Detailed analyses of the data in Tables 5.02 through 5.08 for specific types of institutes reveal among other findings the following observations.

Biology Institutes (Table 5.02). Of the 213 respondents who attended Biology Institutes 149 actually taught Biology. Their average Biology class load was 3.7. The second most common teaching assignment was General Science (47 respondents) for which the average class load was 3.6. It was interesting to note that 34 respondents taught Mathematics with an average class load of 3.8 classes. Evidence indicates that some of these teachers had Mathematics and General Science as their major teaching assignment.

Chemistry Institutes (Table 5.02). More than three fourths of the respondents who attended Chemistry institutes taught Chemistry as part of their teaching load. They taught an average of 3.3 Chemistry classes. About one third of the respondents taught Physics making it the second most common subject in their teaching assignments. Note that no respondent indicated teaching any of the Social Sciences.

Multiple Fields Institutes (Table 5.02). Of the 292 respondents from Multiple Fields institutes more than one third were assigned to teach some Chemistry, about one third were assigned to teach some Physics and about one fourth taught some Mathematics.

Earth Science Institutes (Table 5.03). The respondents of the Sample and Census were similar in that the subject most commonly included in their teaching assignments was Earth Science, followed by General Science and Biology. Several Respondents were teaching Social Science courses.

General Science Institutes (Table 5.04). Respondents from General Science institutes had, as a group, varied teaching assignments that included all of the listed subject areas. Even so, over forty per cent of the respondents were assigned to General Science classes. The second most common assignment was Integrated Physical Science which also had the second highest average class load. Several respondents were teaching Social Science courses as well as "other" courses.

Mathematics Institutes (Table 5.05). Almost all respondents from Mathematics institutes were assigned to teach Mathematics classes. Their Mathematics class loads averaged 4.5 classes in the Sample and 4.4 classes in the Census. This left little room for teaching assignments outside of Mathematics as indicated by the data. It should be noted, however, that a distortion was built into the subject area classification. Mathematics was compared to individual Science and Social Science disciplines rather than to the whole of Science and of Social Science.

Physics Institutes (Table 5.06). In both the Sample and Census a majority of the respondents were assigned to teach some Physics classes, but the average class loads in Physics were low (1.9 in the Sample and 2.3 in the Census). In the Sample the second most common teaching

assignment was Chemistry followed by Mathematics while in the Census the second most common assignment was Mathematics followed by Chemistry. It should be noted that the Physics institutes used in the Census stressed the HPP project. The number of participants in HPP institutes teaching Physics classes was proportionately much larger than those participants in non-implementation Physics institutes of the Sample.

Social Science Institutes (Table 5.07). The data of Table 5.07 indicates that most teachers did not teach classes in the discipline studied in the SIs and that they tended to teach in a variety of other subject areas in addition to Social Science including Science and Mathematics courses.

ECCP Institutes (Table 5.08). Approximately one-third of the respondents reported that their teaching assignments included Physics. Large numbers of respondents were also teaching Mathematics and Chemistry courses. An equally large number of respondents was teaching "other" courses which may be partially explained by the omission of ECCP, or any discipline equivalent for that course, being listed as one of the areas of teaching assignment.

Supervisors Institutes (Table 5.08). The sum of the denominators of the ratios is less than the total number of respondents therefore some supervisors did not teach any classes. More than one-half of the classes taught by supervisors were in Mathematics.

In order to make simple comparisons between the Sample and the Census, some data from Tables 5.03-5.06 were combined in Table 5.09. The four subject areas selected for Table 5.09 were Earth Science, General Science, Mathematics, and Physics. These subject areas had institutes in both the Sample and the Census. In each case the ratio used was the average number of classes taught in a subject area by a teacher who attended an institute in that same subject area (e.g., the average number of general science classes taught by a participant in a General Science institute). Ninety-five per cent confidence intervals were computed for the Sample averages.

TABLE 5.09

Average Number of Classes Taught in a Given Subject Area by a Participant in a SI of That Same Subject for Earth Science, General Science, Mathematics, and Physics Institutes

Institute	Sample	.95 Confidence Interval	Census
Earth Science	3.32	(2.80 - 3.84)	3.25
General Science	3.80	(3.24 - 4.36)	3.58
Mathematics	4.50	(4.38 - 4.62)	4.40
Physics	1.92	(1.65 - 2.19)	2.29

Only in the Physics institutes of the Census, is the average number of classes taught outside the .95 confidence interval for the Sample average. It should be noted that the Physics Institutes in the Census stressed the HPP project.

Direct and Indirect Effects of Institute Attendance Upon Classroom Instruction and Supervisory Responsibilities

The data obtained from Section V of the questionnaire dealt with institute effects upon the participant's subsequent classroom and supervisory responsibilities. As described in Chapter III, the 25 items of Section V were divided into two groups, one reflecting the participant's subjective evaluation of the effects of the institute upon his teaching methods (feeling tone, 12 items) and the other group reflecting more concrete changes in his teaching (action, 13 items). The participants responded by checking one of five possible responses to each item. The responses were Negligible or None, Little, Moderately, Considerably, and A Great Deal and were weighted from 1 to 5 respectively. Thus, the greater the mean score, the greater the perceived effect of the

institute. The mean scores for each of these two groups of items for the Sample and Census are shown in Table 5.10. They are categorized according to the average school enrollment per grade in which the participant was teaching during the 1970-71 academic year.

TABLE 5.10

Mean Scores for Feeling Tone and Action Items by Average Grade Enrollment for the Sample and Census

Average Grade Enrollment	Sample		Census	
	Feeling Tone	Action	Feeling Tone	Action
No Response	37.92	30.58	33.56	31.95
0-99	40.11	35.04	41.18	39.93
100-199	39.84	35.90	41.80	40.48
200-299	40.44	35.53	41.72	38.79
300-399	40.47	35.98	42.14	39.55
400-499	39.61	35.86	42.10	39.78
500-599	41.67	35.83	40.33	38.39
600-699	41.35	36.19	39.87	38.19
700-799	40.73	35.69	40.21	39.21
800-899	38.70	33.78	41.27	39.53
900+	41.27	36.35	41.00	39.39

Inspection of Table 5.10 reveals consistent results for all grade enrollment categories within each column for Feeling Tone and Action items. The only enrollment group which had noticeably lower averages in all four categories of items was the group of respondents which neglected to indicate the school class enrollment per grade. The higher Action scores in the

Census data when compared to the Sample data are basically consistent with the results in Table 4.20 of Chapter IV.

The numbers of teachers by average grade enrollment for the Sample and the Census are shown in Table 5.11. This same distribution of teachers applies to the average grade enrollment data in Tables 5.10 and 5.12.

TABLE 5.11

Numbers of Teachers by Average Grade Enrollment in Schools for the Sample and Census

Average Grade Enrollment	Sample	Census
No Response	26	72
0-99	229	423
100-199	216	490
200-299	202	405
300-399	166	424
400-499	150	332
500-599	86	204
600-699	75	159
700-799	45	106
800-899	37	86
900+	157	386
Total	1389	3087

An observation of the data in Table 5.11 reveals that in the Sample the largest number of teachers was in the 0-99 average grade enrollment category while in the Census the largest number of teachers was in the 100-199 average grade enrollment category. More than one half of the

teachers in both the Sample and Census were teaching in schools in which the average grade enrollments were below 400.

Section III of the questionnaire dealt with changes in professional duties and status directly attributable to participation in the 1970 SI. One of these changes was "moved to another school." The percentages of participants who moved (directly attributable to institute participation) are presented in Table 5.12.

TABLE 5.12

Percentages of Participants Who Moved to Another School by Average Grade Enrollment for the Sample and Census

Average Grade Enrollment	Sample	Census
No Response	.20	.17
0-99	.15	.16
100-199	.15	.13
200-299	.11	.15
300-399	.15	.13
400-499	.14	.20
500-599	.12	.19
600-699	.09	.15
700-799	.20	.19
800-899	.22	.16
900+	.24	.11

It may be noted from the results of Table 5.12 that the range of movement (.09 to .24) is substantial, but that the higher percentages are found in the Sample schools with enrollments 800 and above and in the Census

schools with enrollments between 400-599 and 700-799. The percentages of school transfers for the Census participants are less variable than those of the Sample. In the Census the smallest percentage of participant movement was found in the largest school enrollment per grade category, whereas in the Sample, the largest percentage of participant movement was found in this category.

The participants were questioned about their involvement in supervisory or administrative work during the 1970-71 academic year. Two statements were included and the possible responses in each class were Yes and No. Some respondents failed to give a response. The statements were:

> In addition to teaching during 1970-71, I had supervisory, advisory, or administrative responsibilities.
>
> I had no teaching assignment, but served as a supervisor or in an advisory capacity.

The numbers of responses to these statements are provided for various institutes in Table 5.13.

TABLE 5.13

Numbers of Responses to Statements Dealing with Supervisory, Advisory, or Administrative Responsibilities for Selected Institute Groups

	Had Teaching as well as Supervisory, etc., Responsibilities			Supervisory, etc., Responsibilities Only (No Teaching Assignment)		
Group	Yes	No	No Response	Yes	No	No Response
Sample	456	800	119	9	837	543
Census	1151	1659	227	85	1699	1303
Implementation Institutes of Census	664	905	155	50	935	740
Non-Implementation Institutes of Census	486	754	122	35	764	563

An inspection of Table 5.13 reveals that approximately one-third of the respondents in any group had supervisory, advisory, or administrative responsibilities during the 1970-71 academic year. The extent of these responsibilities was not defined, however, there were very few Yes responses to the statement regarding full-time supervisory, advisory, or administrative responsibilities. The Sample had fewer than 1 per cent of the participants responding Yes to the statements regarding full-time supervisory or administrative duties. The remaining three groups had approximately 3 per cent of the participants responding Yes. Thus, it appears that institute participants tended to remain in classroom teaching and even though they may have assumed supervisory and administrative duties only in rare instances were such responsibilities full-time.

Section V of the questionnaire had an item (Item 90) that was directed only to supervisors. It referred to "the extent to which your institute training has been used to supervise the math/science programs in your school." The five possible responses ranged from Negligible to A Great Deal and were scored 1 to 5 in that order. The number of responses for the categories of this item and the mean responses using the 1-5 weighting are presented in Table 4.15. The data indicate that participants of all groups, even those not in Supervisors institutes found the training useful in their supervisory work. The mean response for the Supervisors institutes was 4.31 and fell between Considerable and A Great Deal. The mean responses for the Sample and Census were 3.38 and 3.50 respectively and fell between Moderate and Considerable. Thus it appears that the training in Supervisors institutes did meet the objective of providing training useful in subsequent supervisory work. Apparently the training in the non-supervisors institutes also proves useful to participants who serve as supervisors.

TABLE 5.14

Responses of Participants Who Were Primarily Supervisors to Item 90: Usefulness of Institute Training for Subsequent Supervisory Work

Group	Response					
	Negligible	Little	Moderate	Considerable	A Great Deal	Mean of Weighted Response
Weight	1	2	3	4	5	
Supervisor Institutes	2	2	8	20	40	4.31
Sample	11	24	55	47	31	3.38
Census	24	69	113	151	97	3.50

Previous Institute Attendance

Responses to the items in Section II of the questionnaire yielded data on the frequency of institute participation prior to 1970. Tables 5.15 and 5.16 summarize the number of respondents who indicated they had previously participated in Academic Year, In-Service, Summer, Cooperative College-School Science, and other NSF programs. The classification Other indicates the total responses from Items 29, 30, and 32 of the questionnaire which included summer conferences, research participation, and other NSF fellowship or traineeship programs for secondary school teachers. The data in these two tables have been arranged to allow comparisons between the various disciplines.

