Living the Questions
A Guide for Teacher-Researchers

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What Likes What?: Data Analysis

Data is a burden in that you’ve got so much of it. It’s very much like taking twenty pounds of mashed potato and shoving it through a straw.

Dana Cox

Research projects often end in defeat when teachers try to analyze their data. Like Dana Cox, we may shake our heads in despair at that mountain of “mashed potato” and the enormous task of funneling it through a straw. Paradoxically, we quickly see many gaps in our notes, interviews, and artifacts, and regret all the information that wasn’t collected. There is often a rush of insecurity at this point in the research process. It’s one thing to write faithfully in a teaching journal for months or conduct a slew of interviews with kids; quite another to say with confidence what all the Big Truths are, culled from the information you’ve gathered.

The murkiness of data analysis is what scares any researcher. If it doesn’t spook you at least a little, you’re not opening yourself up enough to the new learning that can come during analysis. If the analysis seems very easy, you’ve probably only found what you already knew before the project began.

When you analyze your data thoroughly, there is a fair degree of uncertainty in the task. Human relations are complex, so any analysis of what goes on in a classroom teeming with kids will end up with some unknowns and ambiguities. Good research analyses raise more questions than they answer. If you are a neat and orderly teacher, you have to be willing to wrestle with a little more messiness in your life as you analyze your data. Susan Ohanian writes about this need for disorder:

Only the territorialists to the right and left of us seem to know Truth. They are like Louise, a character in Josephine Humphrey’s Fireman’s Fair who finds her pleasure in the “maintenance of daily order in the real world. She kept her shoes in the original boxes.” Too much of what travels under the name of research is concerned with keeping the shoes in the original boxes. For classroom research to be significant, the teacher needs to take the risk of
getting those shoes out of the boxes. She needs to ask herself a lot of hard questions and in the end learn to accept the ambiguity of the answers. (1993, 33)

While it’s hard for anyone to “get the shoes out of the boxes” and tolerate unanswered questions, we’d argue that teachers are better equipped for this task than many university researchers and administrators. You need to accept change, uncertainty, and complexity to survive as a teacher for any length of time. Whether you realize it or not, you probably developed long ago the ability to see events in your classroom as far more complicated than they would appear to an outside observer.

In recounting the experience of being evaluated by a principal, Susan Ohanian challenges traditional researchers to respect the knowledge we teachers bring to our analysis of what happens in our classrooms:

The first year I was teaching . . . I had a very good university department chairman who came in once a week to my high school English class and gave me some advice. One time, I was doing one of those stand-up demonstration lessons that he had to write up, and it was on Julius Caesar. In the back of the room, one of the toughest kids in the class was reading a newspaper.

Later, when he was telling me about the evaluation, he said that he had leaned over and said to her, “Don’t you think you should pay attention to what the teacher is saying?”

And she said to him, “Who the hell are you?”

And I said to him, “Well, when you think about it, who the hell are you? You come into my classroom with a briefcase; you don’t know anything about that child, you don’t know that it’s a triumph for her to be reading a newspaper. She had been a chronic absentee. This was the first step.” So I say with all due respect to the people who want to count things, “Who the hell are you?” (1992, 59)

We all need a little of Susan’s chutzpah when we start to analyze our data. Hey, if not us, who? Who is better able to understand what’s happening in our classrooms? Who better to determine the patterns of thinking and learning than someone who knows and cares about these students? And who else has the storehouse of knowledge about this classroom, its history, its possibilities? So we say with all due respect for both you and your research—you have the skills to analyze data. You just need to trust your ability and find an analysis process that works for you. Data analysis is daunting, but it’s also fascinating work for those willing to accept a little bit of messiness and uncertainty.

Finding Patterns in Data

In the novel Cold Mountain, by Charles Frazier, Ada apprentices herself to another woman, Ruby, to learn everything she can about working and
living in the world around her. She is amazed at how much Ruby knows—
how she can answer almost any question with quiet calm. Ada finally asks
her where all her knowledge comes from:

How did you come to know such things? Ada had asked.

Ruby said she had learned what little she knew in the usual way. A lot of
it was grandmother knowledge, got from wandering around the settlement
and talking to any old woman who would talk back, watching them work
and asking questions. Some came from helping Sally Swanger, who knew,
Ruby claimed, a great many quiet things such as the names of all plants
down to the plainest weed. Partly, though, she claimed she had just puzzled
out in her own mind how the world’s logic works. It was mostly a matter of
being attentive.

You commence by trying to see what likes what, Ruby said. Which Ada
interpreted to mean, Observe and understand the workings of affinity in na-
ture. (1997, 107)

The categories Ruby uses to define where her knowledge comes from are
all helpful in thinking about data analysis. The “grandmother knowledge”
is the stuff you’ve always known at some intuitive level. Don’t discount it as
a researcher; draw upon it. As a teacher-researcher, it’s all right to ignore
some of the traditional research edicts like “If you didn’t write it down, it
didn’t happen.” You can draw on all of your experiences and observations
of kids, throughout your history as a teacher, to analyze the data in your
current project.

Some of the prior knowledge you bring to your research will provide
hunches that guide you in beginning to analyze your data. It’s the old con-
cept of the hypothesis made new. One of the most powerful aspects of
teacher research is that it brings those hunches, the teaching lore we carry
quietly with us, to the surface of our thinking. And when we share our anal-
ysis with others, we have the chance to change policies in schools, districts,
even nationally, as Erickson and Shultz (1992) write: “Adept and empathic
teachers may make effective guesses about the roles of such matters as at-
tention, trust, legitimacy in their teaching. They even may be able to make
fairly accurate ‘seat of the pants’ judgments about the fit of particular tasks
with particular students and about the varieties of student experience in
their classrooms. But if this is so, their inferences are for the most part intu-
itive and transparent to themselves. Hence, their hunches are not available
to others with a stake in their teaching—administrators, researchers, par-
ents, and students” (471).

Once you become comfortable trusting some of your hunches in data
analysis, you need your own “Sally Swanger”—someone you trust as a
mentor who is willing to pore over your data and findings with you, un-
afraid to challenge what doesn’t make sense. In Chapter 8, we show how
teachers find research partners and build communities. While it’s possible
to collect data quietly on your own for months of a study, it’s essential to
have someone willing to listen to your first ideas about findings, looking
Common Analysis Terms and Methods

*Audit check*—A check or confirmation of your findings by someone outside the research process. This can be done at any point in the research process.

*Case study*—A detailed, in-depth examination of a person or people from a specific group.

*Confirmability*—Often used in place of the term *objectivity* by qualitative researchers; refers to the ability of others to reach similar conclusions with the same data set.

*Constant comparison*—A data analysis method developed by Glaser and Strauss (1967) to “enable prediction and explanation of behavior”; involves deriving categories from data over time, and then using the categories to build theory.

*Semantic domain analysis*—A kind of constant comparison coding and analysis.

*Sociogram*—A picture of a social network.

*Thick description*—A sufficient amount of detail in describing the research setting and techniques to allow others to make needed comparisons to research completed in other settings.

*Transferability*—Often used by qualitative researchers in place of the concept of “external validity”; relies on thick description of relevant research to allow outsiders to determine if findings could be transferred to other settings.

*Triangulation*—The use of multiple and different sources, methods, investigators, or theories (at least three) to confirm findings.

*Working hypothesis*—Often substituted for the concept of “generalization” in qualitative research, because hypotheses will change as data continue to be analyzed in research.

over your shoulder at the same data set, as you show the path of your thinking.

But the biggest part of data analysis involves Ruby’s last piece of advice—learning to see “what likes what.” These are the patterns in your work, the pieces of data that fit unexpectedly next to each other, leading to a flash of insight. It’s an organic process, one of learning to be comfortable with what works for you in analyzing data and what doesn’t. This was the experience of Ann Hurd, as she found herself uneasy through much of the early stage of her research: “The research has produced a variety of reactions in me. I experienced anxiety as I tried to develop a topic. More anxiety as I was advised to trust what bubbled up as I taped. More anxiety as there appeared to be nothing and deadlines loomed. Yet each time I looked at the transcripts, I began to see what I hadn’t seen before. To do this, though, I
had to work with handwritten words and not computer-processed words. I had to lay out my pages of type where I could see them all at once, mark them, and generally make a mess. From there I could create order."

Finding the patterns within your data, viewing each bit of information as part of a larger puzzle you must put together, is the task that will take most of your time during data analysis.

If you’ve been to any hobby or gift shops lately, you realize the world of puzzle making has changed. There are now far more choices than the basic 500- or 1000-piece puzzle that was the standard for years. Puzzle lovers can choose to construct 3-D structures. There are mystery puzzles that come with accompanying text—you can only put the puzzle together as you find clues in the narrative. There are even puzzles that have no picture on the box—you have to put them together without any sense at first of what the final image will be.

In the same vein, data analysis over the past decade for teacher-researchers has changed from a few limited options, defined by university researchers, to a range of creative strategies developed by teacher-researchers who find traditional analysis methods didn’t make sense in their studies.

