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ABSTRACT

This report contains the data and results of a study conducted in each of the five Department of Defense Dependents Schools worldwide concerning uses of and attitudes about computers in the classroom. Questionnaires were distributed to 6,850 students in grades 5 to 12 and to 543 computer-based instruction (CBI) project teachers. Highlights of the analyses of the responses from 3,851 students and 522 teachers included the following: (1) students exhibited mildly positive overall attitudes about computers with males displaying more positive attitudes than females in grades 5 and 6, and those with non-school access to computers more positive attitudes than their peers; (2) teachers were uniformly positive about computers across regions, grade levels, genders, and school sizes, and they agreed that computers contributed to student creativity and productivity, as well as to increased teacher productivity; (3) teachers expressed a need for more inservice on how to take advantage of whole-group and small-group instruction with computers; (4) top inservice needs cited were learning what other teachers are doing, finding out what software is available, and learning how best to integrate computers into their classrooms; and (5) the optimal student-to-computer ratio was reported to be two to four students at a computer, varying according to subject areas such as computer literacy or writing that might require more individual use of a computer. Data are reported in both narrative and tablular formats. The appendices contain guidelines and a checklist for regional project coordinators participating in the survey, the questionnaire and anecdotal record forms for teachers at CBI demonstration sites, and the student questionnaire. (DB)

Department of Defense Dependents Schools

CBI Project Evaluation Phase II:

DATA ANALYSIS RESULTS

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EXECUTIVE SUMMARY

Each of the five DoDDS regions worldwide were asked to administer questionnaires to students in grades 5 and above who were involved in a Computer-Based Instruction (CBI) project (total distribution = 6,850) Five hundred, forty-three (543) project teachers were also asked to complete a questionnaire and anecdotal reports. Highlights of the results of the responses (student n = 3,851; teacher n = 522) include the following:

- Students exhibited mildly positive overall attitudes about computers (averaging 3.5 to 3.62 on a 5-point Likert scale).

- No differences in student attitudes were detected with respect to regions or subject areas. However, males displayed more positive attitudes than females, both in grades 5 and 6 (male mean = 99.43, female mean = 97.22; F = 9.36, p = .002) and in 7-12 (male mean = 175.02, female mean = 167.16, F = 63.31, p = .0000).

- Students with non-school access to computers exhibited more positive computer attitudes than their peers (means in grades 5-6 of 99.28 versus 96.15, F = 16.21, p = .0001; in grades 7-12, 173.40 versus 166.26, F = 42.29, p = .0000).

- Teachers were uniformly positive about computers across regions, grade levels, genders, and school sizes (mean = 124.2, Likert equivalent = 4.28 of 5.0). Nearly 99% of teachers agreed with the statement that computer use in their subject area is beneficial.

- Teachers agreed that computers contributed to student creativity (77.6%) and productivity (69.9%), as well as to increased teacher productivity (78.7%). Seventy (70) percent reported that the volume of student work had improved.

- Teachers expressed a need for more inservice on how to take advantage of whole-group (61.5%) and small-group (61.7%) instruction with computers.

- Three of the top inservice needs cited by teachers were learning what other teachers are doing (87.6%), finding out what software is available (84.8%), and learning how best to integrate computers into their classrooms (78.5%). Anecdotal report data tends to support these questionnaire results.

- More than half of the teachers (51.8%) did not believe a computer lab was essential. While they were uncomfortable with whole-group use of computers (85.2%), teachers cited the need for more inservice on computer-based whole-group instruction, as indicated above.

- Teachers claimed that project computer use had contributed to greater success for reluctant learners (69.4%), improved enthusiasm for subject area (94.5%), and school generally (74.7%), enhanced peer cooperation among students (85.5%), and increased student time on task (81.5%)

- Nearly two-thirds of the teachers (64.2%) claimed to have altered their teaching methods as a result of their participation in the CBI project.

- Classroom assignment of computers appeared to be the distribution pattern most favored by teachers (79.8%). However, teachers who felt less adequately supported tended to favor labs, while their more well-off colleagues preferred classroom assignment.

- The optimal student-to-computer ratio was reported to be two-to-four students at a computer (57.3%). This varied by subject area, where computer science/literacy and writing areas sought a ratio closer to 1.1. Over all, teachers believed that access to about 6 computers would help achieve curriculum success. Of the 522 teacher respondents, about a third (37.8%) reported having access to 8 computers.

Data Analysis Results

CBI Student Questionnaire

Phase II

Descriptive Statistics for Background Variables

Aggregate Results

Figures DAR-1 to DAR-5[1] display system-wide frequency counts for key variables relating to the student sample, which consists of 3,851 responses across the five regions.[2] Males accounted for 51.7% of the sample, and females accounting for the remaining 48.3%. The distribution across regions is roughly reflective of the relative student enrollments. With respect to GRADE, middle and high school levels are over-represented, since teachers were instructed to administer the questionnaire only to students in grades 5 or above. Nonetheless, it appears that about four percent of the respondents had teachers who identified themselves as K-1st or 2nd-3rd grade teachers.

Nearly one-fifth of student respondents were involved in Language Arts or English CBI projects (19.9%), followed by science (12.2%), math (12.1%), and social studies (7.6%). Nearly half of the students' computer experience consisted of either word processing (29.0%) or drill and practice (20.3%). This was followed by simulations

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[1]Unless otherwise noted, all figures appear at the end of this report.

[2]Approximately 64% of the 429 teachers whose students were in grade 5 or above received 25 student questionnaires, equally distributed across subject areas (6,850 total).

(15.7%) and tutorials (14.3%). Bringing up the rear were programming (1.7%), databases (1.4%), and spreadsheets (0.0%, n = 1).

Consistent with the initial project distribution of computers, nearly 89 percent of these students reported a hardware base of 1 to 3 computers, with more than half of the sample report. g 3 computers. Only 2.2% of students had access to more than 6 computers during Phase II of the project. That more computers are needed is reflected in the fact that about half of the students had teachers who wanted up to 3 additional computers in order to maximize instructional benefits in the future (the largest percentage, 22.3%, needed 2 additional computers).

Results by Region

Regional descriptive statistics for the same background variables are presented in Figures DAR-6 through DAR-24.

Computer Attitudes

Instrument Reliability

The Computer Attitude Scale was analyzed for reliability twice: once as the 27-item scale for grades 5 and 6 (ATTYOUNG), and again as a 49-item scale for grades 7-12 (ATTOLDER). A Cronbach alpha reliability statistic was obtained for each, yielding an α = .78 for ATTYOUNG (n = 1406), and an α = .90 for ATTOLDER (n = 2237).

Aggregate Attitude Results

Figure DAR-25 displays the overall computer attitudes of students in the CBI evaluation projects. Fifth and sixth graders displayed mildly positive attitudes toward computers, with a mean ATTYOUNG score of 97.6 (out of a possible 135). Using the

original, five-point Likert scale (1 = most negative, 3 = neutral, 5 = most positive). the ATTYOUNG raw mean translates to a 3.62 Likert-equivalent. The older sample also displayed positive overall attitudes about computers (3.50 Likert-equivalent). Values for each of the regio. may be interpreted in a similar manner.

	Grades 5-6				Grades 7-12			
	N	$\bar{x}$	SD	Likert equiv.	N	$\bar{x}$	SD	Likert equiv.
Total	1476	97.6	12.3	3.62	2364	170.3	22.6	3.50
AT	138	98.0	11.4	3.63	254	166.8	23.9	3.40
GE	864	98.0	12.4	3.63	1402	172.0	22.6	3.51
ME	185	97.2	12.4	3.60	238	168.6	22.4	3.44
PA	289	96.5	12.4	3.57	384	167.1	22.4	3.41
PN	NA	NA	NA	NA	85	173.2	17.8	3.54

(AT = Atlantic, GE = Germany, ME = Mediterranean, PA = Pacific, PN = Panama)

Figure DAR-25 Aggregate Student Computer Attitude Results

Attitude Results, by Background Variables

Of particular interests to DoDDS are differences in student computer attitudes, based on background variables. Because two instruments were used, the results are reported first for grades five and six, and then for grades seven through twelve.

Grades Five and Six. There were no statistically-significant differences in computer attitudes across the five DoDDS regions, or across subject areas. The instrument did uncover such a difference for gender. A one-way analysis of variance

(ANOVA) revealed that males were more favorably disposed toward computers ($\bar{x}$ = 99.43) than females ($\bar{x}$ = 97.22), as shown in Figure DAR-26. Figure DAR-27 demonstrate significant differences in computer attitudes by the type of software used in the project. Specific differences are shown in Figure DAR-28, which indicates the pairs of software types that are statistically different at the .05 confidence level. Computer attitudes among database users ($\bar{x}$ = 91.19) were significantly less positive than users of tutorials ($\bar{x}$ = 98.17), problem-solving ($\bar{x}$ = 98.35), word processing ($\bar{x}$ = 99.85), integrated software ($\bar{x}$ = 100.07), or programming ($\bar{x}$ = 102.93). Drill and practice users had less positive attitudes toward computers ($\bar{x}$ = 95.85) than students who used either word processing or programming. Comparisons between other pairs of software types were not statistically significant and, therefore, are not warranted.

Finally, students in grades five and six who had access to computers outside of school had more positive attitudes toward computers ($\bar{x}$ = 99.28) than their counter parts whose access was limited to the school ($\bar{x}$ = 96.15), as shown in Figure DAR-29. It is noteworthy that more than two-thirds of these students (68.87) reported non-school computer access.

Grades Seven through Twelve. Contrary to the finding for the younger subsample, students' attitudes toward computers did vary significantly by region for grades seven through twelve (Figure DAR-30). Students in the Germany region (Group 2) displayed more positive attitudes toward computers ($\bar{x}$ = 172.97) than students in either the Atlantic ($\bar{x}$ = 167.87) or the Pacific ($\bar{x}$ = 168.8444) regions (Groups 1 and 4, respectively).

Again contrary to the younger subsample, differences in attitudes by subject area were evident among the seventh through twelfth graders. Figure DAR-31 shows the mean attitude scores for the various subjects [illegible]. ANOVA results in Figure DAR-32 reveal statistically significant differences in attitudes at the .0002 level. Students whose CBI project was CWE-based (Group 15 on Figure DAR-33) had more negative attitudes toward computers ($\bar{x}$ = 160.00) than students in Language Arts/English ($\bar{x}$ = 171.81), Reading ($\bar{x}$ = 175.69), Media and Library ($\bar{x}$ = 177.46), or PPS ($\bar{x}$ = 179.89). PPS students were also more positive in their computers attitudes than students in Home Economics ($\bar{x}$ = 162.64). Since no other pairs reached significance, there exists no practical attitudinal differences among subject areas.

Gender differences in computer attitudes appeared among the older students, and in the same direction as those among the younger students. Figure DAR-34 demonstrates that males hold more positive computer attitudes ($\bar{x}$ = 175.02) that do females ($\bar{x}$ = 167.16).

With respect to software types, a one-way ANOVA reveals significant differences in computer attitudes. However, in large part due to the extreme range of cases among types, the multiple range test designed to locate those differences was unable to detect statistically different pairs at the .05 level. Visual inspection of mean scores in Figure DAR-35 shows that database and spreadsheet users seemed to hold more positive attitudes than users of other software types, but these two types are represented by only 8 cases combined.

Finally, significant attitude differences existed between those who have access to computers outside of school ($\bar{x}$ = 173.40) and those who do not ($\bar{x}$ = 166.26), according to Figure DAR-36. A high percentage of 7th through 12th graders (71.4%) reported having computer access outside of school.

Attitude Results, by Resource Adequacy

A *Resource Adequacy Factor* (RAF) was calculated as a means of gauging the extent to which teachers felt they had enough computers to achieve success in their projects. The formula for RAF is based on the number of computers that were available for the project, divided by the sum of this value plus the number of additional computers teachers believe would be needed to be completely successful. In the SPSS analysis, this formula is represented at COMPUTRS ÷ (COMPUTRS + COMPNEED). The result of this calculation yields a value of 1, where teachers indicated no need for additional computers (COMPNEED = 0), and descends toward 0 as the number of needed computers rises in relation to given computers. Assuming that teachers' perceptions of resource adequacy are an accurate gauge of genuine resource adequacy, we can use the RAF variable to explore correlations between the adequacy of resources and students' computer attitudes. One might hypothesize that students' computer attitudes will tend to be more negative if they have been asked to carry out tasks without sufficient computer resources.

Based on correlational analysis using the Pearson Product-Moment procedure, this hypothesis is not well supported. In general, only a small correlation exists between grades five and six computer attitudes and RAF, and this was actually a negative

correlation (-.11, p = .00, n = 1154). No correlation was found among the older students. Among the regions, only three correlations were uncovered, all negative and all among grades five and six only: Germany (-.11, p = .002, n = 634), Mediterranean (-.28, p = .000, n = 142), and Pacific (-.11, p = .049, n = 247).

Data Analysis Results

CBI Teacher Questionnaire

Phase II

Descriptive Statistics for Background Variables

Aggregate Results

Figures DAR-37 to DAR-41 display system-wide frequency counts for key variables relating to the teacher sample, which consists of 522 responses across the five regions. Females accounted for most of the sample (72.8%), with males accounting for the remaining 27.2%. The distribution across regions is roughly reflective of the relative size of regions, with over half of the respondents from the Germany region. With respect to GRADE, about half identified themselves as grades K-6 (57.4%), with another 12.8% in junior high school and 27.6% in high school.

Nearly one-quarter of teacher respondents were involved in Language Arts or English CBI projects (24.1%), followed by math (12.3%), special education (10.2%), reading (7.3%), and social studies (6.5%). Over half of the reported projects (58.2%) consisted of either word processing (31.4%) or drill and practice (26.8%). This was followed by tutorials (14.0%) and simulations (10.5%). Bringing up the rear were integrated software (7.7%), problem-solving (6.5%), databases (1.9%), and programming (1.1%).

Consistent with the initial project distribution of computers, more than half of the teachers reported having access to three computers for the pilot projects. Only 7.7% of teachers had access to more than three computers during Phase II of the project. That more computers are needed is reflected in the fact that nearly half of the teachers wanted at least 4 additional computers in order to maximize instructional benefits in the future (the largest percentage, 20.1%, cited a need for 2 additional computers). Sixteen percent of teachers indicated that they did not need more computers to achieve project goals adequately.

Results by Region

Regional descriptive statistics for the same background variables are presented in Figures DAR-42 through DAR-62.

The Adequacy of Computer Resources

In order to inform the process of hardware acquisition in the future, more detailed analysis of computer needs and what constitutes an adequate computer base is called for. Both of these issues are likely to vary greatly across subject areas and grade levels, and this is borne out by the results of breakdown analyses.

Adequate Computer Base

For each subject area and grade levels, teachers' views about what should be a minimally adequate computer base can be inferred by summing their reported access to hardware and the number of additional computers they say they needed for optimal achievement of project objectives.

By subject. Figure DAR-63 presents teachers' perceptions about an adequate base of computer equipment necessary for optimal achievement of project objectives (compare to the initial allocation of project computers in Figure DAR-63a). Computer science/literacy ranks at the top ($\bar{x}$ = 26.88), with Host Nation close behind ($\bar{x}$ = 25.00). Industrial arts teachers, on average, believe that 12 computers is the optimal base for their projects, followed by social studies ($\bar{x}$ = 9.97), science ($\bar{x}$ = 9.06), art ($\bar{x}$ = 8.09), health ($\bar{x}$ = 8.00), Language Arts/English ($\bar{x}$ = 7.99), and math ($\bar{x}$ = 7.64). At the other end of the scale, the two teachers involved in evaluation saw two computers as optimal, followed by counseling ($\bar{x}$ = 2.18), ESL ($\bar{x}$ = 2.94), CWE ($\bar{x}$ = 3.00), and special education ($\bar{x}$ = 4.19). Cumulatively, the computer base deemed adequate by the 510 teachers would require 3,982 computers.

By grade. As shown in Figure DAR-64, there is no significant difference in perceived adequate computer base, averaging about 7.81 computers in each of the grade levels.

Computer Needs

Closing the gap between the current and optimal computer base will vary in difficulty by subject area. Teachers have 37.8% of the base level, and say they need 2,477 additional computers (beyond 1,505) to reach the optimal computer baseline.

By subject. Figure DAR-65 lists project subject areas and means for perceived computer needs. Statistically the subject areas do not differ significantly on this variable, except for computer science/literacy (Group 13) and Host Nation (Group 23), as shown in Figure DAR-66.

By grade. There is no significant difference across grades in the number of additional computer teachers believe they need, as indicated in Figure DAR-67.

By region and subject. As with grade, there is no statistical difference in perceptions of additional computer needs (Figure DAR-68). However, Figure DAR-69a-c displays the means values for computer needs by region, and then by subject within region.

Computer Attitudes

Instrument Reliability

A 29-item instrument was constructed to measure teacher attitudes toward computers. This Teacher Computer Attitude Scale was analyzed for reliability using the Cronbach alpha reliability procedure. This yielded an $\alpha = .96$ ($n = 522$).

Aggregate Attitude Results

Figure DAR-70 displays the aggregate attitude results for the entire sample, as well as for regional subsamples of teachers. On the whole, teachers were quite positive toward computer use, and this persisted with essentially no differences across regions.

Attitude Results, by Background Variables

There are no significant differences in teacher attitudes toward computers based on either grade level, gender, or size of school. Figure DAR-71 reveals attitudinal differences across subject areas. Only one subject area displayed significantly less positive attitudes towards computers. Special education teachers attitudes ($\bar{x} = 113.38$) were less positive than Language Arts/English ($\bar{x} = 125.06$), Math ($\bar{x} = 126.45$),

	N	$\bar{x}$	SD	Likert equiv.
Total	522	124.2	17.0	4.28
AT	50	124.3	18.4	4.29
GE	267	124.3	17.6	4.29
ME	47	124.3	17.2	4.29
PA	137	124.5	15.0	4.29
PN	21	120.9	19.0	4.17

Figure DAR-70 Teacher computer attitudes, by region

Science ($\bar{x}$ = 130.74), or computer science/literacy ($\bar{x}$ = 131.69), as shown in Figure DAR-72.

Teacher attitudes toward computers varied somewhat as well based on the software type used for the project, as Figures DAR-73 and 74 demonstrate. Teachers whose projects involved the use of integrated software tended to have more positive computer attitudes ($\bar{x}$ = 132.33) than those who used word processing alone.

Attitude Results, by Resource Adequacy

The same Resource Adequacy Factor (RAF) that was used for comparative purposes in the student sample was applied to the teacher sample as well. Virtually no correlation could be found between teacher computer attitudes generally and resource adequacy (.0015, p = .49, n = 522).

However, statistically-significant differences in RAF were apparent across grade levels and regions. Figure DAR-75 portrays an ANOVA demonstrating differences

among grade levels. Teachers of grades 2-3 (Group 2) felt that their computer resources were fairly adequate ($\bar{x}$ = .572), in comparison to teachers in grades 7-12 (Groups 4 and 5; $\bar{x}$ = .443 and .451, respectively), according to Figure DAR-76. A similar discrepancy across regions was uncovered by the ANOVA presented in Figure DAR-77. In Figure DAR-78, the level of perceived resource adequacy among teachers in the Pacific region (Group 4, $\bar{x}$ = .539) outpaced perceptions among their German colleagues (Group 2, $\bar{x}$ = .455).

Teacher Opinions on CBI Effectiveness

Activities Made Possible

Items 31 and 38 ask whether computer use facilitated activities that would otherwise be impossible. The responses tended to affirm this idea.

ACTIVEP1 Activities impossible without computers.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	304	59.6	59.8	59.8
Agree	2	149	29.2	29.3	89.2
Not sure	3	18	3.5	3.5	92.7
Disagree	4	31	6.1	6.1	98.8
Strongly disagree	5	6	1.2	1.2	100.0
	.	2	.4	Missing	
	Total	510	100.0	100.0	

Valid cases 508 Missing cases 2

ACTIVEN1 Computer did not do anything I could not

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	9	1.8	1.8	1.8
Agree	2	40	7.8	7.9	9.7
Not sure	3	28	5.5	5.5	15.2
Disagree	4	182	35.7	35.9	51.1
Strongly disagree	5	248	48.6	48.9	100.0
	.	3	.6	Missing	
	Total	510	100.0	100.0	

Valid cases 507 Missing cases 3

Creativity

Two items gauge how computer work has affected creativity, both for the teacher and his/her students. Teachers were overwhelmingly positive on both counts.

CREATIVE I can be more creative with computer.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	198	38.8	39.0	39.0
Agree	2	193	37.8	38.0	77.0
Not sure	3	83	16.3	16.3	93.3
Disagree	4	28	5.5	5.5	98.8
Strongly disagree	5	6	1.2	1.2	100.0
	.	2	.4	Missing	
	Total	510	100.0	100.0	

Valid cases 508 Missing cases 2

CREATE Student creativity has...

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Much improved	1	154	30.2	32.0	32.0
Somewhat improved	2	220	43.1	45.6	77.6
Not changed	3	107	21.0	22.2	99.8
Been neg affected	4	1	.2	.2	100.0
	.	28	5.5	Missing	
	Total	510	100.0	100.0	

Valid cases 482 Missing cases 28

Need for More Computers

Two items confirmed teachers' interest in acquiring more computer resources.

NEEDMORE Success requires more computers.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	229	44.9	45.2	45.2
Agree	2	137	26.9	27.0	72.2
Not sure	3	55	10.8	10.8	83.0
Disagree	4	65	12.7	12.8	95.9
Strongly disagree	5	21	4.1	4.1	100.0
	.	3	.6	Missing	
	Total	510	100.0	100.0	

Valid cases 507 Missing cases 3

NEEDLESS Accomplish same with fewer computers.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	7	1.4	1.4	1.4
Agree	2	16	3.1	3.1	4.5
Not sure	3	23	4.5	4.5	9.0
Disagree	4	113	22.2	22.2	31.2
Strongly disagree	5	350	68.6	68.8	100.0
	.	1	.2	Missing	
	Total	510	100.0	100.0	

Valid cases 509 Missing cases 1

Viability of Whole-Group Instruction

One mode of computer use maximizes limited computer resources, and three items asked teachers to comment on the use of computers for whole-group instruction. The results suggest that teachers are not comfortable with this mode, and need additional inservice to take advantage of the cost effectiveness of whole-group instruction with computers.

WHOLE 1 One computer for whole-group instruc. OK

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	20	3.9	3.9	3.9
Agree	2	28	5.5	5.5	9.5
Not sure	3	27	5.3	5.3	14.8
Disagree	4	105	20.6	20.7	35.5
Strongly disagree	5	327	64.1	64.5	100.0
	.	3	.6	Missing	
	Total	510	100.0	100.0	

Valid cases 507 Missing cases 3

WHOLGRP2 One computer most efficient for my conte

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	8	1.6	1.6	1.6
Agree	2	19	3.7	3.8	5.4
Not sure	3	19	3.7	3.8	9.3
Disagree	4	137	26.9	27.6	36.8
Strongly disagree	5	314	61.6	63.2	100.0
	.	13	2.5	Missing	
	Total	510	100.0	100.0	

Valid cases 497 Missing cases 13

TRAIN01 How to use 1 computer for whole group.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	131	25.7	26.6	26.6
Agree	2	172	33.7	34.9	61.5
Not sure	3	63	12.4	12.8	74.2
Disagree	4	87	17.1	17.6	91.9
Strongly disagree	5	40	7.8	8.1	100.0
	.	17	3.3	Missing	
	Total	510	100.0	100.0	

Valid cases 493 Missing cases 17

Small-Group Instruction

A third mode of classroom computer use is for small-group instruction. Three items measured teachers' comfort with this mode of computer use, and their need for additional inservice training (61.7%).