TABLE 5.15

Numbers and Proportions of Participants with Previous Institute Participation by Institute Discipline and Type for the Sample

NSF Programs	Institute Discipline* BZ	CH	EZ	MA	PY	XX
Total Respondents	213	100	55	574	94	292
Academic Year	8 (.04)**	13 (.13)	6 (.11)	16 (.03)	4 (.04)	7 (.02)
In-Service	81 (.39)	56 (.58)	25 (.46)	187 (.33)	27 (.20)	141 (.49)
Summer	123 (.59)	65 (.67)	41 (.76)	317 (.56)	56 (.60)	183 (.63)
Cooperative College-School Science	3 (.01)	1 (.01)	3 (.06)	1 (.00)	4 (.04)	3 (.01)
Other	21 (.10)	14 (.14)	3 (.06)	33 (.06)	9 (.10)	8 (.03)

* See page 25, Chapter III. for the institute discipline names.

** This proportion indicates that .04 of the participants in Biology institutes in the Sample had previously attended an Academic Year Institute.

TABLE 5.16

Numbers and Proportions of Participants with Previous Institute Participation by Institute Discipline and Type for the Census

NSF Programs	Institute Discipline* EN	EZ	GG	GS	MA	PS	PY	SE	SO	SU
Total Respondents	117	791	65	844	320	66	371	217	178	118
Academic Year	14 (.12)**	24 (.03)	3 (.05)	29 (.03)	21 (.07)	3 (.05)	51 (.14)	3 (.01)	1 (.01)	27 (.23)
In-Service	45 (.29)	238 (.30)	4 (.06)	159 (.19)	85 (.27)	9 (.14)	104 (.28)	6 (.04)	7 (.04)	40 (.34)
Summer	81 (.69)	484 (.61)	8 (.12)	431 (.51)	147 (.46)	40 (.61)	238 (.64)	75 (.35)	36 (.20)	89 (.75)
Cooperative College-School Science	7 (.06)	9 (.01)	0	3 (.00)	1 (.00)	6 (.09)	11 (.03)	0	0	7 (.06)
Other	13 (.11)	35 (.05)	1 (.02)	24 (.03)	13 (.04)	10 (.15)	41 (.11)	3 (.01)	1 (.01)	17 (.15)

*See page 28, Chapter III, for the institute discipline names.

**This proportion indicates that .12 of the participants in Engineering (ECCP) institutes in the Census had previously attended an Academic Year Institute.

The data in Tables 5.15 and 5.16 indicate that previous institute attendance by participants in both the Census and the Sample was predominately in Summer Institutes. In-Service Institutes were the second most previously attended programs. A larger proportion of Physics participants in the Census than those in the Sample had previously attended Academic Year Institutes. A larger proportion of Earth Science participants in the Sample than in the Census had previously attended Academic Year Institutes and In-Service institutes.

Excluding the areas of the Census which stressed relatively new NSF disciplines (the Social Sc[illegible], PS, SE and SO), it can be seen that the participants of the Supervisors and ECCP institutes showed the highest degrees of previous participation in institutes among all disciplines of the Census. Proportionately, the Earth Science and General Science institutes had fewer participants in the Census who had previously taken part in Academic Year Institutes. The General Science participants in the Census had a relatively low level of previous participation in NSF programs.

The overall extent of institute attendance of participants by sex and age for the Sample and Census respectively is shown in Tables 5.17 and 5.18. The previous institute attendance of participants was classified according to three levels. One level, None, was comprised of participants who had attended no previous institutes. Another level, Heavy, included those who had attended an Academic Year Institute and/or more than two previous Summer Institutes. The remaining level, Moderate, included all other patterns of previous participant attendance. The influence of the three year teaching requirement for institute attendance was verified by a larger number of the Under 30 age group in the None category and the Over 30 age group in the Heavy category of the Sample.

TABLE 5.17

Numbers of Participants with Previous NSF Program Attendance According to Sex Classified by Institute Discipline for the Age Categories Within Levels of Attendance for the Sample

Institute Discipline*	Sex	None				Moderate				Heavy			
		Under 30	30-39	Over 39	Total	Under 30	30-39	Over 39	Total	Under 30	30-39	Over 39	Total
BZ	M	26	20	6		22	28	22		0	18	8	
	F	6	9	7		15	5	9		3	4	2	
		32	29	13	74 (.35)**	37	33	31	101 (.48)	3	22	10	35 (.17)
CH	M	13	7	2		13	11	4		4	14	10	
	F	4	1	2		2	2	6		0	1	1	
		17	8	4	29 (.30)	15	13	10	38 (.39)	4	15	11	30 (.31)
EZ	M	7	1	0		7	8	6		0	6	5	
	F	3	3	2		2	1	2		0	0	1	
		10	4	2	16 (.30)	9	9	8	26 (.48)	0	6	6	12 (.22)
GS	M	4	3	2		2	4	1		0	2	0	
	F	1	3	1		2	2	1		1	0	0	
		5	6	3	14 (.48)	4	6	2	12 (.41)	1	2	0	3 (.10)
MA	M	71	48	29		69	89	31		8	37	18	
	F	37	10	17		37	20	25		2	8	11	
		108	58	46	212 (.37)	106	109	56	271 (.48)	10	45	29	84 (.15)
PY	M	15	6	4		17	13	8		4	10	7	
	F	1	0	0		2	1	3		0	3	0	
	T	16	6	4	26 (.27)	19	14	11	44 (.46)	4	13	7	24 (.26)
XX	M	32	22	7		46	43	29		9	18	10	
	F	9	6	11		9	16	10		2	5	6	
		41	28	18	87 (.30)	55	59	39	153 (.53)	11	23	16	50 (.17)
Totals		229 (.50)	139 (.30)	90 (.20)		245 (.38)	243 (.38)	157 (.24)		33 (.14)	126 (.53)	79 (.33)	

*See page 28, Chapter III for the institute discipline names.

**This proportion indicates that .35 of those participants attending Biology SI's in 1970 had no previous NSF Program attendance.

TABLE 5.18

Numbers of Participants with Previous NSF Program Attendance According to Sex Classified by Institute Discipline for the Age Categories Within Levels of Attendance for the Census

Institute Discipline*	Sex	Total				Moderate				Heavy			
		Under 30	30-39	Over 39	Total	Under 30	30-39	Over 39	Total	Under 30	30-39	Over 39	Total
EN	M	16	4	5		3	16	13		2	23	28	
	F	2	0	0		0	1	1		0	0	2	
		18	4	5	27 (.23)**	3	17	14	34 (.29)	2	23	30	55 (.48)
EZ	M	85	51	29		85	117	84		14	77	69	
	F	35	18	17		16	27	29		5	16	11	
		120	69	46	235 (.30)	101	144	113	358 (.46)	19	93	80	192 (.24)
GG	M	17	10	13		1	3	2		0	1	1	
	F	2	3	8		0	0	1		0	0	0	
		19	13	21	53 (.85)	1	3	3	7 (.11)	0	1	1	2 (.04)
GS	M	102	102	46		81	119	86		8	58	53	
	F	26	29	41		7	16	32		0	5	18	
		128	131	87	346 (.42)	88	135	118	341 (.41)	8	63	71	142 (.17)
MA	M	31	21	17		14	31	36		6	23	25	
	F	26	6	16		8	14	23		5	7	8	
		57	27	33	117 (.37)	22	45	59	126 (.40)	11	30	33	74 (.23)
PS	M	5	4	5		3	11	11		0	3	3	
	F	2	1	5		1	0	6		0	1	3	
		7	5	10	22 (.34)	4	11	17	32 (.05)	0	4	6	10 (.16)
PV	M	49	21	20		21	31	35		3	57	79	
	F	6	5	3		1	11	8		0	5	13	
		55	26	23	104 (.28)	22	42	43	107 (.29)	3	62	92	157 (.43)
SE	M	26	52	27		12	24	24		1	3	3	
	F	8	7	17		2	4	4		0	0	1	
		34	59	44	137 (.64)	14	28	28	70 (.33)	1	3	4	8 (.04)
SO	M	30	48	15		0	10	10		0	3	2	
	F	10	19	16		3	1	7		0	0	1	
		40	67	31	138 (.79)	3	11	17	31 (.18)	0	3	3	6 (.03)
SU	M	6	3	2		2	11	7		1	23	47	
	F	1	1	1		0	1	4		0	3	4	
		7	4	3	14 (.12)	2	12	11	25 (.21)	1	26	51	78 (.67)
Totals		485 (.41)	405 (.34)	303 (.25)		260 (.23)	448 (.40)	423 (.38)		45 (.06)	308 (.42)	371 (.51)	

*See page 28, Chapter III for the institute discipline names.

** This proportion indicates that .23 of those participants attending Engineering (ECCP) SI's in 1970 had no previous NSF Program attendance.

In comparing the institute involvement by discipline in both the Sample and Census (Tables 5.17 and 5.18) the General Science participants showed the highest percentage of teachers attending an institute for the first time. At the other extreme are the Chemistry participants in the Sample, who had the highest percentage of participants with heavy previous institute experience. In the Census, the participants in the ECCP and Supervisors institutes tended to have heavy previous attendance. Approximately one-third of all participants who attended SIs in 1970 from both the Census and the Sample had no previous institute experience. There is apparently a continuing residue of experienced Science and Mathematics teachers (at least three years of teaching experience are required for SI attendance) who are accepted at a SI for the first time in their teaching careers. Additional information from NSF records, not shown in this report, verifies that tendency over the years and into the present period.

Rankings of the Institute Objectives by Participants and Directors

Section VI of the questionnaire requested participants to do two rankings of NSF's objectives for institutes: one ranking as they perceived them at the time they submitted the application and another ranking to indicate how they felt the various objectives were met. A list of nine objectives had been established by NSF as a standard set which SIs were designed to meet. The directions pointed out that no institute was designed to meet all the objectives. The list of objectives was:

91. To update subject-matter knowledge of teachers who were once adequately prepared
92. To provide in-depth training to enable to meet new, higher standards (such as those represented by a master's degree)
93. To provide remedial study for those teachers who never had adequate training in the subject(s) they teach
94. To strengthen teachers' background in allied subjects pre-requisite to suitable mastery of a field

95. To acquaint teachers with new curriculum materials and teaching methods
96. To assist teachers in developing materials and courses adapted to individual teaching locales
97. To prepare teachers for assignments involving special problems (i.e., courses for slow learners, Advance Placement courses, etc.)
98. To provide research experience to contribute to understanding of science.
99. To develop leadership and supervisory potential (as by preparing teachers to teach their colleagues, or by training for supervisory assignments, etc.)
100. (Other objectives not included in the above list) Specify:

The institute directors also ranked the objectives for NSF first from the viewpoint of their original intentions and then from their interpretations of the actual outcomes of the institutes. Both the directors and participants ranked varying numbers of objectives (from 3 to 10). The results of the rankings required within institute comparisons rather than between institute comparisons. Therefore, ten institutes of various kinds were selected and the results are summarized in Tables 5.19 through 5.28. The selected institutes each had at least 90 per cent of the questionnaires returned with at least 90 per cent of the Section VI items completed.