Choosing a Data Analysis Method

Narratives

In a collaborative teacher research project in Georgia conducted by Betty Bisplinghoff, JoBeth Allen, and Barbara Michalove, the group spent a year collecting data around issues of using home-school journals in Betty’s first-grade classroom, and with Barbara’s second-grade students. They developed codes for their data based upon the constant comparison analysis method, a respected and well-known method of data analysis for qualitative researchers:

We studied home-school journals, written family stories, oral stories, and other artifacts. JoBeth had been studying grounded theory and suggested we use the fine-grained coding of the constant comparison method. We spent several days reading about the methodology, coding four sets of transcripts together, and generating an extensive code list. We agreed to code the other sets on our own and meet weekly to compare our analyses.

We were all unhappy with the process. Betty came to the next meeting with a new plan. We agreed that we were losing the children, their families, and the real stories by reducing these rich exchanges to codes. Betty suggested, and we immediately adopted, a plan to read all the data about one child/family unit independently, write a one- to three-page narrative interpretation, and come together weekly to read and compare our analytic narratives. Studying a well-established methodology led to the creation of a
new approach, a methodology that was responsive to this particular study, its participants, and its goals. (Bisplinghoff and Allen 1998, 65)

Perhaps the most intriguing aspect of the analysis and writing process for this group was the retreats they scheduled to work together writing up their work. These were held at a beach house, without other family members or distractions. Participants would analyze their data and write in the morning, take long walks on the beach and respond to drafts in the afternoon, and read good novels in the evening. Rested and renewed, they produced the remarkable trilogy Engaging Children (Shockley, Michalove, and Allen 1993), Engaging Families (Shockley, Michalove, and Allen 1995), and Engaging Teachers (Bisplinghoff and Allen 1998), fine examples of the insights teacher-researchers can gain from their data if they give themselves permission to adapt and develop their own data analysis schemes.

These researchers also highlight a crucial but neglected aspect of data analysis—quiet time and space to seek out patterns and learning. As poet Rita Dove (1997) writes, “To make a prairie—or a light bulb, or the quantum theory of mechanics—you need reverie. Daydreaming. The watchful soul in the relaxed mind” (161).

Insights or new understandings often come when we find ways to free ourselves from the daily busyness of teaching lives. It’s amazing how many analysis breakthroughs come during beach vacations or on quiet rainy days with no agenda. We all need space to think, and the brain can sort enormous amounts of information at an unconscious level if we aren’t cluttering it with mundane responsibilities.

The Georgia research team respects different ways of analyzing data and reads widely to find different models. But in the end they don’t discount their feelings of discomfort when a method isn’t working for them, and they are quick to discard it.

Codes

What one teacher-researcher discards, another pulls from the trash heap, revises, and uses. Lee Anne Larsen and Sherry Young are primary teachers in Maine who were inspired by the Engaging teacher research series. They decided to undertake a research project similar to the one outlined in Engaging Families, studying the effects of home-school journals on their relationships with students. Unlike the Engaging Families researchers, they found developing codes early in the process essential for their analysis of data.

After reading the findings in Engaging Families, they decided to develop a code sheet for analyzing the responses children and parents gave in the home-school journals. Research still seems like a linear process to most of us—finding a research question, collecting data, and then analyzing what is found. Lee Anne and Sherry found they could organize and understand their data best by beginning with preliminary codes for the data, based upon what other researchers had found in a similar study. Figures 5.1–5.3
Figure 5.1  Blank Code Sheet

<table>
<thead>
<tr>
<th>R TC PC I</th>
<th>R TC PC I</th>
<th>R TC PC I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jennifer</td>
<td>Lynn</td>
<td>Alex</td>
</tr>
<tr>
<td>Travis</td>
<td>Leon</td>
<td>Abigail</td>
</tr>
<tr>
<td>John</td>
<td>Shane</td>
<td>Brandon</td>
</tr>
<tr>
<td>Mark</td>
<td>Taylor</td>
<td>Jill</td>
</tr>
<tr>
<td>Sidney</td>
<td>Sherry</td>
<td>Dayton</td>
</tr>
<tr>
<td>Peter</td>
<td>Kate</td>
<td>Charles</td>
</tr>
<tr>
<td>Randy</td>
<td>Samuel</td>
<td>John</td>
</tr>
</tbody>
</table>

Codes Explanation

Top of entry
- R = Retelling Only
- TC = Theme Connection
- PC = Personal Connection
- I = Illustration

Bottom of entry
- P = Parent Participation
- NP = No Parent Participation
- 1V = 1 Voice Response
- 2V = 2 Voice Response
- BC = Book Connection
- CC = Child Connection
### Figure 5.2 Filled-in Code Sheet

<table>
<thead>
<tr>
<th>Character</th>
<th>Code</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jennifer</td>
<td>R TC PC I</td>
<td>Lunch off, more effort needed</td>
</tr>
<tr>
<td>Travis</td>
<td>P NP IV 2V BC CC</td>
<td>Magic Fingers</td>
</tr>
<tr>
<td>Abigail</td>
<td>R TC PC I</td>
<td>Alex 8+9 Great but could be longer</td>
</tr>
<tr>
<td>Tobin</td>
<td>R TC PC I</td>
<td>Addy leaves class</td>
</tr>
<tr>
<td>Shane</td>
<td>R TC PC I</td>
<td>Beautiful day, lots of fun</td>
</tr>
<tr>
<td>Brandon</td>
<td>R TC PC I</td>
<td>Hungry, wake up for Christmas</td>
</tr>
<tr>
<td>Nancy</td>
<td>R TC PC I</td>
<td>The Little Cookier parent discussion occurred</td>
</tr>
<tr>
<td>Sydney</td>
<td>P NP IV 2V BC CC</td>
<td>The BFG</td>
</tr>
<tr>
<td>Shana</td>
<td>R TC PC I</td>
<td>Berenstain, Snowman, Sheep</td>
</tr>
<tr>
<td>Calie</td>
<td>R TC PC I</td>
<td>The Messy Monstret</td>
</tr>
<tr>
<td>Randy</td>
<td>P NP IV 2V BC CC</td>
<td>The Whipping Boy</td>
</tr>
<tr>
<td>Samuel</td>
<td>R TC PC I</td>
<td>No Problem</td>
</tr>
</tbody>
</table>

The table includes codes for various characters and their actions or notes related to their roles or activities.
show their blank code sheet, a filled-in code sheet, and a summary of the response.

Coding can begin with something as simple as + and - marks on the page. This was the case for Debbie Glazier, a Title 1 reading teacher who was doing a case study of Andy. She writes,
One day, in the middle of October, I was rereading my notes from the previous few weeks. I have set up my journal to write on only the left side of the page: the right side is for comments. I picked up my pen and started making plus (+) signs next to all the times Andy was “with” us; reading a book, writing in his response journal, listening to a read-aloud, or speaking in an appropriate classroom situation (asking or responding to questions, etc.). I put a minus (-) sign next to all the times he did not appear to be “tuned in.”

Reading through these new additions to my journal, I began to add words and phrases, noticing if Andy was focusing his attention on another student, an object on his desk. Next to the pluses, I noted what specifically drew Andy into an activity: a tape recorder, a student reading her story in the author’s chair, a picture book read-aloud with plenty of humor.

It was a turning point for me in my classroom-based research. I wrote in my journal on September 6, “It's going to be important for us to get Andy to read and write for longer periods of time.” That was the initial period when I was recording how many seconds or minutes he actually stayed with an activity. That particular day, he stayed less than two minutes with a book he had chosen to read.

I'm still using clock time to emphasize the length of time he is able to sustain an activity, but my emphasis now is on the positive happenings in Andy’s responses. Because of the daily journal entries with their quick pluses and minuses right next to the description of activities, I feel I have a “fast and easy” way of retrieving the day's high points. What enables Andy to be successful today drives tomorrow’s decision-making for teaching.

For Debbie, codes were a way to link her classroom research to teaching in powerful and more immediate ways.

When you choose a big research topic, coding can help you stay focused. Wanda Heath wanted to consider gender differences in discussions in her fourth-grade class. Because there are so many ways to look at boys’ and girls’ talk, Wanda decided to focus on only two aspects of discussions in order to make sense of the data she was collecting. She set up two different work groups of four students, one all-boy and one all-girl, and she analyzed the discussions over a month: “I was looking for different types of responses, interactions, interruptions, off-topic digressions, body language, movement, and group dynamics. I was also interested in what strengths and weaknesses were demonstrated by each group. I decided to audiotape the groups, do transcriptions to analyze, and keep a running checklist of behaviors. I chose the use of rising intonation—sharing intonation (SI)—mentioned in Classroom Discourse (Cazden 1988) and off-topic discussions (OT) mentioned in Listening In (Newkirk and McLure 1993) as the two codes to mark on my transcripts.”

