

# FACULTY FOCUS

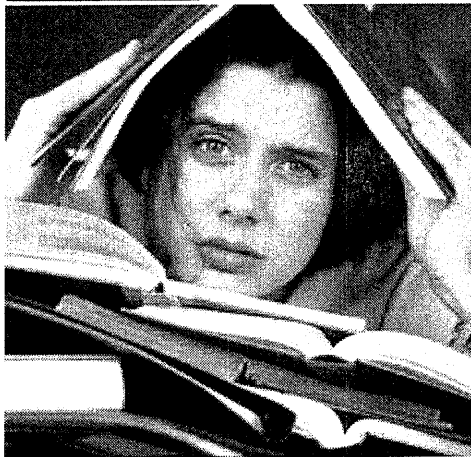
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## Why Don't We Teach the Telephone Book?

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I don't get it! Every fall the new telephone book arrives, filled with lots of information and with loads of new numbers, so why don't we design a class that covers this material? Nowhere do we teach this information. Why don't we expect folks to study the telephone book and memorize the numbers? Grudgingly, I am forced to admit that no real justification for memorizing telephone numbers exists, as tempting as it might be for me to teach this course.

For one thing, there are just too many numbers. Back when there were only a dozen or so, it might have been possible to memorize them all—not that it would have served any existential purpose, but just as an exercise. Now there are way too many. My critics tell me the real problem is that the telephone book is pretty useful as a reference. It is well organized and easy to find a number when you need it. In fact, it turns out that most people have no interest in memorizing telephone numbers and only learn those they use regularly, although speed dial can remove even that reason. Basically, all that folks need to know is how to use a phone book.

It is unfortunate that the same logic is not applied to many of our science courses. I write about science because I know it firsthand, but I suspect this applies to many kinds of courses. First, our knowledge of biology (and many other fields) has increased tremendously over the past few decades, well beyond what any individual can hope to master, yet we continue to try to teach “all of it” in the standard biology curriculum. Sometimes there's no more justification other than that “we know it.” A second problem, however, is that people generally want information when they have a need for it. This means that it is difficult or impossible to get students to want to learn course material if they do

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not see a practical use for it. Unfortunately, many college and university courses cover information that most students do not need to know and will never need to know, although many of my colleagues find that very difficult to admit.

Many upper division courses contain information that is taught for no real purpose, at least not a purpose that is relevant for the students. These courses are taught for not-very-good reasons such as the department has a faculty member with a specialty in that area. I have sat in on many upper division courses and wondered why the instructor was covering information that I did not know and that I later discovered the instructor only learned the day before while preparing the lecture. If practicing scientists do not know these details, why should undergraduate students be forced to learn them?

Louis Pasteur said, "Chance favors the prepared mind," and we do not know just what information will be important to us in the future. But I suggest that sentiment argues against courses that teach large amounts of factual information. Rather, we want our students to be prepared to deal effectively with whatever information—uncovered by chance or research—comes their way. Accordingly, we should not teach science (or other subjects) as though every fact is worth knowing, any more than we would use a telephone book to help us memorize numbers. Textbooks are full of useful information and handy to have around when you need to look up a fact. Memorizing facts is not as important as knowing how to ask questions and how to synthesize information to formulate an answer. When we plan out our courses—and our entire curriculum—we should keep this in mind: How much of the information that we are going to cover do the students really need to know? How much time do we devote to making sure students know when they need a fact and how to look it up? Finally, and most important, do our students know what to do with the facts once they find them?

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