TABLE 5.19

Per Cents of Participants Ranking Objectives First, Second or Third Compared With Their Director's Rankings Before and After a Unitary Biology Institute of the Sample

Objective	Ranking By Director		Ranking By Participants					
			First		Second		Third	
	Before	After	Before	After	Before	After	Before	After
91*	2	2	10.5	5.3	10.5	15.8	15.8	15.8
92					5.3	5.3	5.3	5.3
93				5.3	10.5		5.3	5.3
94							10.5	21.1
95	3	3	47.3	42.1	36.8	36.8	15.8	
96			5.3	10.5	10.5	5.3	10.5	15.8
97	1	1	31.6	31.6	15.8	21.1	10.5	5.3
98			5.3	5.3	5.3	10.5	5.3	
99					5.3			5.3
100								

* See page 96 for listing of objectives.

TABLE 5.20

Per Cents of Participants Ranking Objectives First, Second or Third Compared With Their Director's Ranking Before and After a Unitary Chemistry Institute of the Sample

Objective	Ranking by Director		Ranking By Participants					
			First		Second		Third	
	Before	After	Before	After	Before	After	Before	After
91*	1	1		18.8	44.4	38.9	27.8	16.7
92	3	2		10.5	22.2	11.1	22.2	27.8
93							16.7	11.1
94			5.3		11.1	22.2		
95				10.5	22.2	5.6	16.7	22.2
96						5.6	11.1	
97	2	3	84.2	63.2		11.1		16.7
98					5.6	5.6		5.6
99								
100								

* See page 96 for listing of objectives.

TABLE 5.21

Per Cents of Participants Ranking Objectives First, Second or Third Compared With Their Director's Rankings Before and After a Sequential Mathematics Institute of the Sample

Objective	Ranking by Director		Ranking by Participants					
			First		Second		Third	
	Before	After	Before	After	Before	After	Before	After
91*	1	1	50.0	55.0	20.0	35.0	15.0	5.0
92	2	2	35.0	40.0	40.0	40.0	20.0	10.0
93			15.0	5.0	20.0	10.0	15.0	35.0
94					10.0	5.0	20.0	20.0
95	3	3					25.0	15.0
96					5.0			
97								
98								
99								
100								

* See page 96 for listing of objectives.

TABLE 5.22

Per Cents of Participants Ranking Objectives First, Second or Third Compared With Their Director's Rankings Before and After a Sequential Multiple Fields Institute of the Sample

Objective	Ranking by Director		Ranking by Participants					
			First		Second		Third	
	Before	After	Before	After	Before	After	Before	After
91*	3	3	19.0	19.0	33.3	9.5	23.8	38.1
92	1	1	61.9	52.3	23.8	23.8		4.8
93				4.8	4.8	14.3	33.3	23.8
94	2	2	19.0	23.8	38.1	27.3	19.0	9.5
95								
96								
97	4	4				4.8	9.5	4.8
98	5	5					14.3	9.5
99								
100								

* See page 90 for listing of objectives.

TABLE 5.23

Per Cents of Participants Ranking Objectives First, Second or Third Compared With Their Director's Rankings Before and After a Sequential Multiple Fields Institute of the Sample

Objective	Ranking By Director		Ranking by Participants					
			First		Second		Third	
	Before	After	Before	After	Before	After	Before	After
91*	3	4	45.0	45.0	20.0	20.0	5.0	15.0
92			30.0	30.0	20.0	20.0	15.0	15.0
93	1	2	10.0	10.0	15.0	15.0	10.0	15.0
94	2	3	10.0		10.0	25.0	25.0	15.0
95	6	8	5.0	5.0	20.0	5.0	40.0	10.0
96		1			5.0			
97		7						
98	4	5			10.0	10.0	5.0	10.0
99								
100	5	6						

* See page 96 for listing of objectives.

TABLE 5.24

Per Cents of Participants Ranking Objectives First, Second or Third Compared With Their Director's Rankings Before and After a Unitary Earth Science Institute of the Census

Objective	Ranking By Director		Ranking by Participants					
			First		Second		Third	
	Before	After	Before	After	Before	After	Before	After
91*			4.2	8.3	29.2	25.0	8.3	16.7
92			16.7	12.5	4.2	12.5	16.7	12.5
93		3	4.2	8.3	29.2	20.8	20.8	20.8
94			8.3	8.3	4.2	12.5	20.8	8.3
95	1	1	54.2	50.0	12.5	16.7	8.3	8.3
96			12.5	12.5	16.7	12.5	12.5	16.7
97							4.2	
98	2	2					4.2	4.2
99								
100								

* See page 96 for listing of objectives.

TABLE 5.25

Per Cents of Participants Ranking Objectives First, Second or Third Compared With Their Director's Rankings Before and After a Unitary General Science Institute of the Census

Objective	Ranking by Director		Ranking by Participants					
			First		Second		Third	
	Before	After	Before	After	Before	After	Before	After
91*	3	3	12.9	3.2	19.4	38.7	25.8	12.9
92				3.2	12.9	1.5	3.2	9.7
93	2	2	16.1	16.1	6.5	6.5	6.5	19.4
94				3.2	16.1	9.7	16.1	16.1
95	1	1	67.8	61.3	19.4	12.9	6.5	9.7
96					6.5	6.5	9.7	3.2
97				3.2			3.2	3.2
98				3.2	3.2			
99			3.2		3.2	3.2		
100				3.2			6.5	3.2

* See page 96 for listing of objectives.

TABLE 5.26

Per Cents of Participants Ranking Objectives First, Second or Third Compared With Their Director's Rankings Before and After a Unitary General Science Institute of the Census

Objective	Ranking By Director		Ranking by Participants: First		Second		Third	
	Before	After	Before	After	Before	After	Before	After
91*			26.5	35.3	23.5	11.8		5.9
92			11.8	8.8	8.8	8.8	11.8	11.8
93	1	1	20.6	23.5	8.8	11.6	14.7	8.8
94			8.8	8.8			5.9	
95	2	2	29.4	20.6	23.5	29.4	20.6	26.5
96	3	3			17.6	14.7	17.6	20.6
97						2.9	2.9	
98			2.9		8.8	5.9	2.9	8.8
99							2.9	2.9
100								

* See page 96 for listing of objectives.

TABLE 5.27

Per Cents of Participants Ranking Objectives First, Second or Third Compared With Their Director's Rankings Before and After a Sequential Earth Science Institute of the Census

Objective	Ranking by Director		Ranking by Participants					
			First		Second		Third	
	Before	After	Before	After	Before	After	Before	After
91*			8.0	4.0	24.0	16.0	12.0	16.0
92	1	1	72.0	76.0	12.0	8.0	12.0	12.0
93			4.0	12.0	24.0	20.0	20.0	16.0
94			12.0	4.0	16.0	28.0	24.0	16.0
95					12.0	8.0	8.0	12.0
96			4.0		4.0		4.0	
97						4.0	8.0	
98				4.0	4.0		4.0	12.0
99	2	2			4.0	4.0		
100						4.0		

* See page 96 for listing of objectives.

TABLE 5.28

Per Cents of Participants Ranking Objectives First, Second or Third Compared With Their Director's Rankings Before and After a Sequential Earth Science Institute of the Census

Objective	Ranking by Director		Ranking by Participants					
			First		Second		Third	
	Before	After	Before	After	Before	After	Before	After
91*			10.2	10.2	20.4	24.5	18.4	10.2
92	1	1	46.9	49.0	26.9	16.3	14.3	14.3
93	2	2	14.3	16.3	22.4	20.4	18.4	8.2
94			12.2	8.2	16.3	10.2	18.4	26.5
95	3	3	6.1		10.2	16.3	16.3	8.2
96							4.1	8.2
97								
98					2.0	4.1	6.1	8.2
99					2.0			2.0
100			4.1	4.1				

* See page 9c for listing of objectives.

Inspection of Tables 5.19 through 5.28 reveals a high agreement between the director's and the participants' rankings of the objectives for the following six institutes:

Biology, Unitary from the Sample (Table 5.19)

Mathematics, Sequential from the Sample (Table 5.21)

Multiple Fields, Sequential from the Sample (Table 5.22)

General Science Unitary from the Census (Table 5.25)

Earth Science Sequential from the Census (Table 5.27)

Earth Science Sequential from the Census (Table 5.28)

Four institutes have notable variations in the agreement between the director's and participants' rankings. These are described as follows.

Chemistry, Unitary from the Sample (Table 5.20): The institute achieved a variety of objectives, but what the participants perceived to be the main objective was not considered to be the main objective (before and after) by the director. The objective ranked number one by the director (before and after) was more commonly ranked second or third by the participant (before and after).

Multiple Fields, Sequential from the Sample (Table 5.23): The institute was designed to satisfy a variety of objectives and apparently was so perceived by the director and the participants, before and after the institute. A notable difference is that, after the institute, the director ranked a previously unranked objective as the most important objective. In contrast, after the institute, the participants' rankings completely excluded that objective.

Earth Science, Unitary from the Census (Table 5.24): There was a high agreement in the selection of the main objective of the program, but

the selection of the second most important objective by the director was not perceived by the participants as being important.

General Science, Unitary from the Census (Table 5.26): In considering the rankings without reference to the nature of the objectives, it might be concluded that a difference existed between the director's and the participants' determinations of the main objective of the institute. However, when the similarity between Objectives 1 and 3 is considered, it may be assumed that teachers might be inclined to view their remedial needs as updating needs.

LIST OF APPENDICES

LIST OF APPENDIX TABLES (D1 - H3)

APPENDIX A

National Science Foundation 1970 Summer Institute
Participant Questionnaire

NATIONAL SCIENCE FOUNDATION

WASHINGTON, D.C. 20550

October 5, 1971

Dear 1970 NSF Summer Institute Participant:

The National Science Foundation is conducting a national survey of the participants of 1970 Summer Institutes. The purpose of the survey is to evaluate the effects of institute attendance upon the participant and his subsequent professional performance. You have been selected as one of the respondents. Completion of the enclosed questionnaire will take a small amount of your time, but your responses are of great importance to NSF and the Summer Institute Program. Future directions for the Foundation's education programs will be influenced by the results of this evaluation.

We have engaged the University of Toledo, Center for Education Research as the contractor for this evaluation. University of Toledo staff, in cooperation with NSF officials, have designed the questionnaire. Therefore, all completed questionnaires are to be returned to the University of Toledo as indicated on the envelope. Please use the enclosed, stamped envelope for the prompt return of your completed questionnaire.

Please read the instructions carefully, since the format for response differs from section to section. The numbers in parentheses on the left side of each page are for information coding purposes; disregard those numbers as you respond to the items. The questionnaire number will be used only to exclude your name from follow-up mailings. You are guaranteed complete anonymity as an individual respondent.

Your cooperation in responding to the questionnaire and its prompt return are deeply appreciated.

