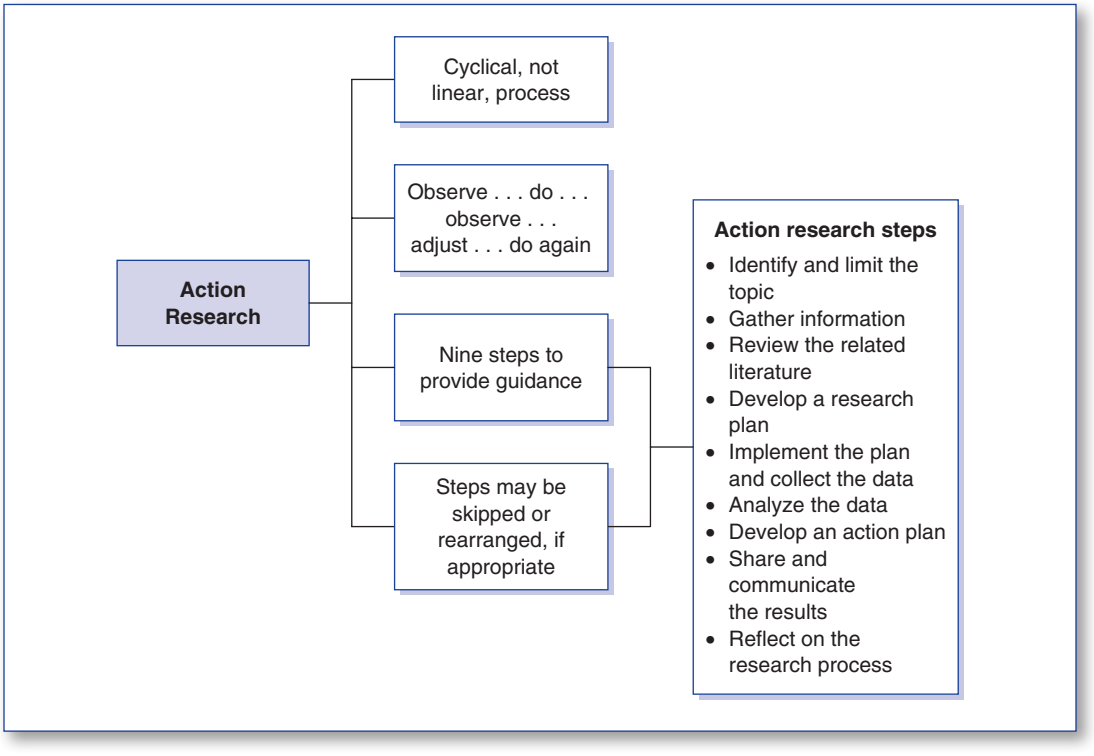
CHAPTER 2

Overview of the Action Research Process

Chapter 2 Organizer



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In Chapter 1, the general process of conducting action research was briefly introduced as a four-stage procedure. To reiterate, these four stages are as follows:

1. The *planning* stage
2. The *acting* stage
3. The *developing* stage
4. The *reflecting* stage

However, it is critical at this time that we begin to examine the *specific* steps of conducting an action research study. The focus of this chapter is to introduce the nine specific steps that compose the process of action research. These steps will then be detailed across Chapters 3 through 8. The nine steps in the process (followed parenthetically by the chapters where they are addressed in this book) are as follows:

1. Identifying and limiting the topic (Chapter 3)
2. Gathering information (Chapter 3)
3. Reviewing the related literature (Chapter 3)
4. Developing a research plan (Chapter 4)
5. Implementing the plan and collecting data (Chapter 5)
6. Analyzing the data (Chapter 6)
7. Developing an action plan (Chapter 7)
8. Sharing and communicating the results (Chapter 9)
9. Reflecting on the process (Chapter 9)

Upon comparing the general four-stage procedure with the nine specific steps, you probably will not find it too difficult to see how the two fit together (see Figure 2.1). Stage 1 (the **planning stage**) is composed of Steps 1, 2, 3, and 4 since these are planning activities done prior to the implementation of the project. Stage 2 (the **acting stage**) is composed of Steps 5 and 6, where the action researcher implements the plan and then collects and analyzes the data. Step 7 is, in essence, its own stage, namely Stage 3 (the **developing stage**). This is the step where the revisions, changes, or improvements arise, and future actions (known as an "action plan") are developed. Finally, Stage 4 (the **reflecting stage**) is composed of Steps 8 and 9; the action researcher summarizes the results of the study, creates a strategy for sharing the results, and reflects on the entire process. It is important to mention that you will see variations of Figure 2.1 near the beginning of each of Chapters 3 through 9, with the specific step or steps being addressed in that particular chapter highlighted in the figure.

