

INTRODUCTION

GETTING STARTED AS TEACHER-RESEARCHER

There is no doubt about the fact that teachers who research their own practice are and become better practitioners. But how does one do research as a teacher? This book is for those perplexed by this question. Once teachers have decided that they want to do research, a second question poses itself: How does one get started doing research as a teacher? Given that you, the reader, have picked up this book means that you already have at least some interest in the topic and that you may consider doing research in your own classroom or, together with a colleague, in his or her classroom. For many individuals, being enrolled in a M.Ed. or MA in education program means *having to do* a project or a thesis, which generally requires graduate students to investigate something of their interest or something that leads to the generation of knowledge that interests others in the research community. Some individuals come to be interested in, and want to find out more about, teacher-research while they are enrolled in a teacher preparation program that emphasizes the idea that teachers as professionals *ought to be* interested in improving their own practices and therefore do research. For still others, as it has been in my own case, the interest in research may begin with the interest of becoming a better teacher. I was not so much thinking about doing research that meets the approval of other researchers and some research community. Rather, I was using teaching techniques that I had been reading about but which did not appear to work in my own classrooms. One of these techniques was *concept mapping*—some also call the technique *mind mapping*, yet others use the term *semantic networking*. I present the research I conducted in chapter 1, but, to get us started into this introduction, I articulate here just enough about what has happened.

In 1985, while teaching in a small Newfoundland community, I had bought a little book entitled *Learning How to Learn* (Novak & Gowin, 1984). I had been experimenting with a variety of student-directed laboratory inquiries but noticed that the students were not learning as much as I wanted them to. When I saw the book, I realized that my students might need to reflect more on their own understanding rather than just design and conduct their research. The authors of *Learning How to Learn* proposed two types of mapping: (a) concepts and (b) experiments that were to help students to think about their thinking. In the process of mapping, students are to learn how to learn. The technique I was particularly interested in was concept mapping because I saw in it a way of getting students to think about those concepts that the curriculum prescribed. I had already practiced something like it when I started teaching—at which point I had not taken teacher preparation courses—to organize my ideas about how all the concepts in my eighth- and ninth-grade courses related, how to find out how these concepts were connected, and what possibilities there were for sequentially ordering the different units

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throughout the year. In *Learning How to Learn* I had found specific instructions to teach the technique to students of all ages so that they could use concept mapping for their own benefit.

The technique asks students to write the concept words on pieces of paper (sometimes I already prepared those labels for them) and then to order them hierarchically. Once the concepts are ordered from most general to least general (most specific), students draw pencil lines between them and write one or more words on each line that connects two concept words. As proposed by the authors of the little book, I had my students do these mapping exercises individually. When they did so in class, I could see how difficult they found this type of activity. Although I tried the technique with my students repeatedly and over several years, it turned out not to be as useful as I hoped it to be.

Then, in 1989, I had the idea of putting students into groups and to ask them to produce, in the course of a 60-minute period, maps containing between 20 and 30 terms. I also had the idea of using a camera to record them so that I could subsequently view the tapes to better understand how students were going about the task, what their main difficulties were, where any hang-ups interfered with their learning, and so forth. To test the approach, I first asked a number of students whether they would do a concept map after school, in the science laboratory. When I figured out how to set up the camera, what camera angles to chose, and so on, I began to extend my investigations into the normal classroom situation. Whenever I did a concept mapping exercise, I recorded one group of students. But because I was teaching five classes—three eleventh-grade and two twelfth-grade physics courses—I was able to record many tapes that I subsequently watched and analyzed. In this way, the topic of my first teacher-researcher investigation had arisen from the difficulties I saw my students having and from my interest in devising strategies that would help them to learn how to learn using concept maps. The questions I had arose with the topic: How do students produce a concept collectively? What do individual students retain after having participated in a collaborative session? How do students settle differences? I later learned that asking the right question frequently is more difficult than it had been for me when I started my teacher research.

FINDING A (THE) TOPIC, RESEARCH QUESTION

In the course of teaching research methods courses for the past 15 years and having assisted my faculty colleagues in designing studies for which they sought funding from federal agencies, I have come to understand that asking the right kind of questions is not as apparent as it looks. Here I understand a *right* question to be one that usefully directs the research I design and conduct. Many teachers find it easy to define some general area of interest, like finding out more about how students actually make a concept map or how students actually design an experiment, set up the equipment, collect data, and then interpret the results, and write a report. But defining an area of interest does not yet constitute a research question: how you frame the question that actually drives what kind of research you conduct. That