Wanda avoided a mistake novice researchers often make: trying to use too many codes at once. She could easily have developed codes to represent body language, group dynamics, digressions, and other topics she was interested in as she considered gender.
Wanda counted the instances of sharing intonation (SI) and off-topic discussions (OT) on each audiotape transcript. (Figure 5.4 shows an excerpt from a transcript of the all-girls group.)

She then charted the instances of each type of talk for each participant in the group, and noted striking differences in the groups (see Figure 5.5). The boys were off-topic far more than the girls, and the girls were much more likely to use sharing intonation. Looking at these findings in the context of what was said by participants led Wanda to these conclusions:

The boys' strengths definitely lie in their group interactions camaraderie, relaxed behaviors, risk taking, play with words, digressions into great off-topic discussions, enjoyment of books, and the sharing of oral language. Weaknesses include forgetting to come back to the topic, getting too silly

The reading share circle consists of four seven-year-old female first graders. Their names are Mallory, Zia, Cortney, and Kayla. They have all chosen a book to read and discuss at the share circle. They are sitting around the reading table, and Mallory is the student reading leader today. I have placed the tape recorder in the center of the table.

I have used the girls' first initials during transcribing, and T denotes my comments.

SI (sharing intonation) appears where it was spoken in the dialogue. OT (off-topic discussion) appears where it happened in the transcript.

At this time C has just finished reading her book.

C: You have to clap. Questions? You guys have any questions?
M: Why [SI] did you want to read this book?
C: Because it's Kayla's book and I know how to read it. Any more questions. Nope. Oh, Mrs. Heath.
T: Who would you read this book to?
C: Anybody, you [SI], Mallory.
T: Has anyone else written a number book?
C: Nope.
Z: Nope.
M: Nope.
T: We have the author sitting right here. Let's ask her why she wrote a counting book.
K: So I could read it to a kindergarten class that didn't know how to count very high. My brother could only count to ten but I taught him by reading that book and now he can count to twenty. [OT]

Figure 5.4 Letter-Coded Interview Transcript
and loud, not asking more in-depth questions, extending the book, and choosing only a few types of books.

The girls seemed to have fewer strengths than the boys. Although they could stay on the topic of the book, this was both a strength and a weakness. They definitely knew the procedure for running the share group, but sometimes this also became a weakness in their ability to share. They did choose books that interested them and ones they could read, but they, like the boys, need to branch out into other genres. Because of their attention to procedure, the girls did ask more questions of each member of their group and they had a larger number of what they call "kind comments." The girls' biggest weaknesses lie in not taking risks, not being relaxed, lack of humor,
HOW TO Cook Your Notes

Anthropologists refer to two types of field notes—"raw" and "cooked." Raw notes are just what you've written, as quickly as possible, without any analysis. Cooked notes are the analysis of these raw materials.

One simple scheme for cooking involves codes developed originally by the famed anthropologist Levi-Strauss (adapted by Corsaro 1981). We recommend the use of three of these codes:

   PN  personal notes
   MN  methodological notes
   TN  theoretical notes

*Personal notes* include any information relevant to your mood, or that of the class. Events like an argument before school with a colleague, or a child vomiting in class ten minutes before you began notetaking, will affect the notes you take, and it's good to include these to jog your memory later about why the notes might be unusual on that day.

*Methodological notes* include any questions or statements about how you're doing your work. They might be statements like "I should put a tape recorder by the science center to get those interactions" or "Maybe students should keep logs of questions asked during literature discussions."

*Theoretical notes* include any hunches about patterns, or why events are occurring as they are. A theoretical note might be as formal as "I think Tadd's behavior after time in special education supports Kohn's notions about the danger of external reward systems." But most are less formal—they are those "aha" moments that are essential to good teaching. These might include statements like "Perhaps Jason's frustration in science is due to so many absences in the past two weeks—the group seems unwilling to bring him up to date on the project."

Cooking notes can also be as simple as adding questions to them, to extend and expand your thinking about what you are seeing. The Latin root of the word *theory* means to see or behold—cooking with questions in mind extends your sight about what patterns are emerging. Questions to consider while cooking your notes might include, Why did I think this was important to write down? How does this connect with what I saw earlier in the day, week, year? Based upon what I'm seeing, what action should I take to change the curriculum or my research project?

These questions can easily be abbreviated in your notes. For example, thinking about the importance of what you're noting becomes *I?* as an inserted code. Issues of curricular change become *C?* as a code. Potential additions to assessment narratives become *A?* as a code. What you're trying to do is develop a mind-set that constantly questions as you write your notes—that is what cooking is all about for researchers.
HOW TO Analyze Audiotapes Without Doing Full Transcriptions

- Listen to tapes, and note what strikes you. This can be done during the odd moments of the day—while you are commuting, doing yardwork, fixing supper.
- Flag only the comments of a case study informant.
- Have students listen to the tapes and analyze what is going on. If you choose this technique, you might want to frame the activity with a few guiding questions, like What went well in the conversation? What would you do differently? What do you notice about [the research topic]?
- Note only topic changes.
- Note only who controls the conversation.

All these techniques take far less time than full transcriptions, and in the end, they may give you all the information you need for your particular study.

and not enjoying the sharing of real-life experiences through the discussions.

Essentially using only two codes to analyze her data, Wanda was able to make some leaps into greater awareness of what was driving the different kinds of talk among boys and girls.

Codes for notes can be developed at almost any point in the research process. Some projects lend themselves to early coding; others require a large chunk of data to be analyzed before the codes can emerge.

When deciding upon codes for your work, start with these principles:

- As a general rule, develop no fewer than three codes, no more than six. Regardless of your research project, if you have too few codes, you are probably thinking of the categories and patterns in your data too broadly. And if you have too many codes, you will struggle to keep track of them.
- Don’t be afraid to change, shift, or abandon specific codes that are no longer useful. A code that makes sense early in a project may not be useful by the end. Also, if you get too rigid about using certain codes, you might miss important new codes that would serve better.
- Try to represent the patterns emerging from your codes visually. This is a good test to see if your codes are really helping you understand your classroom. If there isn’t some way to move from the codes to a visual representation of what the codes are showing you (e.g., a pie chart of different kinds of responses in math workshop; a bar graph of
who responds when during whole-group writing discussions), then you will probably struggle to move from your codes to findings later in the research.

**Visual Markers**

The type of data you are collecting will also affect which coding strategy works best for you. Virginia Shorey’s high school English as a Second Language students had drawn quilt squares about special places in their homelands. When Virginia and her co-researcher, Ruth, read the transcripts of interviews with the students, they found categories like “the importance of pictures in their writing process” and “vivid memory details.” They discovered the most helpful way to code these categories and visually find the way back to them was through colored label dots (colored flag Post-its work, too). Each color represented a category, and the dots or flags are placed in the margins to signal text that fits into that category. For example, in Figure 5.6, an excerpt from a transcribed interview, the categories are

- Red: Memory detail
- Green: Importance of picture to process
- Yellow: Thinking in different language/learning language
- Blue: Importance of talk/sharing/presentations

and in Figure 5.7, a student sample, the categories are

- Green: Goes with quilt square
- Red: Metaphor
- Blue: Emotional ties
- Orange: Sensory detail

As we search our data systematically for patterns, the process can be anything but neat. Enrichment specialist Janna Smith shares a working document of part of her process of data analysis (see Figure 5.8). She explains, “On this sheet, I began to compile and analyze data from multiple sources as it related to the subquestions underlying my major research question. I noted positive and negative patterns, and I also numbered them in order of frequency. Double lines under initials denoted a very strong or repeated expression of certain positive or negative aspects of mathematics, so I considered them significant. This charting became the basis for further categorization and writing.”