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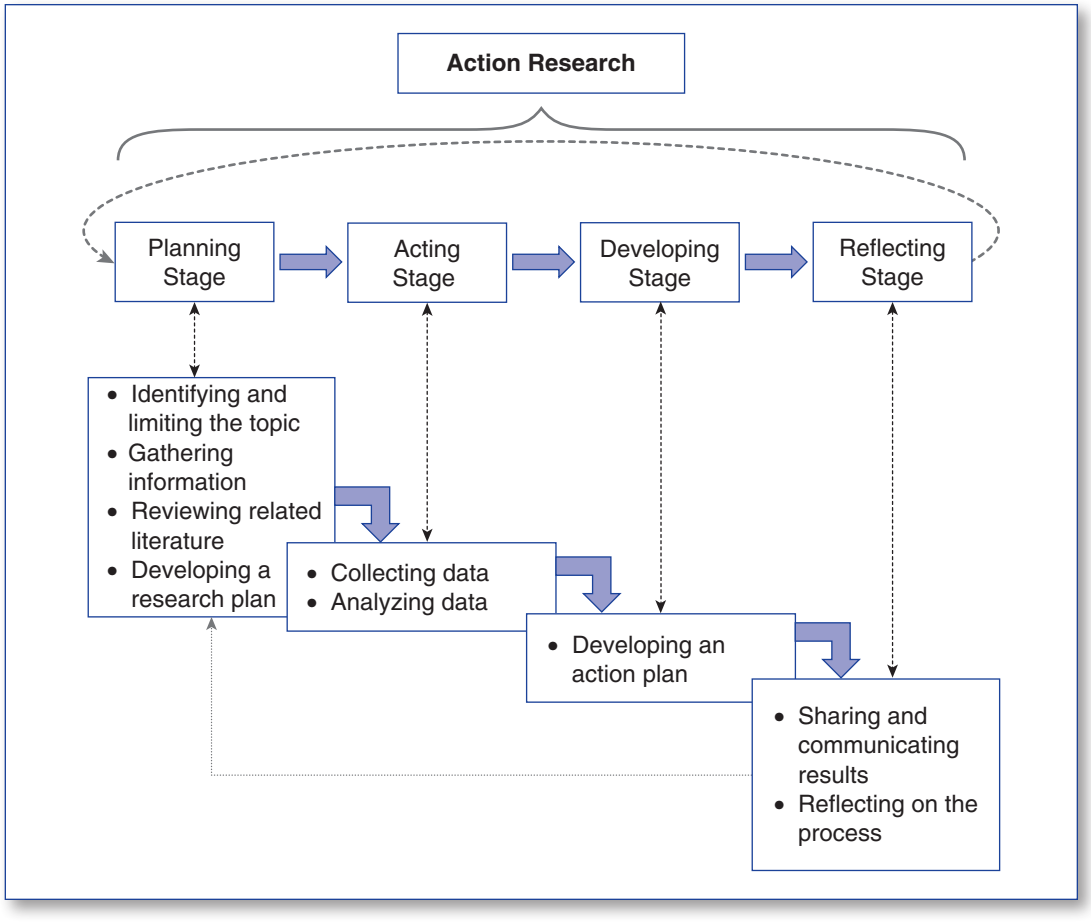
Figure 2.1 Integration of Two Organizational Schemes for the Step-by-Step Process of Action Research



It is critical at this point to reiterate the fact that action research, contrary to the way it is depicted in Figure 2.1, is not a linear process (the purpose of Figure 2.1 is merely to show the relationship between the two schemes for summarizing the action research process). Action research has historically been viewed as cyclical in nature (Mertler & Charles, 2011). Whereas action research has a clear beginning, it does not have a clearly defined endpoint. Ordinarily, teacher-researchers design and implement a project, collect and analyze data in order to monitor and evaluate the project's effectiveness, and then make revisions and improvements to the project for future implementation. In all likelihood, the project would then be implemented again—perhaps with next semester's or next year's students—when

