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ABSTRACT

This paper discusses how to make students effective, lifelong learners. It describes several ways of learning: reading, listening, observing, talking, and writing. According to the author, five elements are needed to become a good learner: (1) motivation; (2) a knowledge base that provides a conceptual structure for further learning; (3) skills for further learning; (4) strategies for efficient learning; and (5) metacognitive strategies. For each of these elements, the author makes specific recommendations. For motivation, teachers can develop students' intrinsic interest in learning and teach them to evaluate their own learning to assess their work and progress. Much of organized and conceptual knowledge is up to professors to construct, but students can be taught to construct outlines and graphic representations. Skills for learning, such as practice and increasing the meaningfulness of material, can be taught, along with strategies for learning, like paying attention and "clustering" things into groups or categories. Finally, metacognitive strategies, such as planning, self-monitoring, and self-regulation, are highly important skills that can be taught to students. (CJW)

Helping Students Learn How to Learn

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What do students need if they are to become effective life-long learners?

First--let's look at the opportunities they may have for learning. What are the possible ways in which adults may learn?

Then, let's examine what they need in order to use these opportunities effectively.

Finally, how can we help them if they are to become better learners?

Those are the three topics I shall try to address in this talk.

I. Possible ways of learning

Even in this electronic age, reading remains as a major way of learning. We learn from books, newspapers, magazines, professional journals, instructional manuals. Even the World Wide Webb requires reading.

Just as important as reading is listening. While post-college learning will probably involve fewer formal lectures than characterizes most college learning, one still learns a great deal by listening to family members, friends, television and radio programs, supervisors, and fellow workers.

A third method of learning is observing. We watch other people and learn from the ways they do things. We not only learn from observations of others but also from observation of our own behavior and its successes and failures. We learn from observing

behavior on television and in films. In learning certain skills, such as high jumping, cooking, carpentry, and even mathematics, videotape may be an important instructional device.

We also learn by talking and writing. Often hearing or seeing our own thoughts can clarify our thinking, cueing new associations, making gaps clear even to ourselves. But, more important, talking and writing are important ways of getting responses to our ideas--responses that may correct, elaborate, or reinforce our ideas. Questioning, explaining, defending are all important mechanisms of learning and memory. And with the increasing popularity of e-mail and the World Wide Webb, writing is an even more important skill than in previous years.

Reading, listening, observing, talking, and writing all involve learnable skills. If we are to help students become effective life-long learners, such skills are among the basic elements needed, but there are elements that are also important; so let's examine what some of them are.

II. What is needed to be an effective lifelong learner?

Five elements:

First, motivation. It does no good to have skills if one isn't motivated to use them. While people learn all the time, there are differences between learning a basketball score and learning something that will be useful at other times and places. Our problem is not that adults don't know how to read, but rather that many don't want to read.

Second, a knowledge base that provides a conceptual structure for further learning. The best predictor of ease of learning is prior knowledge.

Third, skills for further learning. I have already discussed the basic skills, but there are skills for learning from reading, listening, observing, and writing that go beyond basic comprehension. One can comprehend and learn something, but the manner in which it is learned makes a big difference in whether or not what was learned can be remembered and used at a later time and place.

Fourth, strategies for efficient learning. There are a variety of ways to approach a learning opportunity. What works best depends upon the learner, the material, and the goals of learning. Having requisite skill is not enough if the skill is used at the wrong time in the wrong way.

Fifth, metacognitive strategies. By "metacognitive", I mean thinking about one's own learning and thinking. Metacognitive strategies include planning, checking to see if your initial plan is working, and choosing an alternate strategy if the planned approach isn't working. The currently popular term for this is "self-regulation". It can be as simple as checking an arithmetic answer to see if it makes sense or as recognizing that a paragraph is unclear and rereading it to figure out what it means.

Let's take each of these and discuss what students can learn that will contribute to life-long learning.

III. What can we teach?

First:

Motivation. We teachers often talk about motivating students. Actually people are always motivated--even if it's only motivation for sleep. The problem is not that they are not motivated; the problem is that they are more motivated for other things than for learning that will be useful at other times and other places.

How can we help them become motivated for further learning? One of the basic theories of motivation is that motivation for an activity depends upon the value or goal likely to be achieved by that activity and by the expectancy that a given activity will lead to that goal. Most people value learning, but if they feel that they are not good learners, they are not likely to be motivated for learning activities of the sort that we are talking about when we talk about life-long learning. All of us have spent years in school. We learned many things, but inevitably our learning in school is, also associated with feelings conditioned over hundreds, perhaps thousands, of pleasant or unpleasant experiences. If most of the experiences have been unpleasant, is it any wonder that those individuals may not be attracted to further learning opportunities?

What can we do to help them become motivated for continued useful learning?

