SECTION E, SCIENCE EDUCATION

Science Education in Public Schools: A Study of Problems as Perceived by Classroom Teachers and Administrators

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This science education study was initiated to obtain answers to four questions:

(1) What is the degree of familiarity of school administrators and classroom teachers with the national curricular developments in science education?

(2) What is the degree of use and/or anticipated use of these curricular programs?

(3) What degree of interest do school administrators and classroom teachers have in learning of the rationale of these programs and their success, as judged by individuals who have tried the materials and programs?

(4) What are the problems encountered by school administrators and classroom teachers as they strive to maintain an up-to-date science education program?

This paper will treat only the data obtained in answer to question four.

All of the data reported herein were obtained, through a questionnaire, during the months of February and March of the 1966-1967 school year in Texas and Louisiana by the author as part of his responsibility as a program planning specialist for the Southwest Educational Development Corporation of Austin, Texas.

The geographic area of the two states, the size of the school district, and the educational category of the respondent were the only identifications placed on the questionnaires, thus allowing for interpretation of the data without revealing the identify of any teacher, administrator, or school district.

Table I shows the numbers of various categoric respondents to the questionnaire and the percent in each category showing which problems were considered significant and most important. One of the most significant facts apparent from a study of Table I is that more teachers identified *variable two,* gaining information concerning the availability of free and/or inexpensive science materials, than any other variable. The second most often selected variable was *variable one,* gaining information concerning new science curricula. Also, it should be noted that teachers, regardless of grade level or subject matter specialization, consistently selected these variables. In addition, the problem receiving the third highest number of responses by the teachers was *variable five,* securing adequate space for conduct of science activities. Also, as was the case with *variables two* and *one,* the teachers, regardless of grade level and in this case, with only physical science teachers as the exception, consistently ranked this problem third. Another fact that should be noted is the emphasis placed on *variable eight* by the curriculum directors and science supervisors and to a slightly lesser degree, but still within the top three problems, by principals. This variable, appropriate in-service training for professional staff, was also considered important by classroom teachers.

Table I shows the percentage (parenthetic figures) of responses of

TABLE I. PROBLEMS IN MAINTAINING UP-TO-DATE SCIENCE CURRICULA, EXPRESSED IN PERCENT OF RESPONSES (*n*). PARENTHETIC NUMBERS REFER TO THE PERCENT RESPONSES (*n*) INDICATING MOST SERIOUS PROBLEMS. ALL NUMBERS ARE ADJUSTED TO THE NEAREST WHOLE. FOR IDENTIFICATION OF V_1 TO V_9, SEE LIST.

	Elem. Prin.	Elem. Clsm. T.	Jr. High Prin.	Gen. Sci. T.	Life Sci. T.	Earth Sci. T.	Physical Sci. T.	Senior High Prin.	Biology Clsm. T.	Chem. Clsm. T.	Physics Clsm. T.	Sci. Supv.	Cur. Dir.
V_1	60(18)	55(18)	56(17)	54(16)	53(16)	51(16)	55(15)	55(12)	53(11)	53(13)	53(11)	50(18)	63(29)
V_2	59(10)	64(12)	59(11)	63(14)	63(14)	63(14)	61(12)	54(9)	64(14)	60(11)	60(10)	55(9)	51(6)
V_3	43(15)	36(12)	40(11)	35(11)	41(11)	41(13)	35(12)	38(11)	42(14)	37(10)	32(8)	50(12)	56(22)
V_4	44(22)	36(19)	39(19)	47(27)	38(23)	37(21)	37(19)	48(26)	51(34)	46(30)	50(34)	55(31)	52(19)
V_5	52(23)	48(22)	48(20)	53(28)	50(27)	50(26)	46(27)	46(18)	51(26)	47(24)	50(25)	54(20)	40(13)
V_6	32(12)	42(21)	29(9)	38(17)	27(12)	27(12)	49(26)	24(4)	25(8)	26(10)	27(11)	38(13)	22(6)
V_7	34(10)	31(9)	39(14)	34(10)	36(15)	39(16)	34(12)	38(13)	37(12)	36(12)	34(11)	42(12)	40(13)
V_8	56(30)	38(19)	54(26)	36(16)	37(17)	38(17)	32(12)	55(23)	37(15)	42(18)	40(20)	65(35)	73(51)
V_9	4(3)	5(2)	5(4)	8(4)	6(4)	7(5)	7(4)	7(5)	10(7)	11(9)	12(9)	19(14)	16(14)
N =	1487	1374	383	744	455	482	324	493	804	607	396	135	63

Abbreviations used for column headings: Chem., chemistry; Clsm., classroom; Cur., curriculum; Dir., director; Elem., elementary; Gen., general; Jr., junior; Prin., principal; Sci., science; Supv., supervisor; T., teacher.

school personnel when asked to specify their most serious problem in trying to maintain an up-to-date science education curriculum. Elementary school principals and junior high school principals joined with science supervisors and curriculum directors in pointing out *variable eight*, appropriate in-service training for professional staff. Senior high school principals identified variable four, securing adequate financial support necessary to equip and maintain a science facility, but closely followed by the in-service training problem. Elementary classroom teachers and junior high classroom teachers indicated *variable five*, securing adequate space for conduct of science activities, while senior high classroom teachers expressed *variable four*, securing adequate financial support necessary to equip and maintain a science facility. However, senior high school teachers saw adequate space as their problem of second most serious concern.

The participation by school administrators and classroom teachers indicates their sincere interest in their science curricula. The percentage of responses from Texas was 61.9% while that from Louisiana was 27.6%.

The author believes that the junior and senior high school science teachers, and the elementary school teachers who are asked to teach science, are intelligent, sincere individuals cognizant of their problems. The findings of this study also indicate a difference in perception of the degree of acuteness of problems as seen by classroom teachers and administrators.

The ultimate value of this study will be determined by the use to which the data is put toward improving science education in the two states surveyed.

The author is of the opinion that a similar study would be appropriate in Oklahoma to provide a baseline from which future progress in science education can be measured, and to further communicate with teachers and administrators in identifying their felt needs.

List of Problems in Maintaining Up-to-Date Science Curricula
(See Table I)

V_1 Gaining information concerning new science curricula.

V_2 Gaining information concerning the availability of free and/or inexpensive science materials.

V_3 Developing special science materials (by your own school personnel) to meet your special needs due to geographic location and/or social and cultural differences.

V_4 Securing the adequate financial support necessary to equip and maintain a science facility.

V_5 Securing adequate space for conduct of science activities.

V_6 Securing effective, up-to-date science textbooks.

V_7 Adapting available science curriculum materials to meet local needs.

V_8 Obtaining appropriate in-service training for professional staff.

V_9 Others