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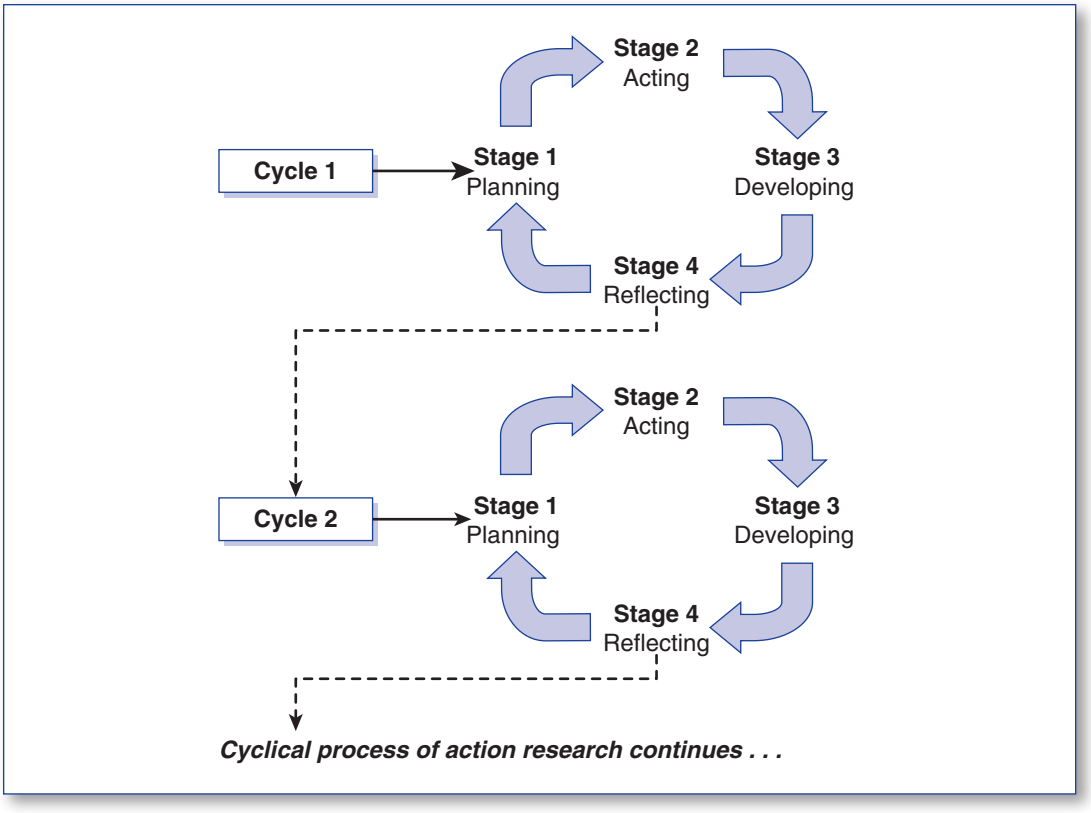
the effectiveness of the revisions would be monitored and evaluated, with new improvements developed for the next phase of implementation. A given project may never have a clear end—the teacher may continue to go through subsequent cycles of implementation, evaluation, and revision, spiraling from one semester or year to the next (Mertler & Charles, 2011). Parsons and Brown (2002) describe the process as one of "observing-doing-observing-adjusting" and then doing it again (p. 8). The process of action research, with its cyclical and spiraling nature, is portrayed in Figure 2.2.

Figure 2.2 The Process of Action Research



Source: Adapted from Mertler and Charles, 2011.

As we begin to examine the nine specific steps in greater detail, Johnson (2008) reminds us that these steps are meant to serve as guidelines in conducting action research projects. They must be adapted to a particular research problem or topic. Furthermore, the steps themselves should not necessarily be seen as cast in stone. If and where appropriate, teacher-researchers may find themselves skipping steps, rearranging their order, or

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repeating some steps more than once (Johnson, 2008). Action research can take on many forms, thus employing a wide range of methodologies. The key to worthwhile teacher-conducted action research rests in the questions addressed by the project and the extent to which the results are meaningful and important to *that* teacher (Parsons & Brown, 2002) and not necessarily in the means by which those results were realized.

Step 1: Identifying and Limiting the Topic

The first step in any research study is deciding exactly *what* to study. Since personal and professional experiences are so central to teacher-initiated action research, possible topics for investigation might be anything about which you are curious, that piques your interest, or that intrigues you in any way. Essentially, you are looking to identify some topic that you would genuinely like to examine in depth (Johnson, 2008). It is important to remember that the goal of any action research project is a desire to make things better, improve some specific practice, or correct something that is not working as well as it should (Fraenkel & Wallen, 2003). These goals must be kept in mind when initially identifying and later narrowing the focus of the topic.

Video Clip 2.1
View a clip of Dr. Mertler discussing the process of conducting action research.

