John King - Concentrated Studies

By Charles Mann

It started in 1963 when I was teaching classes on a regular basis like everyone else and also trying to do some research. I became aware of how fragmented my time was so I thought it would be nice if I could do my teaching and then my research and not have my work broken up with an hour here and an hour there. It was purely arbitrary.

Then came the CCCE which was an extensive study of our curriculum. It set a stop to any other development, but it did one very important thing as far as I was concerned: it authorized project labs. I then worked on our project lab which hit students very well sometimes, and sometimes they get very frustrated. Maybe they are learning that they do or don't want to become experimental physicists, the kind that work with apparatus rather than computers. I could see that the lab suffered from meeting at intervals and between the students' apparatus would sort of course. I could see that every time I found someone who was really interested he was too busy or his department head wouldn't let him do it. One of the problems is that innovators tend to be the same fraction of the population and stay with us.

So the time seemed ripe and we started putting it together. I started the project in conjunction with other departments, but every time I found someone who was really interested he was too busy or his department head wouldn't let him do it. One of the problems is that innovators tend to be that same fraction of the faculty, and they are all busy. But I didn't hint and encourage.

Q. How about going into more detail on the structure of the whole course?

A. Well, any particular student spent a certain amount of time working in a laboratory learning about certain instruments and later applying the instrument to a project. He spent some time reading the textbook and some time doing homework problems. There was some time spent listening to me, Dr. King, call free association about the material and some time in interviews in which I would suggest things to read that might be of interest. The material was approached in many different ways from one day to the next so that it was really wasn't concentrated. The students just didn't sit down and do problems and do problems eight and nine. It was rather varied.

Q. How did you go about guiding the students? A. First, all the projects were worked on in partnerships. Of course they had some problems since you had to have compatible people but the relationships were of the kind that the Institute does not ordinarily foster. Anyway I would be in the laboratory from nine to ten thirty every day to sort of wander around and ask a question, or worry, or whatever seemed appropriate. In other words I worked the same way that graduate thesis supervisors work with their students. That is to say I less how the project part of it worked. I might say that some students were who wanted to have their hands held the whole time and some who wanted to do it their way with no help whatsoever. Somewhere in the middle is a reasonable compromise.

The reading and so on came out in the interviews. I would ask questions about the homework. "How far along are you?" That has an evaluatory tone that bothers the students a little and they wonder secretly if there are some kind of records. There really were no records. I did keep a book of the interviews with something about what questions they asked that also served as a sort of scratch record of what we talked about so that things that were noteworthy times could be brought up in lecture.

Q. What sort of encouraging things did you do to homework? A. Well, we had a transient occurrence. My graduate assistant decided that it would be pedagogically sound if the homework were collected and corrected, and that was done. It wasn't the same process as every time I found someone who was really interested he was too busy or his department head wouldn't let him do it. One of the problems is that innovators tend to be that same fraction of the population and stay with us.

Q. So I said, we go ahead and collect the homework, and everybody sorts of looked down. Soon after they started complaining private. Maybe they just don't like having the homework collected.

A. So we resided the order. You (the interviewer) have seen the report and know that most of the homework was done.

Q. How important do you think problem sets are in a course like this when there are so many other things going on? A. I feel that doing homework problems is useful if one learns how to do them correctly, since one does such problems regularly (as a physicist). I think that the homework problems (and one could say that an MIT education is coming and doing three thousand homework problems) are important but not equally so for everyone. It isn't right to make everyone do the three thousand problems. These students were generally very restricted and should tell themselves whether they should do more problems or less problems. My guess is that the sort of daily homework we had put on a little life in the chance. The importance of any different ingredients of this experiment is plainly different for different people.

Q. What about different ways of learning? Are students in general parents of a cycle of seeing something in the morning in lab and talking about that, if anyone one of them was particularly interested in that topic then I would send him off to find out about it. Then after a while the fact was there was a homework problem on the same subject as the lab and discussion. The role of the problems was to force the student to sit down after seeing the material or before seeing the material or after seeing it and work it out for himself.

Q. What about the students? Do they get tired of just seeing physics? A. Naturally it varied. The problem is not the end-all since it suits some students and not others, in fact it suits some teaching better than others, in fact it suits some teaching better than others, it suits some students and not others, in fact it suits some teaching better than others, it suits some students and not others, in fact it suits some teaching better than others, it suits some students and not others.

Q. Then what about the integration of lab work into the curricu-lum? A. I don't think it will succeed very well. The corridor labs and project labs are the best of a bad thing. In the last analysis the best thing is for a student to come to a research lab and find someone whom he enjoys working with and someone who will take him seriously and treat him decently. That is the best way, not to try to guide the student ahead of the last analysis the best thing is for a student to come to a research lab and find someone whom he enjoys working with and someone who will take him seri-ously and treat him decently. That is the best way.

Q. What sort of topics do you think are amenable to study in this way? A. Far more subjects are amenable to it than seems obvious at first glance. That is one of the reasons for my wanting to have more publicity. In fact any serious work is done in concentrated form. It is possible to turn around and ask how people have been putting up with the five course situation.

Q. What about evaluation? A. I think the only way you can know how well it is evaluated is to have a number of people try it out and the degree of enthusiasm will measure it. It is a measure of the success of the system, and no one really values the system. It will be worth the time of someone else trying it or not.

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