TRAIN02 How to organize for work stations.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	102	20.0	20.7	20.7
Agree	2	202	39.6	41.0	61.7
Not sure	3	52	10.2	10.5	72.2
Disagree	4	102	20.0	20.7	92.9
Strongly disagree	5	35	6.9	7.1	100.0
	.	17	3.3	Missing	
	Total	510	100.0	100.0	

Valid cases 493 Missing cases 17

SMALGRP Small groups at several computers is best

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	69	13.5	14.0	14.0
Agree	2	141	27.6	28.6	42.6
Not sure	3	60	11.8	12.2	54.8
Disagree	4	143	28.0	29.0	83.8
Strongly disagree	5	80	15.7	16.2	100.0
	.	17	3.3	Missing	
	Total	510	100.0	100.0	

Valid cases 493 Missing cases 17

INSERV09 Classroom management tips helped.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	38	7.5	8.4	8.4
Agree	2	66	12.9	14.7	23.1
Not sure	3	87	17.1	19.3	42.4
Disagree	4	119	23.3	26.4	68.9
Strongly disagree	5	140	27.5	31.1	100.0
	.	60	11.8	Missing	
	Total	510	100.0	100.0	

Valid cases 450 Missing cases 60

Lab Configuration

Teachers were asked to comment on the need to have a computer lab in order to achieve project objectives. More than half did not feel a lab was essential, and fewer teachers indicated a need for lab use training (57.6%) compared to whole-group instruction (61.5%).

LABNEED Lab needed to achieve project objectives

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	83	16.3	16.4	16.4
Agree	2	70	13.7	13.8	30.2
Not sure	3	91	17.8	18.0	48.2
Disagree	4	167	32.7	33.0	81.2
Strongly disagree	5	95	18.6	18.8	100.0
	.	4	.8	Missing	
	Total	510	100.0	100.0	

Valid cases 506 Missing cases 4

Professional Use of Computers

One aspect of cost effectiveness is captured in rising productivity on the part of teachers; specifically, the extent to which computer use saves time and effort. Teachers consistently attest to the positive effects of computer use on their professional productivity.

PROF1 Have not saved professional time.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	18	3.5	3.5	3.5
Agree	2	54	10.6	10.6	14.2
Not sure	3	37	7.3	7.3	21.5
Disagree	4	157	30.8	30.9	52.4
Strongly disagree	5	242	47.5	47.6	100.0
	.	2	.4	Missing	
	Total	510	100.0	100.0	

Valid cases 508 Missing cases 2

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PROF2 Computer speeded my work.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	235	46.1	46.8	46.8
Agree	2	160	31.4	31.9	78.7
Not sure	3	50	9.8	10.0	88.6
Disagree	4	45	8.8	9.0	97.6
Strongly disagree	5	12	2.4	2.4	100.0
	.	8	1.6	Missing	
	Total	510	100.0	100.0	

Valid cases 502 Missing cases 8

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PROF3 Helped me use my time more efficientiy.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	223	43.7	43.9	43.9
Agree	2	179	35.1	35.2	79.1
Not sure	3	62	12.2	12.2	91.3
Disagree	4	36	7.1	7.1	98.4
Strongly disagree	5	8	1.6	1.6	100.0
	.	2	.4	Missing	
	Total	510	100.0	100.0	

Valid cases 508 Missing cases 2

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PROF4 Did not make my professional tasks easier

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	6	1.2	1.2	1.2
Agree	2	54	10.6	10.7	11.8
Not sure	3	32	6.3	6.3	18.1
Disagree	4	193	37.8	38.1	56.2
Strongly disagree	5	222	43.5	43.8	100.0
	.	3	.6	Missing	
	Total	510	100.0	100.0	

Valid cases 507 Missing cases 3

Efficiency of Student Work

The ability of computers to enhance student productivity represents another facet of the productivity issue. Teachers reported positive effects of computer use on student productivity.

STUDEFF1 Students make progress faster.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	151	29.6	30.1	30.1
Agree	2	200	39.2	39.8	69.9
Not sure	3	122	23.9	24.3	94.2
Disagree	4	22	4.3	4.4	98.6
Strongly disagree	5	7	1.4	1.4	100.0
	.	8	1.6	Missing	
	Total	510	100.0	100.0	

Valid cases 502 Missing cases 8

STUDEFF2 Students did not learn quicker.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	5	1.0	1.0	1.0
Agree	2	45	8.8	9.1	10.1
Not sure	3	73	14.3	14.8	24.9
Disagree	4	220	43.1	44.5	69.4
Strongly disagree	5	151	29.6	30.6	100.0
	.	16	3.1	Missing	
	Total	510	100.0	100.0	

Valid cases 494 Missing cases 16

VOLUME Volume of student work has...

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Much improved	1	91	17.8	18.9	18.9
Somewhat improved	2	249	48.8	51.7	70.5
Not changed	3	137	26.9	28.4	99.0
Been neg affected	4	5	1.0	1.0	100.0
	.	28	5.5	Missing	
	Total	510	100.0	100.0	

Valid cases 482 Missing cases 28

Student Cooperation

Teachers reported that cooperation among students improved noticeable as a result of computer use.

COOP Helped cooperation.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	196	38.4	38.6	38.6
Agree	2	209	41.0	41.1	79.7
Not sure	3	85	16.7	16.7	96.5
Disagree	4	15	2.9	3.0	99.4
Strongly disagree	5	3	.6	.6	100.0
	.	2	.4	Missing	
	Total	510	100.0	100.0	

Valid cases 508 Missing cases 2

COOPERAT Peer cooperation has...

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Much improved	1	173	33.9	35.4	35.4
Somewhat improved	2	245	48.0	50.1	85.5
Not changed	3	71	13.9	14.5	100.0
	.	21	4.1	Missing	
	Total	510	100.0	100.0	

Valid cases 489 Missing cases 21

Other Effects on Students

Three additional items asked teachers to react to other possible effects of computer use, particularly for reluctant learners.

HLPSTUD1 Project produced successful students.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	128	25.1	25.5	25.5
Agree	2	222	43.5	44.2	69.7
Not sure	3	101	19.8	20.1	89.8
Disagree	4	41	8.0	8.2	98.0
Strongly disagree	5	10	2.0	2.0	100.0
	.	8	1.6	Missing	
	Total	510	100.0	100.0	

Valid cases 502 Missing cases 8

HLPSTUD2 Students completed tasks at computer.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	143	28.0	28.4	28.4
Agree	2	230	45.1	45.6	74.0
Not sure	3	76	14.9	15.1	89.1
Disagree	4	45	8.8	8.9	98.0
Strongly disagree	5	10	2.0	2.0	100.0
	.	6	1.2	Missing	
	Total	510	100.0	100.0	

Valid cases 504 Missing cases 6

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HLPSTUD3 Reluctant students not more successful.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	13	2.5	2.6	2.6
Agree	2	57	11.2	11.3	13.9
Not sure	3	81	15.9	16.0	29.9
Disagree	4	243	47.6	48.1	78.0
Strongly disagree	5	111	21.8	22.0	100.0
	.	5	1.0	Missing	
	Total	510	100.0	100.0	

Valid cases 505 Missing cases 5

Student Enthusiasm

Two items get the effect of computer use on student enthusiasm, both for the subject matter under study and for school in general.

ENTHUS Students enthusiasm for subject has...

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Much improved	1	285	55.9	58.4	58.4
Somewhat improved	2	176	34.5	36.1	94.5
Not changed	3	26	5.1	5.3	99.8
Been neg affected	4	1	.2	.2	100.0
	.	22	4.3	Missing	
	Total	510	100.0	100.0	

Valid cases 488 Missing cases 22

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GENENTH Enthusiasm for school in general has...

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Much improved	1	129	25.3	26.5	26.5
Somewhat improved	2	235	46.1	48.3	74.7
Not changed	3	123	24.1	25.3	100.0
	.	23	4.5	Missing	
	Total	510	100.0	100.0	

Valid cases 487 Missing cases 23

Change in Teaching Methods

About two thirds of the teachers attested to some alteration in their teaching methods in the course of the CBI project.

METHODS1 I have changed my methods.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	89	17.5	17.5	17.5
Agree	2	237	46.5	46.7	64.2
Not sure	3	65	12.7	12.8	77.0
Disagree	4	101	19.8	19.9	96.9
Strongly disagree	5	16	3.1	3.1	100.0
	.	2	.4	Missing	
	Total	510	100.0	100.0	

Valid cases 508 Missing cases 2

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METHODS2 Computer has not changed my methods.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	16	3.1	3.2	3.2
Agree	2	102	20.0	20.1	23.3
Not sure	3	53	10.4	10.5	33.7
Disagree	4	224	43.9	44.2	77.9
Strongly disagree	5	112	22.0	22.1	100.0
	.	3	.6	Missing	
	Total	510	100.0	100.0	

Valid cases 507 Missing cases 3

Knowledge of Available Software

Teachers did not feel that knowledge of available software contributed positively to their projects, but strongly agreed that more information on available software would be useful (84.8%).

TRAIN08 What software is available.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	231	45.3	47.0	47.0
Agree	2	186	36.5	37.8	84.8
Not sure	3	29	5.7	5.9	90.7
Disagree	4	33	6.5	6.7	97.4
Strongly disagree	5	13	2.5	2.6	100.0
	.	18	3.5	Missing	
	Total	510	100.0	100.0	

Valid cases 492 Missing cases 18

INSERV08 Knowledge of software availability helpe

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	57	11.2	12.5	12.5
Agree	2	124	24.3	27.3	39.8
Not sure	3	67	13.1	14.7	54.5
Disagree	4	84	16.5	18.5	73.0
Strongly disagree	5	123	24.1	27.0	100.0
	.	55	10.8	Missing	
	Total	510	100.0	100.0	

Valid cases 455 Missing cases 55

Software Evaluation

In the case of software evaluation, teachers again were not sure that previous inservice training in software evaluation was particularly helpful for their projects, but they were supportive of additional training (60.0%).

TRAIN11 On evaluating software.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	123	24.1	24.9	24.9
Agree	2	173	33.9	35.1	60.0
Not sure	3	51	10.0	10.3	70.4
Disagree	4	108	21.2	21.9	92.3
Strongly disagree	5	38	7.5	7.7	100.0
	.	17	3.3	Missing	
	Total	510	100.0	100.0	

Valid cases 493 Missing cases 17

INSERV01 Software evaluation training helped.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	58	11.4	12.4	12.4
Agree	2	118	23.1	25.3	37.8
Not sure	3	108	21.2	23.2	60.9
Disagree	4	98	19.2	21.0	82.0
Strongly disagree	5	84	16.5	18.0	100.0
	.	44	8.6	Missing	
	Total	510	100.0	100.0	

Valid cases 466 Missing cases 44

Teacher Productivity Tools

Slightly more than sixty percent of the teachers want more inservice on productivity tools like word processors and gradebooks, noting that previous training was not particularly helpful for the CBI project.

TRAIN09 On productivity tools like wp & gradeboo

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	135	26.5	27.5	27.5
Agree	2	161	31.6	32.8	60.3
Not sure	3	38	7.5	7.7	68.0
Disagree	4	108	21.2	22.0	90.0
Strongly disagree	5	49	9.6	10.0	100.0
	.	19	3.7	Missing	
	Total	510	100.0	100.0	

Valid cases 491 Missing cases 19

INSERV07 Gradebooks and other teacher tools helped

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	37	7.3	8.2	8.2
Agree	2	85	16.7	18.8	27.0
Not sure	3	74	14.5	16.4	43.4
Disagree	4	115	22.5	25.4	68.3
Strongly disagree	5	141	27.6	31.2	100.0
	.	58	11.4	Missing	
	Total	510	100.0	100.0	

Valid cases 452 Missing cases 58

Tool Software

Related to the previous items is the issue of tool software generally and teachers perceptions about their preparation to use these computer applications effectively. Almost 60 percent agreed that previous word processing training was helpful for their projects, followed by 32.2 percent for databases and 21.9 percent for spreadsheets. Responses to these items are not independent of the number of projects that used each type of tool software.

INSERV04 Word processing helped.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	119	23.3	25.5	25.5
Agree	2	160	31.4	34.3	59.7
Not sure	3	35	6.9	7.5	67.2
Disagree	4	60	11.8	12.8	80.1
Strongly disagree	5	93	18.2	19.9	100.0
	.	43	8.4	Missing	
	Total	510	100.0	100.0	

Valid cases 467 Missing cases 43

INSERV05 Databases helped.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	49	9.6	10.7	10.7
Agree	2	99	19.4	21.5	32.2
Not sure	3	74	14.5	16.1	48.3
Disagree	4	107	21.0	23.3	71.5
Strongly disagree	5	131	25.7	28.5	100.0
	.	50	9.8	Missing	
	Total	510	100.0	100.0	

Valid cases 460 Missing cases 50

INSERV06 Spreadsheets helped.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	28	5.5	6.1	6.1
Agree	2	72	14.1	15.8	21.9
Not sure	3	80	15.7	17.5	39.4
Disagree	4	124	24.3	27.1	66.5
Strongly disagree	5	153	30.0	33.5	100.0
	.	53	10.4	Missing	
	Total	510	100.0	100.0	

Valid cases 457 Missing cases 53

Time on Task

An overwhelming majority of teachers (81.5%) agreed that the computer project increased student time-on-task.

TIMETASK Computer increased time-on-task.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	207	40.6	40.8	40.8
Agree	2	206	40.4	40.6	81.5
Not sure	3	64	12.5	12.6	94.1
Disagree	4	22	4.3	4.3	98.4
Strongly disagree	5	8	1.6	1.6	100.0
	.	3	.6	Missing	
	Total	510	100.0	100.0	

Valid cases 507 Missing cases 3

One Student per Computer

Probably because of the large number of teachers using word processing in CBI projects, it is not surprising to find that 64.6 percent of teachers believed that their subject area requires students to work one-on-one with a computer.

ONETOONE My content needs one-on-one at computer.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	136	26.7	26.9	26.9
Agree	2	189	37.1	37.4	64.4
Not sure	3	43	8.4	8.5	72.9
Disagree	4	117	22.9	23.2	96.0
Strongly disagree	5	20	3.9	4.0	100.0
	.	5	1.0	Missing	
	Total	510	100.0	100.0	

Valid cases 505 Missing cases 5

Benefits for Your Subject Area

Nearly all of the teachers (98.6%) believe that computer use in their subject area is beneficial to learning. Comparisons across subject areas will be provided below.

BENEFITS Computer use in my subject is beneficial

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	382	74.9	77.2	77.2
Agree	2	106	20.8	21.4	98.6
Not sure	3	5	1.0	1.0	99.6
Disagree	4	1	.2	.2	99.8
Strongly disagree	5	1	.2	.2	100.0
	.	15	2.9	Missing	
	Total	510	100.0	100.0	

Valid cases 495 Missing cases 15

Inservice Training Experiences

A number of items asked teachers to characterize their previous inservice training experiences in terms of their contribution to the success of their project. Those items

are presented below, in order of agreement level, with several items repeated from previous sections.

INSERV04 Word processing helped.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	119	23.3	25.5	25.5
Agree	2	160	31.4	34.3	59.7
Not sure	3	35	6.9	7.5	67.2
Disagree	4	60	11.8	12.8	80.1
Strongly disagree	5	93	18.2	19.9	100.0
	.	43	8.4	Missing	
	Total	510	100.0	100.0	

Valid cases 467 Missing cases 43

INSERV08 Knowledge of software availability helped

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	57	11.2	12.5	12.5
Agree	2	124	24.3	27.3	39.8
Not sure	3	67	13.1	14.7	54.5
Disagree	4	84	16.5	18.5	73.0
Strongly disagree	5	123	24.1	27.0	100.0
	.	55	10.8	Missing	
	Total	510	100.0	100.0	

Valid cases 455 Missing cases 55

INSERV01 Software evaluation training helped.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
St , agree	1	58	11.4	12.4	12.4
Agree	2	118	23.1	25.3	37.8
Not sure	3	108	21.2	23.2	60.9
Disagree	4	98	19.2	21.0	82.0
Strongly disagree	5	84	16.5	18.0	100.0
	.	44	8.6	Missing	
	Total	510	100.0	100.0	

Valid cases 466 Missing cases 44

INSERV05 Databases helped.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	49	9.6	10.7	10.7
Agree	2	99	19.4	21.5	32.2
Not sure	3	74	14.5	16.1	48.3

Disagree	4	107	21.0	23.3	71.5
Strongly disagree	5	131	25.7	28.5	100.0
	.	50	9.8	Missing	
	Total	510	100.0	100.0	

Valid cases 460 Missing cases 50

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INSERV07 Gradebooks and other teacher tools helped

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	37	7.3	8.2	8.2
Agree	2	85	16.7	18.8	27.0
Not sure	3	74	14.5	16.4	43.4
Disagree	4	115	22.5	25.4	68.8
Strongly disagree	5	141	27.6	31.2	100.0
	.	58	11.4	Missing	
	Total	510	100.0	100.0	

Valid cases 452 Missing cases 58

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INSERV02 Diagnose minor problems helped.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	56	11.0	12.2	12.2
Agree	2	118	23.1	25.7	37.8
Not sure	3	77	15.1	16.7	54.6
Disagree	4	91	17.8	19.8	74.3
Strongly disagree	5	118	23.1	25.7	100.0
	.	50	9.8	Missing	
	Total	510	100.0	100.0	

Valid cases 460 Missing cases 50

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INSERV09 Classroom management tips helped.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	38	7.5	8.4	8.4
Agree	2	66	12.9	14.7	23.1
Not sure	3	87	17.1	19.3	42.4
Disagree	4	119	23.3	26.4	68.9
Strongly disagree	5	140	27.5	31.1	100.0
	.	60	11.8	Missing	
	Total	510	100.0	100.0	

Valid cases 450 Missing cases 60

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INSERV06 Spreadsheets helped.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	28	5.5	6.1	6.1
Agree	2	72	14.1	15.8	21.9
Not sure	3	80	15.7	17.5	39.4
Disagree	4	124	24.3	27.1	66.5

Strongly disagree	5	153	30.0	33.5	100.0
	.	53	10.4	Missing	
	Total	510	100.0	100.0	

Valid cases 457 Missing cases 53

INSERV03 Programming helped.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	22	4.3	4.9	4.9
Agree	2	66	12.9	14.6	19.4
Not sure	3	78	15.3	17.2	36.6
Disagree	4	115	22.5	25.4	62.0
Strongly disagree	5	172	33.7	38.0	100.0
	.	57	11.2	Missing	
	Total	510	100.0	100.0	

Valid cases 453 Missing cases 57

Inservice Training Needs

Teachers expressed interest in obtaining additional training in several key areas of computer use. Inservice items are presented below, again in the order of agreement strength.

TRAIN10 What other teachers are doing.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	224	43.9	45.4	45.4
Agree	2	208	40.8	42.2	87.6
Not sure	3	29	5.7	5.9	93.5
Disagree	4	24	4.7	4.9	98.4
Strongly disagree	5	8	1.6	1.6	100.0
	.	17	3.3	Missing	
	Total	510	100.0	100.0	

Valid cases 493 Missing cases 17

TRAIN08 What software is available.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	231	45.3	47.0	47.0
Agree	2	186	36.5	37.8	84.8
Not sure	3	29	5.7	5.9	90.7
Disagree	4	33	6.5	6.7	97.4

Strongly disagree	5	13	2.5	2.6	100.0
	.	18	3.5	Missing	
	Total	510	100.0	100.0	

Valid cases 492 Missing cases 18

TRAIN07 How to integrate into classroom.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	218	42.7	44.3	44.3
Agree	2	168	32.9	34.1	78.5
Not sure	3	46	9.0	9.3	87.8
Disagree	4	47	9.2	9.6	97.4
Strongly disagree	5	13	2.5	2.6	100.0
	.	18	3.5	Missing	
	Total	510	100.0	100.0	

Valid cases 492 Missing cases 18

TRAIN06 How to measure gains.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	117	22.9	23.8	23.8
Agree	2	240	47.1	48.9	72.7
Not sure	3	49	9.6	10.0	82.7
Disagree	4	71	13.9	14.5	97.1
Strongly disagree	5	14	2.7	2.9	100.0
	.	19	3.7	Missing	
	Total	510	100.0	100.0	

Valid cases 491 Missing cases 19

TRAIN02 How to organize for work stations.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	102	20.0	20.7	20.7
Agree	2	202	39.6	41.0	61.7
Not sure	3	52	10.2	10.5	72.2
Disagree	4	102	20.0	20.7	92.9
Strongly disagree	5	35	6.9	7.1	100.0
	.	17	3.3	Missing	
	Total	510	100.0	100.0	

Valid cases 493 Missing cases 17

TRAIN01 How to use 1 computer for whole group.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	131	25.7	26.6	26.6
Agree	2	172	33.7	34.9	61.5
Not sure	3	63	12.4	12.8	74.2
Disagree	4	87	17.1	17.6	91.9
Strongly disagree	5	40	7.8	8.1	100.0
	.	17	3.3	Missing	
	Total	510	100.0	100.0	

Valid cases 493 Missing cases 17

TRAIN09 On productivity tools like wp & gradebook

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	135	26.5	27.5	27.5
Agree	2	161	31.6	32.8	60.3
Not sure	3	38	7.5	7.7	68.0
Disagree	4	108	21.2	22.0	90.0
Strongly disagree	5	49	9.6	10.0	100.0
	.	19	3.7	Missing	
	Total	510	100.0	100.0	

Valid cases 491 Missing cases 19

TRAIN11 On evaluating software.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	123	24.1	24.9	24.9
Agree	2	173	33.9	35.1	60.0
Not sure	3	51	10.0	10.3	70.4
Disagree	4	108	21.2	21.9	92.3
Strongly disagree	5	38	7.5	7.7	100.0
	.	17	3.3	Missing	
	Total	510	100.0	100.0	

Valid cases 493 Missing cases 17

TRAIN05 How to use to raise content knowledge.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	94	18.4	19.1	19.1
Agree	2	194	38.0	39.5	58.7
Not sure	3	62	12.2	12.6	71.3
Disagree	4	113	22.2	23.0	94.3
Strongly disagree	5	28	5.5	5.7	100.0
	.	19	3.7	Missing	
	Total	510	100.0	100.0	

Valid cases 491 Missing cases 19

TRAIN03 How to better use computer lab.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	102	20.0	20.7	20.7
Agree	2	182	35.7	36.9	57.6
Not sure	3	68	13.3	13.8	71.4
Disagree	4	105	20.6	21.3	92.7
Strongly disagree	5	36	7.1	7.3	100.0
	.	17	3.3	Missing	
	Total	510	100.0	100.0	

Valid cases 493 Missing cases 17

- -

TRAIN04 How to us' for skill devt.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Strongly agree	1	93	18.?	18.9	1?.9
Agree	2	183	35.	37.2	56.1
Not sure	3	66	12.9	13.4	69.5
Disagree	4	117	22.9	23.8	93.3
Strongly disagree	5	33	6.5	6.7	100.0
	.	18	3.5	Missing	
	Total	510	100.0	100.0	

Valid cases 492 Missing cases 1?

