librarian. A little help came, but I preferred to do the search myself. Our school was not yet online, so I resorted to using my son's computer. A quick survey of the literature showed plenty of research on keyboarding but not much focused on young children. Opinions ranged from "Start them as early as possible" to "Avoid bad habits" to "Don't bother because they can hunt and peck as fast as they can type."

The problem proved to be a little overwhelming in that I had just started an instructional program to teach all the keyboarding skills, and it became obvious that results would be harder to get for database, spreadsheet, and draw functions. As a result, I decided to look initially only at the effect of teaching keyboarding on word processing for students in grades 4 through 6.

This was supposed to be a collaborative venture, so my first task was to enlist the help of the teachers in grades 4 through 6. We met after school one afternoon so I could explain the purpose of the project. They agreed to help gather data, but only one class actually got into the lab every day. This was disappointing, but it helped make the project more manageable since I would be handling data from only one class instead of three.

What variables might have an effect on students' success in learning to keyboard? I conducted a survey of teacher attitudes and a survey to assess whether students had any prior knowledge, how much time they spent on a computer at home and at school, and whether they had a computer at home. Records were kept for time on computers at school in instructional and free-choice situations.

A well-designed action research project should, as its name declares, lead to some kind of action. The purpose of my action research project was to determine if teaching keyboarding skills to sixth-grade students had enough of an impact on their word processing skills to warrant spending the time and money. It seemed rather obvious that it would, but several students had developed their own unique "hunt-and-peck" system and could already approach the district-mandated target of 20 words per minute. There are many variables that might affect word processing rates, and that led to the following questions:

1. *Do students have a computer at home? How much time do they spend at it per week?*
2. *What preexisting knowledge do students have about computers?*
3. *How much time do students spend at the computer when they're at school? How does it affect word processing rates?*
4. *What is the effect of the keyboarding software used in the lab at school?*

Student Self-Evaluation Survey

1. Do you have a computer that you use outside of school?

   (a) Yes (b) No

2. How many hours a day do you spend at the computer outside of school?

   (a) 0 (b) 1 or less (c) 1–2 (d) 2–3

3. How much time do you spend at the computer while you're at school?

   (a) 0 (b) 15 minutes (c) 30 minutes (d) more than 30 minutes

4. When you type on a keyboard, do you look at the

   (a) monitor (b) keyboard (c) rough draft (d) your neighbor

5. I use the computer to (circle all that apply)

   (a) play games
   (b) write stories and reports
   (c) draw pictures
   (d) collect information and store it
   (e) find information in the library

6. Learning to keyboard in the lab made my life with computers

   (a) easier (b) more frustrating (c) no different

7. If I had the chance to do more with computers, I would

   _____

8. The best thing about learning to keyboard is

   _____

9. The hardest thing about learning to keyboard is

   _____

The questions were then placed in a data matrix and triangulated as follows (Note: D.S. = data source):

Questions	*D.S. 1*	*D.S. 2*	*D.S. 3*
Preexisting knowledge?	Students' survey	Computer knowledge pretest	
Keyboarding speed?	Pretest	Posttest	Teacher help
Appropriate use (WP)?	Pretest software	Posttest software	Timed typing teacher constructed
Time on computers?	School lab records	Student survey	Parent survey

I collected data using surveys that I developed to measure the following areas:

- *Student self-evaluation questionnaire*
- *Teacher-constructed vocabulary/facts pretest of general computer knowledge*
- *Teacher-constructed timed typing test rates*
- *A classroom teacher survey of knowledge/attitudes about technology*
- *A teacher observation record for the computer lab*
- *Existing records of students' word processing rates with software*
- *Parent survey of student computer use outside of school*

Data were compiled as follows:

- *The three variables of time, prior knowledge, and use of keyboarding software were analyzed using a scatter plot graph to determine any correlation to word processing speed.*
- *Surveys were compiled to show tendencies.*
- *Keyboarding rates between October and May were compiled in graph form to show progress over time.*

In general, the data indicated the following:

- *Student time spent on computers out of school had no effect on word processing rate. (They love those computer games!)*
- *Time spent on computers at school was critical.*
- *In only 1 month, the class word processing rate mean had increased 300 percent.*

As a result, it was apparent that the keyboarding software was effective, and on that basis I continued its use. Because time on task is critical, teachers were urged to take students to the lab every day and monitor keyboarding habits as well as install keyboarding software on classroom computers so that each student

received a minimum of 10 minutes' practice per day. Timed typing tests require greater and different skills than are called for on keyboarding software. In the future, timed typing tests will be given weekly to provide an authentic assessment of student progress, and a tracking system will be used to monitor the acquisition of skill development.

Any research worth its salt appears to generate more questions than it answers. At the completion of this project, I was left wondering if a student's learning style had any impact on the ability to learn word processing skills. Would keyboarding instruction improve students' use of database, spreadsheet, and draw/paint functions? Could other types of authentic assessment be used to determine skill/concept development? These are questions I will continue to investigate.

The project became a springboard to address issues in setting up a computer lab. Instead of being behind the eight ball, I was able to anticipate problems and find solutions. Collaboration was an important part of the process. But perhaps the most powerful part of the action research process was the extent to which I became more reflective about what I was doing in the computer lab. The lab at my school has received a lot of praise from administrators, board members, and teachers, and I believe that going through the action research process has had much to do with the continued success of the lab.

I don't look at classroom problems quite the same way now. For example, I also teach middle school choir and began to notice that the weeks on which I saw eighth graders on Mondays (we're on block scheduling), it was usually a difficult, if not unproductive rehearsal. Keeping some informal data about those days and reflecting about why they were so difficult led me to try some interventions that might help alleviate the problem. It may be a bit corny, but action research has changed my life—in the classroom anyway. Student learning is enhanced, I approach problems more systematically, I gather data more carefully and accurately, and my practice is more reflective.

The year following my word processing action research project, I had the good fortune to be a mentor for other teachers learning the action research process. Based on this experience, two observations come to mind. Problem formulation is a difficult process. Extra time spent in this phase of the action research cycle will prevent backtracking, headaches, and frustration down the road. When teachers do identify something that needs addressing, there appears to be a measurable difference between problems that are student centered and those that arise from a teacher complaint about a teaching situation. It appeared that the problems that are student centered are more likely to result in the improvement of instruction.