Sincerely yours,

Charles A. Whitmer

Charles A. Whitmer
Division Director
Pre-College Education in Science

Enclosures

OMB No. 99-S 71004
Approval expires July 31, 1972

Survey Conducted By The University of Toledo
Center for Educational Research
under contract with the National Science Foundation

NSF 1970 SUMMER INSTITUTE PARTICIPANT QUESTIONNAIRE

SECTION I

A (1-4) 1 Age at last birthday _____

(5) 2 Sex: Male ____ Female ____

		Which degrees have you earned?	Major Field	Minor Field(s)		Year
(6-15)	3	Bachelor's	_____	____	_____	_____
(16-25)		Master's	_____	____	_____	_____
(26-35)		Specialist in Education	_____	____	_____	_____
(35-45)		Other (specify)	_____	____	_____	_____

(46) 4 In what type of school did you teach in 1970-71?
Grades 7-8 _____ 7-9 _____ 7-12 _____ 9-12 _____ 10-12 _____
Other (Give grade range) _____

(47) 5 Years of teaching experience as of June 1970
0-2 _____ 3-5 _____ 6-10 _____ more than 10 _____

(48-49) 6 Average enrollment per grade in your school in 1970-71.
under 100 _____ 400-499 _____ 800-899 _____
100-199 _____ 500-599 _____ 900-999 _____
200-299 _____ 600-699 _____ 1000 and over _____
300-399 _____ 700-799 _____

Your teaching assignment for fall term, 1970: Circle the number of classes taught by subject.

(50)	7	Economics	1 2 3 4 5or more
(51)	8	Geography	1 2 3 4 5or more
(52)	9	History	1 2 3 4 5or more
(53)	10	Psychology	1 2 3 4 5or more
(54)	11	Sociology	1 2 3 4 5or more
(55)	12	Anthropology	1 2 3 4 5or more
(56)	13	Social Studies/Social Science (not listed above)	1 2 3 4 5or more
(57)	14	Mathematics	1 2 3 4 5or more
(58)	15	Biology or Biological Science	1 2 3 4 5or more
(59)	16	Chemistry	1 2 3 4 5or more
(60)	17	Earth Science	1 2 3 4 5or more
(61)	18	General Science	1 2 3 4 5or more
(62)	19	Integrated Physical Science	1 2 3 4 5or more
(63)	20	Physics	1 2 3 4 5or more
(64)	21	Other (please specify _____)	1 2 3 4 5or more
(65)		_____	1 2 3 4 5or more
(66)		_____	1 2 3 4 5or more
(67)	22	In addition to teaching during 1970-71 I had supervisory, advisory, or administrative responsibilities. Yes ____ No ____	
(68)	23	I had no teaching assignment, but served as a supervisor or in an advisory capacity Yes ___ No ___	

(69) 24 Do you consider your 1970-fall teaching or supervisory assignment as primarily junior high or senior high? Junior high ___ Senior high ___ Cannot distinguish ___ Other _____

(70-71) 25 Regardless of your 1970-71 assignment, with what secondary school activity or teaching field do you most prefer to be identified? _____

SECTION II

Indicate your previous participation in NSF-supported programs prior to the summer of 1970 (Secondary School is defined here as Grades 7-12.)

For each type of program below, as appropriate, give the year of your most recent attendance and the year of your second most recent attendance.

			Number Attended (Before 1970)	Most recent	2nd Most recent
(72-81)	26	Academic Year Institute for Secondary School Teachers (full-time attendance)			
(82-91)	27	In-Service Institutes for Secondary School Teachers (part-time attendance)			
(92-101)	28	Summer Institutes for Secondary School Teachers			
(102-111)	29	Summer Conferences for Secondary School Teachers			
(112-121)	30	Research Participation for High School Teachers			
(112-131)	31	Cooperative College-School Science Program (CCSS)			
(132-141)	32	Other NSF Fellowship or Traineeship Program			

SECTION III

The following items refer to changes in your professional duties and status. Indicate the effects which are directly attributable to your participation in the 1970 Summer Institute (SI). (If you have participated in NSF-supported institutes before that time your answer should reflect the cumulative effect of all institutes attended through the summer of 1970.)

			Yes	No
(142)	33	Moved to another school		
(143)	34	Received a different teaching assignment		
(144)	35	Received a special purpose teaching assignment, such as a class for exceptional children or children with special needs		
(145)	36	Received a more advanced teaching assignment, i.e., more sophisticated subject matter		
(146)	37	Assigned to curriculum supervision		
(147)	38	Became a department chairman or its equivalent		
(148)	39	Received a reduced teaching load or released time for curriculum development or related activities		
(149)	40	Assigned curriculum development without released time, for example, curriculum committee assignment		
(150)	41	Conducted or otherwise arranged for in-service training of other teachers		

SECTION IV

This section lists numerous generally recognized educational needs. In each of the columns check those needs that apply as follows:

A. Which of the educational needs do you feel are particularly important to you for the teaching of your subject? (Check in column A.)

B. Which needs had you expected the 1970 SI to help you in meeting? (Check in column B.)

C. Which needs did the 1970 SI actually help you in meeting? (Check in column C.)

D. Answer this item if you had experience in NSF-supported institutes prior to the 1970 SI. Which needs did your total institute experience actually help you in meeting? (Check in column D.)

			Educational Needs	A Your needs in teaching the subject	B Your Expectations for the SI	C Your needs which the 1970 SI helped to meet	D Cumulative Effect
B	(1-4)	42	Individualizing learning	____	____	____	____
	(5-8)	43	Adapting instruction to slow learners	____	____	____	____
	(9-12)	44	Adapting instruction to high ability students	____	____	____	____
	(13-16)	45	Adapting inductive (discovery) methods of teaching	____	____	____	____
	(17-20)	46	Having students become more actively involved in the learning process	____	____	____	____
	(21-24)	47	Motivating reluctant learners	____	____	____	____
	(25-28)	48	Providing more courses in your subject area for non-college bound students	____	____	____	____
	(29-32)	49	Providing for continuous progress of students (self-paced learning)	____	____	____	____
	(33-36)	50	Providing content for courses utilizing computers	____	____	____	____
	(37-40)	51	Using computer-assisted instruction	____	____	____	____
	(41-44)	52	Up dating subject-matter background	____	____	____	____
	(45-48)	53	Introducing teachers to new curriculum developments	____	____	____	____
	(49-52)	54	Relating science and non-science areas through interdisciplinary approaches	____	____	____	____
	(53-56)	55	Fusing science courses and/or science and math courses	____	____	____	____
	(57-60)	56	Providing teachers with greater in-depth training (e.g. master's degree, etc.)	____	____	____	____
	(61-64)	57	Providing teachers with refresher study	____	____	____	____
	(65-68)	58	Strengthening teachers' backgrounds in allied subjects	____	____	____	____
	(69-72)	59	Developing courses specifically designed for local students	____	____	____	____
	(73-76)	60	Providing teachers with actual research experience	____	____	____	____
	(77-80)	61	Utilizing resources outside of the school	____	____	____	____
	(81-84)	62	Using existing laboratory space and materials more effectively	____	____	____	____
	(85-88)	63	Obtaining additional laboratory facilities	____	____	____	____
	(89-92)	64	Obtaining additional laboratory equipment	____	____	____	____

SECTION V

For each item check the **one and only one** response which best indicates the extent to which your participation in institute(s) has contributed to that result.

(THE DESIGNATION OF MATH/SCIENCE IN THE ITEMS DESIGNATES THE **AREA(S)** *STUDIES BY* **YOU** *IN YOUR INSTITUTE (E.G., IF YOU STUDIES ECONOMICS IN THE INSTITUTE, THIS IS THE AREA UNDER CONSIDERATION). INTERPRET THE WORD LABORATORY IN THE BROAD SENSE TO COVER YOUR DISCIPLINE.) ALL QUESTIONS CONCERNING YOUR CLASSROOM INSTRUCTION RELATE TO THE PERIOD BEGINNING FROM FALL 1970 TO THE PRESENT.*

			negligible or none	little	moderately	considerably	a great deal
(93)	65	increased your math/science knowledge, directly related to the math/science you teach	—	—	—	—	—
(94)	66	increased your math/science knowledge	—	—	—	—	—
(95)	67	increased your professional competence in teaching math/science	—	—	—	—	—
(96)	68	increased confidence in your ability to present math/science	—	—	—	—	—
(97)	69	increased your ability to judge content for your classes	—	—	—	—	—
(98)	70	increased knowledge of new teaching techniques	—	—	—	—	—
(99)	71	led you to implement new teaching techniques in your classes	—	—	—	—	—
(100)	72	increased your stimulation of student interest in math/science	—	—	—	—	—
(101)	73	increased your effectiveness in classroom teaching	—	—	—	—	—
(102)	74	enabled you to teach units or content not previously taught by you in existing courses	—	—	—	—	—
(103)	75	led you to introduce new units and topics into existing courses	—	—	—	—	—
(104)	76	led you to introduce laboratory experiences into courses that previously contained none	—	—	—	—	—
(105)	77	led you to add additional laboratory demonstrations, techniques, or experiments to existing laboratory courses	—	—	—	—	—
(106)	78	led you to modify laboratory demonstrations, techniques, or experiments in existing laboratory courses	—	—	—	—	—
(107)	79	led you to delete portions of content previously included in your courses	—	—	—	—	—
(108)	80	increased your enthusiasm for teaching math/science	—	—	—	—	—
(109)	81	increased your ability to individualize the math/science instruction for your students	—	—	—	—	—
(110)	82	increased the individualization of the math/science instruction for your students	—	—	—	—	—
(111)	83	increased your feeling of personal accomplishment in successfully having completed the institute	—	—	—	—	—
(112)	84	led you to increase your personal study of new math/science programs	—	—	—	—	—
(113)	85	led you to increase your membership in professional organizations	—	—	—	—	—
(114)	86	led you to increase your active participation in professional organizations	—	—	—	—	—

			negligible or nc	little	moderately	considerably	a great deal
(115)	87	increased your influence on other math/science teachers in your school with respect to subject-matter competence	—	—	—	—	—
(116)	88	increased your influence on other math/science teachers in your school with respect to teaching techniques	—	—	—	—	—
(117)	89	increased your influence on other math/science teachers in your school with respect to implementing new curriculum materials	—	—	—	—	—
(118)	90	(Respond only if you are a supervisor) the extent to which your institute training has been used to supervise the math/science programs in your school	—	—	—	—	—

SECTION VI

The following objectives are those established by NSF for its SI program. However, no single institute is designed to meet all the objectives

A. At the time you submitted an application to your 1970 Summer Institute, what did you perceive its objectives to be? Indicate the most important one by writing the symbol **1** in the appropriate blank in column A. Indicate (in order of priority) any other objectives that you judged to be important in that institute by writing the symbols **2, 3,** . . . (etc) in the appropriate blanks (Do not rank any two objectives the same in this column.)