In addition, in order to investigate a topic for action research, it must be manageable (Fraenkel & Wallen, 2003). With all due respect, large-scale, complex issues and research projects are probably better left to professional researchers. Action research studies designed and conducted by classroom teachers should take into consideration such things as the time requirements (or restrictions), the data collection and analysis skill levels of the individual(s) conducting the research, and any budgetary limitations. For these reasons, action research topics are generally narrow in focus (Fraenkel & Wallen, 2003).

Suggestions for identifying and narrowing the focus of action research topics are discussed more extensively in Chapter 3.

Step 2: Gathering Information

After identifying and limiting the topic, the next step is preliminary information gathering, a process that Mills (2011) refers to as **reconnaissance**. Information gathering can be as simple as talking with other teachers, counselors, or administrators in your school or district in order to gauge their perceptions of your proposed research problem and perhaps to query them for ideas. You may skim teachers' manuals or other types of curricular guides, again looking for ideas, suggestions, and the like that may inform your topic.

More formally, doing reconnaissance involves taking time to reflect on your own beliefs and to gain a better understanding of the nature and context of your research problem (Mills, 2011). Doing reconnaissance takes three forms: self-reflection, description, and explanation. These will be discussed in detail in Chapter 3.

Step 3: Reviewing the Related Literature

"Related literature" can be loosely defined as any existing source of information that can shed light on the topic selected for investigation. These sources of information might include

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professional books, research journals, complete websites or individual web pages, teacher resource manuals, school or district documents, and even discussions with colleagues (Creswell, 2005; Johnson, 2008). There really is no limit to what can be used as related literature because the purpose of reviewing this information is to help the teacher-researcher make informed decisions about the research focus and plan. This related information can provide guidance for defining or limiting the problem, for developing an appropriate research design, or for selecting legitimate instruments or techniques for collecting data (Parsons & Brown, 2002). Again, this activity provides an opportunity for the action research to connect existing theory and research to actual classroom practice (Johnson, 2008).

Much more information, including specific recommendations and techniques, for reviewing related literature is also presented in Chapter 3.

Step 4: Developing a Research Plan

In a traditional educational research study, the development of a research design and plan for collecting data is known as the **research methodology**. Inherent in designing an action research study are several specific decisions that must be made during this step in the action research process. Once the research problem or topic has been identified and focused, it is then appropriate to state one or more research questions and possibly to develop from those questions specific hypotheses (Parsons & Brown, 2002). As you will see in Chapter 4, a *research question* is the fundamental question inherent in the research problem; it is *the* question the action researcher seeks to answer through conducting the study. The research question provides the guiding structure to the study itself. Every part of the action research study should be done so as to facilitate finding an answer to the research question. This is largely the reason behind why it is important to specify the research question prior to making any other decisions about the methodology.

It is typically best to try to keep the study as simple as possible by stating only *one* research question. However, in some instances, it may be appropriate to state an additional question that may be subordinate to (i.e., important but not as important as) the main question. These questions are sometimes referred to as *subquestions* (Mertler & Charles, 2011). If the teacher-researcher has enough previous experience with the topic at hand, it may be possible to also state the research question, as well as any subquestions, as research hypotheses. A *research hypothesis* is simply a specification of the expected answer—or a prediction, of sorts—to the research question. While a convention in more traditional forms of research—especially, quantitative research—hypotheses are seldom used in action research.

Integrated into the specification of research questions and hypotheses is the identification of the variables that are central to the action research investigation. Recall from Chapter 1 that a *variable* is any characteristic that is central to the research topic and, therefore, the research question, about which the researcher wishes to draw conclusions. Therefore, a variable is in essence the actual characteristic or behavior upon which data will be collected. For this reason, it is critical that variables be observable and measurable. For example, it is not possible to observe or measure "*understanding* of addition and subtraction facts" because actual understanding of these facts and skills occurs only in a student's brain. And since we cannot see into someone's brain, we cannot actually measure or observe how much the student understands. A more appropriate variable might be the

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"*accuracy* of applying addition and subtraction facts." Students could be given a set of addition and subtraction problems to complete. Their accuracy could then be measured by simply counting the number of problems each student answers correctly.

Closely related to decisions about which specific characteristics will be measured or observed are the procedures to be used to collect the data on those characteristics; these are the particular decisions related to the design of the research study. The action researcher needs to decide who can provide the data that are needed, how many participants are needed for the study, and how to gain access to those individuals (Creswell, 2005). Any of the methodologies briefly described in Chapter 1—whether they be quantitative, qualitative, or mixed methods in nature—can be used (although usually in somewhat simplified and less sophisticated form; Fraenkel & Wallen, 2003). Surveys, comparative studies, correlational studies, experiments, observations, interviews, analysis of existing records, and ethnographies are just some of the methodological designs that can be considered and effectively utilized. Also, remember that action research is systematic; therefore, data collection must be focused, and decisions about the various elements of research design and data collection must be determined *before* implementing the actual study (Johnson, 2008). Remember also that the data to be collected relate directly to the research questions that are guiding the action research study.