Making action research a natural part of the teaching process, in the classroom and the school, is critical to success. Traditionally, teachers are not researchers. The school routine isn't geared to provide teachers with the time and resources that research demands. Teachers are considered to be working only when they're in front of a class. On the other hand, teachers need to develop the attitude that improvement of the teaching/learning process can and should be addressed with data-based decision making formalized through action research.

Teacher Survey

1. I take my class to the lab

   (a) once a week (b) twice a week (c) 3 times a week
   (d) 4 times a week (e) every day (f) only when Mr. Rockford is there

2. I expect my students to (circle all that apply)

   (a) compose reports/stories (b) revise reports from written copies
   (c) practice keyboarding (d) other: _____

3. If I rated my comfort level with computers it would be

   Use it every chance I get — Don't want to be in the same room as one

   5 4 3 2 1

4. I monitor my students' keyboarding technique

   (a) only during lab sessions (b) any time they're at the computer
   (c) never

5. My students' abilities to use the computer have been enhanced by learning to keyboard

   They're experts! — They're still looking for the on switch!

   5 4 3 2 1

6. I would like my students to be able to

   _____

The decision about what data are collected for an action research area of focus is determined largely by the nature of the problem. There is no one recipe for how to proceed with data collection efforts. Rather, the individual or group must determine what data will contribute to their understanding and resolution of a given problem. Hence, data collection associated with action research is largely an

idiosyncratic approach fueled by the desire to understand one's practice and to collect data that are appropriate and accessible.

This chapter will discuss qualitative (experience-based) data collection techniques and quantitative (number-based) techniques. The former includes data sources such as field notes, journals, questionnaires (surveys), maps, and digital recordings, whereas the latter focuses on the collection of teacher-made tests (criterion-referenced tests), standardized tests (norm-referenced tests), school-generated report cards, attitude scales, and the results of student achievement reported on statewide assessment tests.

One approach is not *better* than the other. Your area of focus and research questions will determine the best data collection techniques for your research. As discussed earlier, this may involve *qualitative* data sources and *quantitative* sources using a **mixed-methods** design. However, the literature on action research supports the assertion that qualitative designs are more appropriately applied to action research efforts compared with the application of an experimental pretest-posttest control group design in which the teacher researcher randomly assigns children to either a control group or an experimental group in order to receive a "treatment." Qualitative research is not the "easy" way out for teacher researchers who fear statistics (a.k.a. sadistics!). As you will see, the rigor of good qualitatively oriented action research equals the rigor of doing good quantitatively oriented action research. If your area of focus necessitates a more quantitative, experimental approach, then you should consult more quantitatively oriented references, such as Mills and Gay (2016, chapters 7 to 11) or Creswell (2015).

Qualitative Data Collection Techniques

The receptivity among educators in general and among action researchers in particular to a qualitative (descriptive) way of examining problems is reflected in the action research literature that emphasizes the following data collection techniques and sources:

- Existing archival sources within a school
- Tools for capturing everyday life
- Tools for questioning
- Conventional sources (surveys, questionnaires, etc.)
- Inventive sources (exhibits, portfolios, etc.)
- Interviews
- Oral history and narrative stories
- Rating scales
- Inventories
- Observation
- Mapping
- Visual recordings

- Photography
- Journals and diaries

(Anderson, Herr, & Nihlen, 1994; Calhoun, 1994; Hendricks, 2017; Sagor, 2000; Stringer, 2004; Wells, 1994)

As you can see from these examples, the kinds of data you collect would include descriptive, narrative, and even nonwritten forms. In many cases, these data occur naturally and are regularly collected by teachers and administrators. In simple terms, we are engaging in an activity that seeks to answer the question, "What is going on here?" It is not a mysterious quest but is quite simply an effort to collect data that increase our understanding of the phenomenon under investigation. The three primary fieldwork strategies we will discuss in this chapter are *experiencing*, *enquiring*, and *examining* (Wolcott, 1992, p. 19). Each of these strategies will be discussed in the context of actual teacher researchers' experiences.

Voices from the Field

Qualitative Data Collection Techniques

The teacher researcher in this video vignette describes a variety of qualitative data collection techniques and strategies that she believed would contribute to her understanding of the impact of classroom computers on students' attitudes toward learning and how they actually use computers in their own learning. Jureen uses multiple qualitative data collection techniques, including; classroom observations (recorded as field notes), student surveys (prior to and after implementing computers in her classroom instruction), attitude surveys (semantic differentials), and surveys of her cooperating teacher and educational assistant focused on their observations of implementing technology in the classroom. The teacher researcher's specific research questions help guide the decision about which multiple qualitative data collection techniques will provide a comprehensive picture about "what is going on" in the classroom during the implementation of a technology innovation. While survey results can be analyzed using descriptive statistics, their use in this study is clearly as a qualitative indicator about changes in students' attitudes toward the use of technology in teaching and learning.

ENHANCEDetext video example 5–1

Watch as Jureen, a teacher researcher, describes her data collection techniques in this video. As you listen, reflect on the difference between qualitative and quantitative techniques. Why does she consider her survey to be a qualitative measure?

Experiencing Through Direct Observation

Teachers who undertake action research have countless opportunities to observe in their own classrooms. They observe as a normal component of their teaching, monitoring and adjusting instruction based on the verbal and nonverbal interactions in their classrooms. Therefore, using direct observation as a data collection strategy is familiar and not overly time consuming. As teachers, we are constantly observing our environment and adjusting our teaching based on what we see. Action research gives us a systematic and rigorous way to view this process of observation as a qualitative data collection technique.

Participant Observation

The action research vignettes shared in Chapters 1 to 3 illustrate how teachers "experience" their teaching through observation. James Rockford observed the "hunt-and-peck" keyboarding strategies of his students as a natural part of his teaching. Cathy Mitchell observed audience reactions to the "Violence Improv" and recorded field notes in her daily journal. Deborah South observed the interpersonal interactions of her "study skills" students and recorded her observations in a journal—observations that quickly confirmed the presence of major problems in the classroom. These experiences are all examples of participant observation.