First of all, we can develop their intrinsic interest in learning. Most people enjoy learning if they feel that they can learn effectively and if they see learning tasks as relating to their own lives and interests. One of the reasons many people do not engage in the sort

of learning activities that seem to us useful and important is that they feel incompetent. Thus we need to help students build confidence in their own learning ability.

One of the barriers to a sense of competence is the belief that learning ability is inherited. "If I wasn't born to be a learner, there's no use expecting that I'll ever be an effective learner.

I sometimes encounter student-athletes who say, "I'm an athlete, not a learner." Other students say, "I'm just not a math-science person." To counter these attitudes we need to teach students that intelligence tests measure abilities that are learnable. Nobody comes into the world with ready made skills for reading, writing, learning or thinking. Everyone has to learn them, and they are learned through practice.

If you want to be a better learner from reading, read a lot. You'll learn material that you read, which will increase your ability to learn more of the material; you'll increase your reading ability; and you'll also increase your vocabulary, which is a major factor in learning and thinking.

If you want to become better at math, spend more time practicing your math skills, and you'll turn out to be better at math than some of those who are now better than you at math.

And if you want to be more intelligent, practice these and other skills for learning, and you'll be more intelligent than some of those whose IQs are now above yours.

A second step is to teach students how to evaluate their own learning so that they can assess their work and feel that they are

making progress. Feeling that one is gaining skill and mastery is an important source of motivation for learning.

Third, we need to give students experiences in a wide variety of learning situations--experience that is interesting and satisfying. Although personal choice is an important motivational variable, even required experiences can lead an individual into areas that they find enjoyable but otherwise would not have attempted. For example, one classic study showed that students who took required physical education courses participated in a wider variety of recreational activities in later life than students who did not have such a requirement.

Fourth, we can teach strategies for motivating oneself. One such strategy is to list one's life goals--the things one would like to have noted in an obituary. Then if those goals are to be attained, what must be done in the next year? in the next month? in the next week? today?

Finally, students learn from models. Our own enthusiasm for learning can have a powerful effect upon students. The last issue of *Change* magazine contains reports of former students' memories of their professors 30 years after leaving college. Enthusiasm was one of the memorable qualities. One alumnus said, "I will never forget this teacher, not only for how he influenced me personally, but professionally as well. You felt his joy, you believed in his commitment to the subject because it was manifested in the very air of the classroom."

Second:

Organized, conceptual knowledge.

I understand that some of you are teaching basic skills rather than dealing with content courses; so you may feel that it is up to the professor to provide structured knowledge. You are right. Nonetheless your students will probably encounter some professors who are not very organized or who simply stress memorization of definitions and facts, and in such courses it will be up to the students to develop methods of identifying concepts and developing a framework that can serve as a basis of further knowledge. Thus teaching students how to construct outlines, how to develop graphic representations of relationships, or how to look for organizing principles in textbooks or other sources--all of these are important tools for students if they are to build on college learning for life long learning.

A *third* area that is vital for life-long learning would probably have been placed first by many speakers on this topic. That is Skills for learning.

In the preceding section I mentioned a variety of skills that are important for continued learning--reading, writing, listening, observing, thinking, as well as mathematical, mechanical and motor skills. I don't have time to discuss these individually, but I should like to point out some basic commonalities.

The first is that *skills* develop through practice, and generally that practice is more effective if there is some feedback; i.e. the learner needs to know whether their efforts are good or not so good--they need to identify mistakes as well as good elements of

what they have practiced. As teachers we can provide feedback for practice in our courses, but students also need to learn that they can get feedback from their peers as well and we can help train our students to give feedback to one another. But eventually learners must be able to evaluate their own learning; so we need to teach our students criteria by which they can judge their own progress or lack of it.

A second principle is that for many kinds of learning, it helps if learners think about what they are learning and make it their own and not something simply stored for the moment. Let me illustrate this in the area of learning from reading. One can read a chapter of a book or a journal or magazine article with general understanding but forget it within a few hours. If one wants to learn in ways that will result in memory that can be retrieved whenever you need it, he or she needs to elaborate it--to process it deeply--to relate it to other things one knows. Probably the best form of elaboration is to explain something to someone else. As we teachers know from personal experience, one learns a great deal about a topic when teaching it. Other elaboration strategies are summarizing, questioning, trying to think of relationships to other things one know--anything that involves increasing its meaningfulness. And similarly learning from writing or observation or listening will be more likely to be remembered if one thinks about it and relates it to other learning.

Thinking about what one is learning is particularly important because basic skills for learning, such as reading and writing need to be supplemented with domain specific skills--reading in social science as compared with reading in science or humanities, writing a research report vs. a literary essay or a business letter. Moving from one area of learning to another is more efficient if one has some ability to be thoughtful about likenesses and differences between reading, writing, or other skills in different contexts.