Also important during the planning stage of action research studies is paying close attention to the issue of **research ethics**. Research ethics deal with the moral aspects of conducting research, especially research involving human beings. Consideration must be paid to how participants who are involved in a study are treated, the level of honesty and openness that participants are afforded, and the manner in which results are reported. As Mills (2011) states, it basically involves "doing the right thing" from a research perspective (p. 29). At a minimum level, research ethics address such values as honesty, caring, and fairness, among others. Details regarding research questions and hypotheses, research designs, ethics, and other decisions related to the development of a research plan are discussed more thoroughly in Chapter 4.

Step 5: Implementing the Plan and Collecting Data

The next step in the process of conducting action research is the determination of the specific data to be collected and how to *actually* collect them. In other words, decisions must be made about the instruments or other data collection techniques that will be used in the study. Fraenkel and Wallen (2003) suggest three main categories of data collection techniques. First, teachers can *observe* participants involved in the educational process. These participants might include students, other teachers, parents, and administrators. Whenever observations are made by teachers, it is a good idea to record as much as possible of what is observed. **Field notes** or journals are typically used to describe in detail what is seen and heard.

Video Clips 2.2 & 2.3 View clips of educator researchers discussing the process of conducting action research.

Second, **interviews** may also be used to collect data from students or other individuals. When we think of interviews, we typically think of an oral question-and-answer exchange between two or more individuals. However, interviews can also be conducted in written form through the use of a pencil-and-paper medium. This type of written question-and-answer data collection is known as a **questionnaire** or **survey**. Often, data collected from observations can lead quite nicely to additional follow-up data collected through the use of interviews or surveys (Fraenkel & Wallen, 2003).

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Finally, a third category of data collection techniques involves the examination and analysis of **existing documents or records**. Analysis of existing records is often the least time consuming, since the data have already been collected; it is the job of the action researcher to make some sense of what is already there. A few examples of this type of data include attendance records, minutes of faculty meetings, school newspapers, lesson plans, policy manuals, seating charts, and student portfolios—the list is potentially endless.

I would like to add a fourth category to the list provided by Fraenkel and Wallen (2003) above. This fourth category is composed of quantitative measures, such as **checklists**, **rating scales**, **tests**, and other formal assessments that are routinely used in schools. Checklists and rating scales are often used in classrooms by teachers, usually in the form of scoring rubrics. In that sense, they may be considered existing records. However, they may also be specifically designed to collect data as part of an action research study. Tests, whether standardized or teacher developed, as well as other types of formal assessment techniques are also existing forms of data that can be used quite efficiently for action research purposes.

Action research allows for the use of all types of data collected through the use of a wide variety of techniques. As both Frankel and Wallen (2003) and Johnson (2008) point out, it is important to collect multiple measures on the variables of interest in a given study. This allows—and, in fact, *encourages*—the teacher-researcher to *polyangulate* the collected data. Recall from Chapter 1 that **polyangulation** is the process of relating or integrating two or more sources of data in order to establish their quality and accuracy. For example, by comparing one form of data to the other, student comments about group dynamics made during interviews could be used to substantiate behaviors observed when those same students were videotaped during a small-group exercise.

Much more information, including examples of various data collection instruments and techniques, is provided in Chapter 5. Both qualitative (e.g., observations, interviews, journals) and quantitative (e.g., surveys, checklists, rating scales, tests) techniques are presented.

Step 6: Analyzing the Data

Analysis of data occurs primarily at two points during the process of a research study. In *traditional quantitative* research studies, data analysis typically occurs following the completion of all data collection. In *traditional qualitative* research studies, data analysis typically begins during data collection, continues throughout the remainder of the process of collecting data, and is completed following data collection. Action research combines these two approaches. Johnson (2008) suggests that "as you collect your data, analyze them by looking for themes, categories, or patterns that emerge. This analysis will influence further data collection [and analysis] by helping you to know what to look for" (p. 63). He continues by stating that there should also be a final stage of data analysis once everything has been collected.

Decisions about which type of data analysis to use are based initially on whether the data are qualitative or quantitative. Moreover, it is imperative to remember that the analysis of data must "match" the research question(s) being addressed, and hopefully, answered by the study. Most qualitative data are appropriately analyzed by means of an inductive process, where the action researcher examines all data for patterns and similarities. Quantitative data may be analyzed through the use of either descriptive statistics or inferential statistics. In most cases, descriptive statistics will suffice for the analysis of

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action research data; however, inferential statistics may be required if it is necessary to compare groups or measure relationships between variables (Creswell, 2005).