**Memos**

It can also be a help to look at an overall picture emerging from a set of data, a kind of visual research memo on one page. Karen Hovland-Feuer initially
Ruth: I wanted to ask you a little bit about the place you drew. First of all, just tell me a little bit about where it is.
Cecilia: Well, it’s in Acapulco, my country. It’s in the beach. (Laughs)
R: Now, is this a place you went to a lot with your family? or by yourself?
C: A lot by myself. Alone, you know. I always go there ... and sometimes with my friends and my family when we have picnics, we always go there.
R: So, this is a place that you have that’s kind of a special place back home?
C: Mmm-hmm.
R: Tell me about the birds and the other things in your picture.
C: Well, the birds, they were always flying, you know. Sometimes, we see them. One time, I don’t remember, when I was twelve, we saw a little turtle and he was with his mom, I don’t know how long, and they were walking on the beach, and we [?] and we took pictures. So, that’s we put ... 
R: So, that’s why you put that turtle in ... oh, you didn’t tell me that before. I like the way you made the sand kind of gold. What color is it?
C: It’s like kind a gold, yeah.
R: So, when Mrs. Shorey asked you to draw and write about where you came from, can you tell me what happened in your head? Did you, like, see pictures, or did you think about it? Do you remember?
C: Pictures. Pictures, you know, they have a lot of memories, of where I came from. And ... I think about it, I saw pictures in my mind, yeah ... .
R: Do you remember if you thought in Spanish or if you were thinking in English?
C: English. Yeah, that’s my first ... before in [?] Spanish.
R: Is that what you do most of the time? Do you mostly think in English now?
C: Uh huh.
R: Do you remember when you started thinking in English?
C: Last year.
R: Uh huh.
C: Because it’s more easier to do it in ... Russian, Spanish, too difficult. Because you have to switch the words, in English, it’s not ...
R: If you spend a lot of time talking to somebody who’s speaking just Spanish, then do you starting thinking in Spanish?
C: Yeah. Yeah.
R: Do you ever feel like you’re not thinking in any language? That you’re just thinking?
C: Yeah! Sometimes, I spend time with an American, and I’m translating, English, then I talk Spanish, then I stop for a moment ... OK, OK, where were we? Real confusing!
felt overwhelmed when she looked at her case study transcripts of a four-year-old’s language patterns at play. To bring some order to her work, she began by counting. She writes, “I counted the number of times Meredith maintained a topic of conversation and the number of times she changed the topic. I found the ratio was very similar in all three conversations. Before counting, I thought that I would find significantly more topic changes with her friend Annie than with Meredith. This was not true.” From each transcript, Karen then charted the course of those topics, showing the number of times Meredith changed and maintained the topic, and noting how the topics related to an overall theme (see Figure 5.9).

Looking at the patterns in each transcript through her visual memos led Karen to important discoveries about Meredith’s ability to use her language to collaborate and negotiate a story together with other conversation participants. One of Karen’s findings noted the ways that Meredith’s talk in creative play was helping her learn to elaborate on the stories of others. She was far more collaborative than Karen had imagined. Information like this helped support the need for unstructured time for Meredith and the other children in preschool to explore talk through play.

Memos needn’t be visual—it can often help to look through your data and choose one of your findings to write up in a brief narrative, a memo to share with other teacher-researchers. This helps you focus your thoughts and begin to write up your data along the way. (For more information on writing up memos, see the first Research Workshop in Chapter 7, “Seeing What Is Not Seen,” suggestion 3.)
Semantic Domain Analysis

Semantic domain analysis is a useful data analysis tool for discovering different understandings of words by various cultural groups. To begin such an analysis, pick four to six words that are crucial to your research study. Define these words yourself, ask students to define them, ask colleagues to define them, and find definitions in the professional literature. Depending upon the subject of your study, one or two groups of informants may be more helpful than others. If you are looking at “folk terms” (words that emerge within the culture you are studying), you’ll want to pay particular attention to the definitions from that group. For example, in Barbara Lockwood’s study of social interactions among her fourth graders, she found these folk definitions among students:

Dude      Looks good, is really hip, wears neat clothes
Jerk      Junior educated radical kid
Nerd      Never-ending radical dude

As these terms show, the definitions can be sophisticated, with linguistic cues. Teachers these days are learning to ask students whether they are describing something as “fat” or “phat.”
On the other hand, if you are looking at implementing a new curriculum at your school, you might want to take key words out of the curriculum, standards, or assessments provided and ferret out differences between your meanings for the critical terms and those of your colleagues or students.

When definitions vary, find out who has the different definitions and where the differences come from. In Jane Doan's K-2 multiage classroom, she asked students to describe different areas and activities in the classroom and uncovered these folk terms: "being sent to the planning chair" meant a
form of punishment; "meanies" referred to a group of older girls who are mean. Jane and Penny Chase, her co-teacher, realized their "alternative" to punishment, "the planning chair," was still viewed as punitive by the students. And they hadn’t realized the existence, let alone the power, of the "meanies" till they heard the word often among students and asked for a definition of it.

Reframe your study based upon your findings. Julia Crowl’s study of perceptions of home-school links by seventh-grade students included home visits and activities with parents. Doing a domain analysis showed her just how defined and pervasive class consciousness was among students (many of the low-income students in her study lived in a particular neighborhood and so were defined derogatively as "scrubbers"). This information led her to do less background reading on literacy instruction and more on the effects of class distinctions on peer groups and family relations.

Sociograms

Sociograms are a useful source of information for analyzing the social networks in your classroom. What you need first is a question for individual interviews with your students that requires the students to answer with the names of their classmates. For example, If you could eat lunch with anyone, who would you sit next to? Who do you know who is a good writer in this class? If you could read a book with anyone in the class, who would you read with? Ideally, the question should have some link to your research topic, even if the link is weak.

With younger students (grades pre-K through 2), you or a colleague will need to interview each child separately, in a space removed slightly from the rest of the class. These interviews should be done very quickly—no more than a minute per student. Resist the urge to ask “why” when a student gives a surprising response—those open-ended questions are useful for other aspects of your research, but not with sociograms. With older students, you can pass out slips of paper and have the whole class silently write their responses immediately to your question—this takes less than five minutes of class time.

As you’re interviewing or after you collect the slips from the students, you’ll need to do a tally sheet. To do the tally sheet, list the name of the person interviewed and the names of classmates she or he lists as first, second, and third choices. For example, if you were interviewing Theresa, the tally sheet would look like this:

Theresa

1. Jennifer [her first choice]
2. Kelly [her second choice]
3. Melissa [her third choice]
This would continue for the whole class:

**Harry**

1. Jim
2. Joe
3. Kelly

and so on.

Once you’ve completed the tally sheet, make a whole-class chart with names of students on horizontal and vertical margins, giving a child three points if he is the first choice of another student, two points if he is a second choice, and one point if he is a third choice. Add the total points for each child to get a sense of who has the most social power in the class and who has least (with a positive question, students with the most points are those who have the most social power in the class, and those with the least points have the least). Many times, it’s helpful to ask two questions—one from a positive social perspective, the other from a negative social perspective: Who would you want to sit with at lunch? Who would you not want to sit with at lunch?

When you have the negative data, you can differentiate between children who aren’t noticed by classmates and those who are disliked or avoided. For example, a student who has few points for each question is for some reason not visible to classmates. But a student who has low points for the first question and high points for the second is behaving in a way that has a negative effect on their social status.

If you have the time, you might want to chart out your findings for the question (see Figure 5.18 on page 156 for an example of a completed sociogram). But many teachers save time by only adding up the tally points.

Sociograms never stand alone as a data source. The results need to be triangulated with other data sources in order to provide truly valid findings. But if you’re stymied in trying to understand links between the social networks in your classroom and the learning going on, sociograms can provide terrific quick looks at complex social relationships.

Some teacher-researchers avoid sociograms because they are concerned about hurt feelings if students share choices with each other. We have not found this to be an issue with many teachers who have used sociograms, but we respect that concern.

These examples of data analysis methods are diverse, but they all show evidence of working from the same basic principles:

1. *Find something to count.* For many novice researchers, it is easier to see patterns first through numbers, then through language. Debbie Glazier moved from counting minutes on the clock to counting plus and minus
signs, to finally beginning to qualify what some of these numbers and codes might mean. Many teacher-researchers find it useful to count the number of instances in different code categories and then to chart them in some way to begin to visualize their findings. For Wanda Heath, the charting led to preliminary findings that she could then use to make changes in her teaching.

2. Look for models from others, but feel free to adapt them. Betty Bisplinghoff, JoBeth Allen, and Barbara Michalove were eager to try out a tried-and-true system for categorizing their data but felt free to abandon it when it didn’t work for them. Wanda Heath, Lee Anne Larsen, and Sherry Young all used specific codes developed by others but tailored these codes to their own particular studies.

3. Find and follow the story of your research. The best lesson from these researchers may be that the codes, analysis systems, and procedures are all a means to one end—finding the narrative thread of the research. As you develop and use any analysis system, ask yourself, Is this getting me closer to the story of my students and teaching, or is it distancing me from it? If you don’t find the system is revealing new truths, but instead feels cumbersome and artificial, then it probably isn’t the right analysis procedure for you.

Welcome the Unexpected

Perhaps the most important advice we can give you regarding data analysis is never to allow yourself to become too comfortable with your findings. As you sort through and weigh different possibilities, there will also be some part of what you are seeing or not seeing in your research that niggles at you. It can be a sense that something is not quite true, or accurate, or honest in how you are representing what you’ve learned. Pay attention to those feelings of discomfort, because often they provide clues to the major breakthroughs in understanding possible through your research.

This was the case for Karen Gallas in her most recent study of gender relations in her class of first graders, Sometimes I Can Be Anything. She writes about an early breakdown in her data analysis:

When I reviewed my data and tried to describe different incidents, my understanding of the purposes and motives behind the children’s interactions grew muddier over time. Writing became a painful process: the children I had loved and observed so closely suddenly became symbols of every social problem that I personally found troubling. I was unable to separate what I had observed and recorded in the classroom from my own social viewpoints and events in the society at large. . . .