If the researcher is "a genuine participant in the activity being studied," then the researcher is called a **participant observer** (McMillan, 1996, p. 245). According to Spradley (1980), participant observation is undertaken with at least two purposes in mind:

- To observe the activities, people, and physical aspects of a situation
- To engage in activities that are appropriate to a given situation that provide useful information

Participant observation can be done to varying degrees depending on the situation being observed and the opportunities presented: A participant observer can be an *active participant observer*, a *privileged, active observer*, or a *passive observer* (Pelto & Pelto, 1978; Spradley, 1980; Wolcott, 1982, 1997). Depending on the problem, teachers have many opportunities to be active participants in the observation process as they go about their work. However, the tendency with observing is to try to see it all! A good rule of thumb here is to try to do less but to do it better. That is, as you embark on some degree of participant observation, do not be overwhelmed with the task. It is not humanly possible to take in everything that you experience. Be content with furthering your understanding of your area of focus through *manageable* observations. Avoid trying to do too much, and you will be happier with the outcomes.

Active Participant Observer

Teachers, by virtue of teaching, are active participant observers of their teaching practice. When they are actively engaged in teaching, teachers observe the

Voices from the Field

Participant Observation

In this video vignette, our teacher researcher Jureen talks candidly about the challenges facing action researchers studying their own practices. As Jureen states, "It's hard to collect data and teach at the same time." Teachers are always engaged in naturalistic, ongoing data collection efforts as they "monitor and adjust" their instruction. Teachers are always in the role of participant observer to varying degrees, and Jureen shares some helpful participant observation strategies: working collaboratively with colleagues to record classroom observations, "teaching" and then "observing" students engaged in guided practice or other student-centered work, and using digital recordings that can be viewed at a later time. Experienced action researchers become competent observers of their own practice and use participant observation techniques as the cornerstone of their data collection efforts to better understand what is happening in their classrooms.

ENHANCEDetext video example 5–2
In this video, Jureen offers suggestions to make observation easier for teachers, who are always participants in their own classrooms.

outcomes of their teaching. Each time we teach, we monitor the effects of our teaching and adjust our instruction accordingly. As an active participant observer of our own teaching practices, however, we may be so fully immersed in what we are doing that we don't have time to record our observations in a systematic way during the school day. Such recording is a necessary part of being an active participant observer.

In the action research vignettes from Chapters 1 to 3, we saw teachers who were active participant observers of their own teaching. Deborah South observed the "off-task" behavior of her "unmotivated" students during the study skills lessons. Cathy Mitchell observed the nature of the audience participation while she directed the teen theater. James Rockford observed the "hunt-and-peck" strategies used by keyboarding students while he was teaching keyboarding skills. As researchers of our own teaching practices, active participant observation is likely to be the most common "experiencing" data collection technique that we use.

Privileged, Active Observer

Teachers may also have opportunities to observe in a more privileged, active role. That is, they may wish to observe their children during a time when they are not

directly responsible for the teaching of a lesson, for example, during a "specialist's" time in music, library, or physical education. These times provide opportunities for teachers to work as a "teacher's aide" while at the same time allowing them to withdraw, stand back, and watch what is happening during a particular teaching episode, moving in and out of the role of teacher, aide, and observer.

Many teachers comment on how valuable these experiences have been in allowing them time to observe the social interactions of students and the impact of a particular instructional strategy on those interactions. By necessity, these privileged, active observer opportunities require teachers to give up valuable time that is often dedicated to duties other than teaching, such as planning, attending team meetings, reading, visiting other classrooms, and relaxing (the all-important "downtime" during a day, if they are fortunate enough to have such a schedule). Taking time to observe one's class is a valuable use of nonteaching time that honors a teacher's effort to improve practice based, in part, on observational data.

Passive Observer

Teachers also have opportunities to be passive observers in classrooms and schools. When teachers take on the role of passive observer, they no longer assume the responsibilities of the teacher—they should focus only on their data collection. A privileged, active observer could be transformed into a passive observer by making explicit to the students and a teaching colleague that the classroom teacher is present only to "see what's going on around here." Students will quickly learn that there are times when their teacher is not going to interact with them as the teacher normally does. The teacher might simply announce, "Today I am going to watch and learn from what you are doing!" Taking a step back from the daily rigor of being "onstage" and performing can be refreshing and provide an insightful opportunity for teachers who are unaccustomed to watching their students in a different setting, through a different lens.

Field Notes

The written records of participant observers are often referred to as **field notes**. For teachers undertaking participant observation efforts in their classrooms, these field notes may take the form of anecdotal records compiled as part of a more systematic authentic assessment or portfolio effort. So, what do you write down in these field notes? Well, it depends on what you are looking for! I can offer only limited guidance to help quell your concerns about the "how-to" of writing field notes. But first let me start with an example of how *not* to do field notes!

During my graduate studies at the University of Oregon, I took a class on ethnographic research in education, and as part of learning how to do ethnography (qualitative research), I was required to conduct a "beginning ethnography" of something that was "culturally different" for me. As an Australian studying in the United States, I had a number of opportunities to study a culturally different phenomenon while at the same time having fun with the project. I chose to study a

sorority. As part of this study, I participated in one of the regular ceremonies that was part of the sorority members' lives—a formal dinner held each Monday night at which members were required to wear formals and male guests were expected to wear a jacket and tie.

During the course of the dinner, I frequently excused myself to visit the restroom, stopping along the way to take out my notebook so I could try to record quotes and reconstruct events as they were happening, as I tried to capture in great detail all that I was observing. Of course, the irony in this strategy was that I was missing a great deal of the dinner by removing myself from the setting in a futile effort to record everything. The ridiculousness of the situation became evident when one of my dinner hosts asked me if I was feeling well or if the meal was to my satisfaction. After all, why did I keep leaving the dinner table?!