Effects on Sectors of Learners and Teacher Strategies

The effects of computer use on students who span the ability spectrum are tapped by the following items, along with the usefulness of the computer as an individualizing and diagnosing tool.

INDEPEND Students working independently has...

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Much improved	1	217	42.5	44.4	44.4
Somewhat improved	2	2??	42.?	44.2	88.5
Not changed	3	56	11.0	11.5	100.0
	.	21	4.1	Missing	
	Total	510	100.0	100.0	

Valid cases 489 Missing cases 21

- -

AVERAGE Learning by average students has...

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Much improved	1	123	24.1	25.7	25.7
Somewhat improved	2	290	56.9	60.7	86.4
Not changed	3	65	12.7	13.6	100.0
	.	32	6.3	Missing	
	Total	510	100.0	100.0	

Valid cases 478 Missing cases 32

- -

ABOVEAVG Learning by above average students has..

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Much improved	1	164	32.2	34.1	34.1
Somewhat improved	2	229	44.9	47.6	81.7
Not changed	3	88	17.3	18.3	100.0
	.	29	5.7	Missing	
	Total	510	100.0	100.0	

Valid cases 481 Missing cases 29

- -

BELOWAVG Learning by below average students has..

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Much improved	1	112	22.0	23.3	23.3
Somewhat improved	2	268	52.5	55.7	79.0
Not changed	3	100	19.6	20.8	99.8
Been neg affected	4	1	.2	.2	100.0
	.	29	5.7	Missing	
	Total	510	100.0	100.0	

Valid cases 481 Missing cases 29

- -

GIFTED Opportunities for gifted students have..

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Much improved	1	211	41.4	44.1	44.1
Somewhat improved	2	166	32.5	34.7	78.9
Not changed	3	100	19.6	20.9	99.8
Very neg affected	5	1	.2	.2	100.0
	.	32	6.3	Missing	
	Total	510	100.0	100.0	

Valid cases 478 Missing cases 32

- -

INDNEEDS Tailoring for individual needs has...

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Much improved	1	165	32.4	34.0	34.0
Somewhat improved	2	215	42.2	44.3	78.4
Not changed	3	105	20.6	21.6	100.0
	.	25	4.9	Missing	
	Total	510	100.0	100.0	

Valid cases 485 Missing cases 25

- -

LD Opportunities for handicapped&LD student

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Much improved	1	170	33.3	35.9	35.9
Somewhat improved	2	157	30.8	33.1	69.0
Not changed	3	145	28.4	30.6	99.6
Been neg affected	4	2	.4	.4	100.0
	.	36	7.1	Missing	
	Total	510	100.0	100.0	

Valid cases 474 Missing cases 36

- -

DIAGNOSE Diagnosing learning problems has...

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Much improved	1	50	9.8	10.5	10.5
Somewhat improved	2	146	28.6	30.7	41.2
Not changed	3	279	54.7	58.6	99.8
Been neg affected	4	1	.2	.2	100.0
	.	34	6.7	Missing	
	Total	510	100.0	100.0	

Valid cases 476 Missing cases 34

Perceived Benefits Across Subject Areas

Statistically, differences among subject areas with respect to teachers' perceptions of computer use benefits are virtually non-existent, in large part to the floor effect produced by such strong agreement on the BENEFITS item. A one-way ANOVA

(Figure DAR-79), followed by the Tukey HSD procedure (Figure DAR-80) did reveal one pair of subject areas for which there exists a significant difference: PPS teachers tended to agree more strongly about the benefits of computers in their area ($\bar{x}$ = 1.05) than did respondents whose project involved counseling ($\bar{x}$ = 1.78).[3] Although differences in raw mean scores are statistically meaningless, subjects areas may be ranked by raw score, from strongest perceived benefit, as follows: evaluation, Host Nation, and vocational education ($\bar{x}$ = 1.00), PPS ($\bar{x}$ = 1.05), music ($\bar{x}$ = 1.13), special education ($\bar{x}$ = 1.14), reading ($\bar{x}$ = 1.16), compensatory education and foreign language ($\bar{x}$ = 1.17), ESL ($\bar{x}$ = 1.18), computer science/literacy ($\bar{x}$ = 1.19), home economics ($\bar{x}$ = 1.2), language arts/English ($\bar{x}$ = 1.21), science ($\bar{x}$ = 1.23), art ($\bar{x}$ = 1.27), business ($\bar{x}$ = 1.29), industrial arts ($\bar{x}$ = 1.30), social studies ($\bar{x}$ = 1.33), media and library ($\bar{x}$ = 1.38), math ($\bar{x}$ = 1.40), CWE ($\bar{x}$ = 1.67), counseling ($\bar{x}$ = 1.78), and health ($\bar{x}$ = 1.8).

Perceived Enthusiasm Across Grades and Subject Areas

Teachers were unequivocal in claiming substantial improvement in students' enthusiasm toward subject matter and school generally. Within this overall trend, it was possible to uncover some differences in observations of student enthusiasm by grade and subject area.

Enthusiasm, by Grade

Analysis of variance revealed a statistically-significant difference in teachers' rating of student enthusiasm by grade level, as shown in Figure DAR-81. Teachers of

[3]The lower the value, the stronger the agreement.

grades K-6 ($\bar{x}$ = 1.19 to 1.39) judged that their students' enthusiasm for the subject matter improved more dramatically that was the case for 7th-12th grade teachers ($\bar{x}$ = 1.70), as shown in Figure DAR-82.

A nearly identical pattern appears for somewhat more modest improvements in enthusiasm for school in general (Figure DAR-83 & 84). Again, teachers of grades 7-12 identified less dramatic improvements in enthusiasm for school generally ($\bar{x}$ = 2.2 to 2.3), compared to teachers of younger students ($\bar{x}$ = 1.65 to 1.9). Students in grades 4-6 ($\bar{x}$ = 1.9) also appeared to display less improvement than second and third graders ($\bar{x}$ = 1.65).

Enthusiasm, by Subject

While an ANOVA indicated a statistically-significant difference in enthusiasm by subject area, subsequent Tukey analysis found that no two subjects differed.

For improvements in enthusiasm for school in general, there were subject-area differences (Figures DAR-85 & 86). Teachers whose projects were related in counseling noted greater improvement in enthusiasm ($\bar{x}$ = 1.6) than students in music or foreign language. The same was true for language arts/English, where general enthusiasm ($\bar{x}$ = 1.81) improvement more than in music. Other distinctions among subject areas are not supported by the statistical analysis. In terms of raw mean scores, the subject areas may be ranked as follows, from greatest improvement to least: evaluation ($\bar{x}$ = 1.50), counseling ($\bar{x}$ = 1.60), reading ($\bar{x}$ = 1.70), home economics ($\bar{x}$ = 1.80), computer science/literacy ($\bar{x}$ = 1.81), language arts/English ($\bar{x}$ = 1.81), compensatory education ($\bar{x}$ = 1.83), ESL ($\bar{x}$ = 1.94), PPS ($\bar{x}$ = 1.94), Host Nation/special education/vocational

education ($\bar{x}$ = 2.00), social studies ($\bar{x}$ = 2.03), industrial arts ($\bar{x}$ = 2.10), business ($\bar{x}$ = 2.14), math ($\bar{x}$ = 2.18), art ($\bar{x}$ = 2.18), science ($\bar{x}$ = 2.21), media & library ($\bar{x}$ = 2.22), health ($\bar{x}$ = 2.25), music ($\bar{x}$ = 2.75), foreign language ($\bar{x}$ = 2.83), and CWE ($\bar{x}$ = 3.00).

Allocation of Computer Resources

Given and Desired Computer Distributions

Teachers were asked to indicate their preferences for computer distribution in the school. CROSSTAB procedures provide a means to assess the relationship between the resource setting under which the teachers carried out their projects and their desired resource setting.

Figure DAR-87 reveals, first, that most teachers conducted projects with one or more computers assigned to their classrooms (92.8%, n = 449), with 5.2% using a computer lab and the remaining 2.1% using one or more computers on mobile carts. When asked to select the best setting for computer resources in the school, 79.8% chose classroom-assigned computers. One can detect some interest among teachers to locate more computers in lab settings, but the preponderance of teachers who had computers assigned to their classrooms (83.7%) did not wish to see the situation change.

Given assurance that they would have one computer assigned to their classrooms, teachers were a bit more disposed to favor centralizing remaining computers in a lab setting (Figure DAR-88). Nonetheless, nearly 60 percent of teachers favored computers as a distributed resource.

Teachers who believed their computer resources were relatively adequate, as gauged by the Resource Adequacy Factor, tended to name classroom assignment of computers. Conversely, teachers with relatively inadequate resources tended to prefer a computer lab as the best setting (Figures DAR-89 &

Optimal Student-to-Computer Ratios

A related issue in resource allocation is student-to-computer ratio. When asked to select the best student-computer ratio for their subject area, one-fifth of the respondents recommended 1:1, one student per computer. The majority, however, believed that two to four students per computer was preferable. Reflecting perhaps a level of discomfort and lack of training in using one computer for whole-group instruction, only 6.4% of teachers opted for a ratio of 10:1 or greater.

RATIO Best student-computer ratio for me is...

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
1:1	1	100	19.9	20.5	20.5
2:1 to 4:1	2	279	54.7	57.3	77.8
5:1 to 9:1	3	77	15.1	15.8	93.6
10:1 to 24:1	4	19	3.7	3.9	97.5
25:1 or more	5	12	2.4	2.5	100.0
	.	23	4.5	Missing	
	Total	510	100.0	100.0	

Valid cases 487 Missing cases 23

In the likelihood that some variation would exist in ratio preferences by grade and subject area, one-way ANOVAs were run and, where significance was evident, Tukey HSD procedures were performed to locate the source of the differences.

Optimal ratios, by grade. Statistically-significant differences in preferred ratios were found by grade level of the teachers (Figure DAR-91). Further analysis revealed

that teachers in grades K-1 (Group 1) were more likely to accept a higher student-to-computer ratio ($\bar{x}$ = 2.57) than were teachers in any other grade level.

Optimal ratios, by subject. Similar analysis was performed for subject area, and significant differences surfaced (Figure DAR-92). As reflected in Figure DAR-93, teachers of CWE were willing to accept a higher ratio ($\bar{x}$ = 3.67) than were teachers of business ($\bar{x}$ = 1.43), compensatory education ($\bar{x}$ = 1.56), computer science/literacy ($\bar{x}$ = 1.63), or industrial arts ($\bar{x}$ = 1.70). Media and library teachers were also willing to accept a higher student-computer ratio ($\bar{x}$ = 2.78), compared to business, compensatory education, computer science/literacy, or special education ($\bar{x}$ = 1.91).

Data Analysis Results

CBI Anecdotal Reports

Phase II

To gain a deeper understanding of teachers' efforts and students' educational gains in the CBI project, participating teachers were asked to complete anecdotal record forms -- first, at the end of the first semester, and at two-week intervals during the spring semester. The summary results reported below was carried on a ten percent sample of report forms representing all various regions.

Each anecdotal record f was reviewed and the information provided by the participating teachers was entered into a database management program, using key background variables as fields. Some adjustments in the range of values within these field had to be made in order to accommodate non-standard responses. For example, the grade levels were expanded, since some teachers did not fit into the five categories provided by DoDDs. A code was therefore included for those teachers who worked with students across all the elementary grades, all the secondary grades and who worked with all students in the system (such as resource teachers). Content areas were also included and the areas of Resource, TAG and Learning Improvement were added to those listed by DoDDs.

Analysis of the data was done by subject and grade levels, but several trends crossed grade levels and are presented as such.

Trends Across Grades Levels and Subject Areas

Inservice Programs

1. Teachers felt that their teacher inservice programs were inadequate in the following ways:
   a. Inservice was given prior to teachers actually looking at and reviewing software available in their subject area.
   b. There were too few inservices throughout the year that could provide support from a knowledgeable computer expert who could troubleshoot.
   c. Teachers would like the opportunity to work with other teachers in their content areas and grade levels who are also participating in the program so that ideas can be exchanged. One teacher suggested that this could also be done by mail in the form of a newsletter.
   d. Many teachers would have liked the opportunity to discuss specific software they had received with others to better utilize the programs.
   e. Some teachers did not receive training at all.
   f. Teachers would like greater emphasis on classroom management; that is, how to schedule students of different levels when only one or two computers are available, where to place the computer in a small room so that

it causes less distraction to those not using the computer station (especially in the elementary grades).

g. A few teachers noted that those with computer experience should not be in the same inservice programs as those with no background.

2. Several teachers would like a resource person available to them during the year that they could call upon for additional help.

3. Several teachers noted that communication between the district level of operation and the teachers at the sites was not good regarding training, causing them to miss sessions.

Establishing New CBI Sites

1. Many teachers felt that the set up of the hardware was difficult, since they had little knowledge of computers and needed materials that were not sent with the original package. Several teachers suggested that someone set up the stations for them and spend time explaining the basics so that minor problems could be handled without the station being lost to repair time outside the classroom.

2. Many teachers noted that the delivery of software was delayed to the point that classes were well under way (some were in their second half of the year) before the software they had ordered the spring before arrived. For this reason, the computers were not used by students in several classrooms for several months.

3. It was suggested that stations be located away from the main part of the classroom.

4. Instead of listing rules on a nearby chalkboard, a bulletin board should be used and charts should display schedules of students using the stations and projects completed.

5. Epson printers were seen as inadequate by many teachers who would have preferred Imagewriters.

6. More electrical outlets, tables, covers, adapters and power strips should be provided in the classroom.

7. Computing magazines should be made available to the teachers and students to heighten interests and provide new ideas in the area.

8. Generally, more computers were suggested per classroom.

   a. Elementary level teachers generally used sm ll group work and peer helpers. Groups of 3 to 5 students per station were adequate with a good scheduling system in place.

   b. At the secondary level teachers felt very restrained by so few stations. Often teachers noted that students had to come during lunch or after school to complete projects and that waiting for stations became a little frustrating. At times some projects were put on hold because of a lack of available computer time. Several teachers suggested that a computer lab would be appropriate as students could work in the lab during their free periods as well. It was also noted that many students had prior computer knowledge and were able to move quickly through projects and could then help others when more challenging programs were not yet available.

c. In schools where other teachers did not have access to computers, the stations were utilized by teachers when not used by the classes. One teacher suggested that a lab could provide teachers with specific hours when they could work on class materials or grades that would not interfere with student use. An alternative to this would be the designation of a station for teacher use only.

9. There was a concern expressed for security precautions in several reports, notably in the Panama region where they had equipment stolen from the school.

Trends by Grade Level

On the Elementary Level

1. Word processing was very difficult and time consuming for many students. Several teachers had students dictate stories, when that was the objective of the lesson, and had them work on computer skills at another time.
2. The activities that teachers felt were impossible or extremely difficult without the computer included: animation, immediate feedback, computer skills, enthusiasm, drills and reinforcement, and self-esteem/confidence.
3. Teachers saw a need for more work with keyboarding as projects were slowed by developing motor skills of students and lack of experience with computers.
4. Teachers thought that a faster pace with non-word processing programs would be appropriate along with the raising of expectations, since student progress with these programs has been good.

5. Most notably, teachers observed better teamwork among students as they shared computer stations.

On the Secondary Level

1. As tasks for students on this level are more individualized, students need more time allotted for completion of assignments. As noted before, teachers were not happy with using small groups for most projects.
2. The activities that teachers felt were impossible or extremely difficult without the computer included: graphics, layout, newspaper justification, data storage and manipulation, graphing and review of material.
3. Teachers gave students more responsibility for care of the software and equipment.
4. Teachers were changing objectives to include more assignments required to be done on the computer and even to have tests done on the computer, with the results being kept and monitored by the students.
5. Some teachers who did not feel that assignments could be given to the whole class because of a lack of stations. They tended to give extra credit assignments on the computer or to use the software programs as rewards.
6. Graphics take a long time to print and cause problems when only one printer is available in a classroom. It would be better if each terminal had its own printer.

Several teachers noted that the evaluation form was repetitive, since some questions did not apply each week or changed very little from week to week (such as the

inservice training question). Others felt that continuity in the evaluation was important and believed that the different evaluation criteria presented were not reflective of the positive aspects of the program and the impact on students.

RECOMMENDATIONS

In light of the results contained in this report, the following recommendations should be given careful consideration by DoDDS in order to capitalize on the positive results of Phase II of the CBI Evaluation Project:

1. *Expand Teacher Inservice Opportunities.* Teachers consistently reported limited helpfulness of current inservice efforts in computing, either because they are only minimally available or because the quality is low. On the other hand, large percentages of teachers reported the need for more computer-related inservice. The results of the questionnaires are supported by the anecdotal reports, where a sizable segment of project teachers emphasized the need for more inservice opportunities to share information and expertise with colleagues, to discover the range of software available to them, and to explore and practice effective classroom integration of computers, including whole-group instruction with a single computer and an LCD projection pad or monitor.

2. *Enhance Computer Coordination at DoDDS-Washington.* The anecdotal reports underscored the kind of disjointed implementation that many large school districts experience in the area of technology. Future implementation efforts will require a higher level of coordination at the central office level to insure equitable distribution of resources, creative application of new technologies, timely information dissemination, responsive inservice program development, and meaningful student assessment. Proactive leadership is especially important as DoDDS

pushes tech. ology use beyond the early adopters and into the mainstream of the curriculum.

3. *Maintain in Each School a "Flexible Response" Capability.* A 1:1 student to computer ratio is essential for serious work in word processing. For whole-group demonstration, a computer lab is wasted when only one machine is being used extensively by the teacher while students watch. Future equipment acquisition plans should aim for a "flexible response" to instructional computing needs. Consider a long-range plan including a lab to accommodate 1:1 needs, a large supply of mobil units to achieve a 3:1 or 4:1 ratio for small group work, and a supply of LCD projection pads when a one-computer classroom is the preferred environment. Considerable school-level coordination will be required to maintain this capacity.

4 *Enhance the Role of School-Based Technology Coordinators.* Formally establish, train, and provide incentives for skilled school-based technology coordinators. Evidence from the anecdotal reports suggests that to the extent the regions have identified school-based contact people in technology, the knowledge and skills of these individuals range widely. Ultimately, change happens at the school level, and the kind of change DoDDS seeks with respect to educational technology will require a concerted effort within the five regions to better prepare individuals who serve in this role.

5. *Improve Communication Among Technology Users.* Many stateside computer-using teachers feel isolated as they explore classroom uses of technology. This situation

is exacerbated in the DoDDS system by obstacles, large and small, to easy and frequent communication from school to school, district to district, and region to region. DoDDS should explore ways to break down these communication barriers that prevent teachers from sharing their experiences with technology in the classroom. The ideal would be a worldwide, user-friendly telecommunications system for teachers (and students). Clearly, however, the wide diversity of communications systems in host countries and other such circumstances present some serious problems in achieving this ideal. Nonetheless, DoDDS-Washington, in concert with regional personnel, should study whatever options may be available to improve the communication among teachers in the system as they seek to implement technology-based innovations.

Figures

File: Processing DODSTOTL TXT

REGION Regional office identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Atlantic	1	392	10 2	10 2	10 2
Germany	2	2273	59 0	59 0	69 2
Mediterranean	3	425	11 0	11 0	80 3
Pacific	4	675	17 5	17 5	97 8
Panama	5	85	2 2	2 2	100 0
		1	0	Missing	
	Total	3851	100 0	100 0	

Valid cases 3850 Missing cases 1

GRADE Grade level identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
K 1	1	17	4	4	4
2 3	2	131	3 4	3 4	3 8
4 6	3	1399	36 3	36 3	40 2
7 8	4	774	20 1	20 1	60 3
9 12	5	1501	39 0	39 0	99 3
K 12	6	28	7	7	100 0
		1	0	Missing	
	Total	3851	100 0	100 0	

Valid cases 3850 Missing cases 1

Figure DAR-1

File: Processing DODSTOTL TXT

SUBJECT Subject support area

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Art	10	91	2 4	2 4	2 4
Business	11	69	1 8	1 8	4 2
Compensatory Ed	12	66	1 7	1 7	5 9
Computer sci & lit	13	143	3 7	3 7	9 6
Cosmetology	14	1	0	0	9 7
CWE	15	74	1 9	1 9	11 6
Counseling	16	28	7	7	12 3
ESL	18	33	9	9	13 2
For. Language	20	102	2 6	2 7	15 9
Home Economics	21	42	1 1	1 1	17 0
Health	22	9	2	2	17 2
Host Nation	23	43	1 1	1 1	18 3
Industrial Arts	24	96	2 5	2 5	20 8
Lang Arts & English	25	763	19 8	9 9	40 8
Math	26	466	12 1	12 2	53 0
Media & Library	27	247	6 4	6 5	59 4
Music	28	81	2 1	2 1	61 5
Reading	30	215	5 6	5 6	67 1
Science	31	470	12 2	12 3	79 4
Spec Ed	32	183	4 8	4 8	84 2
Social Studies	33	294	7 6	7 7	91 9
PPS	34	215	5 6	5 6	97 5
Voc Ed	35	95	2 5	2 5	100 0
		25	6	Missing	
	Total	3851	100 0	100 0	

Valid cases 3826 Missing cases 25

Figure DAR-2

File: Processing DODSTOTL TXT

GENDER Gender identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	2	1	1	1
male	1	1980	51 4	51 7	51 7
female	2	1848	48 0	48 3	100 0
		21	5	Missing	
	Total	3851	100 0	100 0	

Valid cases 3830 Missing cases 21

COMPUTRS Project computer count

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	1	373	9 7	9 9	9 9
	2	957	24 9	25 3	35 2
	3	2028	52 6	53 6	88 9
	4	175	4 5	4 6	93 5
	5	12	3	3	93 8
	6	151	3 9	4 0	97 8
	16	25	6	7	98 5
	17	13	3	3	98 3
	19	15	4	4	99 2
	21	1	0	0	99 2
	22	25	6	7	99 9
	31	2	1	1	99 9
	33	2	1	1	100 0
		74	1 9	Missing	
	Total	3851	100 0	100 0	

Valid cases 3777 Missing cases 74

Figure DAR-3

File: Processing DODSTOTL.TXT

COMPNEED Computer needs count

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	307	8.0	8.1	8.1
	1	246	6.4	6.6	14.7
	2	843	21.9	22.3	37.0
	3	636	16.5	16.8	53.9
	4	177	4.6	4.7	58.5
	5	162	4.2	4.3	62.8
	6	183	4.8	4.8	67.7
	7	219	5.7	5.8	73.5
	8	84	2.2	2.2	75.7
	9	164	4.3	4.3	80.0
	10	296	7.7	7.8	87.9
	11	45	1.2	1.2	89.1
	12	153	4.0	4.1	93.1
	13	7	.2	.2	93.3
	15	42	1.1	1.1	94.4
	18	36	.9	1.0	95.4
	20	47	1.2	1.2	96.6
	21	18	.5	.5	97.1
	22	3	.1	.1	97.2
	24	21	.5	.6	97.7
	25	10	.3	.3	98.0
	26	23	.6	.6	98.6
	28	25	.6	.7	99.3
	30	24	.6	.6	99.9
	34	2	.1	.1	99.9
	50	1	.0	.0	100.0
	81	1	.0	.0	100.0
		74	1.9	Missing	
	Total	3851	100.0	100.0	