Students may have good skills for learning, but if they do not have skills for finding the information they want to learn, their skill will be of little avail. Therefore we also need to help students how to use the library and how to search electronic sources such as the World Wide Web. And perhaps just as important is to teach them to think about other persons who may have the information they need.

One of the important skills that is least likely to be taught explicitly is skill in learning in groups and from peers. The first requisite is recognizing that one is confused and being willing to ask others for help. (Karabenick & Sharma, 1994), but there are also skills of working in groups that are useful and fairly common sensical that are often not known or disregarded by students who get together to prepare for an exam. These skills are just as useful in working with groups after college as during college. Here are some examples:

1. Be sure that each member of the group knows the purpose of the group meeting and comes prepared for the task. For example, one of the most effective peer learning methods, The

Learning Cell, (Goldschmid, 1971; also described in my *Teaching Tips*) requires each member to come with a set of questions to be answered during the group meeting.

2. At the conclusion of the meeting, summarize what has been done, what needs to be done before the next meeting, and who has agreed to do what.

3. Check with each member to be sure that they agree and that they have accepted responsibility for their assignment. Don't assume that silence is consent.

4. Make sure that tasks are shared equitably.

Skills are important but skills are not sufficient for learning if they are not used appropriately. Thus we turn to strategic learning, our fourth element in learning effectiveness.

Strategies for Learning

I have already described one important set of learning strategies--strategies for elaboration or deep processing, such as summarizing, explaining, and questioning. There are also strategies for maintaining attention. Attention probably evolved as a way of insuring that human beings became aware of possible threats in the environment such as predatory animals or attacking enemy tribes. Thus attention is greatly affected by changes in the environment. Generally speaking if everything was quiet and there was no unusual movement around our ancestors were safe. If they knew they were in a territory in which there were threats their attention would be heightened to pick up even the smallest sound of a breaking twig or

a momentary movement. Thus the two factors that are most important for attention are change and motivation.

What implications does this have for learners? What can we teach that will be helpful?

If we take the principle of change, one practical strategy is to change activities briefly if one finds that one is losing the ability to pay attention to a reading assignment. Simply sitting up in an attentive posture or moving around for a few minutes or getting a drink of water will help. In a lecture one way of changing the situation from a monotonous voice is to ask a question. Another is to take more notes, and, if the material is easy, to write examples, possible applications, or references to other learning in addition to the basic notes on the content.

Note that I've given you some basic theory about attention as well as some attentional strategies. Research suggests that if learners understand why things work they are better able to adapt them and use them in new situations. So let's now turn to a little theoretical background for our next set of strategies--organizational strategies.

One of our limitations in learning is that while our brains have an unlimited capacity for storing information, we have only a limited capacity for handling information at any one time; i.e. at a given time we can only handle so many stimuli coming in or some many things to remember. George Miller, a past-president of the American Psychological Association, wrote a famous article called "The Magic Number 7, plus or minus 2", in which he pointed out that we can deal with only about 7 bits of information in a variety of

areas; e.g. we can only repeat back about 7 numbers if they are read to us one after another; we can only comprehend about 7 different objects if they are shown to us on a screen momentarily. But even though you can process only 7 random numbers that you hear, if I give you the numbers 2, 4, 6, 8, 10, 12...etc. , you can process an infinite number. The secret, of course, is organization, and among the important cognitive strategies we can teach our students are organizational strategies. Teaching students to "chunk" things into groups or categories, teaching them to look for the organization of a textbook chapter before reading it; teaching them to organize their notes of lectures or reading and perhaps to use graphic organizers--all of these can contribute to learning effectiveness.

Metacognitive strategies.

The fifth set of elements in teaching students how to learn is metacognition. Metacognitive strategies include

Planning

Self-monitoring

Self-regulation

We can help our students to be more effective learners if we teach them to take a few moments before starting a learning task, such as a reading assignment, or attending a lecture, to think about how they can best approach it. They need to plan.

If it is reading, they need to think, "Should I look over headings or the conclusion before beginning to get an idea of what the reading is all about?" If it is a lecture, the question might be,"Should I do some reading or review before the lecture so that I

will be better able to organize what the lecturer says even if the lecture is difficult or the lecturer goes too fast?

One important planning habit is to develop a time schedule for achieving one's goals for the day, or the week, or the month.

Once the learning is underway students need to check themselves to be sure their plans are working--self-monitoring. If they are working on math, does the answer make sense? If they are reading, do they understand the material well enough to explain it? If the answer is "No", they need to go back and review what they have done or seek help from someone who does understand. (Self-regulation)

Conclusion

We can only hope to get students started in the areas I have outlined, but if students actually get some experience while under our supervision, they are likely to find that their performance improves. One of the greatest incentives for continued development is the sense that one is making progress. Thus increased competence feeds into increased motivation for learning, and increased motivation leads to increased practice and competence.

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