At this point, you might want to consider this advice: Try not to become overwhelmed at the anticipation of analyzing your data, especially if you have experienced stress, frustration, and confusion whenever you read published articles resulting from traditional research studies. The analysis of action research data is typically much less complex and detailed than in other, more formal research studies (Fraenkel & Wallen, 2003). In addition, do not feel that it is a requirement for *you* to analyze the data; you are certainly free to enlist the help of other teachers, administrators, or data analysts (Creswell, 2005). Information about analytical techniques—both qualitative and quantitative—is presented in Chapter 6.

Step 7: Developing an Action Plan

Once the data have been analyzed and the results of the analysis interpreted, the next step in the action research process is the development of an action plan. This is really the ultimate goal of any action research study—it is the "action" part of action research. The important outcome from the development of an action plan is the existence of a specific and tangible approach to trying out some new ideas as a means to solve the original problem (Creswell, 2005). The action plan is essentially a proposed strategy for implementing the results of your action research project. As the action plan is implemented, its effectiveness must continually be monitored, evaluated, and revised, thus perpetuating the cyclical nature of action research.

The action plan may be proposed for an individual teacher or classroom, collaboratively among a group of teachers, or on a schoolwide or even a districtwide basis. In some situations, it may be necessary to prepare a formal document outlining the action plan; often, clearly delineated guidelines for implementing possible solutions may suffice. There must be enough documented information about the plan for implementation; action researchers should never rely on their collective memories for future implementation of solutions.

Further information about the nature of an action plan and the various types of plans appears in Chapter 7.

Step 8: Sharing and Communicating the Results

An important part of any research study is the reporting or sharing of results with others in the educational community at large. Action research should be no different. Simply because you have undertaken this project in order to help you solve a problem that is more local and perhaps more personal in nature does not mean that no one else will be interested in the results that you have obtained. The vast majority of educators are constantly looking for ways to improve their practice—as we have discussed previously, it is the nature of their profession.

The presentation of results can take a variety of forms. For example, Johnson (2008) explains that the most appreciative audience for presentations of action research results is often your own colleagues. Results can be shared with this type of audience in an informal manner, perhaps taking the form of a brief presentation at a regularly scheduled faculty meeting or teacher in-service session (Johnson, 2008). Even an individual dialogue with a colleague may be an appropriate setting to share results. Presentations—which can sometimes include written summaries of results—can also be made to school boards, principals, other administrators, students, and parents.

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On a more professional level, results of action research studies can also be disseminated to larger educational audiences, typically in more formal settings. Results can be formally presented at professional conferences or other types of teachers' conventions, usually conducted at the regional, state, or national levels (Johnson, 2008). Academic or professional journals are wonderful mechanisms for disseminating your results to a geographically broader audience. Journals that focus on a specific level of education—that is, elementary, middle, or high school—or on particular subject areas—for example, mathematics, science, social studies, language arts—are often quite appropriate for articles that report the results of action research. This, however, would require you to prepare a much more formal written paper of your study and its results.

Detailed suggestions for methods of sharing and communicating the results of your action research, both orally and more formally as a written document, are provided in Chapters 8 and 9.

Step 9: Reflecting on the Process

Action research is primarily about critical examination of one's own practice. In order for someone to critically examine her or his practice, that person must engage in systematic reflection on that practice. Reflection, as it pertains to action research, is something that must be done at the end of a particular action cycle. It is a crucial step in the process, since this is where the teacher-researcher reviews what has been done, determines its effectiveness, and makes decisions about possible revisions for future implementations of the project (which, in all likelihood, will comprise future action research cycles).

However, it is not only important to reflect at the end of a given cycle; effective teachers reflect on and critically examine their practice continuously *during* the process of teaching. When a teacher plans an innovative lesson, he might reflect on his planning of that lesson immediately after developing but prior to delivering the lesson; again after teaching the lesson; and perhaps once again after assessing his students on the content of the lesson. This allows him to be able to make revisions *during* instruction. Similarly, the teacher-researcher should engage in reflective practice *throughout* the entire action research project. Reflection following each step in the process permits the teacher-researcher to continuously monitor the progress of the action research project. This allows the teacher to make decisions and, more appropriately, *revisions* to the process throughout its implementation. By doing this, teacher-researchers are not confined to decisions made at the outset of a project; they can adapt their procedures if the situation warrants. In this manner, reflection is not really a final step but is integrated throughout the action research cycle.