Valid cases 3777 Missing cases 74

Figure DAR-4

File: Processing DODSTOTL TXT

SOFTTYPE Type of software used in project

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Drill & practice	1	765	19 9	20 3	20 3
Tutorial	2	541	14 0	14 3	34 6
Simulation	3	593	15 4	15 7	50 3
Database	4	53	1 4	1 4	51 7
Word proce [illegible]	5	1095	28 4	29 0	80 7
Spreadshee[illegible]	6	1	0	0	80 7
Integrated software	7	334	8 7	8 8	89 6
Programming	8	64	1 7	1 7	91 3
Problem-solving	9	329	8 5	8 7	100 0
		76	2 0	Missing	
	Total	3851	100 0	100 0	

Valid cases 3775 Missing cases 76

Figure DAR-5

File: Processing DODSTOTL TXT

REGION Regional office identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Atlantic	1	392	100.0	100.0	100.0
	Total	392	100.0	100.0	

Valid cases 392 Missing cases 0

GRADE Grade level identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
2-3	2	4	1.0	1.0	1.0
4-6	3	144	36.7	36.7	37.8
7-8	4	70	17.9	17.9	55.6
9-12	5	174	44.4	44.4	100.0
	Total	392	100.0	100.0	

Valid cases 392 Missing cases 0

SUBJECT Subject support area

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Computer sci & lit	13	25	6.4	6.4	6.4
For Language	20	25	6.4	6.4	12.8
Home Economics	21	18	4.6	4.6	17.3
Lang Arts & English	25	75	19.1	19.1	36.5
Math	26	76	19.4	19.4	55.9
Media & Library	27	9	2.3	2.3	58.2
Science	31	76	19.4	19.4	77.6
Spec Ed	32	49	12.5	12.5	90.1
Social Studies	33	38	9.7	9.7	99.7
PPS	34	1	.3	.3	100.0
	Total	392	100.0	100.0	

Valid cases 392 Missing cases 0

Figure DAR-6

File Processing DODSTOTL TXT

GENDER Gender identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
male	1	212	54 1	54 2	54 2
female	2	179	45 7	45 8	100 0
		1	3	Missing	
	Total	392	100 0	100 0	

Valid cases 391 Missing cases 1

- -

COMPUTRS Project computer count

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	1	14	3 6	3 6	3 6
	2	31	7 9	7 9	11 5
	3	296	75 5	75 5	87 0
	4	25	6 4	6 4	93 4
	22	25	6 4	6 4	99 7
	33	1	3	3	100 0
	Total	392	100 0	100 0	

Valid cases 392 Missing cases 0

·gure DAR-7

File: Processing DODSTOTL TXT

COMPNEED Computer needs count

Value Label	Val	Frequency	Percent	Valid Percent	Cum Percent
	0	58	14 8	14 8	14 8
	2	103	26 3	26 3	41 1
	3	77	19 6	19 6	60 7
	5	14	3 6	3 6	64 3
	7	43	11 0	11 0	75 3
	9	39	9 9	9 9	85 2
	10	33	8 4	8 4	93 6
	28	25	6 4	6 4	100 0
	Total	392	100 0	100 0	

Valid cases 392 Missing cases 0

SOFTTYPE Type of software used in project

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Drill & practice	1	87	22 2	22 2	22 2
Tutorial	2	53	13 5	13 5	35 7
Simulation	3	66	16 8	16 8	52 6
Database	4	1	3	3	52 8
Word processor	5	79	20 2	20 2	73 0
Integrated software	7	29	7 4	7 4	80 4
Problem solving	9	77	19 6	19 6	100 0
	Total	392	100 0	100 0	

Valid cases 392 Missing cases 0

Figure DAR-8

File: Processing DODSTOTL TXT

REGION Regional office identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Germany	2	2273	100.0	100.0	100.0
	Total	2273	100.0	100.0	

Valid cases 2273 Missing cases 0

GRADE Grade level identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
K-1	1	5	.2	.2	.2
2-3	2	94	4.1	4.1	4.4
4-6	3	801	35.2	35.2	39.6
7-8	4	530	23.3	23.3	62.9
9-12	5	843	37.1	37.1	100.0
	Total	2273	100.0	100.0	

Valid cases 2273 Missing cases 0

Figure DAR-9

File: Processing DODSTOTL.TXT

SUBJECT Subject support area

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Art	10	67	2 9	3 0	3 0
Business	11	44	1 9	2 0	4 9
Compensatory Ed	12	30	1 3	1 3	6 3
Computer sci & lit	13	95	4 2	4 2	10 5
CWE	15	25	1 1	1 1	11 6
Counseling	16	4	2	2	11 8
ESL	18	21	9	9	12 7
For Language	20	64	2 8	2 8	15 6
Home Economics	21	24	1 1	1 1	18 6
Health	22	8	4	4	17 0
Host Nation	23	43	1 9	1 9	18 9
Industrial Arts	24	68	3 0	3 0	21 9
Lang Arts & English	25	472	20 8	21 0	42 9
Math	26	182	8 0	8 1	51 0
Media & Library	27	190	8 4	8 4	59 4
Music	28	58	2 6	2 6	62 0
Reading	30	182	8 0	8 1	70 1
Science	31	172	7 6	7 6	77 8
Spec Ed	32	105	4 6	4 7	82 4
Social Studies	33	165	7 3	7 3	89 8
PPS	34	135	5 9	6 0	95 8
Voc Ed	35	95	4 2	4 2	100 0
		24	1 1	Missing	
	Total	2273	100 0	100 0	

Valid cases 2249 Missing cases 24

GENDER Gender identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	1	0	0	0
male	1	1134	49 9	50 2	50 3
female	2	1123	49 4	49 7	100 0
		15		Missing	
	Total	2273	100 0	100 0	

Valid cases 2258 Missing cases 15

DAR-62

Figure DAR-10

File: ..ocessing DODSTOTL TXT

COMPUTRS Project computer count

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	1	260	11 4	11 7	11 7
	2	654	28 8	29 4	41.1
	3	1023	45 0	46 0	87 1
	4	135	5 9	6 1	93 1
	5	12	5	5	93 7
	6	99	4 4	4 4	98 :
	16	25	1 1	1 1	99 2
	19	15	7	7	99 8
	31	1	0	0	100 0
	33	1	0	0	100 0
		48	2 1	Missing	
	Total	2273	100 0	100 0	

Valid cases 2225 Missing cases 48

Figure DAR-11

File: Processing DODSTOTL TXT

COMPNEED Computer needs count

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	184	8 1	8 3	8 3
	1	137	6 0	6 2	14 4
	2	524	23 1	23 6	38 0
	3	220	9 7	9.9	47 9
	4	169	7 4	7 6	55 5
	5	119	5	5 3	60 8
	6	134	5 9	6 0	66 8
	7	115	5 1	5 2	72 0
	8	84	3 7	3 8	75 8
	9	91	4 0	4.1	79 9
	10	174	7 7	7 8	87 7
	11	25	1 1	1 1	88 8
	12	81	3 6	3 6	92 4
	13	7	3	3	92 8
	15	24	1 1	1 1	93 8
	18	36	1 6	1 6	95 5
	20	22	1 0	1 0	96 4
	21	18	8	8	97 3
	22	2	1	1	97 3
	25	10	4	4	97 8
	26	23	1 0	1.0	98 8
	30	24	1 1	1 1	99 9
	50	1	0	0	100 0
	81	1	0	0	100 0
		48	2 1	Missing	
	Total	2273	100 0	100 0	

Valid cases 2225 Missing cases 48

Figure DAR-12

File: Processing DODSTOTL TXT

SOFTTYPE Type of software used in project

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Drill & practice	1	409	18.0	18.4	18.4
Tutorial	2	354	15.6	15.9	34.3
Simulation	3	320	14.1	14.4	48.7
Database	4	30	1.3	1.3	50.0
Word processor	5	691	30.4	31.0	81.0
Integrated software	7	234	10.3	10.5	91.6
Programming	8	41	1.8	1.8	93.4
Problem-solving	9	147	6.5	6.6	100.0
		47	2.1	Missing	
	Total	2273	100.0	100.0	

Valid cases 2226 Missing cases 47

Figure DAR-13

File: Processing DODSTOTL TXT

REGION Regional office identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Mediterranean	3	425	100 0	100.0	100 0
	Total	425	100 0	100 0	

Valid cases 425 Missing cases 0

GRADE Grade level identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
K-1	1	6	1 4	1 4	1 4
4-6	3	157	36 9	36 9	38 4
7-8	4	46	10 8	10 8	49 2
9-12	5	188	44 2	44 2	93 4
K-12	6	28	6 6	6 6	100 0
	Total	425	100 0	100 0	

Valid cases 425 Missing cases 0

Figure DAR-14

File: Processing DODSTOTL.TXT

SUBJECT Subject support area

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Art	10	8	1 9	1 9	1.9
Business	11	25	5 9	5 9	7 8
Compensatory Ed	12	34	8 0	8 0	15 8
CWE	15	25	5 9	5.9	21 6
Counseling	16	24	5 6	5.6	27.3
ESL	18	6	1 4	1.4	28 7
Industrial Arts	24	3	7	.7	29.4
Lang Arts & English	25	57	13.4	13.4	42.8
Math	26	68	16 0	16.0	58.8
Media & Library	27	25	5 9	5 9	64 7
Music	28	14	3 3	3 3	68 0
Reading	30	10	2.4	2 4	70 4
Science	31	53	12 5	12 5	82 8
Spec Ed	32	8	1 9	1 9	84 7
Social Studies	33	34	8 0	8 0	92 7
PPS	34	31	7 3	7 3	100 0
	Total	425	100 0	100 0	

Valid cases 425 Missing cases 0

GENDER Gender identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
male	1	237	55 8	55 9	55 9
female	2	187	44 0	44 1	100 0
		1		2 Missing	
	Total	425	100 0	100 0	

Valid cases 424 Missing cases 1

Figure DAR-15

File: Processing DODSTOTL TXT

COMPUTRS Project computer count

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	1	81	19 1	20 3	20 3
	2	80	18 8	20.0	40 3
	3	212	49 9	53 0	93 3
	6	27	6 4	6.7	100 0
		25	5 9	Missing	
	Total	425	100 0	100 0	

Valid cases 400 Missing cases 25

- -

COMPNEED Computer needs count

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	24	5 6	6 0	6 0
	1	40	9 4	10 0	16 0
	2	68	16 0	17 0	33 0
	3	171	40 2	42 8	75 8
	4	8	1 9	2 0	77 8
	7	23	5 4	5 8	83 5
	8	25	5 9	6 3	89 8
	10	38	8 9	9 5	99 3
	12	3	7	8	100 0
		25	5 9	Missing	
	Total	425	100 0	100 0	

Valid cases 400 Missing cases 25

Figure DAR-16

File: Processing DODSFOTL.TXT

SOFTTYPE Type of software used in project

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Drill & practice	1	157	36 9	39 3	39 3
Tutorial	2	35	8 2	8 8	48 0
Simulation	3	75	17 6	18 8	66 8
Word processor	5	59	13 9	14 8	81 5
Problem-solving	9	74	17 4	18 5	100 0
		25	5 9	Miss.	
	Total	425	100.0	100 0	

Valid cases 400 Missing cases 25

Figure DAR-17

File Processing DODSTOTL TXT

REGION Regional office identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Pacific	4	675	100 0	100 0	100 0
	Total	675	100 0	100 0	

Valid cases 675 Missing cases 0

GRADE Grade level identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
K-1	1	6	9	9	9
2-3	2	33	4 9	4 9	5 8
4-6	3	297	44 0	44 0	49 8
7-8	4	91	13 5	13 5	63 3
9 12	5	248	36 7	36 7	100 0
	Total	675	100 0	100 0	

Valid cases 675 Missing cases 0

Figure DAR-18

File: Processing DODSTOTL.TXT

SUBJECT Subject support area

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Art	10	16	2 4	2 4	2 4
Compensatory Ed	12	2	3	3	2 7
Computer sci & lit	13	23	3 4	3 4	6 1
Cosmetology	14	1	1	1	6 2
CWE	15	24	3 6	3 6	9 8
ESL	18	6	9	9	10 7
For. Language	20	13	1 9	1 9	12 6
Health	22	1	1	1	12 7
Industrial Arts	24	25	3 7	3 7	16 4
Lang Arts & English	25	140	20.7	20.7	37 2
Math	26	128	19 0	19 0	56 1
Media & Library	27	23	3 4	3 4	59 6
Music	28	9	1 3	1 3	60 9
Reading	30	23	3 4	3 4	64 3
Science	31	156	23 1	23 1	87 4
Spec Ed	32	3	4	4	87 9
Social Studies	33	34	5 0	5 0	92 9
PPS	34	48	7 1	7 1	100 0
	Total	675	100 0	100 0	

Valid cases 675 Missing cases 0

GENDER Gender identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	1	1	1	1
male	1	347	51 4	51 6	51 8
female	2	324	48 0	48 2	100 0
		3	4	Missing	
	Total	675	100 0	100 0	

Valid cases 672 Missing cases 3

Figure DAR-19

File: Processing DODSTOTL TXT

COMPUTRS Project computer count

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	1	18	2 7	2.7	2 7
	2	152	22 5	22 5	25 2
	3	464	68 7	68 7	93 9
	4	15	2 2	2 2	96 1
	6	25	3 7	3 7	99 9
	31	1	1	1	100 0
	Total	675	100 0	100 0	

Valid cases 675 Missing cases 0

COMPNEED Computer needs count

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	41	6 1	6 1	6 1
	1	71	10 5	10 5	16 6
	2	106	15 7	15 7	32 3
	3	168	24 9	24 9	57 2
	5	17	2 5	2 5	59 7
	6	49	7 3	7 3	67 0
	7	25	3 7	3 7	70 7
	9	9	1 3	1 3	72 0
	10	51	7 6	7 6	79 6
	11	20	3 0	3 0	82 5
	12	69	10 2	10 2	92 7
	20	25	3 7	3 7	96 4
	22	1	1	1	96 6
	24	21	3 1	3 1	99 7
	34	2	3	3	100 0
	Total	675	100 0	100 0	

Valid cases 675 Missing cases 0

Figure DAR-20

File: Processing DODSTOTL TXT

SOFTTYPE Type of software used in project

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Drill & practice	1	112	16.6	16.7	16 7
Tutorial	2	99	14.7	14 7	31 4
Simulation	3	132	19.6	19.6	51 0
Database	4	22	3 3	3.3	54 3
Word processor	5	206	30 5	30.7	85 0
Spreadsheet	6	1	1	1	85.1
Integrated software	7	46	6 8	6 8	92 0
Programming	8	23	3 4	3 4	95 4
Problem-solving	9	31	4 6	4 6	100.0
		3	4	Missing	
	Total	675	100 0	100 0	

Valid cases 672 Missing cases 3

Figure DAR-21

File: Processing DODSTOTL.TXT

REGION Regional office identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Panama	5	85	100 0	100 0	100 0
	Total	85	100 0	100 0	

Valid cases 85 Missing cases 0

GRADE Grade level identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
7-8	4	37	43 5	43 5	43 5
9-12	5	48	56 5	56 5	100 0
	Total	85	100 0	100 0	

Valid cases 85 Missing cases 0

SUBJECT Subject support area

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Lang Arts & English	25	19	22 4	22 4	22 4
Math	26	12	14 1	14.1	36 5
Science	31	13	15 3	15 3	51 8
Spec Ed	32	18	21 2	21.2	72 9
Social Studies	33	23	27 1	27 1	100 0
	Total	85	100 0	100 0	

Valid cases 85 Missing cases 0

Figure DAR-22

File: Processing DODSTOTL.TXT

GENDER Gender identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
male	1	50	58 8	58 8	58.8
female	2	35	41 2	41.2	100.0
	Total	85	100 0	100 0	

Valid cases 85 Missing cases 0

COMPUTRS Project computer count

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	2	40	47 1	47 1	47 1
	3	31	36 5	36 5	83 5
	17	13	15 3	15 3	98 8
	21	1	1 2	1 2	100 0
	Total	85	100 0	100 0	

Valid cases 85 Missing cases 0

COMPNEED Computer needs count

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	2	42	49 4	49 4	49 4
	5	12	14 1	14 1	63 5
	7	13	15 3	15 3	78 8
	15	18	21 2	21 2	100 0
	Total	85	100 0	100 0	

Valid cases 85 Missing cases 0

Figure DAR-23

File: Processing DODSTOTL TXT

SOFTTYPE Type of software used in project

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Word processor	5	60	70 6	70 6	70 6
Integrated software	7	25	29 4	29 4	100 0
	Total	85	100 0	100 0	

Valid cases 85 Missing cases 0

Figure DAR-24

22-Dec-89 BREAKDOWN of aggregate gr 5-6 students' attitudes
Page 6
18:58:13 GEORGE MASON UNIVERSITY on GMUVAX:: VMS V5.1

File: Processing DODSTOTL.TXT

D E S C R I P T I O N O F S U B P O P U L A T I O N S

Criterion Variable ATTYOUNG Grades 5-6 attitudes toward computers
Broken Down by GENDER Gender identification

Variable	Value	Label	Mean	Std Dev	Cases
For Entire Population			98.3076	12.3240	1154
GENDER	1	male	99.4288	11.8105	569
GENDER	2	female	97.2171	12.7193	585

Total Cases = 1154

A N A L Y S I S O F V A R I A N C E

Criterion Variable ATTYOUNG Grades 5-6 attitudes toward computers
Broken Down by GENDER Gender identification

Value	Label	Sum	Mean	Std Dev	Sum of Sq	Cases
1	male	56575.00	99.4288	11.8105	79229.3673	569
2	female	56872.00	97.2171	12.7193	94479.4291	585
Within Groups Total		113447.00	98.3076	12.2796	173708.796	1154

Source	Sum of Squares	D.F.	Mean Square	F	Sig.
Between Groups	1410.9965	1.	1410.9965	9.3574	.0023

With fewer than three groups, the relationship is linear

Within Groups	173708.7964	1152	150.7889		

Eta = .0898 Eta Squared = .0081

DAR-77

Figure DAR-26

22-Dec-89 BREAKDOWN of aggregate gr 5-6 students' attitudes
Page 9
18:58:13 GEORGE MASON UNIVERSITY on GMUVAX:: VMS V5.1

File: Processing DODSTOTL.TXT

ANALYSIS OF VARIANCE

Criterion Variable ATTYOUNG Grades 5-6 attitudes toward computers
Broken Down by SOFTTYPE Type of software used in project

Value	Label	Sum	Mean	Std Dev	Sum of Sq	Cases
1	Drill & practice	17733.00	95.8541	11.7675	25479.0595	185
2	Tutorial	16591.00	98.1716	11.9712	24076.0237	169
3	Simulation	8536.00	95.9101	13.6579	16415.2809	89
4	Database	3374.00	91.1892	11.0324	4381.6757	37
5	Word processor	43134.00	99.8472	12.6129	68565.9167	432
7	Integrated software	5604.00	100.0714	12.1608	8133.7143	56
8	Programming	4117.00	102.9250	10.3066	4142.7750	40
9	Problem-solving	14163.00	98.3542	11.2892	18224.9375	144
Within Groups Total		113252.00	98.3090	12.1694	169419.383	1152

Source	Sum of Squares	D.F.	Mean Square	F	Sig.
Between Groups	5554.6030	7.	793.5147	5.3582	.0000
Linearity	1522.1814	1	1522.1814	10.2785	.0014
Dev. from Linearity	4032.4215	6	672.0703	4.5381	.0001
	R = .0933	R Squared = .0087			
Within Groups	169419.3832	1144	148.0939		
	Eta = .1782	Eta Squared = .0317			

DAR-78

Figure DAR-27

```
- - - - - - - - - - - - - - - - - - - - - - - - ONEWAY - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

     Variable  ATTYOUNG   Grades 5-6 attitudes toward computers
  By Variable  SOFTTYPE   Type of software used in project

MULTIPLE RANGE TEST


TUKEY-HSD PROCEDURE
RANGES FOR THE 0.050 LEVEL -

         4.29   4.29   4.29   4.29   4.29   4.29   4.29
THE RANGES ABOVE ARE TABLE RANGES.
THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
       8.6051 * RANGE * DSQRT(1/N(I) + 1/N(J))
  (*) DENOTES PAIRS OF GROUPS SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL

                          G G G G G G G
                          r r r r r r r
                          p p p p p p p

    Mean        Group     4 1 3 2 9 5 7 8

   91.1892      Grp 4
   95.8541      Grp 1
   95.9101      Grp 3
   98.1716      Grp 2      *
   98.3542      Grp 9      *
   99.8472      Grp 5      * *
  100.0714      Grp 7      *
  102.9250      Grp 8      * *
```

Figure DAR-28

File: Processing DOOSTOTL.TXT

D E S C R I P T I O N O F S U B P O P U L A T I O N S

Criterion Variable ATTYOUNG Grades 5-6 attitudes toward computers
Broken Down by HOMECOMP Computer outside of school?

Variable	Value	Label	Mean	Std Dev	Cases
For Entire Population			98.3076	12.3240	1154
HOMECOMP	1	Yes	99.2846	12.4714	794
HOMECOMP	2	No	96.1528	11.7246	360

Total Cases = 1154

A N A L Y S I S O F V A R I A N C E

Criterion Variable ATTYOUNG Grades 5-6 attitudes toward computers
Broken Down by HOMECOMP Computer outside of school?

