A TABULAR SUMMARY OF RESEARCH ON LABORATORY METHODS OF TEACHING NATURAL SCIENCE

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TABLE I

Certain experimental factors and results of experiments concerning the merits of demonstration and individual laboratory methods of teaching natural science

Date	Investigator	Subject	Number of students	Sections	Number of exercises	Significance calculated	Significance established	Advantage in					General trend
								Time	Immediate recall	Delayed recall	Provision for individual diffs.	Laboratory resourcefulness	
1918	Wiley	H. S. Chem.	24	3	....	No	No	Dem.	Ind.	Ind.	.....	.....	Ind.
1920	Phillips	H. S. Phys.	....	....	...	No	No	.....	N[a]	N	.....	Ind.	Ind.
1922	Cooprider	H. S. Biol.	42	3	24	No	No	Dem.	Dem.	Dem.	.....	N	Dem.
1923	Kiebler, Woody	H. S. Phys.	28	2	14	No	No	Dem.	Dem.	.....	Ind.	Dem.	Dem.
1924[b]	Cunningham	H. S. Bot.	20	2	12	No	No	Ind.	Dem.	Dem.	.....	.....	Dem.
1924[c]	Anibal	H. S. Chem.	46	2	25	No	No	.....	Dem.	.....	N	.....	Dem.
	.....	.....	34	2	10	No	No	.....	Dem.	Ind.	N	.....	N
1925	Pruitt	H. S. Chem.	60	3	21	No	No	Dem.	N	Ind.	Ind.	.....	Ind.
1926	Carpenter	H. S. Chem.	....	4	10	Yes	No	.....	Dem.	Dem.	.....	.....	Dem.
1927	Knox	H. S. Chem.	85	2	10	No	No	.....	Dem.	Dem.	Dem.	N	Dem.
1927	Nash, Phillips	H. S. Chem.	45	3	....	No	No	.....	Dem.	.....	Ind.	.....	N
1928	Dyer	H. S. Phys.	102	2	....	No	No	.....	Dem.	N	.....	Dem.	Dem.
1928	Horton	H. S. Chem.	464	2	....	Yes	Yes[d]	.....	Ind.	Ind.	.....	Ind.	Ind.
1928	Johnson	H. S. Biol.	33	3	48	Yes	No	.....	Dem.	Dem.	Ind.	.....	N
1929	Pugh	H. S. Chem.	70	2	....	No	No	Dem.	Dem.	Dem.	Dem.	.....	Dem.
1930	Payne	Coll. Chem.	....	12	....	Yes	No	Dem.	.....	Dem.	Ind.	.....	N
1936	Degering, Remmers	Coll. Chem.	365	4	....	Yes	No	N	.....	Ind.	.....	Ind.	Ind.
1937	Goldstein	H. S. Phys.	60	3	5	Yes	No	.....	N	N	.....	Ind.	Ind.

[a] Neither
[b] Includes a study of 1920
[c] Includes two studies
[d] Found for laboratory skills

LITERATURE CITED

Anibal, A. G. 1924. Investigation of demonstration vs. laboratory method of teaching natural science. Proc. Nat. Ed. Ass. 62: 771-772.

Carpenter, W. W. 1926. A study of the comparison of different methods of laboratory practice on the basis of results of tests of certain classes in high school chemistry. J. Chem. Ed. 3: 798-805.

Cooprider, J. L. 1922. Oral versus written instruction and demonstration versus individual work in high school science. Sch. Sc. and Math. 24: 834-838.

Cunningham, H. A. 1924. Laboratory methods in natural science teaching. Sch. Sc. and Math. 24: 709-715, 848-851.

Degering, E. F., and H. H. Remmers. 1937. Effectiveness of regular laboratory work versus lecture demonstrations. Sch. and Soc. 49: 458-460.

Dyer, J. H. 1928. Analysis of outcomes of teaching physics in public schools. Doctor's thesis, unpublished. University of Pennsylvania.

Goldstein, P. 1937. Student laboratory versus teacher demonstration as a means of developing laboratory resourcefulness. Sc. Ed. 21: 185-193.

Horton, R. E. 1928. Measurable outcomes of individual laboratory work in chemistry. Teachers College Contributions to Education, No. 303. New York: Teachers College, Columbia Univ.

Johnson, P. O. 1928. Comparison of lecture demonstration and individual experiment methods of teaching high school biology. J. Ed. Res. 18: 103-111.

Kiebler, E. W., and C. Woody. 1923. Individual laboratory versus demonstration method of teaching physics. J. Ed. Res. 7: 50-58.

Knox, W. W. 1927. Demonstration versus laboratory method of teaching high school chemistry. Sch. Rev. 35: 376-386.

Nash, H. B., and M. J. W. Phillips. 1927. A study of the relative values of three methods of teaching high school chemistry. J. Ed. Res. 15: 370-379.

Payne, V. F. 1932. Lecture demonstration and individual laboratory methods compared. J. Chem. Ed. 9: 1277-1294.

Phillips, T. D. 1920. A study of notebook and laboratory as an effective aid in science teaching. Sch. Rev. 28: 451-453.

Pruitt, C. M. 1925. An experiment on the relative efficiency of methods of conducting chemistry laboratory work. Master's thesis, unpublished. University of Indiana.

Pugh, D. B. 1929. A comparison of the lecture demonstration and individual laboratory methods of performing chemistry experiments. Penn. Sch. J. 77: 599-601.

Wiley, W. H. 1918. An experimental study of methods in teaching high school chemistry. J. Ed. Psychol. 9: 181-198.