As I examined the children’s active attempts to make their world sensible and reliable, and the resulting stances they assumed to maintain that sensibility, I saw that I had to push aside my own personal labels for the
behavior I was seeing. For example, for children the concept of “sexism” or “sexist” is not a known one until that label is defined and applied by an adult. . . Without labels I became more able to see how what I now call social breaches or ruptures begin. Children’s interactions do not come loaded with the political and psychosocial metaphors of the adult world. (1998, 21)

We can almost hear all those shoes falling out of their original boxes for Karen. Ker-thunk. No wonder writing became painful—without all the comfortable, adult categories for coding and analyzing her data on gender in the classroom, Karen had to see the children in a completely new light. But this new light led to some extraordinarily fresh takes on power and identity among boys and girls in her classroom.

The great Native American leader Seneca said, “It is not because things are difficult that we do not dare. It is because we do not dare that things are difficult.” Data analysis is the point in research that calls for true daring. The magic in the best research studies comes from teachers who are willing to explore the unexpected places their inquiry leads. Like Karen, they explore what isn’t working as they try to analyze their data. Like JoBeth, Barbara, and Betty, they are able to recognize a discomfort in their process, not as a deficiency in their skills but as a mismatch between the analysis method they have chosen and their needs as researchers. Take Don Graves’s (1994) advice: “Listen to yourself and what you see in the shadows and sense just around the corner of thought” (39). A willingness to chuck old methods and categories, try new ones, and consider unorthodox possibilities can make data analysis less of a chore and more of an adventure.

**Strategies for Analyzing Data**

*Ruth Shagoury Hubbard*

Some truths present themselves to us when our minds are taking a break from the day-to-day problems and issues that are confronting us. On a recent weekend, I was taking such a break, escaping into worlds out of the classroom that give me pleasure and relaxation. One of those pleasures is music, and I indulged in really listening to lots of my favorites, tending toward New Orleans rhythm and blues, Chicago jazz, and Texas rock ‘n’ roll. But I couldn’t really escape from what was on my mind—teaching, research, my students—even when I was enjoying this music. So I found myself making lots of connections between the lyrics of the songs and my work. For example, I found myself mulling over my own issues of student assessment and evaluation as I listened to the jazz strains of a song called “Real Compared to What?” And since I’m trying to make sense of piles of data that I’ve collected, I really tuned in to Irma Thomas wailing “It’s not the quantity—oh, no—but it’s the quality.” (I think this cut could become the theme song of teacher-researchers everywhere.)
But the song that highlighted an important truth for me was an old standard with a compelling refrain: "I got a little too little . . . and a lot too much." This was an "ah-ha" moment for me. This phrase captured one main problem that most of us have as teacher-researchers; as we’re analyzing our data, we often realize that in the categories that intrigue us, we have "a little too little." If the school year’s done, and our kids are gone, there’s no way we can go back and follow up on that comment, or ask about the process of this interesting piece of writing, or interview several kids to see if a particular finding has more widespread application.

And how many of us have stared with guilt at piles of untranscribed audiotapes, folders of dust-covered student work samples, even notebooks of raw field notes and teacher journals that we dutifully wrote in but haven’t read and thought about for months? Indeed, "a lot too much."

Besides being a catchy song, those lyrics can serve to crystallize the main problems we run into when analyzing data. If we can begin to focus on how we can collect and analyze data so that we won’t have "a little too little" or "a lot too much," we will have gone a long way toward making the whole process more manageable.

In the suggestions that follow, I have framed some strategies to help you tie data collection with analysis, for often it is their strict separation that is at the heart of the problem. These are just some possibilities for finding ways to protect yourself from singing the teacher-researcher blues as you analyze your data.

**Build analysis into your design from the beginning.** Take a look at first-grade teacher Pat Scherler’s research plan (Figure 5.10). What are some ways she might fit analysis into her mental framework of how she is approaching her research? Here are some of the strategies colleagues suggested to her.

In terms of keeping on top of her field notes, they recommended that she read through her teaching journal every couple of weeks to see what she was finding. Pat found that was a small and manageable enough chunk of time and that she could start to see patterns or nudge her memory about something she’d noticed earlier. So, she added to her design, "Every other week, read field notes/teaching journal."

Another colleague recommended that Pat also set aside a longer time, when she had about thirty to forty pages of field notes or entries in a teaching journal, to index her notes. Pat added to her design, "By the end of January, I’ll index my notes and narrow my focus. I’ll bring my indexed notes to my teaching partner to get some feedback."

Adding this kind of general time line to your plans can help connect data collection and analysis more closely right from the beginning. Talk through your research designs with other teacher-researchers, brainstorming how to add these checkpoints in ways that fit your own work schedule.

**Index your notes to make them more manageable.** It’s useful to create a kind of table of contents of what you’re seeing in your data early on; this
**PAT SCHERLER’S RESEARCH PLAN**

**Question**
How do young children carry out research?

**Procedures**
This research will be based upon the observations, interviews, and samples from approximately sixty first-grade children at Community Elementary School. Most of these students have not had independent research activities and therefore have not had much teacher input that would interfere with discovering how children research naturally.

**Time Frame**
Because first-grade children grow and change rapidly in the course of a year, it is my intent to carry out this research over a six-month period, spanning the middle months of the school year. During the first two months of the school year, the children are settling into the school routine, and the last month they spend unsettling, so I will try to catch them in the middle!

**Data Gathering**
Data will be gathered in primarily three ways: (1) audiotaped interviews; (2) field notes; and (3) samples of data or work carried out by the children. The questions asked in the interviews will be the following:

- What do you do when you want to know about something?
- What do you do with the information once you have got it?
- What do you think the word research means?

The responses may prompt my asking further questions for clarification. Field notes will be taken as I observe the children in the process of doing research. The in-class research will be carried out with a minimum of structure, the topics of study sometimes being determined by the teacher and sometimes by the individuals. The data or work samples will be any product created or found by the child in connection with his or her information gathering.

**Data Analysis**
Within the transcripts, field notes, and samples, I will look for patterns and categories. Out of this, I will develop a list and tally commonalities, and describe trends and curiosities that may develop from the data.
helps you see what you have already, and also helps to narrow your focus for what you need to continue to collect. In October, Blake Tomlinson read over his two months of observations and notes about his case study student, Sam. He listed the categories with the page numbers on which they appeared, and then wrote a few paragraphs reflecting on what he had learned so far (see Figure 5.11). This kind of review highlights what data are missing and gives the research more direction. Blake’s reflection ties in with his role as a teacher-researcher. The data he has analyzed will clearly influence his teaching and help him continue to work with Sam in new ways.

**Figure 5.11** Index of Notes

<table>
<thead>
<tr>
<th>Categories and Patterns in Field Notes</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-task engagement</td>
<td>1, 9, 10, 14</td>
</tr>
<tr>
<td>Boredom/distraction</td>
<td>1, 9</td>
</tr>
<tr>
<td>Seat work</td>
<td>1, 9</td>
</tr>
<tr>
<td>Student-student comm./gossip</td>
<td>1, 3, 4, 10</td>
</tr>
<tr>
<td>Student-teacher comm.</td>
<td>3, 15</td>
</tr>
<tr>
<td>Sam’s on-task engagement</td>
<td>1, 6, 7, 10</td>
</tr>
<tr>
<td>Sam’s boredom/distraction</td>
<td>4, 5, 6, 8</td>
</tr>
<tr>
<td>Sam-teacher comm.</td>
<td>7, 12, 14</td>
</tr>
<tr>
<td>Sam-student comm.</td>
<td>6, 8, 12, 13, 14</td>
</tr>
<tr>
<td>Sam’s personal behaviors</td>
<td>5, 6, 7, 8, 12, 13, 14</td>
</tr>
<tr>
<td>Sam’s clothing</td>
<td>8, 13</td>
</tr>
<tr>
<td>Sam’s interviews</td>
<td>16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27</td>
</tr>
<tr>
<td>Sam’s writing skills</td>
<td>16, 17, 18, 19, 20, 21</td>
</tr>
<tr>
<td>Writing as process: understanding</td>
<td>17, 18, 19</td>
</tr>
<tr>
<td>Things Sam already knows in writing</td>
<td>17, 18 (work sample)</td>
</tr>
<tr>
<td>Sam’s attitudes: school</td>
<td>18, 22, 23, 24, 25, 26</td>
</tr>
<tr>
<td>Sam’s attitudes: life</td>
<td>21, 24, 26, 27 (in his writing)</td>
</tr>
<tr>
<td>Sam’s attitudes: general</td>
<td>23, 25, 26, 27</td>
</tr>
</tbody>
</table>

**Observations:** My first thoughts when looking over my categories are that communication is a big issue in my observations of fifth period. I focused on the communication between students, students to teachers, and the communication that occurs within the context of the academic work, for example in writing. I also focused on task engagement and boredom, looking at the class as a whole and then comparing who was doing what and how often. I paid little attention to issues such as seat work, and who was working with whom.