Value	Label	Sum	Mean	Std Dev	Sum of Sq	Cases
1	Yes	78832.00	99.2846	12.4714	123339.673	794
2	No	34615.00	96.1528	11.7246	49350.5972	360
Within Groups Total		113447.00	98.3076	12.2436	172690.270	1154

Source	Sum of Squares	D.F.	Mean Square	F	Sig.
Between Groups	2429.5231	1.	2429.5231	16.2071	.0001

With fewer than three groups, the relationship is linear

Within Groups	172690.2698	1152	149.9047		

Eta = .1178 Eta Squared = .0139

Figure DAR-29

```
22-Dec-89   ONEWAY of aggregate gr 7-12 .tudents' attitudes, by descrip vars
18:23:57    GEORGE MASON UNIVERSITY        on GMUVAX::          VMS V5.:
File:     Processing DODSTOTL.TXT

- - - - - - - - - - - - - - - - - - - - O N E W A        - - - - - - - - - - - - - - - - - - - - - - -


     Variable  ATTOLDER   Grades 7-12 attitudes toward computers
  By Variable  REGION     Regional office identification

                                    ANALYSIS OF VAPIANCE


                                   SUM OF         MEAN              F       F
        SOURCE            D.F.     SQUARES        SQUARES         RATIO   PROB.

BETWEEN GROUPS              4     10309.1800     2577.?950       5.1403   .0004
WITHIN GROUPS            2012    1008801.984      501.3926
TOTAL                    2016    1019111.164


- - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - - -

     Variable  ATTOLDER   Grades 7-12 attitudes toward computers
  By Variable  REGION     Regional office identification

MULTIPLE RANGE TEST

TUKEY-HSD PROCEDURE
RANGES FOR THE 0.050 LEVEL -

          3.87   3.87   3.87   3.87
THE RANGES ABOVE ARE TABLE RANGES.
THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
      15.8334 * RANGE * DSQRT(1/N(I) + 1/N(J))
   (*) DENOTES PAIRS OF GROUPS SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL

                           G G G G G
                           r r r r r
                           p p p p p

    Mean      Group        1 3 4 2 5

   167.8700   Grp 1
   168.4722   Grp 3
   168.8444   Grp 4
   172.9659   Grp 2        *   *
   174.6081   Grp 5
```

Figure DAR-30

D E S C R I P T I O N O F S U B P O P U L A T I O N S

Criterion Variable ATTOLDER Grades 7-12 attitudes toward computers
Broken Down by SUBJECT Subject/support area

Variable	Value	Label	Mean	Std Dev	Cases
For Entire Population			171.3644	22.4836	2017
SUBJECT	10	Art	170.8000	23.1624	55
SUBJECT	11	Business	172.4091	22.4067	66
SUBJECT	13	Computer sci & lit	170.3448	26.0758	29
SUBJECT	15	CWE	160.0000	24.0783	61
SUBJECT	16	Counseling	170.7778	18.7275	27
SUBJECT	18	ESL	165.0000	2.8284	2
SUBJECT	20	For. Language	170.9175	22.5484	97
SUBJECT	21	Home Economics	162.6389	17.2861	36
SUBJECT	23	Host Nation	176.8571	19.2175	28
SUBJECT	24	Industrial Arts	169.7952	22.3054	83
SUBJECT	25	Lang Arts & English	171.8133	23.1369	316
SUBJECT	26	Math	170.1327	20.5255	226
SUBJECT	27	Media & Library	177.4571	19.4803	105
SUBJECT	28	Music	170.5429	21.1011	35
SUBJECT	30	Reading	175.6860	20.9976	121
SUBJECT	31	Science	170.3019	21.9058	318
SUBJECT	32	Spec. Ed.	169.8627	26.9503	102
SUBJECT	33	Social Studies	170.3642	20.9064	162
SUBJECT	34	PPS	179.8906	23.3096	64
SUBJECT	35	Voc. Ed.	173.2381	26.7364	84

Total Cases = 2017

Figure DAR-31

ANALYSIS OF VARIANCE

Criterion Variable ATTOLDER Grades 7-12 attitudes toward computers
Broken Down by SUBJECT Subject/support area

Value	Label	Sum	Mean	Std Dev	Sum of Sq	Cases
10	Art	9394.00	170.8000	23.1624	28970.8000	55
11	Business	11379.00	172.4091	22.4067	32633.9545	66
13	Computer sci & lit	4940.00	170.3448	26.0758	19038.5517	29
15	CWE	9760.00	160.0000	24.0783	34786.0000	61
16	Counseling	4611.00	170.7778	8.7275	9118.6667	27
18	ESL	330.00	165.0000	2.8284	8.0000	2
20	For. Language	16579.00	170.9175	22.5484	48809.3402	97
21	Home Economics	5855.00	162.6389	17.2861	10458.3056	36
23	Host Nation	4952.00	176.8571	19.217[illegible]	9971.4286	28
24	Industrial Arts	14093.00	169.7952	22.3054	40797.5181	83
25	Lang Arts & English	54293.00	171.8133	23.1369	168623.984	316
26	Math	38450.00	170.1327	20.5255	94792.0177	226
27	Media & Library	18633.00	177.4571	19.4803	39466.0571	105
28	Music	5969.00	170.5429	21.1011	15138.6857	35
30	Reading	21258.00	175.6860	20.9976	52908.0661	121
31	Science	54156.00	170.3019	21.9058	152117.019	318
32	Spec. Ed.	17326.00	169.8627	26.9503	73358.0784	102
33	Social Studies	27599.00	170.3642	20.9064	70369.5123	162
34	PPS	11513.00	179.8906	23.3096	34230.2344	64
35	Voc. Ed.	14552.00	173.2381	26.7364	59331.2381	84
Within Groups Total		345642.00	171.3644	22.3206	994927.458	2017

Source	Sum of Squares	D.F.	Mean Square	F	Sig.
Between Groups	24183.7058	19.	1272.8266	2.5548	.0002
Linearity	2376.0910	1	2376.0910	4.7692	.0291
Dev. from Linearity	21807.6148	18	1211.5342	2.4318	.0007
	R = .0483	R Squared = .0023			
Within Groups	994927.4583	1997	498.2110		
	Eta = .1540	Eta Squared = .0237			

Figure DAR-32

- O N E W A Y -

Variable ATTOLDER Grades 7-12 attitudes toward computer
By Variable SUBJECT Subject/support area

MULTIPLE RANGE TEST

TUKEY-HSD PROCEDURE
RANGES FOR THE 0.050 LEVEL -

5.01 5.01 5.01 5.01 5.01 5.01 5.01 5.01 5.01 5.01
5.01 5.01 5.01 5.01 5.01 5.01 5.01 5.01 5.01

THE RANGES ABOVE ARE TABLE RANGES.
THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
15.7831 * RANGE * DSQRT(1/N(I) + 1/N(J))
(*) DENOTES PAIRS OF GROUPS SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL

Mean	Group	Grp15	Grp21	Grp18	Grp24	Grp32	Grp26	Grp31	Grp13	Grp33	Grp28	Grp16	Grp10	Grp20	Grp25	Grp11	Grp35	Grp30	Grp23	Grp27	Grp34
160.0000	Grp15																				
162.6389	Grp21																				
165.0000	Grp18																				
169.7952	Grp24																				
169.8627	Grp32																				
170.1327	Grp26																				
170.3019	Grp31																				
170.3448	Grp13																				
170.3642	Grp33																				
170.5429	Grp28																				
170.7778	Grp16																				
170.8000	Grp10																				
170.9175	Grp20																				
171.8133	Grp25	*																			
172.4091	Grp11																				
173.2381	Grp35																				
175.6860	Grp30	*																			
176.8571	Grp23																				
177.4571	Grp27	*																			
179.8906	Grp34	*	*																		

Figure DAR-33

DAR-84

D E S C R I P T I O N O F S U B P O P U L A T I O N S

Criterion Variable ATTOLDER Grades 7-12 attitudes toward computers
Broken Down by GENDER Gender identification

Variable	Value	Label	Mean	Std Dev	Cases
For Entire Population			171.3644	22.4836	2017
GENDER	1	male	175.0222	22.8515	1079
GENDER	2	female	167.1567	21.3009	938

Total Cases = 2017

A N A L Y S I S O F V A R I A N C E

Criterion Variable ATTOLDER Grades 7-12 attitudes toward computers
Broken Down by GENDER Gender identification

Value	Label	Sum	Mean	Std Dev	Sum of Sq	Cases
1	male	188849.00	175.0222	22.8515	562923.466	1079
2	female	156793.00	167.1567	21.3009	425143.963	938
Within Groups Total		345642.00	171.3644	22.1440	988067.429	2017

Source	Sum of Squares	D.F.	Mean Square	F	Sig.
Between Groups	31043.7352	1.	31043.7352	63.3086	.0000
With fewer than three groups, the relationship is linear					
Within Groups	988067.4289	2015	490.3560		

Eta = .1745 Eta Squared = .0305

DAR-85

Figure DAR-34

A N A L Y S I S O F V A R I A N C E

Criterion Variable ATTOLDER Grades 7-12 attitudes toward computers
Broken Down by SOFTTYPE Type of software used in project

Value	Label	Sum	Mean	Std Dev	Sum of Sq	Cases
1	Drill & practice	67441.00	168.6025	20.6271	169765.798	400
2	Tutorial	52415.00	172.9868	22.5264	153245.947	303
3	Simulation	71151.00	169.4071	21.8934	200835.379	420
4	Database	1343.00	191.8571	19.1610	2202.8571	7
5	Word processor	85258.00	172.9371	23.8863	280713.051	493
6	Spreadsheet	189.00	189.0000	.0000	.0000	1
7	Integrated software	39069.00	173.6400	21.1358	100065.840	225
8	Programming	2870.00	179.3750	21.0614	6653.7500	16
9	Problem-solving	19771.00	171.9217	23.9737	65520.2957	115
Within Groups Total		339507.00	171.4682	22.2868	979002.917	1980

Source	Sum of Squares	D.F.	Mean Square	F	Sig.
Between Groups	12134.0787	8.	1516.7598	3.0537	.0020
Linearity	3765.4594	1	3765.4594	7.5809	.0060
Dev. from Linearity	8368.6193	7	1195.5170	2.4069	.0187
	R = .0616	R Squared = .0038			
Within Groups	979002.9168	1971	496.7037		
	Eta = .1106	Eta Squared = .0122			

DAR-86

Figure DAR-35

D E S C R I P T I O N O F S U B P O P U L A T I O N S

Criterion Variable ATTOLDER Grades 7-12 attitudes toward computers
Broken Down by HOMECOMP Computer outside of school?

Variable	Value	Label	Mean	Std Dev	Cases
For Entire Population			171.3644	22.4836	2017
HOMECOMP	1	Yes	173.3994	22.5949	1442
HOMECOMP	2	No	166.2609	21.3844	575

Total Cases = 2017

A N A L Y S I S O F V A R I A N C E

Criterion Variable ATTOLDER Grades 7-12 attitudes toward computers
Broken Down by HOMECOMP Computer outside of school?

Value	Label	Sum	Mean	Std Dev	Sum of Sq	Cases
1	Yes	250042.00	173.3994	22.5949	735675.920	1442
2	No	95600.00	166.2609	21.3844	262486.870	575
Within Groups Total		345642.00	171.3644	22.2568	998162.789	2017

Source	Sum of Squares	D.F.	Mean Square	F	Sig.
Between Groups	20948.3750	1.	20948.3750	42.2887	.0000

With fewer than three groups, the relationship is linear

Within Groups	998162.7891	2015	495.3661		

Eta = .1434 Eta Squared = .0206

DAR-87

Figure DAR-36

File: Processing DODDTCHR.TXT

REGION Regional office identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Atlantic	1	50	9.6	9 6	9 6
Germany	2	267	51.1	51.1	60 7
Mediterranean	3	47	9 0	9.0	69 7
Pacific	4	137	26 2	26 2	96 0
Panama	5	21	4 0	4 0	100 0
	Total	522	100 0	100 0	

Valid cases 522 Missing cases 0

GRADE Grade level identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
K-1	1	37	7 1	7 1	7 1
2 3	2	99	19 0	19 0	26 1
4-6	3	163	31 2	31 3	57 4
7 8	4	67	12 8	12 9	70 2
9-12	5	144	27 6	27 6	97 9
Other	6	11	2 1	2 1	100 0
		1		Missing	
	Total	522	100 0	100 0	

Valid cases 521 Missing cases 1

Figure DAR-37

File: Processing DODDTCHR.TXT

SUBJECT Subject support area

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Art	10	11	2 1	2 1	2 1
Business	11	7	1 3	1 3	3.4
Compensatory Ed	12	18	3 4	3 4	6 9
Computer sci & lit	13	17	3 3	3 3	10 2
CWE	15	3	6	6	10 7
Counseling	16	12	2 3	2 3	13 0
ESL	18	17	3 3	3 3	16 3
Evaluation	19	2	4	4	16 7
For. Language	20	6	1 1	1 1	17 8
Home Economics	21	5	1 0	1 0	18 8
Health	22	5	1 0	1 0	19 7
Host Nation	23	3	6	6	20 3
Industrial Arts	24	10	1 9	1.9	22 2
Lang Arts & English	25	126	24 1	24 1	46 4
Math	26	64	12 3	12.3	58 6
Medi & Library	27	26	5 0	5 0	63 6
Music	28	8	1 5	1.5	65 1
Reading	30	38	7 3	7 3	72 4
Science	31	32	6 1	6 1	78 5
Spec Ed	32	53	10 2	10 2	88 7
Social Studies	33	34	6 5	6.5	95 2
PPS	34	19	3 6	3 6	98 9
Voc Ed	35	6	1 1	1 1	100 0
	Total	522	100 0	100 0	

Valid cases 522 Missing cases 0

GENDER Gender identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
male	1	142	27 2	27 2	27 2
female	2	380	72 8	72 8	100 0
	Total	522	100 0	100 0	

Valid cases 522 Missing cases 0

DAR-89

Figure DAR-38

File: Processing DODDTCHR TXT

COMPUTRS Project computer count

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	3	6	6	6
	1	101	19 3	19 3	19 9
	2	107	20 5	20 5	40 4
	3	271	51 9	51 9	92 3
	4	14	2 7	2 7	95 0
	5	3	6	6	95 6
	6	11	2 1	2 1	97 7
	9	2	4	4	98 1
	10	1	2	2	98 3
	16	1	2	2	98 5
	17	1	2	2	98 7
	18	3	6	6	99 2
	20	1	2	2	99 4
	21	1	2	2	99 6
	22	1	2	2	99 8
	83	1	2	2	100 0
	Total	522	100 0	100 0	

Valid cases 522 Missing cases 0

Figure DAR-39

File: Processing DODDTCHR TXT

COMPNEED Computer needs count

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	85	16.3	16.3	16.3
	1	47	9.0	9.0	25.3
	2	105	20.1	20.1	45.4
	3	70	13.4	13.4	58.8
	4	27	5.2	5.2	64.0
	5	26	5.0	5.0	69.0
	6	43	8.2	8.2	77.2
	7	24	4.6	4.6	81.8
	8	7	1.3	1.3	83.1
	9	9	1.7	1.7	84.9
	10	28	5.4	5.4	90.2
	11	4	.8	.8	91.0
	12	10	1.9	1.9	92.9
	13	2	.4	.4	93.3
	14	2	.4	.4	93.7
	15	5	1.0	1.0	94.6
	16	1	.2	.2	94.8
	17	1	.2	.2	95.0
	18	2	.4	.4	95.4
	20	3	.6	.6	96.0
	21	2	.4	.4	96.4
	22	4	.8	.8	97.1
	23	1	.2	.2	97.3
	24	3	.6	.6	97.9
	25	2	.4	.4	98.3
	26	1	.2	.2	98.5
	27	1	.2	.2	98.7
	28	2	.4	.4	99.0
	30	2	.4	.4	99.4
	34	1	.2	.2	99.6
	70	1	.2	.2	99.8
	99	1	.2	.2	100.0
	Total	522	100.0	100.0	

Valid cases 522 Missing cases 0

Figure DAR-40

File: Processing DODDTCHR.TXT

SOFTTYPE Type of software used in project

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Drill & practice	1	140	26 8	26.8	26 8
Tutorial	2	73	14.0	14.0	40 3
Simulation	3	55	10 5	10 5	51 3
Database	4	10	1 9	1 9	53 3
Word processor	5	164	31 4	31 4	84 7
Integrated software	7	40	7 7	7 7	92 3
Programming	8	6	1	1 1	93 5
Problem-solving	9	34	6 5	6 5	100 0
	Total	522	100 0	100 0	

Valid cases 522 Missing cases 0

- -

NUMBSTUD Total number of students in school

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Fewer than 125	1	22	4 2	4 2	4 2
126-250	2	44	8 4	8 5	12 7
251-500	3	98	18 8	18 9	31 6
501-1000	4	231	44 3	44 5	76 1
More than 1000	5	124	23 8	23 9	100 0
		3	6	Missing	
	Total	522	100 0	100 0	

Valid cases 519 Missing cases 3

Figure DAR-41

File: Processi.g DODDTCHR TXT

GRADE Grade level dentification ATLANTIC

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
K-1	1	1	2 0	2 0	2 0
2-3	2	11	22 0	22 0	24 0
4-6	3	13	26.0	26 0	50 0
7-8	4	10	20 0	20 0	70 0
9-12	5	15	30 0	30 0	100 0
	Total	50	100 0	100 0	

Valid cases 50 Missing cases 0

- -

SUBJECT Subject support area

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Art	10	2	4 0	4 0	4 0
Computer sci & lit	13	2	4 0	4 0	8 0
For. Language	20	1	2 0	2 0	10 0
Home Economics	21	1	2 0	2 0	12 0
Industrial Arts	24	1	2 0	2 0	14 0
Lang Arts & English	25	8	16 0	16 0	30 0
Math	26	13	26 0	26 0	56 0
Media & Library	27	2	4 0	4 0	60 0
Reading	30	2	4 0	4 0	64 0
Science	31	5	10 0	10 0	74 0
Spec Ed	32	7	14 0	14 0	88 0
Social Studies	33	6	12 0	12 0	100 0
	Total	50	100 0	100 0	

Valid cases 50 Missing cases 0

Figure DAR-42

File: Processing DODDTCHR TXT

GENDER Gender identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
male	1	16	32.0	32 0	32 0
female	2	34	68 0	68.0	100.0
	Total	50	100 0	100 0	

Valid cases 50 Missing cases 0

COMPUTRS Project computer court

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	1	6	12 0	12.0	12 0
	2	6	12 0	12.0	24 0
	3	33	66 0	66 0	90 0
	4	2	4 0	4.0	94 0
	6	1	2 0	2 0	96 0
	18	1	2 0	2 0	98 0
	22	1	2 0	2 0	100 0
	Total	50	100 0	100 0	

Valid cases 50 Missing cases 0

Figure DAR-43

File: Processing DODDTCHR.TXT

COMPNEED Computer needs count

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	8	16 0	16 0	16.0
	1	2	4 0	4 0	20 0
	2	10	20 0	20.0	40 0
	3	9	18 0	18.0	58.0
	4	3	6 0	6.0	64 0
	5	2	4 0	4 0	68 0
	6	2	4 0	4 0	72 0
	7	4	8 0	8 0	80 0
	9	3	6 0	6 0	86 0
	10	4	8 0	8 0	94 0
	14	1	2 0	2 0	96 0
	24	1	2 0	2 0	98 0
	28	1	2 0	2 0	100 0
	Total	50	100 0	100 0	

Valid cases 50 Missing cases 0

SOFTTYPE Type of software used in project

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Drill & practice	1	14	28 0	28 0	28 0
Tutorial	2	8	16 0	16 0	44 0
Simulation	3	4	8 0	8 0	52 0
Database	4	1	2 0	2 0	54 0
Word processor	5	10	20 0	20 0	74 0
Integrated software	7	6	12 0	12 0	86 0
Problem solving	8	7	14 0	14 0	100 0
	Total	50	100 0	100 0	

Valid cases 50 Missing cases 0

Figure DAR-44

File: Processing 1)DDTCHR TXT

NUMBSTUD Total number of students in school

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Fewer than 125	1	3	6.0	6.0	6.0
126-250	2	9	18.0	18.0	24.0
251-500	3	19	38.0	38.0	62.0
501-1000	4	16	32.0	32.0	94.0
More than 1000	5	3	6.0	6.0	100.0
	Total	50	100.0	100.0	

Valid cases 50 Missing cases 0

Figure DAR-45

File: Processing DODDTCHR.TXT

GRADE Grade level identification GERMANY

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
K-1	1	16	6 0	6 0	6 0
2-3	2	39	14 6	14 6	20 6
4-6	3	88	33 0	33 0	53 6
7-8	4	38	14 2	14 2	67 8
9-12	5	79	29 6	29 6	97 4
Other	6	7	2 6	2 6	100 0
	Total	267	100 0	100 0	

Valid cases 267 Missing cases 0

Figure DAR-46

File: Processing DODDTCHR TXT

SUBJECT Subject support area

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Art	10	3	1 1	1.1	1 1
Business	11	4	1 5	1 5	2 6
Compensatory Ed	12	12	4 5	4 5	7 1
Computer sci & lit	13	11	4 1	4 1	11 2
CWE	15	2	7	7	12 0
Counseling	16	4	1 5	1 5	13 5
ESL	18	7	2 6	2 6	16 1
Evaluation	19	1	4	4	18 5
For. Language	20	2	7	7	17 2
Home Economics	21	3	1 1	1 1	18 4
Health	22	3	1 1	1 1	19 5
Host Nation	23	3	1 1	1 1	20 6
Industrial Arts	24	5	1 9	1 9	22 5
Lang Arts & English	25	64	24 0	24 0	46 4
Math	26	18	6 7	6 7	53 2
Media & Library	27	16	6 0	6 0	59 2
Music	28	4	1 5	1 5	60 7
Reading	30	22	8 2	8 2	68 9
Science	31	13	4 9	4 9	73 8
Spec Ed	32	37	13 9	13 9	87 6
Social Studies	33	13	4 9	4 9	92 5
PPS	34	14	5 2	5 2	97 8
Voc Ed	35	6	2 2	2 2	100 0
	Total	267	100 0	100 0	

Valid cases 267 Missing cases 0

GENDER Gender identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
male	1	71	26 6	26 6	26 6
female	2	196	73 4	73 4	100 0
	Total	267	100 0	100 0	

Valid cases 267 Missing cases 0

Figure DAR-47

File: Processing DODDTCHR TXT

COMPUTRS Project computer count

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	1	4	4	4
	1	60	22 5	22 5	22 8
	2	62	23 2	23 2	46 1
	3	123	46 1	46 1	92 1
	4	6	2 2	2 2	94 4
	5	1	4	4	94 8
	6	6	2 2	2 2	97 0
	9	1	4	4	97 4
	10	1	4	4	97 8
	16	1	4	4	98 1
	18	2	7	7	98 9
	20	1	4	4	99 3
	31	1	4	4	99 6
	83	1	4	4	100 0
	Total	267	100 0	100 0	

Valid cases 267 Missing cases 0

Figure DAR-48

File: Processing DODDTCHR TXT

COMPNEED Computer needs count

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	32	12 0	12 0	12 0
	1	18	6 7	6 7	18 7
	2	60	22 5	22 5	41 2
	3	27	10 1	10 1	51 3
	4	17	6 4	6 4	57 7
	5	17	4	6 4	64 0
	6	29	9	10 9	74 9
	7	12	4 5	4 5	79 4
	8	6	2 2	2 2	81 6
	9	4	1 5	1 5	83 1
	10	14	5 2	5 2	88 4
	11	2	7	7	89 1
	12	6	2	2 2	91 4
	13	2	7	7	92 1
	14	1	4	4	92 5
	15	4	5	1 5	94 0
	16	1	4	4	94 4
	17	1	4	4	94 8
	18	1	4	4	1
	20	2	7	7	9
	21	1	4	4	98 3
	22	1	4	4	98 6
	25	1	4	4	9 0
	26	1	4	4	97 4
	27	1	4	4	97 8
	28	1	4	4	98 1
	30	2	7	7	98 9
	34	1	4	4	99 3
	70	1	4	4	99 6
	99	1	4	4	100 0
	Total	267	100 0	100 0	

Valid cases 267 Missing cases 0

Figure DAR-49

File: Processing DODDTCHR.TXT

SOFTTYPE Type of software used in project

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Drill & practice	1	54	20 2	20 2	20 2
Tutorial	2	40	15 0	15 0	35 2
Simulation	3	24	9 0	9 0	44 2
Database	4	5	1 9	1 9	46 1
Word processor	5	104	39 0	39 0	85 0
Integrated software	7	19	7 1	7 1	92 1
Programming	8	4	1 5	1 5	93 6
Problem-solving	9	17	6 4	6 4	100 0
	Total	267	100 0	100 0	

