Indeed, few of those who now loudly proclaim that cognition and learning are context-bound have followed the implications of this assertion through to its inevitable conclusion.

—David Lohman, “Encouraging The Development of Fluid Abilities in Gifted Students”

The research on transfer and on education that I have presented in this book, along with my experience teaching, have forced me to no longer do “business as usual” in the classroom. Indeed this research and my experience has led to a paradigm shift in my educational philosophy and practice. For lack of a better term, I call this shift deep-context teaching. In brief, deep-context teaching involves addressing the conditions surrounding a subject matter, in general, and students’ expectations, beliefs, and values relating to learning, in specific. These deep contexts function as “filters” through which students “hear” and evaluate information. Deep-context teaching is directly related to motivating and readying students for deep learning (see chapter 7). Though this concept may have a familiar ring to it, the sound of deep-context teaching is played in a different key and is arranged differently from the concept of context as typically discussed in the literature. Certainly, as teachers, we include a certain amount of contextual and motivational issues in our teaching. Deep-context teaching, however, is more programmatic, deep, and far-reaching.

One of the most pervading themes throughout this book has been the importance and effects of context on transfer, beginning with the long established fact that learning is all too often welded to the context or situation in which it is learned (see chapter 1) and that transfer is conditional upon culture and other contexts surrounding it (see chapter 8). The importance of context on learning, then, is certainly not novel. Nor is the term deep scarce in the
educational literature. We frequently find the phrases deep processing, and deep learning. In contrast, we seldom find the phrases deep context, or more infrequently, deep instruction. Unwrapping and integrating these latter two concepts leads to deep-context teaching.

Once again, explaining and applying this concept, I will be doing so from the educational context I know best: the college classroom, more specifically the first-year introductory psychology classroom. This educational context is not at all different, however, from the later years of high school and from other adult educational contexts. The difference is one of degree, not a qualitative one. Deep-context teaching, then, refers to addressing the counterproductive erroneous (a) knowledge, (b) beliefs, (c) expectations, (d) values, and (e) assumed implications. (f) about a subject matter, or (g) about these contexts are not addressed, learning may, at best, be shallow and not lead to significant transfer. In addition, there is an important aspect of deep-context teaching that pertains to teachers. Let's look at deep context a little more closely.

DEEP-CONTEXT SUBJECT MATTER

I first began thinking about deep context years ago when it became clear to me that something was interfering with students' learning and understanding (presuming that they studied the material). It took me a while by listening carefully to students' questions and by seeing how they incorrectly answered test questions despite my having spent considerable time on the test material. It finally dawned on me that students were coming into my psychology courses with all manner of erroneous pop-culture beliefs about psychology (see chapter 9) propagated by the mass media. They wouldn't often volunteer these beliefs, however, so I had to ferret them out. I found that I had to address these erroneous notions that students had in their heads about psychology before I could teach, and before they could learn scientific psychology.

Then I came across the research in science teaching showing that the erroneous theories that students come into the science classroom with block their understanding of science concepts. Studies have consistently demonstrated that naive or beginning physics and biology students hold fundamentally erroneous theories about these subjects that interfere with their learning and transfer (see chapter 9). This is the essence of what is termed negative transfer. The everyday theories students possess act like the antibodies in the immune system, which function to neutralize and eject foreign material. Deep-context teaching thus involves ferreting out and teaching to this deep context. On the basis of these two realizations, it became clear that there were other deep-context issues that I had to confront in order for me to teach effectively, and for students to learn (effective teaching doesn't necessarily result in student learning).

Whether discussion or lecture, teaching remains largely centered on the subject matter, with an eye to contexts of its application. This is the traditional approach that most of us inherited from a different time and place, a time and place where college students came to the classroom (a) with a different educational background, and (b) with different contexts in their heads. Comparatively speaking, prior to the middle 1960s, students came into the high school and college classroom with their minds a tabula rasa. Since then—in many ways—the generations of students raised on TV come into the classroom with much more contextual awareness than the generations prior to the middle 1960s.

Today's student is much more aware of political, ideological, and other pop culture issues (however distorted). In addition, prior to the middle 1960s teachers—and especially college professors—were seen as "objective" sources of information. The subsequent TV generations "know better." The TV and postmodern student is acutely aware of identity politics, gender issues, and of the situated nature of knowledge—though they may not know these labels. Yet, most of us still teach in a relatively traditional mode as if their minds were a blank slate; as if these deep contexts didn't exist. The lecture/discussion mode directed almost exclusively at the subject matter is still the predominant method of teaching, at least in the college classroom. Yes, questions and discussion in class may automatically address some of this deep context, but, by and large, even discussion of an issue leaves most deep context untouched (see below).