The message here for teacher researchers who wish to use field notes as part of their data collection efforts is clear: You can't physically record everything that is happening during an observational episode, nor should you try to. The following options for observing and recording field notes are useful ways to proceed (adapted from Wolcott, 1994).

Observe and Record Everything You Possibly Can

If you knew exactly what you wanted to observe when you went into an observation, you would find this data collection process inefficient. Engaging in an effort to "record everything" will quickly attune you to what is of most interest to you. During these observational periods, you can start with a broad sweep of the classroom and gradually narrow your focus as you gain a clearer sense of what is most pressing. You can also decide on your strategies for recording observations. You might choose verbatim conversations, maps and illustrations, photographs, video or audio recordings, or even writing furiously in the fashion of a principal or university professor undertaking an evaluation. It is a very idiosyncratic activity but follow one rule: Don't run off to the restroom every five minutes—you *will* miss something! Do try to maintain a running record of what is happening in a format that will be most helpful for you.

For example, in my study of a school district attempting multiple change efforts (see Mills, 1988), I attended the 37th Annual McKenzie School District Teacher In-Service Day. Part of my field notes from this observation were as follows:

8:30 A.M. An announcement is made over the public address system requesting that teachers move into the auditorium and take a seat in preparation for the in-service. As the teachers file into the auditorium, the pop song "The Greatest Love of All" is played.

8:41 A.M. The assistant superintendent welcomes the teachers to the in-service with the conviction that it is also the "best district with the best teachers." The brief welcome is then followed by the Pledge of Allegiance and the introduction of the new assistant superintendent.

8:45 A.M. The assistant superintendent introduces the superintendent as "the superintendent who cares about kids, cares about teachers, and cares about this district."

The next hour of the in-service is focused on introducing new teachers to the district (there were 60 new appointments) and the presentation of information about how a new focus for the district would be at-risk children.

10:00 A.M. The superintendent returns to the lyrics of "The Greatest Love of All" and suggests that the message from the song may be suitable as the district's charge: "Everyone is searching for a hero. People need someone to look up to. I never found anyone who fulfilled my needs . . ." The superintendent compels the teachers to be the heroes for their students and wishes them a successful school year before closing the in-service.

As you can see from this abbreviated example, there is nothing mystical about field notes. They serve as a record of what an observer attended to during the course of an observation and help guide subsequent observations and interviews. This was the beginning of my yearlong fieldwork in the McKenzie School District, and this initial observation helped me to frame questions that guided my efforts to understand how central office personnel, principals, and teachers manage and cope with multiple innovations.

Observe and Look for Nothing in Particular

Try to see the routine in new ways. If you can, try to look with "new eyes" and approach the scene as if you were an outsider. Wolcott (1994) offers helpful advice for teachers conducting observations in classrooms that are so familiar that everything seems ordinary and routine:

> Aware of being familiar with classroom routines, an experienced observer might initiate a new set of observations with the strategy that in yet another classroom one simply assumes "business as usual. . . ." The observer sets a sort of radar, scanning constantly for whatever it is that those in the setting are doing to keep the system operating smoothly. (p. 162)

Look for "Bumps" or Paradoxes

In this strategy, you consider the environment you are observing as if it were "flat"; nothing in particular stands out to you. It is an opportunity for observers to look for the "bumps" in the setting. In action research projects, these "bumps" might be unexpected student responses to a new curriculum or teaching strategy or an unexpected response to a new classroom management plan, seating arrangement, monitoring strategy, or innovation.

For example, the "bumps" observed by a teacher concerned with gender inequity may become painfully evident when the "locus of control" in a classroom is on one or two boys. That is, by keeping a tally of who commanded most of the teacher's attention by answering and asking questions, it became clear that one or two dominant boys were the focus of the activity during a lesson.

This strategy also suggests that teacher researchers look for contradictions or paradoxes in their classrooms. In a sense, this is not dissimilar to the "looking for bumps" strategy because a paradox will often stand out in an obvious way to the teacher who has taken the time to stand back and look at what is happening in the classroom. (See Key Concepts Box 5–1 for a description of the components of effective observation.)

For example, teacher researchers often comment on the unintended consequences of a particular teaching strategy or a curriculum change that have become evident only when they have had an opportunity to stand back and observe the results of their actions. These consequences often present themselves in the form of a paradox—a contradiction in terms. For example, as one teacher researcher commented after attempting to incorporate manipulatives into her math instruction in a primary classroom, "I thought that the use of manipulatives in teaching mathematics would also lead to increased cooperation in group work. Instead, what I saw were my kids fighting over who got to use what and not wanting to share."

KEY CONCEPTS BOX 5–1

Components of Effective Observation

DEGREES OF PARTICIPATION	
Participant observer	Engage in activities and observe activities, people, and physical aspects
Privileged observer	A teacher's aide during specialists' time
Passive observer	Present only to observe what's going on
FIELD NOTES	
Observe and record everything	Attune to what you actually record through verbatim conversations, maps and illustrations, photos, and video and audio recordings
Observe and look for nothing	Try to see beyond the routine and look with a fresh perspective
Look for paradoxes	What are the unintended consequences of action?

Voices from the Field

Field Notes

The teacher researcher in this video vignette claims that she used observations and field notes as part of her mixed-methods research design with an area of focus on the impact of formative and summative assessments on student achievement and attitude. It appears as though Rachelle "looked for bumps" in student behavior in order to capture verbatim comments in response to announcements about upcoming formative and summative assessments. In order to see how "students were reacting" in the classroom, Rachelle could have conducted more sustained observations and considered the use of digital recordings in order to gather a comprehensive picture of what was going on in the classroom. This would have also been aided by the use of maps to capture who was interacting with whom in response to the announcement that formative and summative assessments would be administered and the specific nature of those interactions.

ENHANCEDetext video example 5–3
Rachelle, the teacher researcher shown in this video, used both qualitative and quantitative data collection methods. As she describes her procedures for taking field notes, think about whether she followed the guidelines given in the text.

Enquiring: When the Researcher Asks

A second major category of data collection techniques can be grouped as data that are collected by the teacher through the asking of questions. Teacher researchers may ask questions of students, parents, and other teachers using **interviewing** and **questionnaire** techniques.