Valid cases 267 Missing cases 0

NUMBSTUD Total number of students in school

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Fewer than 125	1	18	6 7	6 8	6 8
126-250	2	12	4 5	4 5	11 3
251-500	3	45	16 9	17 0	28 3
501-1000	4	111	41 6	41 9	70 2
More than 1000	5	79	29 6	29 8	100 0
		2	7	Missing	
	Total	267	100 0	100 0	

Valid cases 265 Missing cases 2

Figure DAR-50

File: Processing DODDTCHR TXT

GRADE Grade level identification MEDITERRANEAN

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
K-1	1	4	8 5	8 5	8 5
2-3	2	8	17 0	17 0	25 5
4-6	3	12	25 5	25 5	51 1
7-8	4	5	10 6	10 6	61 7
9-12	5	16	34 0	34 0	95 7
Other	6	2	4 3	4 3	100 0
	Total	47	100 0	100 0	

Valid cases 47 Missing cases 0

SUBJECT Subject support area

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Art	10	3	6 4	6 4	6 4
Business	11	2	4 3	4 3	10 6
Compensatory Ed	12	2	4 3	4 3	14 9
Counseling	16	3	6 4	6 4	21 3
ESL	18	2	4 3	4 3	25 5
For Language	20	1	2 1	2 1	27 7
Health	22	1	2 1	2 1	29 8
Industrial Arts	24	1	2 1	2 1	31 9
Lang Arts & English	26	7	14 9	14 9	46 8
Math	28	7	14 9	14 9	61 7
Media & Library	27	2	4 3	4 3	66 0
Music	28	2	4 3	4 3	70 2
Reading	30	6	12 8	12 8	83 0
Science	31	3	6 4	6 4	89 4
Spec Ed	32	2	4 3	4 3	93 6
Social Studies	33	1	2 1	2 1	95 7
PPS	34	2	4 3	4 3	100 0
	Total	47	100 0	100 0	

Valid cases 47 Missing cases 0

DAR-102

Figure DAR-51

File: Processing DODDTCHR TXT

GENDER Gender identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
male	1	17	36 2	36 2	36 2
female	2	30	63 8	63 8	100 0
	Total	47	100 0	100 0	

Valid cases 47 Missing cases 0

COMPUTRS Project computer count

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	1	12	25 5	25 5	25 5
	2	11	23 4	23 4	48 9
	3	22	46 8	46 8	95 7
	4	1	2 1	2 1	97 9
	6	1	2 1	2 1	100 0
	Total	47	100 0	100 0	

Valid cases 47 Missing cases 0

Figure DAR-52

File: Processing DODDTCHR TXT

COMPNEED Computer needs count

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	10	21 3	21 3	21 3
	1	5	10 6	10 6	31 9
	2	8	17 0	17 0	48 9
	3	13	27 7	27 7	76 6
	4	2	4 3	4 3	80 9
	5	3	6 4	6 4	87 2
	6	1	2 1	2 1	89 4
	7	2	4 3	4 3	93 6
	8	1	2 1	2 1	95 7
	10	2	4 3	4 3	100 0
	Total	47	100 0	100 0	

Valid cases 47 Missing cases 0

SOFTTYPE Type of software used in project

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Drill & practice	1	20	42 6	42 6	42 6
Tutorial	2	7	14 9	14 9	57 4
Simulation	3	6	12 8	12 8	70 2
Word processor	5	8	17 0	17 0	87 2
Integrated software	7	2	4 3	4 3	91 5
Problem-solving	9	4	8 5	8 5	100 0
	Total	47	100 0	100 0	

Valid cases 47 Missing cases 0

Figure DAR-53

File: Processing DODDTCHR TXT

NUMBSTUD Total number of students in school

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
126-250	2	12	25 5	25 5	25 5
251-500	3	8	17 0	17 0	42 6
501-1000	4	26	55 3	55 3	97 9
More than 1000	5	1	2 1	2 1	100 0
	Total	47	100 0	100 0	

Valid cases 47 Missing cases 0

Figure DAR-54

File: Processing DODDTCHR TXT

GRADE Grade level identification PACIFIC

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
K-1	1	15	10 9	11 0	11 0
2-3	2	37	27 0	[illegible] 2	38 2
4-6	3	45	32 8	33 1	71 3
7-8	4	12	8 8	8 8	80 1
9-12	5	25	18 2	18 4	98 5
Other	6	2	1 5	1 5	100 0
		1	7	Missing	
	Total	137	100 0	100 0	

Valid cases 136 Missing cases 1

DAR-106

Figure DAR-55

File: Processing DODDTCHR TXT

SUBJECT Subject support area

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Art	10	3	2 2	2 2	2 2
Business	11	1	.7	.7	2 9
Compensatory Ed	12	3	2 2	2 2	5 1
Computer sci & lit	13	4	2 9	2 9	8 0
CWE	15	1	.7	.7	8 8
Counseling	16	3	2 2	2 2	10 9
ESL	18	7	5 1	5 1	16 1
Evaluation	19	1	.7	.7	16 8
For Language	20	2	1 5	1 5	18 2
Home Economics	21	1	.7	.7	19 0
Health	22	1	.7	.7	19.7
Industrial Arts	24	3	2 2	2 2	21.9
Lang Arts & English	25	40	29 2	29 2	51 1
Math	26	21	15 3	15 3	66 4
Media & Library	27	5	3 6	3 6	70 1
Music	28	2	1 5	1 5	71 5
Reading	30	8	5 8	5 8	77 4
Science	31	10	7 3	7 3	84 7
Spec. Ed	32	6	4 4	4 4	89 1
Social Studies	33	12	8 8	8 8	97 8
PPS	34	3	2 2	2 2	100 0
	Total	137	100 0	100 0	

Valid cases 137 Missing cases 0

GENDER Gender identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
male	1	33	24 1	24 1	24 1
female	2	104	75 9	75 9	100 0
	Total	137	100 0	100 0	

Valid cases 137 Missing cases 0

DAR-107

Figure DAR-56

File: Processing DODDTCHR TXT

COMPUTRS Project computer count

Value Label	Valu	Frequency	Percent	Valid Percent	Cum Per.ent
	0	2	1 5	1 5	1 5
	1	19	13 9	13 9	15 3
	2	27	19 7	19 7	35.0
	3	80	58 4	58 4	93 4
	4	5	3 6	3.6	97.1
	6	3	2 2	2.2	99 3
	9	1	7	.7	100 0
	Total	7	100 0	100 0	

Valid cases 137 Missing cases 0

- -

COMPNEED Computer needs count

Value Label	Value	Frequency	Percent	Valid Percent	Cur Percent
	0	31	22 6	22 6	22 6
	1	18	13 1	13 1	35 8
	2	ˀ3	16 8	16.8	52 6
	3	ı8	13 1	13.1	65 7
	4	5	3 6	3 6	69 3
	ꞏ3	2	1 5	1 5	70 8
	6	10	7 3	7 3	78 1
	7	5	3 6	3 6	81.8
	9	2	1 5	1 5	83 2
	10	7	5 1	5 1	88 3
	11	2	1 5	1 5	C9 8
	12	4	2 9	2 9	92 7
	15	1	7	7	93 4
	18	1	7	7	94 2
	20	1	7	7	94 9
	21	1	7	7	95 6
	22	3	2 2	2 2	97 8
	23	1	7	7	98 5
	24	2	1 5	1 5	100 0
	Total	137	10(0	100 0	

Valid cases 137 Missing cases 0

DAR-108

Figure DAR-57

File: Processing DODDTCHR TXT

SOFTTYPE Type of software used in project

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Drill & practice	1	43	31 4	31 4	31 4
Tutorial	2	17	12 4	12 4	43 8
Simulation	3	20	14 6	14 6	58
Database	4	4	2 9	2 9	61 3
Word processor	5	35	25 5	25 5	86 9
Integrated software	7	10	7 3	7 3	94 2
Programming	8	2	1 5	1 5	95 6
Problem-solving	9	6	4 4	4 4	100 0
	Total	137	1 0	100 0	

Valid cases 137 Missing cases 0

NUMBSTUD Total number of students in school

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Fewer than 125	1	1	7	7	7
126-250	2	11	8 0	8 1	8 8
251-500	3	15	10 9	11 0	19 9
501-1000	4	70	51 1	51 5	71 3
More than 1000	5	39	28 5	28 7	100 0
		1	7	Missing	
	Total	137	100 0	100 0	

Valid cases 136 Missing cases 1

Figure DAR-58

File: Processing DODDTCHR.TXT

GRADE Grade level identification PANAMA

lue Label	Value	Frequency	Percent	Valid Percent	Cum Percent
K 1	1	1	4 8	4 8	4 8
2 3	2	4	19 0	19 0	23 8
4-6	3	5	23 8	23 8	47 6
7-8	4	2	9 5	9 5	57 1
9-12	5	9	42 9	42 9	100 0
	Total	21	100 0	100 0	

Valid cases 21 Missing cases 0

SUBJECT Subject support area

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Compensatory Ed	12	1	4 8	4 8	4 8
Counseling	16	2	9 5	9 5	14 3
ESL	18	1	4 8	4 8	19 0
Lang Arts & English	25	7	33 3	33 3	52 4
Math	26	5	23 8	23 8	76 2
Media & Library	27	1	4 8	4 8	81 0
Science	31	1	4 8	4 8	85 7
Spec Ed	32	1	4 8	4 8	90 5
Social Studies	33	2	9 5	9 5	100 0
	Total	21	100 0	100 0	

Valid cases 21 Missing cases 0

Figure DAR-59

File: Processing DODDTCHR.TXT

GENDER Gender identification

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
male	1	5	23.8	23.8	23.8
female	2	16	76.2	76.2	100.0
	Total	21	100.0	100.0	

Valid cases 21 Missing cases 0

COMPUTRS Project computer count

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	1	4	19.0	19.0	19.0
	2	1	4.8	4.8	23.8
	3	13	61.9	61.9	85.7
	5	2	9.5	9.5	95.2
	17	1	4.8	4.8	100.0
	Total	21	100.0	100.0	

Valid cases 21 Missing cases 0

Figure DAR-60

File: Processing DODDTCHR TXT

COMPNEED Computer needs count

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	4	19 0	19 0	19 0
	1	4	19 0	19 0	38 1
	2	4	19 0	19 0	57 1
	3	3	14 3	14 3	71 4
	5	2	9 5	9 5	81 0
	6	1	4 8	4 8	85 7
	7	1	4 8	4 8	90 5
	10	1	4 8	4 8	95 2
	25	1	4 8	4 8	100 0
	Total	21	100 0	100 0	

Valid cases 21 Missing cases 0

SOFTTYPE Type of software used in project

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Drill & practice	1	9	42 9	42 9	42 9
Tutorial	2	1	4 8	4 8	47 6
Simulation	3	1	4 8	4 8	52 4
Word processor	5	7	33 3	33 3	85 7
Integrated software	7	3	14 3	14 3	100 0
	Total	21	100 0	100 0	

Valid cases 21 Missing cases 0

Figure DAR-61

File: Processing DODDTCHR TXT

NUMBSTUD Total number of students in school

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
251-500	3		52 4	52 4	52 4
501-1000	4	8	38 1	38 1	90 5
More than 1000	5	2	9 5	9 5	100 0
	Total	21	100 0	100 0	

Valid cases 21 Missing cases 0

DAR-113

Figure DAR-62

File: Processing DODDTCHR TXT

D E S C R I P T I O N O F S U B P O P U L A T I O N S

Criterion Variable COMPBASE
Broken Down by SUBJECT Subject support area

Variable	Value	Label	Mean	Std Dev	Cases
For Entire Population			7 8078	9.2991	510
SUBJECT	10	Art	8 0909	6 0573	11
SUBJECT	11	Business	7 1429	4 5981	7
SUBJECT	12	Compensatory Ed	6 3333	3 4641	18
SUBJECT	13	Computer sci & lit	26 8750	36 4799	16
SUBJECT	15	CWE	3 0000	1 0000	3
SUBJECT	16	Counseling	2 1818	1 6011	11
SUBJECT	18	ESL	2 9412	1 1674	17
SUBJECT	19	Evaluation	2 0000	0000	2
SUBJECT	20	For Language	7 3333	3 4860	6
SUBJECT	21	Home Economics	5 8000	2 5884	5
SUBJECT	22	Health	8 0000	3 2462	5
SUBJECT	23	Host Nation	25 0000	25 1595	3
SUBJECT	24	Industrial Arts	12 0000	8 2597	10
SUBJECT	25	Lang Arts & English	7 9921	5 7807	126
SUBJECT	26	Math	7 6406	5.3611	64
SUBJECT	27	Media & Library	6 9583	6 2309	24
SUBJECT	28	Music	5 5000	3 2950	8
SUBJECT	30	Reading	6 1622	5 9044	37
SUBJECT	31	Science	9 0645	5 8875	31
SUBJECT	32	Spec Ed	4 1915	2 7947	47
SUBJECT	33	Social Studies	9 4706	8 1516	34
SUBJECT	34	PPS	6 1053	4 0400	19
SUBJECT	35	Voc Ed	6 0000	4 0000	6

Total Cases - 510

Figure DAR-63

File: Processing DOODTCHR.TXT

DESCRIPTION OF SUBPOPULATIONS

Criterion Variable COMPUTRS Project computer count
Broken Down by SUBJECT Subject/support area

Variable	Value	Label	Mean	Std Dev	Cases
For Entire Population			2.9234	4.2010	522
SUBJECT	10	Art	2.0000	.0000	11
SUBJECT	11	Business	3.4286	1.1339	7
SUBJECT	12	Compensatory Ed	3.7222	3.5778	18
SUBJECT	13	Computer sci & lit	12.2353	19.7786	17
SUBJECT	15	CWE	1.6667	.5774	3
SUBJECT	16	Counseling	1.0833	.2887	12
SUBJECT	18	ESL	.9412	.2425	17
SUBJECT	19	Evaluation	.5000	.7071	2
SUBJECT	20	For. Language	4.0000	.0000	6
SUBJECT	21	Home Economics	2.6000	.8944	5
SUBJECT	22	Health	2.8000	1.7889	5
SUBJECT	23	Host Nation	9.0000	9.5394	3
SUBJECT	24	Industrial Arts	3.5000	1.9579	10
SUBJECT	25	Lang Arts & English	2.9841	.8293	126
SUBJECT	26	Math	3.0938	.9548	64
SUBJECT	27	Media & Library	2.3077	.7884	26
SUBJECT	28	Music	1.0000	.0000	8
SUBJECT	30	Reading	2.2368	.5897	38
SUBJECT	31	Science	3.5625	2.8048	32
SUBJECT	32	Spec. Ed.	1.2075	.5320	53
SUBJECT	33	Social Studies	3.1176	1.0376	34
SUBJECT	34	PPS	1.7895	.6306	19
SUBJECT	35	Voc. Ed.	2.0000	.0000	6

Total Cases = 522

Figure DAR-63.a

File: Processing DODDTCHR.TXT

ANALYSIS OF VARIANCE

Criterion Variable COMPBASE
Broken Down by GRADE Grade level identification

Value	Label	Sum	Mean	Std Dev	Sum of Sq	Cases
1	K-1	262 00	7.0811	9 9481	3562 7568	37
2	2-3	817 00	8 2525	15 9689	24990 6869	99
3	4-6	1213 00	7 4417	6.8051	7502 1963	163
4	7-8	552 00	8 2388	6 7848	3038 1791	67
5	9-12	1138 00	7 9028	5.8217	4846 6389	144
Within Groups Total		3982 00	7 8078	9 3280	43940 4579	510

Source	Sum of Squares	D F	Mean Square	F	Sig
Between Groups	74 7107	4	18 6777	2147	9303
Linearity	5 2753	1	5 2753	0606	8056
Dev from Linearity	69 4354	3	23 1451	2660	8499
	R - 0109	R Squared - 0001			
Within Groups	43940 4579	505	87 0108		
	Eta - 0412	Eta Squared - .0017			

Figure DAR-64

File: Processing DODDTCHR TXT

A N A L Y S I S O F V A R I A N C E

Criterion Variable COMPNEED Computer needs count
Broken Down by SUBJECT Subject support area

Value	Label	Sum	Mean	Std Dev	Sum of Sq	Cases
10	Art	67	6 0909	6.0573	366.9091	11
11	Business	26	3 7143	4.1918	105.4286	7
12	Compensatory Ed	47	2.6111	1.9445	64.2778	18
13	Computer sci & lit	225	14.0625	17.3069	4492.9375	16
15	CWE	4	1 3333	1.5275	4 6667	3
16	Counseling	12	1.0909	1.5136	22 9091	11
18	ESL	34	2 0000	1.3229	28.0000	17
19	Evaluation	3	1 5	.7071	5000	2
20	For. Language	20	3 [illegible]	3 2660	53 3333	6
21	Home Economics	16	3 2000	2 5884	26 8000	5
22	Health	26	5 [illegible]	7.1554	204 8000	5
23	Host Nation	48	16 0000	15.6205	488 0000	3
24	Industrial Arts	85	8 5000	7 8775	558.5000	10
25	Lang Arts & English	631	5 0079	5 5172	3804 9921	126
26	Math	291	4 5469	5.2097	1709 8594	64
27	Media & Library	113	4 [illegible]	5.8196	778.9583	24
28	Music	36	4 5000	3 2950	76.0000	8
30	Reading	145	3.9189	5.7027	1170.7568	37
31	Science	170	5 4839	4 6895	859 7419	31
32	Spec. Ed.	139	2.9574	2.5619	301 9149	47
33	Social Studies	233	6 8529	7 7191	1966 2647	34
34	PPS	82	4 3158	3 7573	254 1053	19
35	Voc Ed	24	4 0000	4 0000	80 0000	6
Within Groups Total		2477	4 8569	5 9463	17219 554	510

Source	Sum of Squares	D.F.	Mean Square	F	Sig.
Between Groups	2730 8956	22	124.1316	3.5106	0000
Linearity	33 3642	1	33 3642	9436	3318
Dev from Linearity	2697.5315	21	128 4539	3.6329	0000
	R - - 0409	R Squared -	0017		
Within Groups	17219 6554	487	35 3586		
	Eta - 3700	Eta Squared -	1369		

DAR-117

Figure DAR-65

- - - - - - - - - - - - - - - - - O N E W A Y -

VARIABLE COMPNEED Computer needs count
(CONTINUED)

Mean	Group	Grp16	Grp15	Grp19	Grp18	Grp12	Grp32	Grp21	Grp20	Grp11	Grp30	Grp35	Grp34	Grp28	Grp26	Grp27	Grp25	Grp22	Grp31	Grp10	Grp33	Grp24	Grp13	Grp23
1.0909	Grp16																							
1.3333	Grp15																							
1.5000	Grp19																							
2.0000	Grp18																							
2.6111	Grp12																							
2.9574	Grp32																							
3.2000	Grp21																							
3.3333	Grp20																							
3.7143	Grp1^																							
3.9189	Grp30																							
4.0000	Grp35																							
4.3158	Grp34																							
4.5000	Grp28																							
4.5469	Grp26																							
4.7083	Grp27																							
5.0079	Grp25																							
5.2000	Grp22																							
5.4839	Grp31																							
6.0909	Grp10																							
6.8529	Grp33																							
8.5000	Grp24																							
14.0625	Grp13	*			*	*	*		*	*	*		*	*	*	*	*		*		*			
16.0000	Grp23	*			*		*																	

DAR-118

Figure DAR-66

File: Processing DODDTCHR TXT

A N A L Y S I S O F V A R I A N C E

Criterion Variable COMPNEED Computer ne .s count
Broken Down by GRADE Grade level identification

Value	Label	Sum	Mean	Std Dev	Sum of Sq	Cases
1	K-1	158	4 2703	7 5743	2065 2973	37
2	2-3	463	4 6768	8 6742	7373 6566	99
3	4-6	763	4 6810	5 6160	5109 4110	163
4	7-8	360	5 3731	5 2709	1833 6716	67
5	9-12	733	5 0903	4.9627	3521 8264	144
Within Groups Total		2477	4 8569	6.2780	19903 8629	510

Source	Sum of Squares	D F	Mean Square	F	Sig
Between Groups	46 6880	4	11 6720	2961	8805
Linearity	32 2230	1	32 2230	8176	3663
Dev from Linearity	14 4650	3	4 8217	1223	9469
	R - 0402	R Squared - 0016			
Within Groups	19903 8629	505	39 4136		
	Eta - 0484	Eta Squared - 0023			

Figure DAR-67

File: Processing DODDTCHR TXT

A N A L Y S I S O F V A R I A N C E

Criterion Variable COMPNEED Computer needs count
Broken Down by REGION Regional office identification

Value	Label	Sum	Mean	Std Dev	Sum of Sq	Cases
1	Atlantic	244	4 8800	5 5278	1497 2800	50
2	Germany	1416	5 4462	7 0339	12814 2462	260
3	Mediterranean	127	2 8222	2 5787	292 5778	45
4	Pacific	611	4 5597	5 7663	4423 0224	134
5	Panama	79	3 7619	5 5218	609 8095	21
Within Groups Total		2477	4 8569	6 2358	19636 9358	510

Sourc	Sum of Squares	D F	Mean Square	F	Sig
Between Groups	313 6151	4	78 4038	2 0163	0909
Linearity	95 2292	1	95 2292	2 4490	1182
Dev from Linearity	218 3859	3	72 7953	1 8721	1333
	R - - 0691	R Squared -	0048		
Within Groups	19636 9358	505	38 8850		
	Eta - 1254	Eta Squared -	0157		

Figure DAR-68

File: Processing DODDTCHR.TXT

D E S C R I P T I O N O F S U B P O P U L A T I O N S

Criterion Variable COMPNEED Computer needs count
Broken Down by REGION Regional office identification
by SUBJECT Subject support area

Variable	Value	Label	Mean	Std Dev	Cases
For Entire Population			5 0134	7 4461	522
REGION	1	Atlantic	4 8800	5 5278	50
SUBJECT	10	Art	5 0000	1 4142	2
SUBJECT	13	Computer sci & lit	17 5000	14 8492	2
SUBJECT	20	For. Language	0000	.0000	1
SUBJECT	21	Home Economics	7 0000	0000	1
SUBJECT	24	Industrial Arts	14 0000	.0000	1
SUBJECT	25	Lang Arts & English	7 6250	7 6893	8
SUBJECT	26	Math	3 7692	3 2899	13
SUBJECT	27	Media & Library	3 5000	2 1213	2
SUBJECT	30	Reading	1 0000	1 4142	2
SUBJECT	31	Science	3 6000	3 3615	5
SUBJECT	32	Spec Ed	2 1429	1 5736	7
SUBJECT	33	Social Studies	4 3333	3 5590	6
REGION	2	Germany	5 [illegible]0	8.9873	267
SUBJECT	10	Art	5 [illegible]00	4 3589	3
SUBJECT	[illegible]	Business	5 0000	5.2915	4
SUBJECT	12	Compensatory Ed	2 7500	2 2208	12
SUBJECT	13	Computer sci & lit	25 6364	30.6113	11
SUBJECT	[illegible]5	CWE	2 0000	1 41[illegible]2	2
SUBJECT	16	Counseling	1 2500	9574	4
SUBJECT	18	ESL	1 [illegible]286	9759	[illegible]
SUBJECT	[illegible]9	Evaluation	2 0000	0000	[illegible]
SUBJECT	20	For Language	3 0000	1 4142	2
SUBJECT	21	Home Economics	3 00[illegible]	1.0000	3
SUBJECT	22	Health	8 6667	7 571[illegible]	3
SUBJECT	23	Host Nation	16 0000	15 8205	3
SUBJECT	24	Industrial Arts	5 8000	6 7602	5
SUBJECT	25	Lang Arts & English	5 3438	5 6575	64
SUBJECT	26	Math	4 3333	3 3955	18
SUBJECT	27	Media & Library	4 2500	4 5826	16
SUBJECT	28	Music	3 2500	1 5000	4
SUBJECT	30	Reading	5 3636	6 9935	22
SUBJECT	31	Science	6 5385	4 99[illegible]	13
SUBJECT	32	Spec Ed	4 9811	2 [illegible]075	37
SUBJECT	33	Social Studies	10 4615	10 0334	13
SUBJECT	34	PPS	5 3571	2 7903	14
SUBJECT	35	Voc Ed	4 00[illegible]	4 0000	6