Most of my field notes concentrate on Sam. And I feel it is through my interviews with him that vital information emerges. A question that keeps popping up in terms of my two interviews with him is, What does Sam already know? What has he revealed about his positive/negative learning behaviors and styles at Central High School? I am not sure if I should break the interview responses themselves into major categories. I already did some of that in his writing and attitude categories, but inside each particular question is a response that illustrates a unique part of Sam.
In terms of his writing, I feel Sam already knows a great deal about the writing process, and his own connection with writing. I think one of the major writing problems facing Sam is that the writing he does in school is not meaningful to him. Then again, he hasn’t shown much interest in pieces that allow for student freedom; therefore I don’t know if he is completely sincere in his responses.

His attitudes about Central and life in general were discovered as a result of my second interview with him. I think Central is not suitable to Sam’s learning style. I really don’t know at this point what Sam needs, but the institutionalized structure of Central is not helping him.

Overall, the things I need to know about Sam’s learning modes come through his writing interview. I think if Sam is given the correct guidance and freedom to explore issues in his writing, then he will certainly begin to learn how to think critically. Some additional information that I will need to obtain are probably some more one-on-ones with Sam concerning specific things we can accomplish in the classroom. If we can brainstorm some possible topic areas of writing, I think Sam will rediscover the energy and enthusiasm that he lost learning at Central.

Indexing can be very useful in preparation for a teacher research meeting. Giving yourself the time to go through your notes in this way, listing your tentative categories, can reconnect you to the research question itself and to the patterns that are emerging in your classroom work. You may also find interesting connections to the categories that others are finding, sparking additional insights that you now have time to go back and explore further.

*Keep on top of transcription.* I find that if my tapes are older than a month, I usually don’t get to them. And again, it’s often too late to go back and follow up then if you find something really intriguing. Making a commitment to keep on top of transcription also makes you more realistic and less greedy for data you won’t use.

Pat Scherler had planned to interview each student. She needed to think realistically about how she could fit that into her teaching day. She decided she could interview one student per day as part of her writing workshop. Given her other commitments, she decided to limit herself to two interviews per week. On her time line, she added, “Two fifteen-minute interviews per week, to be transcribed for one hour every other Saturday morning.”

For many research designs, though, you don’t need to transcribe all the tapes. Suppose you are looking at patterns or at strategies that students use in whole-group sharing of math problem solving. Instead of taping and transcribing each session, you might randomly tape one per week or per month and transcribe that one right away. Or you might listen to the tapes, choose one that you consider a representative sample, and transcribe that one tape to analyze more closely. That way, you can still follow up on what you may need.
Adapt your record-keeping strategies to include data collection and analysis. The more closely you can intertwine data collection and analysis into your daily routine, the more likely you are to be able to keep on top of it. Rather than inventing something completely new, look at the record keeping you are already doing and adapt it to include collection of information that will help you answer your research question. Annie Keep-Barnes adapted the records she kept during class discussions so that she could add tallies as well as have a record of her thoughts (see Figure 5.12). Take a look at your own record-keeping procedures; how might you adapt them to help meet your research needs?

![Figure 5.12 Adapted Record-Keeping Sheet](image-url)
Catalogue your data in preparation for analysis. For student work, cataloguing might be as simple as having a trapper keeper or a folder for samples with the contents listed on the cover.

Initial cataloguing is also vital for videotapes, and much quicker and more useful than transcribing the whole audio track. You can make a running guide as detailed or sparse as you need. When I catalogue videotapes, I go through quickly the first time, mostly writing down phrases to serve as a memory jog. I use a cataloguing sheet with columns for the time and for describing the contents, such as "Conference with Larry." I might also put a star next to segments I’ll want to review closely later (see Figure 5.13).

<table>
<thead>
<tr>
<th>Time Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:35</td>
<td>writing film shot</td>
</tr>
<tr>
<td>13:16</td>
<td>pool shot</td>
</tr>
<tr>
<td>13:58</td>
<td>Chuck &amp; sexy</td>
</tr>
<tr>
<td>14:17</td>
<td>Chuck alone</td>
</tr>
<tr>
<td>15:01</td>
<td>Conf. w/ Larry, perhaps to make</td>
</tr>
<tr>
<td>15:29</td>
<td>Conf.</td>
</tr>
<tr>
<td>16:44</td>
<td>computer</td>
</tr>
<tr>
<td>17:10</td>
<td>&quot;you need to have an editing org&quot;</td>
</tr>
<tr>
<td>18:00</td>
<td>editing Conf. w/ Jessica</td>
</tr>
<tr>
<td>20:00</td>
<td>Conf.</td>
</tr>
<tr>
<td>20:18</td>
<td>Jessica in Grant's office</td>
</tr>
<tr>
<td>21:02</td>
<td>Morgan, Jess, very writing</td>
</tr>
<tr>
<td>21:36</td>
<td>Alan &amp; Ryan - research</td>
</tr>
<tr>
<td>26:00</td>
<td>DT's shot in tournament</td>
</tr>
<tr>
<td>27:29</td>
<td></td>
</tr>
</tbody>
</table>

Figure 5.13  Cataloguing Sheet for Videotapes
Create flowcharts or other visual aids to help you see how your data fit together. Marilyn Hubler built analysis into her plans for data collection by creating a visual representation of how she would triangulate her data, looking for common threads among her observational records, surveys, and other resources. Having this pictorial image of her analysis helped her focus more specifically on the data she needed (see Figure 5.14).

**DATA COLLECTION:**

Surveys. Surveys will be sent home with each of my 29 kindergarten students. These will provide me with a broad view of the verbalization that takes place within the home.

Interviews. I will invite parents to tea. My goal here would be to listen in on a conversation, tape record this session, and thereby obtain anecdotal information.

I will visit with at least two other kindergarten teachers to discuss this project and note any relevant feedback.

Anecdotal Records. I will listen in on classmate's conversations or any comments made to me that show evidence of communication at home regarding school experiences. I will also make records of relevant comments made to me by my parent volunteers.

Tally sheets. I will ask for parent volunteers to keep a tally sheet on any comments within the time-frame of one week.

I have arranged to have my data come from three primary sources in keeping with Webb's (1965) term triangulation and, as the chart below shows, I will be searching for the agreement of anecdotal records, parental input, and distant and/or present teachers in order to draw any conclusions.

![Visual Representation of Data Collection Plan](image)

**Figure 5.14** Visual Representation of Data Collection Plan
Journals as a Tool of the Trade

Kimberly Hill Campbell

Last year's journal began as a survival technique. As a first-year principal in a first-year high school, I was awed by the enormousness of the job. Writing a journal in my Franklin Planner (also a new system) sustained me. I made sense of my day in the evening after dinner. I did not write every day, but I wrote at least three or four times a week.

By December, I found myself curious about the way I used my time; I felt as if I were beginning to come up for air after the whirlwind of the first few months. As I looked back through my early journal entries, I became curious about the issue of time. I had naively assumed that as an administrator I would have more control over my time; it would not be as regimented as in teaching. Instead, I felt like my time was completely beyond my control. At the end of the day, I had usually accomplished almost nothing on my "to do" list because I was too busy reacting to the crisis of the moment. If I was going to address and improve this "reactive" style, I needed to first understand it.

I turned to my teacher research tool box and reached for "indexing." I had taught several courses on teacher research and often discussed indexing but had never taken the time to use this tool in my own data analysis. Quite candidly, I was skeptical of this method; it seemed time-consuming and a little too "college professor"-like for me. But faced with pages and pages of scribbled journal entries, I thought I would give it a try. Initially, I listed categories very basically: students/parents/staff. But, as I reviewed my entries, I noticed categories within categories. I began again. Each entry was cross-referenced by date into my new categories (see Figure 5.15). As I read and categorized, I began to see patterns of time use. I saw how little of my time was spent in the role of instructional leader. Much of my time was invested in parent issues and facility issues (we were leasing space from a college of naturopathic medicine). Based on this information, I was able to present a compelling case as to why we needed to hire a counselor for the 1997-98 school year: to handle the parent questions regarding schedules and other student advocacy issues. And I had hard evidence that we needed to lease a different site.

I also made personal decisions about the way I handled my time based on the categories. I arranged for informal drop-in visits to classes and followed up with a brief conversation rather than relying only on formal observations. I learned to prioritize my time:

Staff issues
Student issues
Parent issues
District issues
Facility issues
An additional benefit of the journal was that on those days when I felt as if I had not accomplished anything on my “to do” list, I had concrete evidence of all that I had done instead. I began to redefine success: If I got more than three items on my list done during regular work hours, it was a stellar day!

**Figure 5.15** Index of Journal Data
Exploring Literature Through Student-Led Discussions
Jennifer Allen

Just the other day I asked Emily, a third-grade student, why she thought student-led discussions were beneficial when talking about books in literature groups. Her response was, “Kids connect with kids. We understand each other.” I listened to Emily with a smile and knew that she held great literary wisdom.