As Agar (1980) suggests, information from interviews can serve as the "methodological core" against which observational data can be used to "feed" ongoing informal interviews. That is, observational data (collected through the "experiencing" techniques described earlier) can suggest questions that can be asked in subsequent interviews with children, parents, teachers—whoever the participants in the study might be. Participants in an interview may omit things. Pairing observation and interviewing provides a valuable way to gather complementary data. For example, Cathy Mitchell's Teen Theater Group (see Chapter 3) developed a group interview technique based on observations of audience reactions to performances. This technique involved three company members meeting

with a small group of audience members for about 15 minutes following a performance so that they could gauge the audience response to the scenes about teen violence and harassment. One actor served as the interviewer, one served as the scribe, and one kept a running tally of comments and responses.

Informal Ethnographic Interview

The **informal ethnographic interview** is little more than a casual conversation that allows the teacher, in a conversational style, to inquire into something that has presented itself as an opportunity to learn about their practice. Agar (1980) suggests strategies that allow teacher researchers to have a ready set of questions to ask participants in a study, for example, the "5 Ws and H": *who*, *what*, *where*, *when*, *why*, and *how*. Using these prompts, teachers will never be at a loss for a question to add to their understanding of what is happening in their classrooms. For example, in considering the example of the teacher researching the impact of manipulatives on math performance and through observation recognizing the unanticipated consequence of poor sharing of manipulatives, the teacher might ask questions such as these:

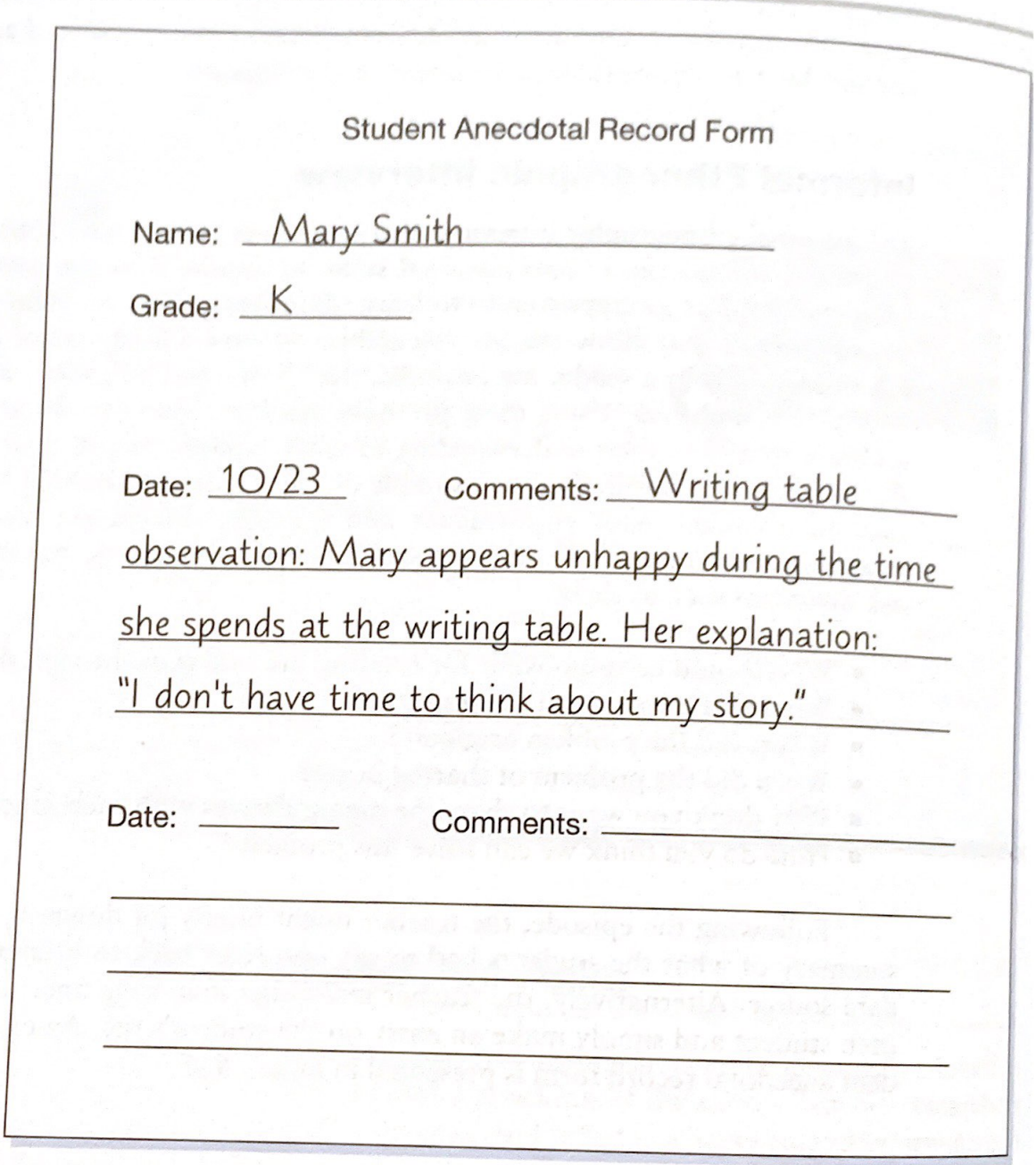
- *Who* should be responsible for rotating the materials through the group?
- *What* was the cause of the problem?
- *Where* did the problem originate?
- *When* did the problem of sharing begin?
- *Why* don't you want to share the manipulatives with each other?
- *How* do you think we can solve this problem?

Following the episode, the teacher might briefly jot down in a plan book a summary of what the students had to say and refer back to it later as a valuable data source. Alternatively, the teacher researcher may keep anecdotal records on each student and simply make an entry on the student's file. An example of a student anecdotal record form is presented in Figure 5–1.