Figure DAR-69

Criterion Variable COMPNEED

Variable	Value	Label	Mean	Std Dev	Cases
REGION	3	Mediterranean	2 7872	2 5276	47
SUBJECT	10	Art	3 6667	5774	3
SUBJECT	11	Business	3 0000	0000	2
SUBJECT	12	Compensatory Ed	2 5000	7071	2
SUBJECT	16	Counseling	1 6667	2.8868	3
SUBJECT	18	ESL	2 0000	1 4142	2
SUBJECT	20	For Language	8 0000	0000	1
SUBJECT	22	Health	0000	0000	1
SUBJECT	24	Industrial Arts	3 0000	0000	1
SUBJECT	25	Lang Arts & English	2 7143	2 2887	7
SUBJECT	26	Math	3 1429	2 9114	7
SUBJECT	27	Media & Library	1 0000	1 4142	2
SUBJECT	28	Music	6 0000	5 6569	2
SUBJECT	30	Reading	2 1667	1 7224	6
SUBJECT	31	Science	1 0000	1 0000	3
SUBJECT	32	Spec Ed	2 0000	1 4142	2
SUBJECT	33	Social Studies	3 0000	0000	1
SUBJECT	34	PPS	5 5000	6 3640	2
REGION	4	Pacific	4 4672	5 7369	137
SUBJECT	10	Art	10 3333	11 1505	3
SUBJECT	11	Business	0000	0000	1
SUBJECT	12	Compensatory Ed	2 0000	2 0000	3
SUBJECT	13	Computer sci & lit	1 7500	2 0616	4
SUBJECT	15	CWE	0000	0000	1
SUBJECT	16	Counseling	3333	5774	3
SUBJECT	18	ESL	2 5714	1.6183	7
SUBJECT	19	Evaluation	1 0000	0000	1
SUBJECT	20	For Language	3 0000	4 2426	2
SUBJECT	21	Home Economics	0000	0000	1
SUBJECT	22	Health	0000	0000	1
SUBJECT	24	Industrial Arts	13 0000	10 4403	3
SUBJECT	25	Lang Arts & English	4 6000	5 4198	40
SUBJECT	26	Math	6 1429	7 8313	21
SUBJECT	27	Media & Library	2 6000	2 1909	5
SUBJECT	28	Music	5 5000	4 9497	9
SUBJECT	30	Reading	1 5000	1 4112	8
SUBJECT	31	Science	5 9000	5 1737	10
SUBJECT	32	Spec Ed	8333	1 1690	6
SUBJECT	33	Social Studies	5 5000	5 8698	12
SUBJECT	34	PPS	8 0000	5 2915	3
REGION	5	Panama	3 7619	5 5218	21
SUBJECT	12	Compensatory Ed	3 0000	0000	1
SUBJECT	16	Counseling	1 0000	0000	2

Criterion Variable COMPNEED

Variable	Value	Label	Mean	Std Dev	Cases
SUBJECT	18	ESL	2 0000	.0000	1
SUBJECT	25	Lang Arts & English	3 5714	3.5989	7
SUBJECT	26	Math	2 6000	1 8166	5
SUBJECT	27	Media & Library	25 0000	0000	1
SUBJECT	31	Science	7 0000	.0000	1
SUBJECT	32	Spec. Ed	0000	0000	1
SUBJECT	33	Social Studies	1 0000	1 4142	2

Total Cases = 522

File: Processing DODDTCHR TXT

ANALYSIS OF VARIANCE

Criterion Variable TCHRATT Teacher attitudes toward computers
Broken Down by SUBJECT Subject support area

Value	Label	Sum	Mean	Std Dev	Sum of Sq	Cases
10	Art	1376 00	125 0909	14.3837	2068 9091	11
11	Business	907 00	129 5714	10 9065	713 7143	7
12	Compensatory Ed	2155 00	119 7222	20 6135	7223 6111	18
13	Computer sci & lit	2107 00	131 6875	14 9876	3369 4375	16
15	CWE	375 00	125 0000	16 0935	518 0000	3
16	Counseling	1335 00	121 3636	18 7151	3502 5455	11
18	ESL	2088 00	122 8235	17.2019	4734 4706	17
19	Evaluation	280 00	140 0000	1 4142	2 0000	2
20	For. Language	813 00	135 5000	9 2682	429.5000	6
21	Home Economics	316 00	123 2000	13.9893	782 8000	5
22	Health	543 00	108 6000	23 2121	2155 2000	5
23	Host Nation	390 00	130 0000	12 7671	326 0000	3
24	Industrial Arts	1269 00	126 9000	14.9105	2000 9000	10
25	Lang Arts & English	15758 00	125 0635	16 4174	33691 4921	126
26	Math	8093 00	126 4531	15 8264	15779 8594	64
27	Media & Library	3037 00	126 5417	15 7286	5689 9583	24
28	Music	993 00	124 1250	12 5748	1106 8750	8
30	Reading	4608 00	124 5405	15 5663	8723 1892	37
31	Science	4053 00	130 7419	13 6625	5599 9355	31
32	Spec Ed	5329 00	113 3830	20 0603	18511 1064	47
33	Social Studies	4161 00	122 3824	15 5622	7992 0294	34
34	PPS	2453 00	129 1053	13 617.	3337 7895	19
35	Voc Ed	816 00	136 0000	8 5323	364 0000	6
Within Groups Total		63555 00	124 6176	16 2516	128623 323	510

Source	Sum of Squares	D F	Mean Square	F	Sig
Between Groups	12949 1184	22	588 5963	2 2286	0012
Linearity	213 2003	1	213 2003	8072	3694
Dev from Linearity	12735 9181	21	606 4723	2 2933	0010
	R - 0388	R Squared - 0015			
Within Groups	126623 3227	487	264 1136		
	Eta - 3024	Eta Squared - 0915			

DAR-124

Figure DAR-71

File: Processing DODDTCHR TXT

- O N E W A Y - - - - - - - - -

VARIABLE TCHRATT Teacher attitudes toward computers
(CONTINUED)

Mean	Group	Grp22	Grp32	Grp12	Grp16	Grp33	Grp18	Grp21	Grp28	Grp30	Grp15	Grp25	Grp10	Grp26	Grp27	Grp24	Grp34	Grp11	Grp23	Grp31	Grp13	Grp20	Grp35	Grp19
108 6000	Grp22																							
113 3830	Grp32																							
119 7222	Grp12																							
121 3636	Grp16																							
122 3824	Grp33																							
122 8235	Grp18																							
123 2000	Grp21																							
124 1250	Grp28																							
124 5405	Grp30																							
125 0000	Grp15																							
125 0635	Grp25		*																					
125 0909	Grp10																							
126 4531	Grp26		*																					
126 5417	Grp27																							
126 9000	Grp24																							
129 1053	Grp34																							
129 5714	Grp11																							
130 0000	Grp23																							
130 7419	Grp31		*																					
131 6875	Grp13		*																					
135 5000	Grp20																							
136 0000	Grp35																							
140 0000	Grp19																							

DAR-125

Figure DAR-72

File: Processing DODDTCHR TXT

ANALYSIS OF VARIANCE

Criterion Variable TCHRATT Teacher attitudes toward computers
Broken Down by SOFTTYPE Type of software used in project

Value	Label	Sum	Mean	Std Dev	Sum of Sq	Cases
1	Drill & practice	17024.00	123.3623	15.7670	34057.8841	138
2	Tutorial	8771.00	123.5352	15.5286	16879.6620	71
3	Simulation	6866.00	124.8364	15.7077	13323.5273	55
4	Database	1152.00	128.0000	16.8226	2264.0000	9
5	Word processor	19304.00	122.9554	18.7601	54902.6879	157
7	Integrated software	5293.00	132.3250	13.3578	6958.7750	40
8	Programming	734.00	122.3333	12.9254	835.3333	6
9	Problem-solving	4411.00	129.7353	15.7755	8212.6176	34
Within Groups Total		63555.00	124.6176	16.5461	137434.4887	510

Source	Sum of Squares	D F	Mean Square	F	Sig
Between Groups	4137.9540	7	591.1363	2.1592	.0364
Linearity	1524.3752	1	1524.3752	5.5680	.0187
Dev from Linearity	2613.5788	6	435.5965	1.5911	.1476
	R = .1038	R Squared = .0108			
Within Groups	137434.4887	502	273.7739		
	Eta = .1710	Eta Squared = .0292			

DAR-126

Figure DAR-73

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File:      Processing DODDTCHR.TXT
- - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

     Variable  TCHRATT     Teacher attitudes toward computers
  By Variable   OFTTYPE    Type of software used in project

MULTIPLE RANGE TEST


TUKEY-HSD PROCEDURE
RANGES FOR THE 0 050 LEVEL -

          4.30   4.30   4.30   4 30   4 30   4 30   4 30
THE RANGES ABOVE ARE TABLE RANGES
THE VALUE ACTUALLY COMPARED WITH MEAN(J) MEAN(I) IS
       11 6999 * RANGE * DSQRT(1 N(I) + 1 N(J))
   (*) DENOTES PAIRS OF GROUPS SIGNIFIC  TI  DI.'FERENT AT THE 0 050 LEVEL


                                     G G G G G G G G
                                     r r r r r r r r
                                     p p p p p p p p

