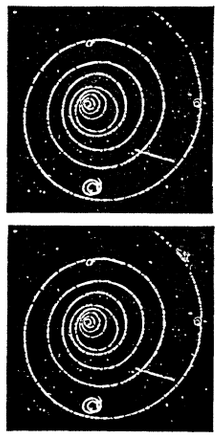

Harvard—Project Physics

School Science—Past and Future

AAAS Symposium

30 December 1969

Boston

In 1956 the Physical Science Study Committee (PSSC) undertook the creation of a high school physics course drastically different from any that had existed previously. What resulted was a course physicists admired. It dealt with basic principles in a quantitative manner; it was as rigorous as the level of the students would permit; laboratory investigation played a dominant role. The course was introduced into the school rapidly. Today a significant percentage of the high school physics students—roughly half—study the PSSC course. A student in this fortunate group has an opportunity to make a fine start toward a career in physics or in a related discipline.

The chemists, biologists, and mathematicians did not lag far behind. The chemical study group produced a high school course based strongly on concepts of interaction and energy exchange. Almost simultaneously another group of chemists generated a laboratory course which relied on a theme of structure and chemical bonding to provide overall unity. Biologists focused on three of their newer and more exciting concepts —cells, ecology, and molecular processes —in an effort to capture the interest of young students. And every parent must by now have discovered that the "new math" has permeated many school classrooms.

What impact have these curriculum innovations had on science education or on society in general? We continue to find youngsters disenchanted with school. Many of them find science irrelevant to their interests. Some look to drugs and other forms of antisocial behavior for meaning—or perhaps as an escape from reponsibility for correcting the ills which pervade modern society. No one would blame the new courses for the world's problems, but the fact remains that the younger generation as a whole seems largely unaffected by relatively massive efforts to create change in the educational processes which attempt to prepare them for a changing world.

Were these early efforts misguided? Some would answer "yes, we should have paid more attention to the average student," or "yes, we must start when they are much younger," or "yes, the problem is with the teachers, not the textbooks." Others would answer "no, we are on the right track, but we need much more of the same kind of excellence in every phase and at every level of the education of our children." Which of these positions should provide us with a guideline for future efforts? No one is likely to have a more thoughtful opinion than the leaders of the original curriculum projects. At the morning session of this symposium on 30 December 1969 five such leaders will have an opportunity to respond to the question: "If you had it to do all over again now, knowing what you know now, what project would you undertake to make a big impact on science education in the schools?"

Will these project leaders take an unbiased view of the science education scene? One could hardly expect them—or want them—to be uninfluenced by their experiences with particular development projects. Are there other persons who could provide a more objective or a particularly well-informed outlook on the school science scene? Of course, there are many such individuals, and four of them will speak at the afternoon session.

One of the speakers, Dr. Elizabeth Wood, recently completed an extensive series of interviews with school teachers, students, and administrators and others close to the schools. She concludes that we are still not communicating science sense to the majority of children, not even to most of those who sit politely in class, pass our tests, attend college, and become the nation's leaders. She will make several recommendations for needed new science programs.

Dr. Al Garrett has moved up through the ranks of university responsibilities and now serves as vice president for research at Ohio State. Having once contributed to research and curriculum development, and now having administrative responsibilities for such efforts, Dr. Garrett is likely to have well-developed ideas about the role universities should play in the improvement of school science. He will have some controversial questions with which to deal. Some science teachers say that university scientists have dominated school curriculum change without understanding school needs; others assert that quality improvements would be impossible without assistance from scientists. Should scientists leave the school curriculum to the teachers? Considering that curriculum projects draw heavily on the resources of a university, can the universities afford to be involved? Considering their responsibility to society, can they afford not to be? Perhaps Dr. Garrett will answer.

Who would be a better judge of the effectiveness of school science courses than one who recently experienced such courses as a student? Miss Janna Dresden, freshman at the University of Michigan, will be asked "What's wrong with high school science courses?" If she is as critical and witty as her physicist father, a treat is in store for the audience.

In the final analysis, we must rely heavily on the National Science Foundation for direction on the extent and character of curriculum innovation in the sciences. Those of us in the curriculum reform business cannot help but wonder what someone like Tom Fontaine, associate director for education at the National Science Foundation, sees in his crystal ball. Perhaps he will tell us in Boston.

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