Structured Formal Interviews

Teacher researchers may also want to consider formally interviewing children, parents, or colleagues as part of their data collection efforts. Using a structured interview format allows the teacher to ask all the participants the same series of questions. However, a major challenge in constructing any interview is to phrase questions in such a way that they elicit the information you really want. Although this may seem obvious, teacher researchers often feel compelled by tradition and history to ask a lengthy set of questions of which only a part is really their focus. When planning interviews, consider the following options for ensuring the quality of your structured formal interviews:

Figure 3–1 ■ Student Anecdotal Record Form



Student Anecdotal Record Form

Name: Mary Smith

Grade: K

Date: 10/23 Comments: Writing table observation: Mary appears unhappy during the time she spends at the writing table. Her explanation: "I don't have time to think about my story."

Date: _____ Comments: _____

- **Pilot questions on a similar group of respondents.** That is, if you have developed an interview schedule to use with the students in your classroom, try it out on some similarly aged students (not in your class) to see if it makes sense. Their feedback will quickly confirm—or challenge—the assumptions you have made about appropriate language. Using the feedback from the students, revise the questionnaire before administering it to your class.
- **Use questions that vary from convergent to divergent.** That is, use both "open-ended" and "closed" questions in a structured interview or questionnaire.

For example, a closed (convergent) question allows for a brief response, such as "Yes/No." Alternatively, an open-ended (divergent) question can conclude with an "Other Comments" section or a request for the interviewees to "add anything else" they would like to. In so doing, you will provide students with opportunities to elaborate on questions in ways that you had never anticipated. However, the information gathered through open-ended questions is often more difficult to make sense of. But it does allow the teacher researcher to obtain information that might otherwise be considered "outlying" or "discrepant."

- **Persevere with silence and "wait time" to elicit a response.** Otherwise, it becomes too easy to answer your own question!
- **Consider using a digital recorder to capture the interview responses.** One way to ensure that you capture verbatim responses during an interview is to use a digital recorder. After all, you can't write down everything that is said and still maintain rapport with your interviewee. But be warned—this will add to the amount of time that it takes to "write up" your interview. You will need to listen to the recording and transcribe the responses. Furthermore, I seem to suffer from Murphy's Law when it comes to the use of digital recorders! (That is, if something is going to break or malfunction, it will develop a terminal illness on my shift!) I have also interviewed teachers, principals, and superintendents who are very uncomfortable with being recorded. After all, who else will listen to the recording?! Check the body language of whomever you are interviewing to determine if they are okay with the use of the recorder. You may find that your interviewees eventually loosen up!

- **Locate a private place to interview.** Whether you are conducting one-on-one or focus group interviews, be sure to conduct the interview in a private place where you are not likely to be interrupted and where you have the tools for the interview (audio recorder and notepad). You may choose to use your classroom, another teacher's classroom, a study room in the library—anywhere will work as long as you have privacy and your interviewee feels comfortable in the environment. Alternatively, in an informal interview, you may choose to talk to students outside during a recess and play a game of some sort. Some of your colleagues may be very comfortable being interviewed in a faculty lounge or lunchroom. Take your cues from your interviewees as to where they are most comfortable being interviewed.
- **Carefully choose whom you will interview.** Teacher researchers have considerable flexibility about how they will choose whom they interview. The decision to interview will depend largely on the questions you are trying to answer and whether the interviewee is "information rich" (Patton, 1990, p. 169). This is perhaps a statement of the obvious—it doesn't make a lot of sense to interview folks who don't know anything about your area of focus! But at some point you will make a conscious decision about whom you will interview. Will you interview all the children in your class/school? All the teachers? The answer is probably "No." Therefore, you will choose whom to talk

to based on a number of factors: knowledge and experience of the area of focus, verbal skills, and willingness to be interviewed. For most teacher researchers, the choice will be fairly limited—the students in their classes will be the primary targets for interviews. Depending on the number of students in your classes, you may choose to conduct a combination of focus group and individual interviews in order to develop a comprehensive understanding of your area of focus.

- **Take notes during the interview.** Regardless of whether you use a digital recorder during an interview, be sure to take notes to capture the essence of the conversation. This is also an antidote for Murphy's Law! No matter how quickly you can write, you will not be able to capture everything that transpires during the interview. The notes taken during the interview will serve as a road map for you so that you can fill in the blanks as soon as possible after the actual interview. Your interviewees will also appreciate the rapport that you establish with them and not be distracted by your fervent scratching on a notepad! Note taking is largely an idiosyncratic activity. What works for one person may not work for another. I tend to use a combination of verbatim quotes (taken in longhand), abbreviations, and sketches (uses of arrows to link comments that are repeated, smiley faces to capture the interviewee's body language, etc.) to enable me to reconstruct an interview. Given my increasing number of "senior moments," it also speaks to the importance of taking time *as soon as possible after the interview* to write up the field notes for the interview! (The components of interviewing are listed in Key Concepts Box 5–2.)

KEY CONCEPTS BOX 5–2

Components of Interviewing

Informal Interviews	5 WS And H: *Who*, *What*, *Where*, *When*, *Why*, and *How*?
Structured formal interviews	Pilot the interview.
	Use a variety of question formats.
	Use divergent and convergent questions.
	Allow ample "wait time" to elicit a response.
	Consider using an audio recorder to capture the interview responses.
	Locate a private place to conduct the interview.
	Carefully choose whom you will interview.
	Take notes during the interview.

Focus Groups

Another valuable interview technique is the use of focus groups with several individuals who can contribute to your understanding of your area of focus. One way to think of focus groups is as a group interview where you are trying to "collect shared understanding from several individuals as well as to get views from specific people" (Creswell, 2012, p. 218). Focus groups are a particularly useful technique when the interaction among individuals will lead to a shared understanding of the questions being posed by the teacher researcher. For example, James Rockford may have conducted a focus group with the parents of students in his word processing classes to determine a collective view of computer use in the home.

When conducting focus groups, it is important to ensure that all participants have their say and to nurture a group agreement to take turns; that is, participants should understand that the focus group is a sharing activity and that one or two participants should not dominate it. Using a structured or semistructured interview schedule, the teacher researcher can pose questions to the group and encourage all participants to respond. To use sporting metaphors, use a basketball versus a ping-pong questioning style. That is, ask the question, elicit a response, and pass it off to another participant (basketball) versus ask the question, accept the response, and ask another question. Get as much information out of each question as you possibly can and, in the process, ensure that all group participants have an opportunity to respond.