B. In column B indicate the objective that you feel was met most successfully in the institute for the participant group as a whole, by writing the symbol **1** in the appropriate blank. Indicate (in order of most successful accomplishment) the other objectives that you judge were met by the institute for the participant group in general; do this by writing the symbols **2, 3,** . (etc.) in the appropriate blanks in column B. (Do not rank any two objectives the same in this column)

			A	B	
C	(1 4)	91	—	—	To update subject matter knowledge of teachers who were once adequately prepared
	(5-8)	92	—	—	To provide in-depth training to enable teachers to meet new, higher standards (such as those represented by a master's degree)
	(9-12)	93	—	—	To provide remedial study for those teachers who never had adequate training in the subject(s) they teach
	(13-16)	94	—	—	To strengthen teachers' background in allied subjects prerequisite to suitab'e mastery of a field
	(17-20)	95	—	—	To acquaint teachers with new curriculum materials and teaching methods
	(21-24)	96	—	—	To assist teachers in developing materials and courses adapted to individual teaching locales
	(25-28)	97	—	—	To prepare teachers for assignments involving special problems (i e courses for slow learners, Advance Placement courses, etc.)
	(29-32)	98	—	—	To provide research experience to contribute to understanding of science
	(33-36)	99	—	—	To develop leadership and supervisory potential (as by preparing teachers to teach their colleagues, or by training for supervisory assignments, etc.)
	(37-40)	100	—	—	(Other objectives not included in the above list) **Specify:**

SECTION VII

According to NSF records, you attended one of the institutes which was oriented towards one of the new curriculum projects. Please supply the following information about that particular institute.

(41-60) **101** Which curriculum project was emphasized? (The initials or acronym will suffice.) _____

(61) **102** How much of the institute was devoted to the project?

- _____ 75 per cent or more
- _____ 50 per cent - 75 per cent
- _____ less than 50 per cent

(62-63) **103** Has the curriculum project studied in the institute been implemented in your classroom?

- _____ Yes
- _____ No, not the entire curriculum but substantial portions of materials, approaches, or ideas have been implemented
- _____ No, but it has been implemented in my school.
- _____ No, but there are plans to implement it in my classroom next year.
- _____ No, but there are plans to implement it in my school next year, but perhaps not in my classroom.
- _____ No, and at the time it looks as though we will not be adopting the curriculum project.
- _____ Other (please explain)

(64) **104** If your school has implemented the curriculum project, when was it introduced?

- _____ 1968-1969 or earlier
- _____ 1969-1970
- _____ 1970-1971
- _____ 1971-1972

(65) **105** What was your main objective for selecting this particular institute? Check only one response.

- _____ I had not yet taught in the curriculum project but was expected to do so in the future.
- _____ I had been teaching in the curriculum project without formal background in it.
- _____ I wanted to obtain information which would help in deciding the suitability of the curriculum project for adoption in our school
- _____ I needed the background necessary for leadership in the implementation of the curriculum project in our school system.
- _____ Other **Specify:**

Please place any additional comments below that will be beneficial to NSF personnel in planning future institutes.

APPENDIX B

LEVELS OF WORK OF 1970 SUMMER INSTITUTES

The planned level of work by the participants in the institute courses was also supp' ' to the projec staff by NSF personnel The levels of work were coded by NSF as follows:

(0) Work at level of introductory course such as might be offered to students who have practically no academic background in the basic subject matter;

(1) Work at level normally requiring approximately a year (6-10 semester-hours) of prior study of basic subject matter;

(2) Work at level normally requiring about 2 years (12-18 semester-hours) of prior study of basic subject matter;

(3) Work at level normally requiring about 3 years of prior study of basic subject matter;

(4) Work at level comparable to that of the usual subject-matter course for advanced undergraduates or beginning graduates, assuming a background essentially equivalent to an undergraduate major in the field;

(5) Work at level comparable to that of the usual graduate courses in the field.

For the purpose of comparison within this study the project staff grouped the planned level of work as follows: If the arithmetic average of the level or levels indicated for an institute was 2 or less it was designated as a Level A institute. If the average was more than 2 it was designated as a Level B institute. This classification enabled comparisons between participants who had no academic background up to approximately a minor in a basic subject area to those participants who had work beyond a minor up through graduate preparation in a subject area.

APPENDIX C

Distributions of Questionnaires Sent and Returned and the Per Cents of Returns by Disciplines for the Sample and Census

	Sample		Census	
BZ	264 sent	213 returned 81%	BZ	
CH	132 sent	100 returned 75%	CH	
EN			EN	152 sent 117 returned 77%
EZ	66 sent	55 returned 83%	EZ	929 sent 791 returned 85%
GG	22 sent	15 returned 68%	GG	78 sent 65 returned 83%
GS	44 sent	29 returned 66%	GS	991 sent 844 returned 85%
MA	726 sent	574 returned 79%	MA	383 sent 320 returned 84%
PS			PS	74 sent 66 returned 89%
PY	108 sent	94 returned 86%	PY	483 sent 371 returned 77%
RD	22 sent	17 returned 77%	RD	
SE			SE	247 sent 217 returned 88%
SO			SO	225 sent 178 returned 79%
SU			SU	132 sent 118 returned 89%
XX	374 sent	292 returned 78%	XX	
Total	1758 sent	1389 returned 79.01%		3694 sent 3087 returned 83.57%

APPENDIX D

Age-Sex Distributions of the Disciplines of the Sample and the Disciplines and Implementation Groups of the Census

TABLE D 1

Age-Sex Distributions of the Biology Group of the Sample

	Under 30	30-39	Over 39	Total
Male	48 .23	66 .31	36 .17	150 .71
Female	24 .11	18 .09	18 .09	60 .29
Total	72 .34	84 .40	54 .26	210
% Female	.33	.21	.33	

TABLE D 2

Age-Sex Distributions of the Chemistry Group of the Sample

	Under 30	30-39	Over 39	Total
Male	30 .31	32 .33	16 .16	78 .80
Female	6 .06	4 .04	9 .09	19 .20
Total	36 .37	36 .37	25 .26	97
% Female	.17	.11	.36	

TABLE D 3

Age-Sex Distributions of the Earth Science Group of the Sample

	Under 30	30-39	Over 39	Total
Male	14 .26	15 .28	11 .20	40 .74
Female	5 .09	4 .07	5 .09	14 .26
Total	19 .35	19 .35	16 .30	54
% Female	.26	.21	.31	

TABLE D 4

Age-Sex Distributions of the General Science Group of the Sample

	Under 30	30-39	Over 39	Total
Male	6 .21	9 .31	3 .10	18 .62
Female	4 .14	5 .17	2 .07	11 .38
Total	10 .34	14 .48	5 .17	29
% Female	.40	.36	.40	

TABLE D 5

Age-Sex Distributions of the Mathematics Group of the Sample

	Under 30	30-39	Over 39	Total
Male	148 .26	174 .31	78 .14	400 .71
Female	76 .13	38 .07	53 .09	167 .29
Total	224 .40	212 .37	131 .23	567
% Female	.34	.18	.40	

TABLE D 6

Age-Sex Distributions of the Physics Group of the Sample

	Under 30	30-39	Over 39	Total
Male	36 .38	29 .31	19 .20	84 .89
Female	3 .03	4 .04	3 .03	10 .11
Total	39 .41	33 .35	22 .23	94
% Female	.08	.12	.14	

TABLE D 7

Age-Sex Distributions of the Multiple Fields Group of the Sample

	Under 30	30-39	Over 39	Total
Male	87 .30	83 .29	46 .16	216 .74
Female	20 .07	27 .09	27 .09	74 .26
Total	107 .37	110 .38	73 .25	290
% Female	.19	.25	.37	

TABLE D 8

Age-Sex Distributions of the Earth Science Group of the Census

	Under 30	30-39	Over 39	Total
Male	184 .23	245 .31	182 .23	611 .78
Female	56 .07	61 .08	57 .07	174 .22
Total	240 .31	306 .39	239 .30	785
% Female	.23	.20	.24	

TABLE D 9

Age-Sex Distributions of the Geography Group of the Census

	Under 30	30-39	Over 39	Total
Male	18 .29	14 .23	16 .26	48 .77
Female	2 .03	3 .05	9 .15	14 .23
Total	20 .32	17 .27	25 .40	62
% Female	.10	.18	.36	

TABLE D 10

Age-Sex Distributions of the General Science Group of the Census

	Under 30	30-39	Over 39	Total
Male	191 .23	279 .34	185 .22	655 .79
Female	33 .04	50 .06	91 .11	174 .21
Total	224 .27	329 .40	276 .33	829
% Female	.15	.15	.33	

TABLE D 11

Age-Sex Distributions of the Psychology Group of the Census

	Under 30	30-39	Over 39	Total
Male	8 .13	18 .28	19 .30	45 .70
Female	3 .05	2 .03	14 .22	19 .30
Total	11 .17	20 .31	33 .52	64
% Female	.27	.10	.42	

TABLE D 12

Age-Sex Distributions of the Economics Group of the Census

	Under 30	30-39	Over 39	Total
Male	39 .18	79 .37	54 .25	172 .80
Female	10 .05	11 .05	22 .10	43 .20
Total	49 .23	90 .42	76 .35	215
% Female	.20	.12	.29	

TABLE D 13

Age-Sex Distributions of the Sociology Group of the Census

	Under 30	30-39	Over 39	Total
Male	30 .17	61 .35	27 .15	118 .67
Female	13 .07	20 .11	24 .14	57 .33
Total	43 .25	81 .46	51 .29	175
% Female	.30	.25	.47	

TABLE D 14

Age-Sex Distributions of the Engineering Concepts Curriculum Project (ECCP) Group of the Census

	Under 30	30-39	Over 39	Total
Male	21 .18	43 .37	46 .40	110 .95
Female	2 .02	1 .01	3 .03	6 .05
Total	23 .20	44 .38	49 .42	116
% Female	.09	.02	.06	

TABLE D 15

Age-Sex Distributions of the Earth Science Curriculum Project (ESCP) Group of the Census

	Under 30	30-39	Over 39	Total
Male	76 .24	89 .28	83 .26	248 .78
Female	24 .08	20 .06	24 .08	68 .22
Total	100 .32	109 .34	107 .34	316
% Female	.24	.18	.22	

TABLE D 16

Age-Sex Distributions of the Intermediate Science Curriculum Study (ISCS) Group of the Census

	Under 30	30-39	Over 39	Total
Male	14 .19	30 .41	17 .23	61 .82
Female	5 .07	3 .04	5 .07	13 .18
Total	19 .26	33 .45	22 .30	74
% Female	.26	.09	.23	

TABLE D 17

Age-Sex Distributions of the Introductory Physical Science (IPS) Group of the Census

	Under 30	30-39	Over 39	Total
Male	44 .18	74 .30	65 .26	183 .74
Female	11 .04	16 .07	36 .15	63 .26
Total	55 .22	90 .37	101 .41	246
% Female	.20	.18	.36	

TABLE D 18

Age-Sex Distributions of the Harvard Project-Physics (HHP) Group of the Census

	Under 30	30-39	Over 39	Total
Male	76 .21	109 .30	132 .36	317 .86
Female	7 .02	20 .05	24 .07	51 .14
Total	83 .23	129 .35	156 .42	368
% Female	.08	.16	.15	

TABLE D 19

Age-Sex Distributions of the University of Illinois Committee on School Mathematics (UICSM) Group of the Census

	Under 30	30-39	Over 39	Total
Male	61 .16	75 .24	78 .25	204 .64
Female	39 .12	27 .09	47 .15	113 .36
Total	90 .28	102 .32	125 .39	317
% Female	.43	.26	.38	

