

SUMMER SCHOOLS FOR TEACHING RESEARCH

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Research in the developed countries is frequently taught by the experienced experimentalists and by professors actively engaged in research. In fact this teaching starts in the classrooms where every subject is lectured from the angle of new developments after the classical knowledge is first given. These two areas generally provide sufficient stimulation for the young students. Thus introduced to new ideas the ambitious students apply for summer fellowships in research. Others are given funds in support of their own small projects to be conducted in the professors' laboratory. Once he has arrived at this point the student is well on the way for a research carrier.

His contemporaries born in less developed countries however listen the classical courses from the professors who have many problems in their insufficiently equipped laboratories. Research frequently moves there at a slower pace and produces less excitement among the fellow staff members who face many problems at the university and generally in life. He is hard pressed with long hours of lectures and problems of application of his field where he is in desperate need of new equipment, well trained, technicians, assistants, and the most important of all research oriented administrators. The student therefore is generally not exposed to 'scientific investigation' from the first hand. Frequently he learns of research developments from the news media rather than his classical books or from his professor.

This situation of course produces a significant barrier before the student who may be as gifted from the genetic point of view as his western contemporaries so far as research is concerned.

We must therefore in the universities of the developing countries try to institute channels of information through which new developments in science can be conveyed to the inspiring young generations. In this effort, the author of these lines has spent a quarter of a century trying to institute an easy way of encouraging young specialists to go

into research. Until 10 years ago the University law obliged the assistants to conduct research and write a thesis before they could be accepted to examinations equivalent to the National boards. In order for an assistant professor to apply for associate professorship he had to have published a number of articles. In addition he was also required to write an 'original' thesis reporting the results of his investigations. The associate professor should have a long list of articles and an impressive as well as original 'introductory article' to be promoted to full professorship.

All of these requirements were designed to channel the university teachers to conduct research, while many obligations were imposed on him to keep away from the laboratory: administrative burdens, long hours of lectures in fields where he mostly has no scientific interest, applied problems about which he is consulted... all of which consume working hours. He therefore works in the laboratory only long enough to write papers necessary and sufficient for the next promotion.

It is clearly seen that the above procedure of academic promotion have not been as productive so far as research potentialities of the country are concerned.

It has thus become obvious that the junior assistants, young specialists, assistant professors and professors are almost for identical reasons prevented from initiating the sparkle for research among the young students. We are therefore forced to find other methods to attract the students into the field of research. But let us first ask the following question: Under these circumstances can the students be taught research? A more satisfactory answer to this important question will, I hope, spring from the following experience:

Since in the long run the younger the age of the investigator the more productive he would be, medical students were directly chosen as the aim of the efforts to promote research. Courses in summer and series of conferences in winter were therefore planned for students who had received basic medical sciences and were about to start clinical training.

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The plan of the summer courses consisted of 10-20 hours of presentation of research objectives and orientation. Starting from the point of finding a research topic, to its organization as a 'project' to how the results are interpreted and how a research paper is written.

Courses were mostly organized during the summer months when the weather is hot, and the schools are in vacation. Many of the students came to attend interrupting their seaside vacations. Some devoted their cherished leisure days in their home towns.

After this basic knowledge a second course was organized where the invited lectures presented the results of their own research emphasizing how they conceived the idea, why they chose the particular topic, how they planned the research and how they carried out the individual experiments. In many occasions demonstrations on animals or human material was carried out.

There was a great deal of interest among the students frequently above the capacity of our lecture rooms and laboratories to learn about research. Especially the most successful students studied the conference rooms.

These was ample time reserved for questions and discussion of the topic by the students. They extended this period of discussion into topics of research that may next be carried out.

During the last 4 years a total of 360 hours of lecture discussions were devoted by 88 professors to audiences ranging from 15 to over 80 (Table 1).

Summer Courses				
	Students attended	Lectures	No. of lecture and seminars (hour)	Duration (week)
1987	40	17	32	2
1988	14	14	32	2
1989	29	28	80	2
1990	25	29	120	3
Total	108	88	264	9

Winter course: only in 1988: 36 hours with attendance of 40-80 students and 14 lecturers.

It is possible to conclude the following from the experience of 4 years summer courses:

Medical students respond very favorably to interested investigators efforts of introduce research of them. The presentations which are accepted enthusiastically are those where the lecturer speaks of his own experiments. If a demonstration in the laboratory follows a well rounded presentation students are frequently drawn in the subject. Under these circumstances students are apt to discuss the presented material at length, even hours. They frequently come up with projects which are branched off the main topic presented. These may even be carried out in the laboratories if time and circumstances permit.

It is our opinion therefore that this is a very productive way of teaching research to the upcoming generations. It should be repeated every summer for two to three weeks.

Weekly conferences of research during winter months are also very profitable for the students providing that their program permits attendance.

It is our belief that in order to channel young generations into research summer schools and special periodic conferences of research during winter are very productive. With the above summarized approach it is possible to give the young students a research orientation early in their professional life. This I believe in the hands of experienced researchers will open the way of scientific originality to the upcoming generations.

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