Let me offer an initial paradigmatic example of the distorting filtering effects of deep context, expectations, and values that students often bring into the classroom. On several occasions I have asked students to complete a voluntary and anonymous questionnaire. I pass this out prior to any lectures and typically to first-year students who have not had much opportunity to inquire of other students about me. The final two True/False questions I ask are (1) Your instructor is probably a Republican, and (2) Your instructor is probably pro-life on the issue of abortion. I do explain to them that I know they don't have any information about me, but to make a choice, anyway. Many students—sometimes a majority—answer true to both these questions, others answer true to one of them and false to the other (in fact, both are false). Without the benefit of specific information about me, students are, of course, left with reasoning on the basis of their deep-context beliefs about what I represent as (a) a tweed sport coat-wearing, (b) older male. The point is, unless I address this deep context, it will influence or filter the instructional material that I present in class.
Coda: Deep-Context Teaching for Transfer

One other example. Often what the students assume is implied in what is said can function as deep context. Sometimes students are not directly aware of these assumed implications; sometimes they are. I was talking about the decrease of American students majoring in hard subject areas such as physics, math, and engineering and the increase in these areas of international students, especially Asians and East Indians. I started to transition to another topic when a student raised her hand and said, "I don't think this is because they are more intelligent than we are!" The student assumed that this was an implication of what I had said. It wasn't, of course. In any case, somewhere as deep context, she either had heard the idea before or had somehow (erroneously) deduced that this was the implication of what I had been saying. In teaching today I have found few other issues involving such deep-context teaching implications as race and gender. Deep erroneous implications of a subject, then, may function as deep-context interfering with learning and transfer. These make excellent models of understanding deep contexts.

Though I can't address every possible implication of what may function as deep context, one can be aware and directly address some of the more "pop" notions of a subject that students may have in their heads. Deep erroneous implications of a subject, then, may function as deep-context interfering with learning and transfer. If instructors don't know what's in students' heads, they are not providing the contextual conditions necessary for them to effectively learn. I should note, too, that students may be only peripherally aware of the deep contexts that are operating in the background; for other deep-context material they are only too aware.

**POP CULTURE AS DEEP CONTEXT**

In chapter 8 I presented some of the research showing that cultural and other specifically situated contexts differentially impact learning and transfer. The research on cultural influences on learning mostly addresses the different ways cultures conceptualize phenomena that may interfere with learning. But I am not just talking about different cultural understandings of phenomena, I am talking about cultural norms and beliefs that interfere with deep learning. Indeed, I am talking about a pervasive contextual atmosphere of counter-learning. In chapter 8 I mentioned the long-recognized norms in the United States of an (a) anti-intellectual cultural climate, and (b) an overly "pragmatic" or instrumental approach to learning; to these I now add (c) certain religious beliefs.

It's not secret that the U.S. culture is at the very least ambivalent about deep learning and thinking. In our current pop culture, to call someone an "intellectual" is meant as an insult. Then, of course, we have other insulting terms for people who learn and think: We call them eggheads, nerds, geeks, etc., who are out of contact with the "real" world. Tell Microsoft's billionaire-geek Bill Gates, that he is not in contact with the "real" world. We glorify sports and entertainment figures, but not people who think. Oh, we throw around Einstein's name every now and then, but even these references are short-lived because they are (rightly) seen as so anomalous and unreachable that they are not meaningful to the average person. Our culture also discourages deep learning and thinking by defining "useful" as that which can immediately be used (recall in chapter 6, the section entitled, "The Usefulness of Useless Knowledge"). These cultural antilearning contexts aren't lost on students; they hear, see, and incorporate them only too readily.

Moreover, students come into our classrooms with certain religious beliefs that interfere with learning and transfer. For example, in terms of holding a Christian belief in the literal biblical account of Genesis and Creationism, how is it possible for a teacher to teach, and for a student to engage in deep learning, about Darwinian evolution? The answer is, that though it may be possible, it's highly unlikely for most people. Galileo (1564-1642) and others have apparently been able to separate their religious beliefs and their science. And in terms of the so-called New Age spiritual beliefs which many students have in their heads, believing that crystals under their pillow will cure their illness, how is it possible to teach scientific concepts and principles about physical health and the findings of scientific psychology? Again, it's possible, but unlikely.

Without at least addressing these deep contexts, any learning that may occur will be superficial and nonmeaningful. The learning that does occur will be either by rote, or be so similar to sheer rote learning we won't be able to tell the difference. As a result, it will not be integrated into the students' knowledge base and cognitive apparatus and thus will not transfer very far. Without addressing these cultural deep contexts, we are, in effect, reducing education to a form of training where the learning is merely "tacked on" to the student, and is, at best, tucked away in some restricted mental module and rarely seen again.

**INDIVIDUAL EXPECTATIONS AS DEEP CONTEXT**

In addition to cultural norms, there are other deep-context expectations about learning that students carry around in their heads that inhibit learning. Somewhat arbitrarily, I have separated cultural norms and individual expectation about learning. Strictly speaking, these expectations also come from culture and they get massively reinforced every day. Another reason for addressing deep-context expectations is that thwarted expectations lead to negative reactions. So we must head them off at the pass, so to speak.

Many students expect that if they are majoring in, say, physical therapy, that they shouldn't have to suffer through a lot of courses like history or psy-
chology. So, implicit in many classrooms are students silently asking themselves, “Why do I have to learn this stuff?” Deep-context teaching suggests that we have to answer this unasked (sometime even asked) question. We have to show students that deep learning takes discipline and lots of hard practice (see chapter 10). Another expectation among many students is a sense of entitlement that learning should be easy and instant, like a video game. It isn’t, of course.