TABLE D 20

Age-Sex Distributions of the Sociological Resources for Secondary Schools (SRSS) Group of the Census

	Under 30	30-39	Over 39	Total
Male	22 .19	40 .34	18 .15	80 .68
Female	8 .07	10 .09	19 .16	37 .32
Total	30 .26	50 .43	37 .32	117
% Female	.27	.20	.51	

APPENDIX E

Teaching Assignment Distributions of the Disciplines of the Sample and of the Disciplines and Implementation Groups of the Census

TABLE E 1

Teaching Assignment Distributions of the Disciplines of the Sample

Group	Jr. High	Sr. High	Cannot Distinguish	Other	Omit
Biology	73 .34	127 .60	5 .02	1 .00	7 .03
Chemistry	9 .04	83 .83	5 .05	1 .01	7 .07
Earth Science	35 .64	15 .27	0 .00	1 .02	4 .07
General Science	8 .62	9 .31	0 .00	0 .00	2 .07
Mathematics	145 .25	361 .63	26 .05	18 .03	24 .04
Physics	12 .13	69 .73	4 .04	6 .06	3 .03
Multiple Science	80 .27	189 .65	5 .02	4 .01	14 .05

TABLE E 2

Teaching Assignment Distributions of the Disciplines of the Census

Group	Jr. High	Sr. High	Cannot Distinguish	Other	Omit
Earth Science	456 .58	276 .35	21 .03	19 .02	19 .02
Geography	50 .77	10 .15	0 .00	3 .05	2 .03
General Science	522 .62	252 .30	20 .02	27 .03	23 .03
Psychology	11 .17	50 .76	0 .00	1 .02	4 .06
Economics	23 .11	171 .79	4 .02	9 .04	10 .05
Sociology	30 .17	128 .72	3 .02	1 .01	16 .09

TABLE E 3

Teaching Assignment Distributions of the Implementation Groups of the Census

Group	Jr. High	Sr. High	Cannot Distinguish	Other	Omit
Engineering Concepts Curriculum Project (ECCP)	9 .08	102 .87	3 .02	0 .00	3 .03
Earth Science Curriculum Project (ESCP)	194 .61	96 .30	11 .03	9 .03	6 .02
Intermediate Science Curriculum Study (ISCS)	65 .82	7 .09	1 .01	3 .04	3 .04
Introductory Physical Science (IPS)	146 .58	89 .35	5 .01	7 .03	5 .02
Harvard Project-Physics (HPP)	16 .04	321 .87	9 .02	9 .02	16 .04
University of Illinois Committee on School Mathematics (UICSM)	196 .61	103 .32	4 .01	11 .03	6 .02
Sociological Resources for Secondary Schools (SRSS)	20 .17	84 .71	3 .02	1 .01	11 .09

APPENDIX F

Distributions of Yes Responses to Section III Items for the Disciplines of the Sample and for the Disciplines and Implementation Groups of the Census

TABLE F 1

Distributions of Yes Responses to Section III Items for the Disciplines of the Sample

Group	Item 33 Moved	34 Dif. Asmt.	35 Sp. Asmt.	36 Adv. Asmt.	37 Supt.	38 Dept. Ch.	39 Red. Load	40 Curr. Dev.	41 In-Serv.
Biology	39 .18	69 .32	32 .15	95 .45	28 .13	52 .24	16 .08	58 .27	30 .14
Chemistry	13 .13	26 .26	13 .13	38 .38	12 .12	16 .16	8 .08	20 .20	8 .08
Earth Science	9 .16	23 .42	6 .11	17 .31	6 .11	12 .22	2 .04	16 .29	10 .18
General Science	5 .17	8 .28	2 .07	7 .24	3 .10	5 .17	3 .10	7 .24	2 .07
Mathematics	74 .13	166 .29	83 .14	233 .41	65 .11	97 .17	38 .07	122 .21	47 .08
Physics	12 .13	25 .27	12 .13	35 .37	13 .14	16 .17	8 .09	23 .24	20 .21
Multiple Fields	54 .18	78 .27	34 .12	104 .36	39 .13	73 .25	18 .06	73 .25	31 .11

TABLE F 2

Distributions of Yes Responses to Section III Items for the Disciplines of the Census

Group	Item 33 Moved	34 Dif. Asmt.	35 Sp. Asmt.	36 Adv. Asmt.	37 Supt.	38 Dept. Ch.	39 Red. Load	40 Curr. Dev.	41 In-Serv.
Earth Science	129	310	96	265	120	161	74	246	135
	.16	.39	.12	.34	.15	.20	.09	.31	.17
Geography	5	23	5	20	5	16	4	20	11
	.08	.35	.08	.31	.08	.25	.06	.31	.17
General Science	144	313	96	280	115	200	72	214	166
	.17	.37	.11	.33	.14	.24	.09	.25	.20
Psychology	6	16	6	30	10	19	10	19	10
	.09	.24	.09	.45	.15	.29	.15	.29	.15
Economics	19	62	21	81	35	40	18	67	40
	.09	.29	.10	.37	.16	.18	.08	.31	.18
Sociology	21	60	19	69	37	45	23	62	40
	.12	.34	.11	.39	.21	.25	.13	.35	.22

TABLE F 3

Distributions of Yes Responses to Section III Items for the Implementation Groups of the Census

Group	Item 33 Moved	34 Dif. Asmt.	35 Sp. Asmt.	36 Adv. Asmt.	37 Supt.	38 Dept. Ch.	39 Red. Load	40 Curr. Dev.	41 In-Serv.
Engineering Concepts Curriculum Project (ECCP)	22 .19	37 .32	21 .18	45 .38	22 .19	27 .23	17 .15	30 .26	19 .16
Earth Science Curriculum Project (ESCP)	44 .14	134 .42	36 .11	103 .33	53 .17	75 .24	28 .09	110 .35	60 .19
Intermediate Science Curr. Study (ISCS)	10 .13	27 .34	7 .09	22 .28	12 .15	16 .20	4 .05	28 .35	26 .33
Introductory Physical Science (IPS)	47 .19	118 .47	44 .17	94 .37	38 .15	65 .26	22 .09	64 .25	62 .25
Harvard Project Physics (HPP)	64 .17	121 .33	46 .12	125 .34	50 .13	91 .25	26 .07	111 .30	70 .19
U. of Illinois Committee on School Math. (UICSM)	53 .17	107 .33	128 .40	116 .36	39 .12	62 .19	32 .10	86 .27	57 .18
Sociological Resources for Second. Schools (SRSS)	14 .12	33 .28	12 .10	43 .36	23 .19	28 .24	15 .13	41 .34	26 .22

APPENDIX G

Distributions of Responses to Section IV Items for the Disciplines of the Sample and for the Disciplines and Implementation Groups of the Census

TABLE G 1

Distributions of Responses to Section IV Items for the Biology Group of the Sample

Item	A	C	C/B
42 (Indv.)	.65	.34	1.16
43 (Slow)	.54	.15	.89
44 (Able)	.55	.47	1.22
45 (Induct.)	.65	.49	.96
46 (Active Invol.)	.69	.51	1.00
47 (Motivate)	.60	.20	.81
48 (Non-college)	.37	.12	.81
49 (Self-paced)	.38	.16	.87
50 (Computers)	.10	.05	.77
51 (Comp. Asst. Inst.)	.08	.03	.70
52 (Up-Date)	.69	.65	1.01
53 (Curr. Dev.)	.44	.38	1.01
54 (Interdiscp.)	.36	.18	1.03
55 (Fusing)	.29	.16	.90
56 (In-Depth)	.60	.58	.98
57 (Refresh.)	.54	.51	1.09
58 (Allied Subs.)	.50	.42	1.06
59 (Local)	.32	.16	.97
60 (Research)	.37	.39	1.11
61 (Outside Resources)	.46	.33	1.09
62 (Effective Lab. Use)	.51	.40	.96
63 (Add. Lab. Space)	.31	.10	1.22
64 (Add. Lab. Equip)	.41	.22	1.44

TABLE G 2

Distributions of Responses to Section IV Items
for the Chemistry Group of the Sample

Item	A	C	C/B
42 (Indv.)	.58	.19	.86
43 (Slow)	.34	.06	.60
44 (Able)	.65	.51	1.00
45 (Induct.)	.60	.32	.74
46 (Active Invol.)	.69	.30	.81
47 (Motivate)	.44	.10	.71
48 (Non-college)	.31	.06	.60
49 (Self-paced)	.29	.14	1.27
50 (Computers	.17	.07	.64
51 (Comp. Asst. Inst.)	.15	.11	1.22
52 (Up-Date)	.70	.64	.97
53 (Curr. Dev.)	.40	.32	.86
54 (Interdiscp.)	.40	.14	.88
55 (Fusing)	.35	.28	1.00
56 (In-Depth)	.57	.52	.98
57 (Refresh.)	.52	.51	.98
58 (Allied Subs.)	.44	.27	.87
59 (Local)	.15	.04	.57
60 (Research)	.27	.16	1.07
61 (Outside Resources)	.27	.07	.88
62 (Effective Lab. Use.)	.53	.35	1.03
63 (Add. Lab. Space)	.30	.06	.46
64 (Add. Lab. Equip.)	.51	.18	.90

TABLE G 3

Distributions of Responses to Section IV Items
for the Earth Science Group of the Sample

Item	A	C	C/B*
42 (Indv.)	.71	.18	.63
43 (Slow)	.65	.16	.56
44 (Able)	.62	.35	1.12
45 (Induct.)	.75	.38	.91
46 (Active Invol.)	.84	.44	.92
47 (Motivate)	.73	.18	.48
48 (Non-college)	.40	.11	.75
49 (Self-paced)	.47	.09	.56
50 (Computers)	.13	.02	
51 (Comp. Asst. Instr.)	.13	.02	
52 (Up-Date)	.76	.65	1.13
53 (Curr. Dev.)	.51	.31	1.06
54 (Interdiscp.)	.44	.09	.83
55 (Fusing)	.44	.24	1.00
56 (In-Depth)	.60	.47	1.00
57 (Refresh.)	.62	.47	1.04
58 (Allied Subs.)	.60	.51	.93
59 (Local)	.45	.22	.86
60 (Research)	.42	.36	1.25
61 (Outside Resources)	.56	.53	1.04
62 (Effective Lab. Use)	.58	.25	.93
63 (Add. Lab. Space)	.31	.07	1.33
64 (Add. Lab Equip.)	.36	.07	1.33

* No C/B value indicates that the B-value was zero.

TABLE G 4

Distributions of Responses to Section IV Items
for the General Science Group of the Sample

Item	A	C	C/B*
42 (Indv.)	.55	.34	1.00
43 (Slow)	.55	.14	.57
44 (Able)	.45	.31	1.00
45 (Induct.)	.69	.52	1.00
46 (Active Invol.)	.59	.48	1.17
47 (Motivate)	.52	.31	1.00
48 (Non-college)	.28	.07	
49 (Self-paced)	.31	.28	1.00
50 (Computers)	.10	.14	1.33
51 (Comp. Asst. Inst.)	.07	.10	1.50
52 (Up-Date)	.59	.45	1.00
53 (Curr. Dev.)	.45	.45	1.08
54 (Interdiscp.)	.24	.21	2.00
55 (Fusing)	.41	.45	1.44
56 (In-Depth)	.45	.38	.79
57 (Refresh.)	.45	.52	1.15
58 (Allied Subs.)	.55	.48	1.08
59 (Local)	.14	.14	2.00
60 (Research)	.14	.28	2.00
61 (Outside Resources)	.31	.31	1.50
62 (Effective Lab. Use)	.48	.52	1.36
63 (Add. Lab. Space)	.17	.10	1.50
64 (Add. Lab. Equip.)	.28	.14	1.00

* No C/B value indicates that the B-value was zero.