It has been two years since I began to explore the question, What happens when students lead literature discussions? During this time I shifted back and forth between the roles of researcher and teacher. The process of implementing student-led literature discussions enabled me to grow as a teacher-researcher, improved reading comprehension among students, and fostered social growth in students.

At the onset of this research, I was interested in exploring oral language as a response to literature. I had a preconceived agenda of trying to shift students’ literature responses from a literal level to a more inferential level, using students as discussion facilitators. Looking back now, I realize that I went into the process trying to design a research question to fit my anticipated data. I quickly learned that you can’t always predict the paths that you will follow as you embark on your research journey.

As a teacher-researcher, I learned the tools of the trade: notetaking, listening, revision, and reflection (Hubbard and Power 1993). I carried my journals with me faithfully to every literature group and took notes for fifteen minutes during discussions. I found myself constantly shifting between the roles of researcher and teacher. Insights as a researcher always led me back to the students for their input. Moving back and forth between the roles enabled me to reflect on the process and make constant revisions during the implementation of student-led discussions.

Implementing Student-Led Literature Discussions

In the beginning, I talked to the students about my idea of having them direct their own literature discussions. My goal was for students to participate in focused discussions with their peers, based on the literature they were reading. Students showed interest in the idea, and we began to look at how student-led discussions could be incorporated into our current literature group format.

My literature group consisted of four to six students at varying developmental reading stages. Genres and groupings were temporary and changed frequently throughout the year to meet individual needs of students. At any one time students could be grouped heterogeneously, according to ability,
interest, need, or gender. Although I put together the literature groups, students had choices about what books they read. I usually presented six books to the class through mini-booktalks, and had students choose three books that they would like to read. I always strove to give students one of their choices, but I wasn’t always successful as I also tried to match texts to the individual needs and interests of students. If a particular book was popular with students, I assured them that I would create another literature group using the book later in the year. This selection process enabled students to voice their book choices, but still gave me the control to create literature groups that would meet their needs. Sometimes I intentionally created a group based on ability or interest. The key was that groups were never fixed for a long duration of time. I usually orchestrated four different literature groups in the classroom at the same time, with each group exploring a different book. I met with each group twice a week for thirty minutes. During literature groups, we spent the first ten minutes discussing the book. For the rest of our meeting time, we worked on a particular element of the text such as character development or a reading strategy. When I was not meeting with students, they were working independently or with peers from the same group. The literature group model was similar to that described in *Invitations* by Regie Routman (1994).

As I continued to explore the idea of student-led literature discussions, I started to involve the students more in the decision-making process. As a class we began to outline student responsibilities (see Figure 5.16). We decided that a student facilitator would be responsible for developing discussion questions for the group. The questions were expected to reflect the book and serve as the foundation for the group’s discussion. The facilitator was also responsible for keeping the discussions focused and on track. We decided that our purpose for these discussions was to talk about the books we were reading, the characters we encountered, our personal connections to the books, and any questions that surfaced.

I modeled the role of discussion facilitator for a month before having students try this on their own. As the facilitator, I asked the group inferential questions and prompted literature discussions based on my personal connections with the book and characters. While we were reading the book *Morning Girl* by Michael Dorris (1992), I told the students that I could identify with *Morning Girl* because I, too, wake up early every morning and love the peaceful sound of dawn. I asked students questions such as the following: Based on what you know about the characters of Star Boy and Morning Girl, which one would you like for a friend, and what would you do if you spent the day together? I wanted students to explore and think about literature beyond the literal print of the text. I wanted them to personalize literature by making connections to characters and events found in books. Ultimately, I hoped to develop lifelong readers.

We also practiced strategies that would foster peer interaction. The first thing we worked on was making eye contact. I encouraged students to respond to one another by looking at the person talking, and not just at me,
As defined by Jennifer Allen and Students in A-I (1996)

<table>
<thead>
<tr>
<th>REQUIRED ROLES</th>
<th>RESPONSIBILITIES</th>
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<tbody>
<tr>
<td>Facilitator</td>
<td>* Prepares for discussion by reading the assigned text and develops questions based on the reading</td>
</tr>
<tr>
<td></td>
<td>* Initiates the discussion through prepared literature questions</td>
</tr>
<tr>
<td></td>
<td>* Keeps group on task and focused</td>
</tr>
<tr>
<td></td>
<td>* Encourages student participation</td>
</tr>
<tr>
<td></td>
<td>* Processes the literature discussion with the group by listening to the discussion tape. Records what went well and what they want to work on as a group.</td>
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the teacher. I tried to participate as an equal member of their group, although I limited my responses. I wanted students to know that the role of facilitator was more than playing “teacher.” It was an opportunity for them to discuss their connections to the characters and text. Student facilitators were not simply “directors” of literature discussion but were also expected to be active participants.

As students became more comfortable and involved in their literature groups, it was time for them to take more responsibility for their discussions. Since student facilitators were going to generate and present questions for the group’s discussions, I decided that we needed to work on developing questions that might spark discussions.

I read the book, *The Great Gilly Hopkins* (Paterson 1978) aloud to the class. Since students were familiar with this story, we used it to generate possible discussion questions. Students then tried out their questions on the group. They quickly observed that some questions sparked great discussions and others didn’t. As Emily commented, “Asking yes or no questions does not create discussions.” I taught students the three levels of questioning: literal, inferential, and evaluative. I used the terms “reading the lines,” “between the lines,” and “beyond the lines.” Students found that asking literal questions based on the text did not lead to interesting or lengthy discussions.

Finally, a month into the project, I began having students facilitate their literature discussions. Student groups met twice a week with me and twice a week without me. It is important to note that these discussions lasted only...
ten to fifteen minutes out of our total two-and-a-half-hour literacy block. The role of facilitator rotated among members of the group, so students were responsible for facilitating a discussion about once a week.

Like many explorers, I sometimes wandered off course as a teacher-researcher, but I never completely lost my direction. The dialogue from the following literature discussion fulfilled my vision for student-led discussions:

Title: The Flunking of Joshua T. Bates
Author: Susan Shreve
Student Facilitator: Taylor
Group: Taylor, Zack, Devin, Adrian

Taylor: Why do you think that Joshua said, "This is the worst day of my life"?
Zack: Because he has to repeat third grade and his teacher is a military tank.
Devin: Josh’s sister is making a big deal of it, Tommy Wilheim is going into fourth grade and Josh is smarter.
Taylor: Some of his friends are making fun of him. Would you guys like to be in Joshua’s place?
Adrian: No, my sister would make fun of me.
Taylor: Well, I’ve been through this, I had to repeat a grade.
Devin: How did it feel?
Taylor: I was mad. I wanted to go into second grade. Now that I’m in a higher grade I feel better.

It was fascinating how the four boys discussed the literature. The conversation was very natural and free-flowing as one idea led them to the next. All four boys participated reflectively, and they truly listened to one another. Their conversation shifted from a literal interpretation of the book to a more evaluative level. In the beginning, Taylor used a quotation to initiate the discussion, and Zack replied with a literal response taken directly from the text, yet by the end of the discussion they had shifted from the literal text to a more evaluative level when Devin asked Taylor what it felt like to repeat a grade. This was also the first time a student facilitator used a quotation from the book to prompt a discussion.

It must have been a safe environment for Taylor to share that he had stayed back. This is not something that he had shared before with the class. Kathy Short (1990) has written extensively about the strong sense of classroom community needed for student discussions involving text. Short suggests that classroom climate has a significant impact on students’ willingness to share their ideas with their peers. Margaret Anzul’s (1993) research also sheds light on Taylor’s personal disclosure. Anzul found that
“making connections between literature and other life situations became increasingly common for the students as they became deeply absorbed in stories” (194). This intimate and very personal example of Taylor sharing that he had stayed back showed me the importance of kids reading literature with which they could connect on a personal level. Harste, Woodward, and Burke (1984) have gone so far as to define learning as a process of making connections in order to make sense of our world. The personal connections and inferential conversations that students engaged in about literature had more to do with past personal experiences than with their developmental reading stages.

**Growth as a Teacher-Researcher**

As a researcher, I was constantly rereading field notes, talking to students, and making changes to our student-led literature discussions. Several themes emerged from my field notes, student reflections, and student interviews. I found that students didn’t like interruptions made by their peers during discussions. They expressed that it was important to stay on track during discussions, and that everyone should have an opportunity to participate. Student facilitators tried to engage their peers with comments like, “What do you think, Kathy?” or “Have we heard from everyone in the group?”

When I started this project I knew that modeling would be integral to the success of student facilitation. However, I was not sure how to approach incorporating this type of instruction. Students told me, through interviews, that they learned to “facilitate by watching, listening, practicing, and through the teacher.” Students also expressed that they would like to become better at facilitating and learn to write better questions. “Good questions make good discussions,” they said.