Ideally, the teacher researcher will use an interview to capture the responses from the focus group and then later transcribe the discussion. This is a time-consuming process—perhaps even more so than individual interviews—so be prepared to allocate time to ferreting out the nuances of the focus group interview and the shared understandings that emerge.

E-Mail Interviews

Another approach to interviewing that can be used effectively by teacher researchers is the use of e-mail interviews. With schools becoming increasingly networked, it is easy to use e-mail to interview colleagues and students. For busy teachers, it may be a far more effective use of time to engage in an ongoing conversation using e-mail. Busy professionals can respond to an e-mail either synchronously (during a "live" conversation) or asynchronously (at some other time when you are not sitting at your computer).

There are some pros and cons associated with the use of e-mail interviews. For example, one advantage of the e-mail interview is that the transcription of the interview has already been done for you by the respondent! That is, you don't have to transcribe a recorded interview with a colleague or student. However, there are ethical issues associated with assuring your respondent that his or her text response will be confidential and anonymous. I am not an expert when it comes to technology, but I do not trust that, once I have sent an e-mail to someone, it is not sitting on a server somewhere that is accessible to other, curious folks! This

paranoia is further enhanced by the amount of spam (junk e-mail) I receive that has been forwarded from someone else's computer.

In spite of these technical and ethical challenges associated with the use of e-mail interviews, such interviews may be a useful tool to use at your school. If your colleagues are like mine, it is difficult to find time during a day when we can sit down face-to-face to talk. Using e-mail will allow your colleagues and students to respond on their own time line—perhaps from the comfort of their home or the quiet of their classroom or library after school.

Questionnaires

Perhaps the major difference between a structured interview schedule and a questionnaire is that the student or parent will write out the responses on the form provided. Clearly, there are positives and negatives with each approach: Questionnaires allow the teacher researcher to collect large amounts of data in a relatively short amount of time (compared with interviewing the same number of students or parents), whereas interviews allow an opportunity for the teacher to intimately know how each student (and parent) feels about a particular issue but in a time-consuming fashion that few teacher researchers feel is justified. A compromise is to use a questionnaire (when appropriate) and to conduct follow-up interviews with students who have provided written feedback that warrants further investigation. For example, in a conversational way, teachers, as part of their regular teaching, may ask, "Mary, in the questionnaire you returned you commented that. . . . Can you tell me a little more about that?" Similarly, as part of a parent-teacher conference, the teacher may follow up with parents who have returned questionnaires.

Clearly, one major assumption associated with the use of a questionnaire is that the student can read and write. Many teacher researchers exclude the use of a questionnaire on this basis alone but also compromise the time it takes to interview all their students by interviewing only a "representative sample" in their class.

A solid data collection instrument will help to ensure useful responses. Consider the following guidelines for developing and presenting questionnaires:

1. **Carefully proofread questionnaires** (or, better still, have a "critical" friend read your questionnaire) before sending them out. Nothing will turn parents off more quickly than receiving a message from their child's teacher that is filled with errors. Alternatively, students may be thrilled by the chance to point out that there is an error in their teacher's written work.
2. **Avoid a sloppy presentation.** Make the survey attractive and consider using BIG print if necessary.
3. **Avoid a lengthy questionnaire.** Piloting the instrument will give you a realistic sense of how long it will take for your students (or parents) to complete the task. Remember, no matter how much they want to help you, if the questionnaire is too long, it will find its way into the "circular file" instead of back into your hands.

4. **Do not ask unnecessary questions.** This is akin to teachers developing tests that don't match what was taught—a common complaint directed toward the administration of standardized tests. Often, we feel compelled to ask a great deal of trivial information on a questionnaire that is tangential to our stated purpose.
5. **Use structured items with a variety of possible responses.** (See the discussion of Likert scales in this chapter.) Indicate what you mean by "often" and "frequently" and how they differ from each other. Otherwise, your respondents will interpret the meaning of the terms in quite different ways.
6. **Whenever possible, allow for an "Other Comments" section.** This provides respondents with an opportunity to respond openly to your questions. These comments also provide you with an excellent source of "discrepant" data ("I hadn't expected someone to say that!") and an opportunity to follow up with an informal interview to elicit more information from the respondent as your time, energy, and inquisitiveness allow. For example, "In your response to question 3 you stated that. . . . Can you tell me a little more about what you meant?"
7. **Decide whether you want respondents to put their names on the questionnaires or whether you will use a number to keep track of who has responded.** You should assure respondents (students, parents, colleagues) that their confidentiality will be protected throughout the process. However, you can protect respondents while also keeping track of who has responded and deciding whether they have made comments that you feel warrant a follow-up conversation. The key issue here is to assure the students, parents, and colleagues that they will not suffer any negative consequences for anything they might share with you. If we want respondents to be honest and forthright in their answers, we must assure them that they will not be persecuted if they tell us something we don't want to read or hear. (For further discussion of this matter, see the discussion of ethics in Chapter 2.) See Research in Action Checklist 5–1 for guidelines for devising a questionnaire.

Examining: Using and Making Records

This third category for data collection techniques suggests a catchall term to describe everything else that a teacher researcher may collect. Again, many of these data sources are naturally occurring and require only that teachers locate them within their school setting.

Archival Documents

Like classrooms, schools are repositories for all sorts of records—student records, minutes of meetings (faculty, PTA, school board), newspaper clippings about

RESEARCH IN ACTION CHECKLIST 5–1

Guidelines for Devising Questionnaires

_____ Proofread the questionnaire carefully.

_____ Avoid a sloppy presentation.

_____ Avoid a lengthy questionnaire.

_____ Do not ask unnecessary questions.

_____ Use structured items with a variety of possible responses.

_____ Include an "Other Comments" section.

_____ Decide whether to use respondents' names.

_____ Pilot the questionnaire.

_____ Use a variety of question formats.

significant events in the community, and so on. With permission, the teacher researcher can use these sources of data to gain valuable historical insights, identify potential trends, and explain how things got to be the way they are. Clearly, there are many archival data sources that can be accessed by teacher researchers if indicated by their focus areas. Often, clerical assistants, school aides, and student teachers are happy to help with uncovering archival data and organizing them in a way that is most useful to the classroom teacher if they believe that it is contributing to the collective understanding of a pressing educational issue. Don't be bashful about asking for assistance with this task.