TABLE G 5

Distributions of Responses to Section IV Items
for the Mathematics Group of the Sample

Item	A	C	C/B
42 (Indv.)	.66	.23	.80
43 (Slow)	.58	.13	.59
44 (Able)	.58	.43	.98
45 (Induct)	.55	.35	.92
46 (Active Invol.)	.66	.26	.74
47 (Motivate	.61	.13	.48
48 (Non-college)	.37	.06	.59
49 (Self-paced)	.30	.10	.67
50 (Computers)	.30	.15	.74
51 (Comp. Assn. Instr.)	.22	.11	.76
52 (Up-Date	.63	.59	1.01
53 (Curr. Dev.	.47	.35	.87
54 (Interdisc.)	.25	.06	.75
55 (Pacing)	.26	.08	.76
56 (In-Depth)	.57	.56	.95
57 (Refresh.)	.52	.53	1.01
58 (Allied Subj.)	.37	.25	.84
59 (Ideal)	.18	.05	.65
60 (Research	.18	.11	.84
61 (Outside Resources)	.25	.10	.89
62 Effective Lab. Use)	.21	.05	.61
63 (Add. Lab. Space)	.16	.03	.56
64 (Add. Lab. Equip.)	.17	.03	.57

TABLE G 6

Distributions of Responses to Section IV Items
for the Physics Group of the Sample

Item	A	C	C/B
42 (Indv.)	.61	.20	.83
43 (Slow)	.39	.12	.65
44 (Able)	.62	.39	.84
45 (Indvct.)	.60	.33	.89
46 (Active Invol.)	.63	.28	.81
47 (Motivate	.52	.15	.58
48 (Non-college)	.43	.11	1.11
49 (Self-paced)	.37	.09	.80
50 (Computers)	.16	.02	.22
51 (Comp. Asst. Inst.)	.18	.03	.43
52 (Up-Date)	.72	.70	.97
53 (Curr. Dev.)	.43	.31	.83
54 (Interdisep.)	.44	.16	.68
55 (Fusing)	.45	.32	1.00
56 (In-Depth)	.64	.62	1.02
57 (Refresh.)	.51	.51	.91
58 (Allied Subs.)	.61	.56	.96
59 (Local)	.14	.07	1.00
60 (Research)	.29	.13	.75
61 (Outside Resources)	.26	.07	.64
62 (Effective Lab. Use)	.60	.32	.73
63 (Add. Lab. Space)	.34	.06	.75
64 (Add. Lab. Equip.)	.41	.14	.65

TABLE G 7

Distributions of Responses to Section IV Items
for the Multiple Fields Group of the Sample

Item	A	C	C/B
42 (Indv.)	.60	.24	.81
43 (Slow)	.41	.08	.59
44 (Able)	.58	.38	.90
45 (Induct.)	.63	.35	.85
46 (Active Invol.)	.64	.35	.89
47 (Motivate)	.50	.18	.76
48 (Non-college	.20	.08	.64
49 (Self-paced)	.34	.11	.89
50 (Computer)	.16	.10	1.07
51 (Comp. Asst. Instr.)	.11	.06	1.00
52 (Up-Date)	.68	.65	.98
53 (Curr. Dev.)	.46	.33	.85
54 (Interdisc.)	.35	.18	.90
55 (Fusing)	.41	.32	1.11
56 (In-Depth)	.63	.62	.94
57 (Refresh.)	.56	.50	.98
58 (Allied Subs.)	.52	.53	1.03
59 (Local)	.23	.06	.67
60 (Research)	.28	.21	.95
61 (Outside Resources)	.34	.21	1.03
62 (Effective Lab. Use)	.40	.27	.87
63 (Add. Lab. Space)	.27	.08	.88
64 (Add. Lab. Equip.)	.34	.13	1.26

TABLE G 8

Distributions of Responses to Section IV Items
for the Earth Science Group of the Census

Item	A	C	C/B
42 (Indv.)	.66	.34	.96
43 (Slow)	.52	.16	.75
44 (Able)	.49	.36	1.08
45 (Induct.)	.66	.50	1.00
46 (Active Invol.)	.68	.49	.97
47 (Motivate)	.59	.23	.77
48 (Non-college)	.33	.15	.92
49 (Self-paced)	.35	.13	.80
50 (Computers)	.07	.02	.[illegible]
51 (Comp. Asst. Inst.)	.06	.02	.82
52 (Up-date)	.67	.67	1.03
53 (Curr. Dev.)	.42	.38	.96
54 (Interdisep.)	.36	.16	.90
55 (Fusing)	.35	.19	1.03
56 (In-depth)	.53	.53	1.02
57 (Refresh.)	.49	.48	1.07
58 (Allied Subs.)	.54	.54	1.01
59 (Local)	.30	.20	1.05
60 (Research	.34	.35	.97
61 (Outside Resources)	.40	.46	1.11
62 (Effective Lab. Use)	.52	.36	.99
63 (Add. Lab. Space)	.31	.10	.92
64 (Add. Lab. Equip.)	.38	.[illegible]	1.17

TABLE G 9

Distributions of Responses to Section IV Items
for the Geography Group of the Census

Item	A	C	C/B*
42 (Indv.)	.68	.40	1.08
43 (Slow)	.49	.26	.94
44 (Able)	.45	.42	1.23
45 (Induct.)	.65	.66	1.16
46 (Active Invol.)	.71	.69	1.18
47 (Motivate)	.74	.45	1.32
48 (Non-college)	.23	.06	.57
49 (Self-paced)	.38	.18	1.09
50 (Computers)	.05	.02	
51 (Comp. Asst. Inst.)	.09	.05	1.50
52 (Up-date)	.66	.83	1.10
53 (Curr. Dev.)	.57	.60	1.03
54 (Interdiscp.)	.38	.35	1.05
55 (Fusing)	.31	.31	1.00
56 (In-depth)	.51	.49	.97
57 (Refresh.)	.52	.59	1.13
58 (Allied Subs.)	.57	.71	1.18
59 (Local)	.35	.25	1.14
60 (Research)	.32	.42	1.29
61 (Outside Resources)	.54	.49	1.33
62 (Effective Lab. Use)	.45	.38	1.09
63 (Add. Lab. Space)	.25	.09	1.50
64 (Add. Lab. Equip.)	.32	.17	1.22

* No C/B value indicates that the B-value was zero.

TABLE G 10

Distributions of Responses to Section IV Items
for the General Science Group of the Census

Item	A	C	C/B
42 (Indv.)	.64	.39	1.00
43 (Slow)	.53	.24	.80
44 (Able)	.45	.40	1.12
45 (Induct.)	.62	.52	1.02
46 (Active Invol.)	.69	.56	1.04
47 (Motivate)	.57	.30	.86
48 (Non-college)	.31	.15	.79
49 (Self-paced)	.39	.24	.96
50 (Computers)	.09	.05	.71
51 (Comp. Asst. Inst.)	.07	.04	.75
52 (Up-date)	.58	.55	1.02
53 (Curr. Dev.)	.45	.43	.94
54 (Interdiscp.)	.30	.17	1.01
55 (Fusing)	.39	.30	1.09
56 (In-depth)	.43	.39	.96
57 (Refresh.)	.51	.51	1.09
58 (Allied Subs.)	.45	.45	1.09
59 (Local)	.24	.11	.91
60 (Research)	.27	.25	.96
61 (Outside Resources)	.32	.26	1.31
62 (Effective Lab. Use)	.48	.41	1.09
63 (Add. Lab. Space)	.32	.14	1.21
64 (Add. Lab. Equip.)	.38	.21	1.22

TABLE G 11

Distributions of Responses to Section IV Items
for the Psychology Group of the Census

Item	A	C	C/B*
42 (Indv.)	.70	.50	1.14
43 (Slow)	.36	.17	.92
44 (Able)	.52	.47	1.48
45 (Induct.)	.62	.50	1.22
46 (Active Invol.)	.76	.67	1.05
47 (Motivate)	.50	.39	.93
48 (Non-college)	.24	.09	.75
49 (Self-paced)	.41	.11	.54
50 (Computers)	.11	.03	
51 (Comp. Asst. Inst.)	.12	.05	
52 (Up-date)	.68	.68	1.05
53 (Curr. Dev.)	.50	.41	1.08
54 (Interdiscp.)	.38	.24	.89
55 (Fusing)	.20	.15	1.00
56 (In-depth)	.47	.35	.92
57 (Refresh.)	.56	.47	1.00
58 (Allied Subs.)	.39	.52	1.42
59 (Local)	.24	.09	1.00
60 (Research)	.52	.50	1.06
61 (Outside Resources)	.38	.26	1.00
62 (Effective Lab. Use)	.47	.35	1.15
63 (Add. Lab. Space)	.36	.18	.86
64 (Add. Lab. Equip.)	.45	.24	.89

* No C/B value indicates that the B-value was zero.

TABLE G 12

Distributions of Responses to Section IV Items
for the Economics Group of the Census

Item	A	C	C/B
42 (Indv.)	.61	.30	.82
43 (Slow)	.45	.14	.76
44 (Able)	.52	.44	1.08
45 (Induct.)	.61	.37	.77
46 (Active Invol.)	.72	.48	.88
47 (Motivate)	.53	.18	.78
48 (Non-college)	.31	.11	.66
49 (Self-paced)	.33	.11	.61
50 (Computers)	.09	.04	.64
51 (Comp. Asst. Inst.)	.09	.06	1.33
52 (Up-date)	.69	.65	.99
53 (Curr. Dev.)	.48	.39	.88
54 (Interdiscp.)	.29	.14	.79
55 (Fusing)	.05	.05	1.00
56 (In-depth)	.40	.41	1.02
57 (Refresh.)	.55	.56	1.00
58 (Allied Subs.)	.51	.46	1.05
59 (Local)	.22	.10	.76
60 (Research)	.23	.20	.96
61 (Outside Resources)	.45	.35	1.06
62 (Effective Lab. Use)	.16	.06	.82
63 (Add. Lab. Space)	.07	.02	.83
64 (Add. Lab. Equip.)	.10	.04	1.60

TABLE G 13

Distributions of Responses to Section IV Items
for the Sociology Group of the Census

