

1934

Experiments on the Effectiveness of Lectures in College Physics

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Recommended Citation

Lapp, C. J. (1934) "Experiments on the Effectiveness of Lectures in College Physics," *Proceedings of the Iowa Academy of Science*, 41(1), 255-256.

Available at: <https://scholarworks.uni.edu/pias/vol41/iss1/90>

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A STUDY OF LABORATORY TEACHING

J. W. WOODROW

A committee was appointed in 1930 at Iowa State College to make a study of methods of laboratory instruction. This study has brought out some rather interesting information which it is thought may be of general interest.

Some of the more interesting problems considered by the committee are; length of laboratory period, demonstration laboratory, size of section, correlation between laboratory and recitation, organization of course, equipment and qualifications of a good laboratory instructor.

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EXPERIMENTS ON THE EFFECTIVENESS OF LECTURES IN COLLEGE PHYSICS

C. J. LAPP

At the beginning of the school year 140 students registered in College Physics in two sections to meet at eight and nine o'clock respectively. During the first semester four mid-semester examinations each containing 50 objective items of the multiple situation type were given. The average of the mid-semester examinations was found to correlate almost perfectly with the corrected Nationwide Examination in College Physics used as a semester final. On the basis of these achievement data it is possible to select groups at random from either section and compute their relative achievements. Using this method to predict what a given group might be expected to achieve, four separate experiments have been performed on the effectiveness of physics demonstration lectures. In two experiments the object was to see how well the students could explain theory that was developed and demonstrated by the use of lecture experiments. The same theory was partially covered in the text-book. About 40 per cent of the students were sent out of the room before the lecture. Two days later examinations showed that in proportion to their expectancy the student who did not hear the lecture or see the experiments knew fully as much about the theory and its application as did those who remained in the lecture room.

Two other experiments were performed using a similar educa-

tional set-up. These were over theory only barely mentioned in the text. The results were similar to those mentioned above.

The results of these experiments over a very restricted area in the teaching of college physics lead one to question the effectiveness of lecturing in the teaching of college physics.

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SOME EXPERIMENTS ON THE TEACHING VALUE OF TALKING MOTION PICTURES IN COLLEGE PHYSICS

C. J. LAPP AND W. J. POPPY

At the end of the first semester a talking motion picture on molecular physics was shown twice to Section A in College Physics. Section B did not see the picture. The following day the Nationwide examination in College Physics was given to both groups and about twenty questions were selected for analysis from the examination covering material reviewed in the pictures. Also a supplementary examination of 13 questions was given to cover material not covered in the final examination. An analysis of the results shows that this talking motion picture was a very effective means of reviewing molecular physics.

A talking picture over electrostatics was shown in the second semester. An objective examination was then given and the results compared with those of a section to which a lecture on electrostatics had been given. The results favor the students seeing the picture. These data were handled statistically and corrected for the natural level of ability of the sections.

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A STUDY OF SOME TRANSFER VALUES OF LABORATORY VERSUS LIBRARY PROJECTS

W. J. POPPY AND C. J. LAPP

A library project is defined as carefully outlined library work that is calculated to have the same teaching values and to require