Since students told me that they learned to facilitate by listening, I decided to incorporate the use of a tape recorder into the student-led discussions. Students began to tape-record and play back their discussions each day. Students relistened to their discussions and processed what went well and what they wanted to work on as a group. In time students created a reflection form that guided the facilitator’s notes as the group processed the discussion and set new goals (see Figure 5.17).

The reflection forms indicated that students felt that they were doing a good job discussing the literature but that they needed to work on not interrupting and “talking over” each other. I talked to the whole class about this problem, and together we brainstormed solutions. Students decided to pass the tape recorder among group members. They agreed that the one who spoke would hold the tape recorder. I was amazed at the effectiveness of this strategy. Once this idea was implemented, the pace of the discussion
![Reflection Form](image)

**Figure 5.17 Reflection Form**

<table>
<thead>
<tr>
<th>Facilitator:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Title of Book:</td>
<td><em>The Hundred Dresses!</em></td>
</tr>
<tr>
<td>Date:</td>
<td>3-26-96</td>
</tr>
</tbody>
</table>

1. What went well about the discussion?

*We did not talk over!*

2. What did we learn new about the book that we didn't know before?

*Peggy was the one that was mean!*

3. What do we want to work on?

*We need to stop gerbing the reader!*

4. How do you feel as the facilitator today? Why?

*I like the way I tell the questions and then I have the answers. I do not know?***

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...slowed down and students started responding to one another by name: “Elizabeth, I agree with you but ...,” “Tom, I can add on ...,” and “Yeah, Nick ...” As a result of this process, students stopped talking at the same time and began to listen to each other.

Students also started asking to listen to their discussion tapes during independent reading time. My initial instinct was to say no. I wanted to keep the tapes as part of my research, but eventually I stepped back and followed the students’ lead. I soon set up a box of literature discussion tapes at the
listening center. Once again I watched in awe as students listened again to literature tapes and talked about past discussions. The tapes provided students an opportunity to revisit stories long after we had finished with the book.

The tape recorder became an integral part of preparing students for literature discussions. I have witnessed students listening to themselves and reflecting on ways to improve their discussions. The tape recorder enabled students to process their literature discussions and helped them to grow as facilitators and participants in student-led discussions.

As I continued to observe student-led discussions, I wanted to know how students perceived themselves as facilitators in comparison to my field notes. I decided to create a sociogram, after asking students who they would like to facilitate their literature discussions (see Figure 5.18). Students identified classmates who were truly able to initiate group discussions, and not just the “popular” kids in the class. Students also filled out an inventory that asked them questions about student-led discussions (see Figure 5.19). The inventory asked students to name who they thought was a good facilitator and to explain why. Susie wrote, “Beth is a good facilitator because she asks good questions that lead to a conversation.” Dan wrote, “Tom has good questions. Some of his questions make us look in the book.”

I enlisted students as co-researchers as a way to collect insights directly from students. This role rotated among members in the literature groups. It was a chance for students to take field notes during actual literature discussions. Most student co-researchers tried to capture the actual class discussion. One co-researcher, Devin, wrote in the journal, “Zack thinks that Josh is having fun, Taylor said that we didn’t know what Mrs. Goodwin looked like in the beginning. Adrian thinks Mrs. Goodwin is nice.” Students also noted what they thought were “unacceptable behaviors.” A few examples are “Dan is talking,” “Devin and Cindy are arguing,” and “Mrs. Allen isn’t paying attention.”

A student co-researcher was also used periodically to review my data. Zack wrote the following upon his review of my field notes: “A lot of interruptions. The people who were facilitating were well prepared. Members of the groups were active listeners when a member of the group was facilitating. There were a few arguments.” The concepts that Zack pulled from the data were consistent with my observations.

Several months into the project, I started to notice several key words recurring in my notes. I began to code my notes according to these words and eventually grouped them together under broader themes. For example, any time a student stated a feeling such as “happy” I would code it under the theme of “self-esteem.” I began with a list of twenty key words found in the raw data, then narrowed my focus down to two themes. In the end, I identified the following themes as student outcomes that were woven throughout the study: students’ growth as readers, and students’ social growth.
Students' Growth as Readers

Students were convinced that discussions led by students helped them to understand the book better. Kirsten said, “When students facilitate, it’s kids talking to each other and we can relate and understand each other.” Rosenblatt addresses the issue of the “generation gap” that exists between students and the teacher in her text Literature as Exploration (1983). Rosenblatt states, “In many cases there is an unabridged gulf between anything that the student might actually feel about the book, and what the
teacher, from the point of view of accepted critical attitudes and his adult sense of life, thinks the pupil should notice" (61).

My field notes show that students probed on a literal level and beyond. Students began to recognize that a literal question did not lead to a long discussion. I think students wanted lengthy discussions so that they could remain in control longer. Toward the end of the project, I heard members of the literature group try to help the facilitator reword his or her question if
it simply required literal recall from the text. An example was during a discussion of the book *Owls in the Family* (Mowat 1961). Emily asked the group, “What is the name of the owl in the book?” She had not even finished saying the question before two students interrupted and said, “Emily, that is not a good question for discussion. Why don’t you reword the question to ‘Why do you think he named the Owl Wol?’” Anzul’s (1993) research also supports the notion of higher levels of student thinking. She found that when student talk increased in the classroom, students spontaneously achieved and sustained higher levels of thinking.

The higher levels of thinking that students engaged in during student-led discussions was also evident in their written responses to literature. Written responses often reflected students’ personal connections to the text. Students also used their responses to pose questions and make new predictions about the book. While reading the book *My Father’s Dragon* (1948) by Ruth Gannett, Mark wrote, “I think that he will meet more things maybe like gorillas, monkeys, whales, and more! I also think he will get in trouble for bringing the dragon home! I wonder if he’ll get to keep the dragon?” The written responses provided an opportunity for less vocal students to share their connections to the text. The quality of written responses improved for both the vocal and less vocal students as student-led discussions continued.

**Students’ Social Growth**

Student facilitators were well prepared. Very rarely did a student forget to write a question. If that was the case, I would take over and facilitate the discussion. One student told me, “Being a student facilitator made me more responsible because I had to take extra time and prepare a question. I had to really understand the reading.” Anzul’s (1993) research supports this finding: “As children learned to take more responsibility for their own discussions, they also became more adept at marshalling reasons to explain their interpretations” (201). Students truly explored the text and characters when they were responsible for facilitating discussions.

All but one student wanted classmates to facilitate literature discussions. Kirsten wanted the workload to shift back to the teacher. Kirsten said, “Writing questions and preparing to facilitate is extra work. I would rather have the teacher do it.” A very fluent reader, Kirsten was quite articulate during literature discussions, but she did the minimum to get by. Student-led literature discussions required her to take more responsibility for her own learning than she wanted to do.

Many students told me that facilitating made them feel happy, good, or important. Feeling important was an essential element in this project, since I am always looking for ways to help students gain self-worth. The words
that touched me the most were from Peter, a developing reader who spent most of his day sketching or looking out the window into another world. He was quiet and almost invisible at times. He was an isolate, not recognized by any other classmates on the sociogram (Figure 5.18). When I asked Peter how he liked facilitating, he spoke right up without hesitation and said, “It makes me feel good because everyone pays attention and listens to me. Everyone chips in on the discussion.” It was evident during my talk with Peter that the role of facilitator made him feel good about himself. I never realized how important it was to Peter to be heard by his classmates. So often he faded into the woodwork of the classroom, as if he wanted to go through the days unnoticed.

Students stated over and over again that classmates listened to one another during literature discussions. They also noted when they felt peers were not listening in group. When students facilitated literature discussions, there was almost 100 percent participation even though students were not designated a variety of roles (Daniels 1994). Students also participated in discussions by referring back to the text to support their opinions or used the text to check other student comments.

**Final Reflections as a Teacher-Researcher**

Working through this project was a wonderful learning experience. I learned that you can’t predict the path of your research before you start collecting it. I balanced the roles of researcher and teacher as I worked to implement student-led literature discussions. I worked through the mechanics of data collection and notetaking. The inventories, field notes, and student interviews provided insights on how I could best support student-led discussions. I have answered the questions that I set out to explore but have formulated many new ones along the way. I feel that I have evolved and refined my skills as a teacher-researcher. I have learned that researching is exploring the unknown. It’s like taking an afternoon drive with no destination in mind.

The most significant outcomes of the project were in terms of student growth. Students made gains in reading comprehension and in their social development. I found that student-led literature discussions made students responsible for their learning. The format provided an opportunity for children to select topics and direct their own discussions. During student-facilitated discussions, children made personal connections to the characters and events in books. Kids discussed and connected to literature beyond the literal text when they became emotionally involved in the book.

I feel like I have just returned from a great adventure where many unknowns were discovered. As I reflect on my process as a researcher, I am
reminded of the following quotation from Carl Rogers (1983), which captures what I think it means to be a teacher researcher: "To free curiosity; to permit individuals to go charging off in new directions dictated by their own interests; to unleash the sense of inquiry; to open everything to questioning and exploration; to recognize that everything is in the process of change" (120).