Item	A	C	C/B
42 (Indv.)	.71	.38	.84
43 (Slow)	.47	.22	.91
44 (Able)	.43	.38	1.33
45 (Induct.)	.75	.69	1.00
46 (Active Invol.)	.74	.63	.93
47 (Motivate)	.60	.31	.74
48 (Non-college)	.33	.18	.94
49 (Self-paced)	.35	.15	.68
50 (Computers)	07	.04	2.00
51 (Comp. Asst. Inst.)	.06	.04	1.60
52 (Up-date)	.61	.66	1.09
53 (Curr. Dev.)	.55	.60	1.10
54 (Interdisep.)	.31	.27	1.26
55 (Fusing)	.08	.06	1.43
56 (In-depth)	.41	.38	.99
57 (Refresh.)	.44	.45	1.07
58 (Allied Subs.)	.65	.58	1.04
59 (Local)	.27	.20	1.06
60 (Research)	.37	.35	1.15
61 (Outside Resources)	.48	.39	1.11
62 (Effective Lab. Use)	.19	.13	.96
63 (Add. Lab. Space)	.08	.04	.88
64 (Add. Lab. Equip.)	.12	.06	.83

TABLE G 14

Distributions of Responses to Section IV Items
for the Engineering Concepts Curriculum Project (ECCP) Group of the Census

Item	A	C	C/B
42 (Indv.)	.66	.32	.97
43 (Slow)	.39	.21	.80
44 (Able)	.58	.38	1.10
45 (Induct.)	.56	.39	1.21
46 (Active Invol.)	.72	.47	1.03
47 (Motivate)	.54	.31	.90
48 (Non-college)	.47	.34	.75
49 (Self-paced)	.36	.21	1.39
50 (Computers)	.50	.62	1.09
51 (Comp. Assis. Inst.)	.38	.36	1.14
52 (Up-date)	.56	.50	1.09
53 (Curr. Dev.)	.51	.52	1.11
54 (Interdiscp.)	.49	.47	1.12
55 (Fusing)	.44	.36	1.02
56 (In-depth)	.32	.21	1.04
57 (Refresh.)	.39	.21	1.14
58 (Allied Subs.)	.44	.42	1.00
59 (Local)	.27	.15	1.06
60 (Research)	.27	.14	.73
61 (Outside Resources)	.37	.23	1.29
62 (Effective Lab. Use)	.38	.21	.86
63 (Add. Lab. Space)	.27	.10	.80
64 (Add. Lab. Equip.)	.39	.24	1.22

TABLE G 15

Distributions of Responses to Section IV Items
for the Earth Sciences Curriculum Project (ESCP) Group of the Census

Item	A	C	C/B
42 (Indv.)	.68	.42	1.00
43 (Slow)	.54	.19	.73
44 (Able)	.49	.36	1.08
45 (Induct.)	.69	.67	1.07
46 (Active Invol.)	.71	.63	1.01
47 (Motivate)	.65	.28	.76
48 (Non-college)	.32	.12	.84
49 (Self-paced)	.38	.16	.79
50 (Computers)	.07	.01	.40
51 (Comp. Asst. Inst.)	.07	.03	.80
52 (Up-date)	.65	.65	.99
53 (Curr. Dev.)	.46	.49	1.05
54 (Interdiscp.)	.33	.16	.83
55 (Fusing)	.34	.18	1.02
56 (In-depth)	.50	.48	.98
57 (Refresh.)	.52	.50	1.05
58 (Allied Subs.)	.52	.52	1.01
59 (Local)	.28	.18	1.04
60 (Research)	.30	.30	.89
61 (Outside Resources)	.51	.48	1.14
62 (Effective Lab. Use)	.55	.40	.98
63 (Add. Lab. Space)	.34	.14	.98
64 (Add. Lab. Equip.)	.43	.28	1.29

TABLE G 16

Distributions of Responses to Section IV Items
for the Intermediate Science Curriculum Study (ISCS) Group of the Census

Item	A	C	C/B*
42 (Indv.)	.87	.82	.98
43 (Slow)	.58	.52	.98
44 (Able)	.47	.46	1.00
45 (Induct.)	.72	.72	1.08
46 (Active Invol.)	.81	.84	1.14
47 (Motivate)	.59	.46	.86
48 (Non-college)	.23	.15	1.20
49 (Self-paced)	.76	.80	1.03
50 (Computers)	.06	.00	
51 (Comp. Asst. Inst.)	.08	.03	1.00
52 (Up-date)	.44	.39	1.11
53 (Curr. Dev.)	.47	.56	1.16
54 (Interdiscp.)	.28	.14	.85
55 (Fusing)	.34	.22	1.06
56 (In-depth)	.23	.15	.80
57 (Refresh.)	.39	.39	1.19
58 (Allied Subs.)	.32	.27	1.50
59 (Local)	.15	.10	1.33
60 (Research)	.16	.10	1.00
61 (Outside Resources)	.23	.14	1.10
62 (Effective Lab. Use)	.47	.46	1.16
63 (Add. Lab. Space)	.19	.14	1.83
64 (Add. Lab. Equip.)	.33	.30	1.41

* No C/B value indicates that the B-value was zero.

TABLE G 17

Distributions of Responses to Section IV Items
for the Introductory Physical Science (IPS) Group of the Census

Item	A	C	C/B
42 (Indv.)	.62	.43	1.05
43 (Slow)	.55	.30	.84
44 (Able)	.46	.47	1.24
45 (Induct.)	.68	.69	1.15
46 (Active Invol.)	.75	.71	1.08
47 (Motivate)	.57	.38	.86
48 (Non-college)	.37	.23	.94
49 (Self-paced)	.38	.23	1.02
50 (Computers)	.07	.01	.18
51 (Comp. Asst. Inst.)	.07	.02	.40
52 (Up-date)	.54	.44	1.00
53 (Curr. Dev.)	.53	.49	.94
54 (Interdisep.)	.33	.17	1.02
55 (Fusing)	.47	.33	1.15
56 (In-depth)	.32	.23	.89
57 (Refresh.	.48	.43	1.02
58 (Allied Subs.)	.40	.39	1.07
59 (Local)	.23	.12	.78
60 (Research)	.25	.19	.98
61 (Outside Resources)	.20	.18	1.39
62 (Effective Lab. Use)	.52	.48	1.18
63 (Add. Lab. Space)	.39	.19	1.02
64 (Add. Lab. Equip.)	.42	.27	1.21

TABLE G 18

Distributions of Responses to Section IV Items
for the Harvard Physics Project (HPP) Group of the Census

Item	A	C	C/B
42 (Indv.)	.77	.63	1.14
43 (Slow)	.43	.32	1.02
44 (Able)	.54	.36	.87
45 (Induct.)	.57	.49	1.01
46 (Active Invol.)	.77	.70	1.02
47 (Motivate)	.57	.37	.89
48 (Non-college)	.41	.27	.97
49 (Self-paced)	.47	.36	1.02
50 (Computers)	.13	.04	1.27
51 (Comp. Asst. Inst.)	.11	.04	1.60
52 (Up-date)	.61	.49	.98
53 (Curr. Dev.)	.58	.64	1.08
54 (Interdiscp.)	.52	.48	1.13
55 (Fusing)	.35	.17	1.09
56 (In-depth)	.41	.26	.99
57 (Refresh.)	.50	.45	1.05
58 (Allied Subj.)	.45	.32	1.03
59 (Local)	.20	.11	.93
60 (Research)	.18	.08	.78
61 (Outside Resources)	.30	.18	1.22
62 (Effective Lab. Use)	.57	.44	1.01
63 (Add. Lab. Space)	.29	.14	1.08
64 (Add. Lab. Equip.)	.51	.36	1.17

TABLE G 20

Distributions of Responses to Section IV Items for the Sociological Resources for Secondary Schools (SRSS) Group of the Census

Item	A	C	C/B*
42 (Indv.)	.69	.37	.81
43 (Slow)	.49	.26	.94
44 (Able)	.45	.42	1.43
45 (Induct.)	.77	.70	1.04
46 (Active Invol.)	.74	.62	.91
47 (Motivate)	.64	.34	.72
48 (Non-college)	.33	.17	.91
49 (Self-paced)	.34	.15	.75
50 (Computers)	.04	..03	
51 (Comp. Asst. Inst.)	.04	.03	1.33
52 (Up-date)	.60	.66	1.13
53 (Curr. Dev.)	.54	.54	1.10
54 (Interdiscp.)	.31	.27	1.23
55 (Fusing)	.07	.05	1.20
56 (In-depth)	.43	.38	1.05
57 (Refresh.)	.50	.47	1.08
58 (Allied Subs.)	.63	.50	1.00
59 (Local)	.29	.18	.96
60 (Research)	.39	.33	1.18
61 (Outside Resources)	.50	.39	1.18
62 (Effective Lab. Use)	.19	.11	1.00
63 (Add. Lab. Space)	.08	.01	.25
64 (Add. Lab. Equip.)	.12	.05	1.00

* No C/B value indicates that the B-value was zero.

TABLE G 19

Distributions of Responses to Section IV Items for the University of Illinois Committee on School Mathematics (UICSM) Group of the Census

Item	A	C	C/B
42 (Indv.)	.67	.30	.89
43 (Slow)	.69	.44	.89
44 (Able)	.51	.39	1.07
45 (Induct.)	.64	.50	.95
46 (Active Invol.)	.73	.54	.91
47 (Motivate)	.69	.40	.87
48 (Non-college)	.38	.13	.84
49 (Self-paced)	.44	.18	.77
50 (Computers)	.16	.03	.69
51 (Comp. Asst. Inst.)	.14	.03	.90
52 (Up-date)	.54	.41	.98
53 (Curr. Dev.)	.49	.46	1.04
54 (Interdiscp.)	.18	.05	.79
55 (Fusing)	.22	.03	.52
56 (In-depth)	.37	.25	.96
57 (Refresh.)	.45	.34	.97
58 (Allied Subs.)	.29	.15	.72
59 (Local)	.24	.14	1.10
60 (Research)	.14	.05	.81
61 (Outside Resources)	.25	.05	.71
62 (Effective Lab. Use)	.19	.05	.63
63 (Add. Lab. Space)	.18	.03	.79
64 (Add. Lab. Equip.)	.19	.05	.94

APPENDIX H

Distributions of Responses to Section V Items for the Disciplines of the Sample and for the Disciplines and Implementation Groups of the Census

TABLE H 1

Distributions of Responses to Section V Items for the Disciplines of the Sample

Group	Scores	
	Feeling Tone	Action
Biology	41.32	39.55
Chemistry	40.51	37.10
Earth Science	40.05	38.27
General Science	40.21	36.52
Mathematics	39.78	32.80
Physics	40.55	37.74
Multiple Fields	40.70	36.55

TABLE H 2

Distributions of Responses to Section V Items for the Disciplines of the Census

Group	Scores	
	Feeling Tone	Action
Earth Science	43.13	41.86
Geography	41.85	40.28
General Science	42.36	40.15
Psychology	40.87	40.48
Economics	37.63	34.46
Sociology	33.89	35.31

TABLE H 3

Distributions of Responses to Section V
Items for the Implementation Groups of the Census

Group	Scores	
	Feeling Tone	Action
Engineering Concepts Curriculum Project (ECCP)	39.24	37.38
Earth Science Curriculum (ESCP)	44.04	43.66
Intermediate Science Curriculum Study (ISCS)	43.29	40.59
Introductory Physical Science (IPS)	43.46	41.87
Harvard Physics Project (HPP)	42.06	41.19
University of Illinois Committee on School Mathematics (UICSM)	39.75	34.42
Sociology Resources for the Social Studies (SRSS)	33.73	34.78