Reflecting on the overall process of conducting action research is discussed in Chapter 9.

A BRIEF EXAMPLE

Now that we have taken a concise look at each of the nine steps involved in conducting an action research study, let us consider the following example of an action research study, where each step has been briefly described. Our example begins with the department chair of a high

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school social studies department who, for some time, has been disappointed in the performance of students in the school's American history course. The course has always been taught in a traditional manner—with the content coverage beginning prior to the American Revolution and ending with events more recent. The department chair, who teaches multiple sections of the course along with another teacher, believes that there may be some merit in examining a "backward" approach to teaching history (i.e., beginning with current events and proceeding back through time in order to end at the American Revolution). The chair asks the other history teacher for assistance with this potential action research project, and she agrees.

Step 1: Identifying and Limiting the Topic

The two teachers meet on a couple of occasions over the summer in order to identify the specific topic they hope to address through the examination and trial of this alternative instructional approach. They determine that they believe their students struggle most in making connections between seemingly unrelated historical events. The department chair argues that perhaps this backward approach (i.e., beginning with more recent historical events with which their students will be more familiar) will have a positive impact on how well they are able to make these types of connections. The teachers decide to focus their attention on any differences that the two instructional approaches have on students' abilities to make these connections.

Step 2: Gathering Information

The teachers decide to talk with the other social studies teachers as well as teachers in other subject areas in their building. They want to know what other teachers think about their assumption that students struggle with making connections between historical events, which occurred perhaps decades apart. They ask the others for their initial perceptions about the backward approach to teaching their content. Additionally, the two teachers spend time, independently, over the course of a few days, to actually consider *why* they believe that this is the case for the struggles their students seem to experience. In other words, they carefully consider any "evidence" that may have led them to feel this way. They also strongly consider other possible solutions to this dilemma. At their next meeting together, they share what they had reflected on and decide that the backward approach continues to be worthy of investigating.

Step 3: Reviewing the Related Literature

The teachers then decide to collect more formal information—that based on research, in addition to what they had already obtained anecdotally from other teachers of history—about the effectiveness of backward approaches to teaching historical, chronological events; how other history teachers may have implemented this type of instruction; and any problems they may have encountered. They decide to split the tasks, with the department chair identifying and reviewing published research studies on the topic and the other teacher contacting history teachers through their professional organizations.

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Step 4: Developing a Research Plan

Following the review of published literature and discussions with teachers from other schools and districts that have implemented this type of instruction, the teachers found enough evidence to support the focus of their proposed study (i.e., the backward approach to instruction is effective), although they also found some contradictory evidence (i.e., this approach is less or at least no more effective). The teachers decided on the following researchable question: *Is there a difference in instructional effectiveness between a backward approach and a forward approach to teaching American history?* Furthermore, based on their review of related literature and other information, the teachers state the following predicted hypothesis: *Students who are exposed to the backward approach will experience higher academic achievement, as evidenced by their abilities to make connections between historical events, than those exposed to the more traditional forward approach.*

Since their hypothesis implies a comparison study, the teachers decide to randomly split the eight sections of American history for the coming school year. Each teacher will teach four sections of American history—for each teacher, two sections will be taught using the forward approach and two sections will incorporate the backward approach. Achievement data as well as other teacher-developed assessment data will be collected from all students enrolled in the American history course for this academic year.

Step 5: Implementing the Plan and Collecting Data

Throughout the school year, the two history teachers design performance-based assessments, which examine the extent to which students were able to connect historical events. In addition, students will take an American history achievement test in the spring, a portion of which focuses on critical thinking skills as they apply to historical events.

Step 6: Analyzing the Data

Immediately following the end of the school year, data analysis is undertaken. Test scores resulting from the administration of the standardized achievement tests are statistically compared for the two groups (i.e., the backward group versus the forward group). It is determined that the test scores of the students who were taught using the backward instructional approach are significantly higher than those of the students taught in the more traditional manner. In other words, the original research hypothesis has been supported.

In addition, scores resulting from the various administrations of classroom-based performance assessments support the results of the standardized achievement tests. Again, the research hypothesis has been supported.

Step 7: Developing an Action Plan

With their findings in hand, the teachers decide to approach their principal and district curriculum coordinator about temporarily revising the American history curriculum in order to capitalize on the apparent effectiveness of the backward instructional approach. They agree that it will be imperative to continue to study the effectiveness of this approach in subsequent academic years. Similar findings in the coming years

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would provide a much stronger case for permanently changing the approach to teaching American history.