There are other deep-context issues, but this Coda is not the place to detail them. However, there is one that I must note. Students often expect that the information and views that they hear in classes are “just your opinion.” Students are bombarded with multiple views of issues and ideas on TV. Many have no notion of how to evaluate what they are hearing. For example, students sometimes say to me that Professor X disagrees with what I might be saying about a psychological issue. As it turns our Professor X is from the humanities department. In other words, students often don’t know or appreciate the difference between what their English teacher says about human behavior and what biologists and psychologists may say.

This deep-context expectation about assessing information (i.e., belief) has to be addressed. I typically speak to this issue in my introductory material on scientific methods, pointing out the difference between literature, philosophy, and science. Certainly I wouldn’t presume to tell students something contrary to Professor X’s analysis of Lawrence Durrell’s novels from his Alexandria Quartet (though it’s one of my favorite pieces of literature).

There are other deep-context issues and conditions that impinge upon learning in the classroom that teachers can’t do very much about. These contexts include the effects of TV on attention span, personal problems, having to work (perhaps full-time) while taking classes, squeezing in night classes until nine or ten o’clock. Then there are still others like the campus culture and the antilearning dorm life that we may possibly have some minimal influence on.

Deep context is crucially important because it filters how students encode the information they receive, which in turn influences how they are able to store it, retrieve it, and apply it, all of which influences transfer (see chapter 7). If information is inappropriately filtered, it doesn’t lead to the encoding of a valid knowledge base. And as we have seen (chapter 6), without a valid knowledge base valid transfer is not possible.

**DEEP CONTEXT AS DEFAULT POSITION**

I mentioned in chapter 1 that when students are given different forms of the same question on an exam that has been constantly reinforced with multiple examples throughout the entire course, they frequently fail to transfer their knowledge to virtually identical questions. From a transfer perspective, this is not surprising, as we have known for some time that learning tends to be welded to a particular context. Now, just as new learning is welded to a context, deep contexts—or old learning—tends to operate as a default position when thinking and reasoning and when answering test questions if the new learning hasn’t been encoded (read: learned) appropriately. From pilot research in my classes, it seems that (a) when new learning about psychology contradicts deep-context pop psychology, questions are answered from the default position of pop psychology knowledge; and (b) when new learning about psychology is not encoded appropriately, the default position is used to answer virtually identical questions in which either the wording has been changed slightly, or for transfer questions where the subject or content has been changed. Here’s an example.

When I teach about the various problems with sampling procedures used in research, I use particular examples to illustrate these problems. If this knowledge about sampling problems is learned, questions that are based on these particular examples will tend to be answered correctly. But when “transfer” questions about sampling use other examples, especially from pop psychology, the questions tend to be answered from student’s deep-context pop psychology default position. In other words, new learning is to being welded to a particular context as old learning is to being a default position.

**APPLYING DEEP-CONTEXT TEACHING**

The degree to which deep context needs to be addressed, and how it is to be applied, depends on a number of factors. One obvious factor is the grade level of the student. A second is the individual level of awareness and motivation for learning. Although I first began to recognize the need for deep-context teaching in the context of increasingly inadequately prepared students, these are not the only students who benefit. Even many students who seem to be motivated and who exhibit a high ability for learning the subject material can benefit as well. I have found that these two kinds of students, however, benefit differentially. For the underprepared student, the benefit of deep-context teaching is largely an increase in motivation and readiness to learn, whereas for the higher-ability student the increase seems to be the integration and transfer of the learning.

A third factor is the degree to which deep context needs to be addressed. A fourth is how it is to be addressed in a specific subject matter. For example, there probably are not as many interfering pop cultural influences in the mathematics classroom or in courses specifically designed for a professional major as there are in general education courses, or in learning psychology. Thus, to what degree and how deep-context teaching is applied is variable.

I mentioned above that in student questions and discussion, either as part of a lecture format or as a student-centered discussion, some deep context...
CONCLUSION

There is a "kicker" involved in deep-context teaching that I haven't yet mentioned. The kicker is us teachers. To one degree or another, many of us are afflicted with the same erroneous knowledge base, expectations, and cultural values that impact upon subject matter and learning. We are a part of, and subject to, many of the same forces that impact our students. Thus, trying to change the deep context of teaching and learning is somewhat like trying to build a boat in midocean. Somehow we need to create a dry dock in this ocean of countercontexts. The problem is that many of the educational institutions, as well as the culture at large, mitigate against change. We need to deal with this context on both a personal and a professional level.

Finally, I often make the following analogy from my experience conducting T-groups: In order for a group to be productive, leaders often have to "unfreeze" the group. What this means is forcing some conflict and awareness of problems and issues that the group doesn't want to deal with. Like unfreezing a group, deep-context teaching is unfreezing students' minds. All of these deep contexts tend to create a certain state of mind in students. Our job as deep-context teachers is to drive students out of their minds.

Notes


5. Ibid. p. 49.