Teachers and students – or is this a learning hospital or a teaching hospital? – or good teaching is fine but great teaching is entertainment

How would I learn the subjects that I have learned if I had another chance? This question made me think about the tribulations of learning. A student is someone who is curious – someone who learns no matter what. A student learns because the thrill of understanding is exciting. Are students born or made? Perhaps being curious is innate, but we have to believe that students can be made, otherwise why have school?

The essentials of learning are language, mathematics and writing. The important factors in learning are what we see – words, pictures, geometrical designs – and hear – language and meanings that are symbols of ideas. Primary school and home are crucial in setting the stage to a lifetime of curiosity.

Learning is problem solving, and defining the problem is the key. This is opposite to the way that we usually learn, which is to spend almost all of our time getting the answer that somebody else says is the right answer. Spending most of the time defining the problem makes the answer appear easily. Of course, students cannot spend a lot of time on the problem because they live in an environment that is isolated and unlike the real world. The student's world is without real problems, except perhaps for examinations and sex. So an aggressive student with a hunger to learn is keen to enter the real world as soon as possible to begin problem solving and to try out a fledgling brain to see just how good it is. In learning medicine, however, the problem is that students take a long time to get to the problem-solving stage and work in a very structured environment. This, unfortunately, can lead to a desire to please those at a higher level rather than to question basic assumptions. There are those who understand the idea that 'it will take some time to get over your education'; those people will be more objective than most about the negative effects of a good education.

Another learning idea is the conflict between 'lumpers' and 'splitters'. A lumper recognizes similarities and patterns and groups them together. Splitters see differences and see a world full of detail. A splitter would be better at playing *Trivial Pursuit*. I think that being a lumper is best. It doesn't prevent you from learning detail but keeps the detail at the

bottom of the page where it belongs. Lumpers quickly see how easy everything is because they see woods not trees.

The Socratic method has its uses, but few students are lucky enough to have a teacher who teaches this way from a young age. Further, it can be an excuse for the teacher to be lazy and have the student figure everything out from first principles. I think that the teacher's duty is to demonstrate how easy a subject is. Anyone can show how complex something is because the student already thinks that the subject is difficult because he doesn't understand it. The teacher's job is to show that the basic principles are within the student's ability to understand. For this reason, I think that the teacher should present the student with the entire subject written in clear language, simplifying the jargon that confounds students. This would allow those who want to study at home to keep up, and would eliminate note-taking at lectures, which is the single biggest impediment to learning ever invented. Note-taking prevents listening to the teacher's flow of thought explaining the notes that he or she has written and given out. Poorly organized, vague notes must be rejected. All new words should be defined and an effort made to describe concepts and principles in simple language. Almost any concept can be described in one page, and if it isn't, the student should go back to the drawing board. A medical vocabulary is large, but the key is learning word roots. As the same roots keep showing up, words can be translated and even new words coined.

Medical school shows us some of the problems that we are going to have in the future and shows us acceptable ways to solve them. The problem for students is that they don't really have the problem yet because others are there to solve it for them. We are taught to solve problems in teams, but it is tempting to transfer problem solving to someone else or memorize somebody else's answer to a problem. The student should write out the problem until the question is clearly defined. All assumptions should be written out. When students see assumption that they have never questioned before, suddenly new answers appear because time has been spent on the problem, not on the answer.

Students are often surprised that the subject they are try-

ing to learn is easy. That realization may occur years later. Is there a way to make a subject easy right from the start? Some teachers do not provide notes because they say that it makes it too easy for students because hard won knowledge is best. I think teachers should provide notes and summarize all the course material that a student needs in a subject. Being a student is hard enough without having to follow the lecture and take notes at the same time.

When students don't learn, students are blamed. Sometimes the teacher should be blamed.

The teacher's job is to show students how easy the subject is, and why it is easy. Notes provided would help because it is good to see the subject laid out as a whole right from the beginning, allowing the student to see how best to cover the material. Students reach a turning point when they realize that their brain is just as good as their teacher's, and gain confidence when they question the things they are taught as being either factually wrong or poorly expressed. The confidence to question and challenge is the basis of all understanding and is how students are made.

Mastery of language is key to learning anything, and too little time is spent reading and gaining vocabulary. Teachers need to insist on mastery of grammar and language in order to express ideas. Students need to use this expanding talent as a way of expressing increasingly complex ideas.

The goal is to be excited by learning so that it becomes as natural as breathing. Student will learn that they can learn anything because they have a habit of learning. We need to remember that learning unsettles people and is essentially

private, but groups of similar learners can catalyze each other.

If I were learning medicine again, I would put every disease or problem on one piece of paper and take the pages to the physical examination and find the page that suits the patient's diagnostic dilemma. A comparison between the standard and the specific would then imprint the problem in my mind so that when I was asked to describe a problem, a mental image of the patient would flash on my mind's screen and I would describe what I see. This is the case study method.

My experience with pathology in second-year medical school is the reason that I am writing this editorial. Pathology was the first subject that I had no clue about. The slides all looked the same to me, and all the cells were blue or pink. The more I blamed myself for not understanding the differences among the diseases that I saw under the microscope, the more panicky I got that maybe I would never be able to tell the difference between one slide and another. Later, in surgical training, I found a magnificent book, *General Pathology* by Walter and Israel (1). This book made all the difference, because I had the whole subject in 52 chapters simply and clearly written.

REFERENCES

1. Walter JB, Israel MS. *General Pathology*. Edinburgh: Churchill Livingstone, 1987.

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