Step 8: Sharing and Communicating the Results

The principal and curriculum coordinator are quite impressed with the results of this action research study. They suggest to the department chair that the two teachers make a presentation to the school board and to the entire school faculty at a regularly scheduled meeting at the beginning of the next school year. The two teachers develop and make an effective presentation at the subsequent month's board meeting. A teacher attending the board meeting later suggests that this study might make an interesting contribution at an annual statewide conference on instructional innovations and best practices held each fall.

Step 9: Reflecting on the Process

Over the summer, the two teachers meet in order to debrief and decide on any adjustments to the process that might be beneficial for next year. They consider several questions, including these: How well did the process work? Are we sure that the data we collected were the most appropriate in order to answer our research question? Were there additional types of data that could or should have been included in the data collection? Their answers to these questions will help guide next year's implementation of the backward approach to teaching American history.

ACTION RESEARCH PORTRAIT 1

Improving Reading Comprehension in a Title I Program: *Outlining the Action Research Process*

Although Kathleen was not sure of the direction her action research project would take, she knew that she wanted to focus on some aspect of her reading instruction that she could initially address within one semester's time frame. She began to lay out a loose time frame for conducting her study, based on the major components that she had learned about in her school's training sessions:

- Reflect on instruction to identify a topic: early August
- Engage in reconnaissance and review related research: mid-August through mid-September
- Design study: late September
- Implement intervention (if included) and collect data: mid-September through late October
- Analyze data: late October through mid-November
- Draw conclusions/develop action plan/write up results: mid-November through mid-December

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ACTION RESEARCH PORTRAIT 2

Conceptual Understanding of Mitosis and Meiosis: *Outlining the Action Research Process*

Sarah and Tom had collectively decided that they wanted to work on improving their students' conceptual understanding of various biological processes—that is, numerous and varied topics in biology that they struggle with year in and year out. Knowing that their students tend to struggle more with topics taught during the second semester (e.g., cell biology, photosynthesis, plant life cycles), Sarah and Tom wanted to take some time during the first half of the school year to identify a specific topic and then to explore alternative ways to teach and assess that topic. Therefore, they decided that they would use the first half of the year to reflect, engage in reconnaissance, and plan how they would conduct their action research project, to take place during the second semester.

ACTION RESEARCH CHECKLIST 2

The Action Research Process

- ☐ Identify specific sources or types of information you could use during reconnaissance.
- ☐ Obtain several published research articles related to your topic.
- ☐ List what you see as advantages and limitations of various data collection techniques.
- ☐ Identify potential audiences with whom you can share the results of your action research.

RELATED WEBSITES: THE ACTION RESEARCH PROCESS

This annotated list of related websites presents various interpretations of the action research process.

- An Introduction to Action Research **http://physicsed.buffalostate.edu/danowner/actionrsch.html**

  In her 1995 presidential address to the National Association for Research in Science Teaching (NARST), Dorothy Gabel provides this thorough introduction to action research. Contained within are three different graphical depictions of the action research process. All are variations on the same theme but present different perspectives on the process.

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- The Five Phases of Action Research **https://staffdevweb.madison.k12.wi.us/node/234**

  The Classroom Action Research site of the Madison (Wisconsin) Metropolitan School District contains a specific page dedicated to reviewing the phases involved in conducting an action research study. Each of the five phases is described and summarized by posing to the reader a series of questions whose answers are central to completing that particular phase.

SUMMARY

- The cyclical and iterative action research process comprises four stages: planning, acting, developing, and reflecting.
- The *planning stage* consists of the following four steps:
  - Identifying and limiting the topic
  - Gathering information
  - Reviewing the related literature
  - Developing a research plan
- The *acting stage* consists of the following two steps:
  - Implementing the plan and collecting data
  - Analyzing the data
- The *developing stage* consists of the following step:
  - Developing an action plan
- The *reflecting stage* consists of the following two steps:
  - Sharing and communicating the results
  - Reflecting on the process

QUESTIONS AND ACTIVITIES

1. Which of the nine steps in the action research process do you believe would be most difficult to carry out? Explain your answer.
2. Considering the process of action research as presented in the chapter, do you think it would be more feasible to conduct action research individually or in small groups? Develop a list of advantages and a list of disadvantages for doing it either way.

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3. Discuss what you see as possible benefits of communicating the results of action research studies with various educational audiences.
4. Suppose that students in your school are not achieving at the desired level in the area of mathematics. Using the four-stage procedure for action research as presented in this chapter, briefly describe how you might *systematically* examine this problem.
5. Using the same scenario presented in Number 4 above, outline a specific action research study you might conduct conforming to the nine-step process as presented in the chapter.

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