Calhoun (1994) lists several archival data sources that exist in schools:

- Attendance rates
- Retention rates
- Discipline referrals
- Dropout rates
- Suspension rates
- Attendance rates at parent-teacher conferences
- Disaggregated data by grade level for student performance on statewide assessments in math, reading, writing, and so on
- Standardized test scores
- Student participation rates in extracurricular activities

Journals

Daily journals kept by both students and teachers are also a valuable data source. As Anderson et al. (1994) point out,

> The journal acts as a narrative technique and records events, thoughts, and feelings that have importance for the writer. As a record kept by a student, it can inform the teacher researcher about changing thoughts and new ideas and the progression of learning. (p. 153)

Students' journals can provide teachers with a valuable window into the students' world (in much the same way that homework assignments provide parents with insights into their children's daily experiences). Teachers can also use daily journals to keep a narrative account of their perspectives of what is happening in their classrooms.

Cochran-Smith and Lytle (1993) have incorporated teachers' journals as a central part of their work with teacher researchers and offer a somewhat expanded definition of what journals might incorporate:

- Journals are records of classroom life in which teachers write observations and reflect on their teaching over time.
- Journals are a collection of descriptions, analyses, and interpretations.
- Journals capture the essence of what is happening with students in classrooms and what this means for future teaching episodes.
- Journals provide teachers with a way to revisit, analyze, and evaluate their experiences over time.
- Journals provide windows on what goes on in school through teachers' eyes (pp. 26–27).

Journals, conceptualized in this way, are more than a single data source—they are an ongoing attempt by teachers to systematically reflect on their practice by constructing a narrative that honors the unique and powerful voice of the teachers' language. Regardless of your specific area of focus, journaling is recommended as a way to keep track of not only observations but also feelings associated with the action research process.

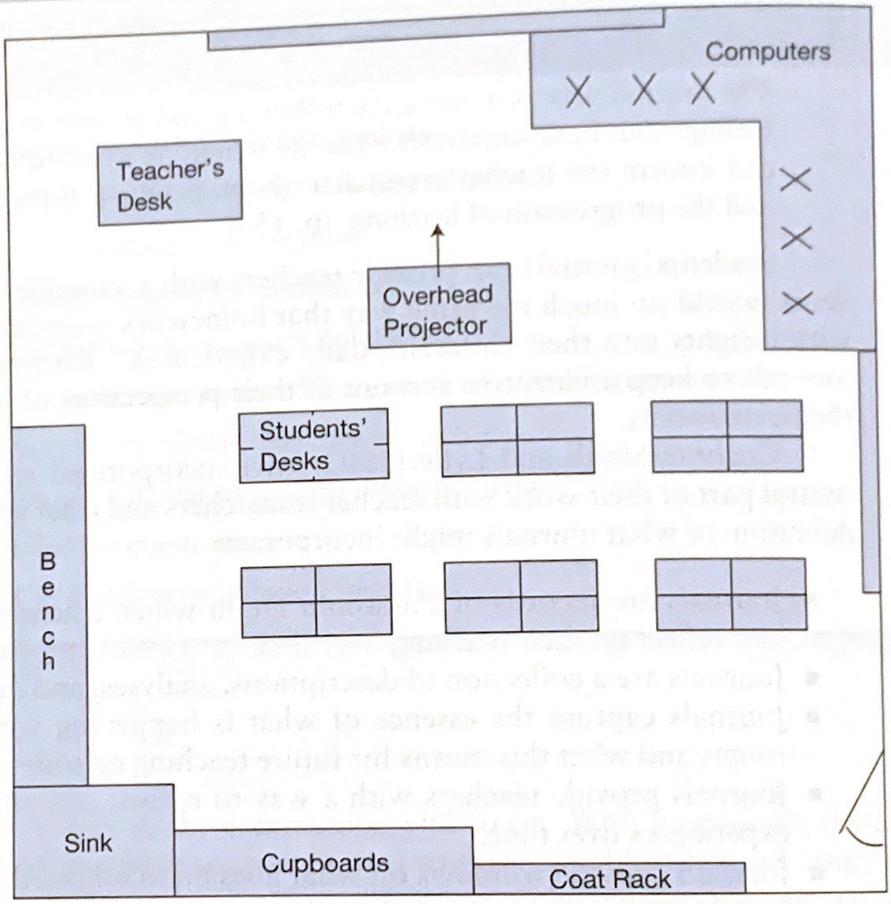
Making Maps, Digital Recordings, and Artifacts

These nonwritten sources of data can also be extremely helpful for teacher researchers trying to monitor movements in a classroom—data that are not always easily recorded in a narrative form.

Construction of Maps

Teacher researchers find class maps and school maps useful for a number of reasons. They provide contextual insights for people who have not visited the school, and they provide the teacher researcher with a reflective tool—a way of rethinking

figure 5–2 ■ Classroom Map Example



the way things are in their classrooms. For example, why are the computers in the classroom placed in a "bank" along one wall, and what are the effects of individual student computer time on other seat-work activities? A map can also record traffic flow in a classroom as well as teacher movement during instruction.

The school map may also prove useful for teams of teachers who are concerned about the movement and interactions of different grade levels of students and any problems that emerge from the traffic flow. Quite simply, maps are easy, useful tools that help teacher researchers and the people with whom they are sharing their research locate particular teaching episodes in the space of the teacher's classroom or school. For qualitatively oriented classroom researchers, context is everything! Figure 5–2 shows an example of a classroom map.

Digital Recordings

Digital recordings provide teacher researchers with another data source when the teacher is fully engaged in teaching but still wants to capture classroom events and interactions. Of course, there are drawbacks to these techniques. For example, their presence may elicit the usual "funny faces" and bizarre comments that we