    Mean        Group                8 5 1 2 3 4 9 7

   122 3333     Grp 8
   122.9554     Grp 5
   123 3623     Grp 1
   123 5352     Grp 2
   124 8364     Grp 3
   128 0000     Grp 4
   129 7353     Grp 9
   132 3250     Grp 7                  *
```

DAR-127

Figure DAR-74

File: Processing DODDTCHR.TXT

A N A L Y S I S O F V A R I A N C E

Criterion Variable RAF Resource Adequacy Factor
Broken Down by GRADE Grade level identification

Value	Label	Sum	Mean	Std Dev	Sum of Sq	Cases
1	K-1	21 36	5774	2818	2 8579	37
2	2-3	56.67	5724	2844	7 9245	99
3	4-6	80.47	4937	2568	10 6630	163
4	7-8	29 67	4428	2542	4 2642	67
5	9-12	64 95	4510	2830	11 4524	144
Within Groups Tot l		253 12	4963	2713	37 1621	510

Source	Sum of Squares	D F	Mean Square	F	Sig
Between Groups	1 3047	4	3262	4 4726	0016
Linearity	1 1026	1	1 1026	14 9829	0001
Dev from Linearity	2022	3	0674	9158	4330
	R - - 1693	R Squared -	0287		
Within Groups	37 1621	505	0736		
	Eta - 1842	Eta Squared -	0.39		

Figure DAR-75

- O N E W A Y -

Variable RAF Resource Adequacy Factor
By Variable GRADE Grade level identification

ANALYSIS OF VARIANCE

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
BETWEEN GROUPS	4	1.3047	.3262	4.4326	.0016
WITHIN GROUPS	505	37.1621	.0736		
TOTAL	509	38.4668			

- O N E W A Y -

Variable RAF Resource Adequacy Factor
By Variable GRADE Grade level identification

MULTIPLE RANGE TEST

TUKEY-HSD PROCEDURE
RANGES FOR THE 0.050 LEVEL -

3.88 3.88 3.88 3.88
THE RANGES ABOVE ARE TABLE RANGES.
THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
0.1918 * RANGE * DSQRT(1/N(I) + 1/N(J))
(*) DENOTES PAIRS OF GROUPS SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL

Mean	Group	G r p 4	G r p 5	G r p 3	G r p 2	G r p 1
.4428	Grp 4					
.4510	Grp 5					
.4937	Grp 3					
.5724	Grp 2	*	*			
.5774	Grp 1					

Figure DAR-76

File: Processing DODDTCHR TXT

ANALYSIS OF VARIANCE

Criterion Variable RAF Resource Adequacy Factor
Broken Down by REGION Regional office identification

Value	Label	Sum	Mean	Std Dev	Sum of Sq	Cases
1	Atlantic	25 13	5025	2598	3 3095	50
2	Germany	118 17	4545	2613	17 6783	260
3	Mediterranean	25 16	5591	2775	3 3880	45
4	Pacific	72 24	5391	2975	11 7729	134
5	Panama	12 43	5917	2498	1 2476	21
Within Groups Total		253 12	4963	2721	37 3964	510

Source	Sum of Squares	D F	Mean Square	F	Sig
Between Groups	1 0704	4	2676	3 6137	0065
Linearity	6534	1	6554	8 8234	0031
Dev from Linearity	4170	3	1390	1 8771	1324
	R - 1303	R Squared -	0170		
Within Groups	37 3964	505	0741		
	Eta - 1668	Eta Squared -	0278		

DAR-130

Figure DAR-77

. . . . . O N E W A Y . . . . . .

Variable RAF Resource Adequacy Factor
By Variable REGION Regional office identification

ANALYSIS OF VARIANCE

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
BETWEEN GROUPS	4	1.0704	.2676	3.6137	.0065
WITHIN GROUPS	505	37.3964	.0741		
TOTAL	509	38.4668			

Variable RAF Resource Adequacy Factor
By Variable REGION Regional office identification

MULTIPLE RANGE TEST

TUKEY-HSD PROCEDURE
RANGES FOR THE 0.050 LEVEL -

3.88 3.88 3.88 3.88
THE RANGES ABOVE ARE TABLE RANGES.
THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
0.1924 * RANGE * DSQRT(1/N(I) + 1/N(J))
(*) DENOTES PAIRS OF GROUPS SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL

Mean	Group	G G G G G r r r r r p p p p p 2 1 4 3 5
.4545	Grp 2	
.5025	Grp 1	
.5391	Grp 4	*
.5591	Grp 3	
.5917	Grp 5	

Figure DAR-78

File: Pr ssing DODI CHR.TXT

A N A L Y S I S O F V A R I A N C E

Criterion Variable BENEFITS Computer use in my subject is beneficial
Broken Down by SUBJECT Subject support area

Value	Label	Sum	Mean	Std Dev	Sum of Sq	Cases
10	Art	14	1 2727	4671	2 1818	11
11	Business	9	1 2857	4880	1 4286	7
12	Compensatory Ed	21	1 1667	3835	2.5000	18
13	Computer sci & lit	19	1 1875	4031	2 4375	16
15	CWE	5	1 6667	5774	6667	3
16	Counseling	16	1 7778	1 3017	13 5556	9
18	ESL	20	1 1765	.3930	2 4706	17
19	Evaluation	2	1 0000	.0000	0000	2
20	For. Language	7	1 1667	4082	8333	6
21	Home Economics	6	1 2000	4472	8000	5
22	Health	9	1 8000	4472	8000	5
23	Host Nation	3	1 0000	0000	0000	3
24	Industrial Arts	13	1 3000	4830	2 1000	10
25	Lang Arts & English	152	1 2063	4255	22 6349	126
26	Math	88	1 3968	5547	19 0794	63
27	Media & Library	33	1 3750	4945	5 6250	24
28	Music	9	1 1250	.3536	8750	8
30	Reading	43	1 1622	3737	5 0270	37
31	Science	37	1 2333	.5040	7 3667	30
32	Spec Ed	42	1 1351	3466	4 3243	37
33	Social Studies	44	1.3333	.6922	15 3333	33
34	PPS	20	1 0526	2294	9474	19
35	Voc Ed	6	1 0000	0000	0000	6
Within Groups Total		618	1 2485	4849	110 9870	495

Source	Sum of Squares	D F	Mean Square	F	Sig
Between Groups	9 4493	22	4295	1 8266	0128
Linearity	3784	1	3784	1 6093	2052
Dev from Linearity	9 0709	21	4319	1 8370	0135
	R - 0561	R Squared - 0031			
Within Groups	110 9870	472	2351		
	Eta - 2801	Eta Squared - 0785			

DAR-132

Figure DAR-79

File Processing DODDTCHR TXT

ONEWAY

VARIABLE BENEFITS Computer use in my subject is beneficial
(CONTINUED)

Mean	Group	Grp 19	Grp 23	Grp 35	Grp 34	Grp 28	Grp 32	Grp 30	Grp 12	Grp 20	Grp 18	Grp 17	Grp 21	Grp 25	Grp 31	Grp 10	Grp 11	Grp 24	Grp 33	Grp 27	Grp 26	Grp 15	Grp 16	Grp 22
1.0000	Grp 19																							
1.0000	Grp 23																							
1.0000	Grp 35																							
1.0526	Grp 34																							
1.1250	Grp 28																							
1.1351	Grp 32																							
1.1622	Grp 30																							
1.1667	Grp 12																							
1.1667	Grp 20																							
1.1765	Grp 18																							
1.1875	Grp 17																							
1.2000	Grp 21																							
1.2063	Grp 25																							
1.2333	Grp 31																							
1.2727	Grp 10																							
1.2857	Grp 11																							
1.3000	Grp 24																							
1.3333	Grp 33																							
1.3750	Grp 27																							
1.3968	Grp 26																							
1.6667	Grp 15																							
1.7778	Grp 16																							
1.8000	Grp 22																							

Figure DAR-80

File. Processing DODDTCHR TXT

A N A L Y S I S O F V A R I A N C E

Criterion Variable ENTHUS Students enthusiasm for subject has
Broken Down by GRADE Grade level identification

Value	Label	Sum	Mean	Std Dev	Sum of Sq	Cases
1	K 1	44	1 1892	.5184	9 6757	37
2	2-3	125	1 2626	.4648	21 1717	99
3	4 6	220	1 3924	.5625	49.6709	158
4	7-8	109	1 7031	.6590	27 3594	64
5	9-12	221	1 7000	6428	53 3000	130
Within Groups Total		719	1 4734	5777	161 1777	488

Source	Sum of Squares	D F	Mean Square	F	Sig
Between Groups	18 4760	4	4 6190	13 8418	0000
Linearity	17 0163	1	17 0163	50 9925	0000
Dev from Linearity	1 4598	3	.4866	1 4582	2252
	R - 3078	R Squared -	0947		
Within Groups	161 1777	483	3337		
	Eta - 3307	Eta Squared -	1028		

Figure DAR-81

- - - - - - - - - - - - - - - - - - O N E W A Y -

Variable ENTHUS Students enthusiasm for subject has...
By Variable GRADE Grade level identification

ANALYSIS OF VARIANCE

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
BETWEEN GROUPS	4	18.4760	4.6190	13.8418	.0000
WITHIN GROUPS	483	161.1777	.3337		
TOTAL	487	179.6537			

- - - - - - - - - - - - - - - - - - O N E W A Y -

Variable ENTHUS Students enthusiasm for subject has...
By Variable GRADE Grade level identification

MULTIPLE RANGE TEST

TUKEY-HSD PROCEDURE
RANGES FOR THE 0.050 LEVEL -

3.88 3.88 3.88 3.88
THE RANGES ABOVE ARE TABLE RANGES.
THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
0.4085 * RANGE * DSQRT(1/N(I) + 1/N(J))
(*) DENOTES PAIRS OF GROUPS SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL

Mean	Group	G G G G G p p p p p 1 2 3 5 4
1.1892	Grp 1	
1.2626	Grp 2	
1.3924	Grp 3	
1.7000	Grp 5	* * *
1.7031	Grp 4	* * *

Figure DAR-82

File: Processing DODDTCHR.TXT

ANALYSIS OF VARIANCE

Criterion Variable GENENTH Enthusiasm for school in general .as..
Broken Down by GRADE Grade level identification

Value	Label	Sum	Mean	Std Dev	Sum of Sq	Cases
1	K 1	64	1 7297	6519	15 2973	37
2	2-3	163	1 6465	6277	38 6263	99
3	4-6	298	1 8981	7441	86 3694	157
4	7-8	143	2 2000	6661	28 4000	65
5	9-12	300	2 3256	6270	50 3256	129
Within Groups Total		968	1 9877	6741	219 0186	487

Source	Sum of Squares	D F	Mean Square	F	Sig.
Between Groups	32 9075	4	8 2269	18 1051	0000
Linearity	30 2753	1	30 2753	66 6277	0000
Dev from Linearity	2 6322	3	8774	1 9309	1237
	R - 3467	R Squared - 1202			
Within Groups	219 0186	482	4544		
	F - 3614	Squared - 1306			

DAR-136

Figure DAR-83

- - - - - - - - - - - - - - - - - - O N E W A Y -

Variable GENENTH Enthusiasm for school in general has...
By Variable GRADE Grade level identification

ANALYSIS OF VARIANCE

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
BETWEEN GROUPS	4	32.9075	8.2269	18.1051	.0000
WITHIN GROUPS	482	219.0186	.4544		
TOTAL	486	251.9261			

- - - - - - - - - - - - - - - - - - O N E W A Y -

Variable GENENTH Enthusiasm for school in general has...
By Variable GRADE Grade level identification

MULTIPLE RANGE TEST

TUKEY-HSD PROCEDURE
RANGES FOR THE 0.050 LEVEL -

3.88 3.88 3.88 3.88
THE RANGES ABOVE ARE TABLE RANGES.
THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
0.4767 * RANGE * DSQRT(1/N(I) + 1/N(J))
(*) DENOTES PAIRS OF GROUPS SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL

Mean	Group	Grp 2	Grp 1	Grp 3	Grp 4	Grp 5
1.6465	Grp 2					
1.7287	Grp 1					
1.8981	Grp 3	*				
2.2000	Grp 4	*	*	*		
2.3256	Grp 5	*	*	*		

Figure DAR-84

File: Processing DODDTCHR TXT

ANALYSIS OF VARIANCE

Criterion Variable GENENTH Enthusiasm for school in general has
Broken Down by SUBJECT Subject support area

Value	Label	Sum	Mean	Std Dev	Sum of Sq	Cases
10	Art	24	2 1818	4045	1 6364	11
11	Business	15	2 1429	6901	2 8571	7
12	Compensatory Ed	33	1 8333	6183	6 5000	18
13	Computer sci & lit	29	1 8125	7500	8 4375	16
15	CWE	9	3 0000	0000	0000	3
16	Counseling	16	1 6000	6992	4 4000	10
18	ESL	33	1 9412	7475	8 9412	17
19	Evaluation	3	1 5000	7071	5000	2
20	For Language	17	2 8333	4082	8333	6
21	Home Economic	8	1 8000	4472	8000	5
22	Health	9	2 2500	5000	7500	4
23	Host Nation	6	2 0000	1 0000	2 0000	3
24	Industrial Arts	21	2 1000	5676	2 9000	10
25	Lang Arts & English	225	1 8145	7690	72 7339	124
26	Math	135	2 1774	6659	27 0484	62
27	Media & Library	51	2 2174	5987	7 9130	23
28	Music	22	2 7500	4629	1 5000	8
30	Reading	63	1 7027	6176	13 7297	37
31	Science	64	2 2069	6750	12 7586	29
32	Spec Ed	72	2 0000	7171	18 0000	36
33	Social Studies	67	2 0303	6840	14 9697	33
34	TPS	35	1 9444	8726	12 9444	18
35	Voc Ed	10	2 0000	7071	2 0000	5
Within Groups Total		968	1 9877	6950	224 1533	487

Source	Sum of Squares	D F	Mean Square	F	Sig
Between Groups	27 7728	22	1 2624	2 6132	0001
Linearity	1111	1	1111	2300	1318
Dev from Linearity	27 6617	21	1 3172	2 7287	0001
	R - 0210	R Squared - 0004			
Within Groups	224 1533	464	4831		
	Eta - 3320	Eta Squared - 1102			

DAR-138

Figure DAR-85

- - - - - - - - - - - - - - - - - - O N E W A Y -

VARIABLE GENENTH Enthusiasm for school in general has...
(CONTINUED)

Mean	Group	Grp 19	Grp 16	Grp 30	Grp 21	Grp 13	Grp 25	Grp 12	Grp 18	Grp 34	Grp 23	Grp 32	Grp 35	Grp 33	Grp 24	Grp 11	Grp 26	Grp 10	Grp 31	Grp 27	Grp 22	Grp 28	Grp 20	Grp 15
1.5000	Grp19																							
1.6000	Grp16																							
1.7027	Grp30																							
1.8000	Grp21																							
1.8125	Grp13																							
1.8145	Grp25																							
1.8333	Grp12																							
1.9412	Grp18																							
1.9444	Grp34																							
2.0000	Grp23																							
2.0000	Grp32																							
2.0000	Grp35																							
2.0303	Grp33																							
2.1000	Grp24																							
2.1429	Grp11																							
2.1774	Grp26																							
2.1818	Grp10																							
2.2069	Grp31																							
2.2174	Grp27																							
2.2500	Grp22																							
2.7500	Grp28																					*		*
2.8333	Grp20																					*		
3.0000	Grp15																							

Figure DAR-86

File: Processing DODDTCHR TXT

SETTING Project computers were by BESTSET For best effect, computers ought to be

BESTSET Page 1 of 1

SETTING / Count	used in a lab 1	assigned to class carts 2	on mobile carts 3	Row Total
1 available only i	19	6		25 5.2
2 assigned to my c	67	376	6	449 92 8
3 on mobile cart	4	4	2	10 2 1
Column Total	90 13 6	386 79 8	8 1 7	484 100 0

Figure DAR-87

File: Processing DODDTCHR TXT

SETTING Project computers were b" IFONE If I have one computer, others should be

IFONE Page 1 of 1

SETTING / Count	1	2	3	Row Total
1 available only i	18	4	3	25 5 2
2 assigned to my c	173	203	71	447 92 7
3 on mobile cart	5	2	3	10 2 1
Column Total	196 40 7	209 43 4	77 16 0	482 100 0

Figure DAR-88

File: Processing D^DD1^HR TXT

A N A L Y S I S O F V A R I A N C E

Criterion Variable RAF Resource Adequacy Factor
Broken Down by BESTSET For best effect, computers ought to be

Value	Label	Sum	Mean	Std Dev	Sum of Sq	Cases
1	used in a lab	38 77	4260	2646	6 3028	91
2	assigned to classroo	204 51	5257	.2710	28 5033	389
3	on mobile car s as n	4 22	5271	.3312	7677	8
Within Groups Total		247 49	5072	2708	35 5739	488

Source	Sum of Squares	D F	Mean Square	F	Sig
Between Groups	7362	2	.3681	5.0182	0070
Linearity	.6701	1	6701	9.1352	0026
Dev from Linearity	0661	1	.0661	.9012	3429
	R - 1358	R Squared -	0185		
Within Groups	35 57[illegible]	485	0733		
	Eta - 1424	Eta Squared -	0203		

DAR-142

Figure DAR-89

File: Processing DODDTCHR.TXT

- O N E W A Y -

Variable RAF Resource Adequacy Factor
By Variable BESTSET For best effect, computers ought to be..

MULTIPLE RANGE TEST

TUKEY-HSD PROCEDURE
RANGES FOR THE 0 050 LEVEL -

3 34 3 34
THE RANGES ABOVE ARE TABLE RANGES
THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS
0 1915 * RANGE * DSQRT(1 N(I) + 1 N(J))
(*) DENOTES PAIRS OF GROUPS SIGNIFICANTLY DIFFERENT AT THE 0 050 LEVEL

Mean	Group	G r p 1	G r p 2	G r p 3
4260	Grp 1			
5257	Grp 2	*		
5271	Grp 3			

Figure DAR-90

23-Dec-89 ONEWAY of aggregate teachers attitudes by descrip. vars
15:24:45 GEORGE MASON UNIVERSITY on GMUVAX:: VMS V5.1
File: Processing DODDTCHR.TXT

- O N E W A Y -

Variable RATIO Best student-computer ra:io for me is...
By Variable GRADE Grade level identification

ANALYSIS OF VARIANCE

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
BETWEEN GROUPS	4	9.6406	2.4102	3.3573	.0[illegible]0
WITHIN GROUPS	482	346.0185	.7179		
TOTAL	486	355.6591			

- O N E W A Y -

Variable RATIO Best student-computer ratio for me is...
By Variable GRADE Grade level identification

MULTIPLE RANGE TEST

TUKEY-HSD PROCEDURE
RANGES FOR THE 0.050 LEVEL -

3.88 3.88 3.88 3.88
THE RANGES ABOVE ARE TABLE RANGES.
THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
0.5991 * RANGE * DSQRT(1/N(I) + 1/N(J))
(*) DENOTES PAIRS OF GROUPS SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL

Mean	Group	Grp 4	Grp 3	Grp 2	Grp 5	Grp 1
1.9848	Grp 4					
2.0380	Grp 3					
2.0928	Grp 2					
2.1240	Grp 5					
2.5676	Grp 1	*	*	*	*	

Figure DAR-91

DAR-144

23-Dec-89 ONEWAY of aggregate teachers attitudes by descrip. vars
15:24:47 GEORGE MASON UNIVERSITY on GMUVAX:: VMS V5.1
File: Processing DOODTCHR.TXT

- O N E W A Y -

Variable RATIO Best student-computer ratio for me is...
By Variable SUBJECT Subject/support area

ANALYSIS OF VARIANCE

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
BETWEEN GROUPS	22	42.2738	1.9215	2.8450	.0000
WITHIN GROUPS	464	313.3853	.6754		
TOTAL	486	355.6591			

- O N E W A Y -

Variable RATIO Best student-computer ratio for me is...
By Variable SUBJECT Subject/support area

MULTIPLE RANGE TEST

TUKEY-HSD PROCEDURE
RANGES FOR THE 0.050 LEVEL -

5.13 5.13 5.13 5.13 5.13 5.13 5.13 5.13 5.13 5.13
5.13 5.13 5.13 5.13 5.13 5.13 5.13 5.13 5.13 5.13
5.13 5.13

THE RANGES ABOVE ARE TABLE RANGES.
THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
0.5811 * RANGE * DSQRT(1/N(I) + 1/N(J))
(*) DENOTES PAIRS OF GROUPS SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL

DAR-145

Figure DAR-92

File: Processing DODDTCHR.TXT

- O N E W A Y -

VARIABLE RATIO Best student-computer ratio for me is...
(CONTINUED)

Mean	Group	Grp 1 1	Grp 1 2	Grp 2 2	Grp 3 4	Grp 0 8	Grp 1 1	Grp 3 2	Grp 2 3	Grp 3 0	Grp 3 3	Grp 2 2	Grp 0 5	Grp 2 2	Grp 3 3	Grp 2 3	Grp 3 2	Grp 3 1	Grp 1 1	Grp 2 2	Grp 1 5
1.4286	Grp11																				
1.5556	Grp12																				
1.6000	Grp22																				
1.6250	Grp13																				
1.7000	Grp24																				
1.7273	Grp16																				
1.8824	Grp18																				
1.9118	Grp32																				
2.0794	Grp26																				
2.0811	Grp30																				
2.1034	Grp31																				
2.1515	Grp33																				
2.1667	Grp20																				
2.1760	Grp25																				
2.2000	Grp21																				
.2000	Grp35																				
2.3333	Grp23																				
2.4444	Grp34																				
2.5000	Grp16																				
2.5000	Grp19																				
2.5000	Grp28																				
2.7727	Grp27	*	*		*				*												
3.6667	Grp15	*	*		*	*															

Figure DAR-93

Exhibits

DoDDS Computer-Based Instruction (CBI) Program Evaluation - PHASE II

GUIDELINES FOR REGIONAL COORDINATORS

What is in Your Box(es)? (1) Bundled by school are teacher and student questionnaires ready to be transferred to school mailers,[1] (2) extra teacher questionnaires to give to CBI project teachers not listed on the attached project listing sheet (additional copies can be made by you if needed), (3) extra optically-scannable answer forms (hereafter referred to simply as "answer forms" for use by these extra teachers, and (4) a projects listing sheet to use to prepare school mailers and as a checkoff list to monitor returns.

Opening and Unpacking the Box(es). Open and remove the contents **carefully**, because each bundle contains loose items that can separate from the rest. Inspect the contents to make sure no items are missing.

Distribution of Questionnaires to Schools ASAP. Since the questionnaires have been bundled with elastic bands by school, the region's initial task is to transfer each bundle to a mailer to the individual school and send the mailer out. A label on each bundle (or individual teacher questionnaire) states the name of the teacher, the name of the school, the two-letter regional identifier (AT for Atlantic), and one or more two-letter subject-area identifiers. In the process of transferring materials between the box(es) and the school mailer, take care that loose items within bundles, like the #10 envelopes with the answer forms, do not fall out. On arrival at the destination school, your local contact person should remove the outer-most elastic band and distribute the teacher bundles (or individual teacher questionnaire and single answer form).

The distribution of questionnaires may be complicated by changes that may have occurred over the last 12 months since the arrival of computers for project participants. Some of these changes and solutions are described next.

How to Address Changes in the Last 12 Months

The development of the sample and other planning for this data collection effort were based on project abstracts submitted last spring. Much has happened and some changes have occurred over the ensuing year, so let's consider a few possible changes and how you can deal with them with respect to the survey tasks.

1. The teacher who was to carry out a project described in the abstracts has left the school or the system. **Solution** -- give that teacher's materials to the teacher who is running the project now, or to another teacher whose project was added to Phase II and does not appear among the abstracts we examined. Note this

---

[1]*NOTE: Not all project teachers will receive student questionnaires.*

action, and the changes in grade-level and content, on the project listing you received in this packet.

2. The project teacher has had to make changes in the project (grade level or subject area) for any number of understandable reasons. **Solution** -- make relevant changes on the project listing sheet and forward the materials to the teacher.

3. More teachers in your region have joined the TI demonstration project, and there are not enough of the green-colored teacher questionnaires to send out from the regional office. **Solution** -- we have provided a number of additional answer forms and questionnaires, and you should produce more copies of the teacher questionnaire for these teachers. To facilitate adequate monitoring, please ask these teachers to label their return envelope with their school name and their project's subject area.

Handling Returns

Each project teacher will be sending you an envelope containing either (1) 1 teacher answer form and several [up to 25] student forms or (2) just 1 teacher answer form. Teachers were provided a return label identifying only school name, region, and subject. On your projects listing sheet, check off each return as it arrives. In cases where no label appears on the envelope, simply keep a tally of such unlabeled returns. In so doing, you will be able to calculate the return rate, and do foilowup for unreturned answer forms.

By June 15, send the student and teacher (or just teacher) answer sheets, together with a **corrected** copy of the project listing sheet, directly to the project evaluator:

Dr. Charles S. White, Director
Center for Interactive Educational Technology
Robinson I, Room 3402
George Mason University
4400 University Drive
Fairfax, Virginia 22030

Please direct any questions about these instructions, and about other issues that may arise, to Mary Johnson (autovon 221-0660) at DoDDS in Washington.

CBI PHASE II -- SAMPLING SUMMARY

INSTRUMENT	NUMBERS DISTRIBUTED	ADMINISTERED
Teacher Questionnaire	543	May 8 - 19, 1989
Student Questionnaire	6,850	May 8 - 19, 1989
Participants:		
One teacher for each demonstration project, based on abstracts submitted to DoDDS in the spring of 1988. If the project teacher is different from that designated on the projects listing sheet, the regional coordinator arranges for redesignation. The Regional coordinator identifies additional Phase II teachers and adds them to the projects listing sheet. Only one teacher per project should complete the teacher questionnaire.	AT = 53 GE = 167 ME = 56 PA = 100 PN = 17	
Twenty-five students in 65% of the 429 projects that involved students in grade five or above, distributed equally across subject areas.	AT = 29 * 25 = 725 GE = 163 * 25 = 4075 ME = 29 * 25 = 725 PA = 42 * 25 = 1050 PN = 11 * 25 = 275	

CHECKLIST FOR REGIONAL COMPUTER COORDINATORS

_____ Read all instructions.

_____ As you unpack the box(es), check to see if a change in teacher or project requires changes on the teacher packet and/or the projects listing sheet. If so, make those changes.

_____ Identify additional teachers with CBI demonstration projects who do not appear on the projects listing sheet.

_____ Add those additional teachers to the projects listing sheet.

_____ Construct a questionnaire package for these additional teachers, which includes:

- ____ the green questionnaire (photocopy if necessary)
- ____ a blue teacher's optical scan answer form
- ____ one #10 envelope
- ____ instructions for labeling the envelope for return

_____ Place each school bundle in a mailer and mail to school contact person.

_____ As returns arrive, mark the corrected projects listing sheet accordingly.

_____ Follow up on late returns by referring to the tallies on the projects listing sheet.

_____ Forward returns by **June 15, 1989** to the project evaluator at the end of the survey deadline period, with a copy of the **corrected** projects listing sheet with returns to date marked.

DoDDS Computer-Based Instruction (CBI) Program Evaluation - PHASE II

DATA COLLECTION GUIDE for TEACHERS at CBI DEMONSTRATION SITES

Background and Purpose: The Department of Defense Dependents Schools (DoDDS) is conducting a system-wide evaluation of CBI activities at over 700 demonstration sites. The CBI plan is a comprehensive effort to integrate hardware and software into classrooms. Phase I (January to May 1988) focused on the use of microcomputers as teacher and student tools. During Phase II (June 1988 to June 1989), DoDDS is evaluating the appropriateness of computer hardware and curriculum specific software in your classroom.

The attached questionnaire, distributed to all teachers who had computers at the beginning of the current school year, represents one facet of Phase II data collection efforts. For a stratified random sample of projects (233), students are surveyed as well. Finally, project teachers were asked to maintain anecdotal reports concerning the evolution of their projects. While all such reports will be forwarded to the regional office, a small random sample of these will be sent to Washington to help achieve a clearer picture of computer use in the DoDDS system.

The Questionnaire: The "Questionnaire for Teachers at CBI Demonstration Sites" is designed to capture important information based on your experiences with computers in your classroom over the past school year. The 91-item instrument is divided into five independent parts, allowing teachers to complete the questionnaire in a series of manageable chunks over several days. **Part I** seeks your general views of computers. **Part II** seeks your judgments about the effect of computer use on the quality of the school experience. The issue of teacher training for computer use is tapped in **Part III**, while **Part IV** returns to the impact of computers in the classroom. Finally, **Part V** seeks your views about how computers are and should be allocated in your school. Your time and diligence in completing the question naire is very much appreciated. Directions for completing the questionnaire are provided on the instrument itself.

Return Date: The completed questionnaire must be returned to the regional office within **two weeks** of its receipt and, in any case, before the end of the school year. Thank you for your thoughtful and timely attention to this task.

DAR-152

DoDDS Computer-Based Instruction (CBI)
Program Evaluation - PHASE II

QUESTIONNAIRE for TEACHERS
at CBI DEMONSTRATION SITES

General Directions for Completing the Questionnaire: Before you start, you should have a #2 pencil and an optical scan answer sheet. Only penciled answers will be read. You should neatly erase any unintended response. Make sure that the entire bubble on the answer sheet is filled in completely.

Completing the "Identification Number" section: In order to analyze responses by certain factors, you will need to enter some numbers, and fill in the corresponding bubbles, in the section of the optical scan sheet labeled "IDENTIFICATION NUMBER." Notice that there are 10 boxes, each with a column of numbers from 0 to 9. This section should be completed **from left to right** according to the following directions:

Box 1 *Regional Office Identification*: Using the code numbers below, enter the identifier of your region in the left-most box of the Identification Number section on the optical scan answer sheet. Then, darken the bubble containing the number that corresponds to your region's code.

Region	ID Number
Atlantic Region	1
Germany Region	2
Mediterranean Region	3
Pacific Region	4
Panama Region	5

Box 2 *Grad Level Identification*: In the next box to the right in the Identification Number section, enter the code number for the grade level of your demonstration project. If your project spans two code numbers (for example, a project involving both 3rd and 4th graders), enter the code number corresponding to the predominant grade level involved. If equal numbers of students in both grade levels participated, enter the lower code number (in the example of 3rd and 4th grade, you would enter a "2"). Then, darken the bubble containing the number that corresponds to the grade level code.

Grade	ID Number
K-1	1
2-3	2
4-6	3
7-8	4
9-12	5

Boxes 3 & 4 *Subject/Support Area:* Use the next two boxes to enter the code number for the subject/support area in which you implemented your demonstration project. Elementary teachers and "basic allocation" projects must choose a specific area below. Then, darken the bubbles containing the numbers that correspond to the two-digit subject/support area's code.

Subject/Support Area	ID Number	Subject/Support Area	ID Number
Art	10	Host Nation	23
Business	11	Industrial Arts	24
Compensatory Education	12	Language Arts/English	25
Computer Science/Literacy	13	Mathematics	26
Cosmetology	14	Media/Library	27
CWE	15	Music	28
Counseling	16	Physical Education	29
Educational Prescription	17	Reading	30
ESL	18	Science	31
Evaluation	19	Special Education	32
Foreign Language	20	Social Studies	33
Home Economics	21	PPS	34
Health	22	Vocational Education	35

Box 5 *Gender Identification*: In the 5th box from the left in the Identification Number section, enter the identifier of your gender, where "1" = MALE and "2" = FEMALE. Then, darken the bubble containing the number that corresponds to your gender.

Boxes 6 & 7 *Project Computer Count*: For the next 2 boxes in the Identification Number section, enter the number of computers you used for your project. Then, darken the bubbles containing the numbers that correspond to your computer count. (NOTE: for numbers less than 10, include a leading zero; for example, four computers should be recorded as 04.)

Boxes 8 & 9 *Computer Needs Count*: For the next 2 boxes in the Identification Number section, enter the number of **additional** computers you would have needed for optimal achievement of your project objectives. Darken the bubbles containing the numbers that correspond to your computer needs count (NOTE: as with the previous item, include a leading zero for numbers less than 10.)

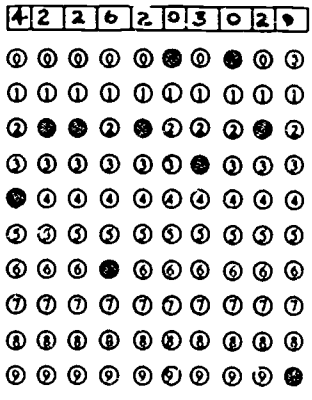
Box 10 *Type of Software Used*: In the last box on the right in the Identification Number section, enter the identifier code for the kind of software that was used **most predominantly** in your project (select only one). Then, darken the bubble containing the number that corresponds to the software type.

Software Type	ID Number
Drill and Practice *(the content of the software has been taught previously by the teacher, and the software allows students to practice with the content.)*	1

Tutorial *(software introduces students to new content, and may allow for practice and self-testing.)*	2
Simulation *(software presents students with a simulated representation reality and allows students to make decisions or take actions, and then to observe the results or consequences of those decisions or actions.)*	3
Database *(software consists primarily of data that can be sorted and selectively retrieved to answer given research questions.)*	4
Word processor *(software allows students to enter and edit text as part of writing tasks.)*	5
Spreadsheet *(software consists of rows and columns of numerical cells allowing for calculation and recalculation.)*	6
Integrated software *(combines word processor, database, and/or spreadsheet tools into a single package. Choose this option only if your project involved students with at least two of the three integrated software tools.)*	7
Programming *(students learn the syntax and semantics of a programming language like BASIC, Logo, or Pascal as the basis for problem solving.)*	8
Problem-solving *(software designed explicitly to develop the higher-order thinking skills associated with problem solving.)*	9

EXAMPLE: A female teacher in the Pacific Region conducted a CBI demonstration project with problem-solving software in third grade math using 3 computers, although she really needed 5 computers to be completely successful. She would use *4* as the code number for the region, *2* as the code number for the grade level, *26* as the code number for subject/support area, *2* as the code number for gender, *03* for the project computer count, *02* for the computer needs count (since 5 minus 3 = 2), and *9* for the software type. The Identification Number section of the optical scan answer sheet would be filled in as shown on the next page.

IDENTIFICATION NUMBER



(Example of Teacher Response for Identification Number Section)

Responding to questionnaire statements: After completing the Identification Number section, proceed to respond to the 91 items, organized into 5 parts. Items generally follow the same pattern: For each statement, decide whether you **STRONGLY AGREE, AGREE, NOT SURE, DISAGREE,** or **STRONGLY DISAGREE** with it. Then, indicate on the optical scan answer sheet your decision by filling in the **A** for **STRONGLY AGREE, B** for **AGREE, C** for **NOT SURE, D** for **DISAGREE,** or **E** for **STRONGLY DISAGREE.** (Where different response types are used, specific instructions are presented.)

Here are examples of answers properly marked on the answer sheet:

1. Moral development should be a central goal in the curriculum. A B C D E

Teacher #1
(This teacher agreed with the statement, but not strongly.)

Teacher #2
(This teacher strongly disagreed with the statement.)

Teacher #3
(This teacher wasn't sure whether she agreed or disagreed.)

Answer Sheet

1. Ⓐ ● Ⓒ Ⓓ Ⓔ

1. Ⓐ Ⓑ Ⓒ Ⓓ ●

1. Ⓐ Ⓑ ● Ⓓ Ⓔ

Be sure to respond to all the items, to put all your answers on the answer sheet, and to fill in ONLY ONE ANSWER for each statement.

You are now ready to begin Part I of the *CBI Demonstration Project Questionnaire* on the next pages.

CBI Demonstration Projects

Teacher Questionnaire
Part I

(Place all responses on the optical scan answer sheet only)

A=strongly agree	B=agree	C=not sure	D=disagree	E=strongly disagree

1.	Computers do not scare me at all.	A B C D E
2.	I'm no good with computers.	A B C D E
3.	I like working with computers.	A B C D E
4.	Working with a computer makes me very nervous.	A B C D E
5.	Generally, I feel OK about trying a new problem on the computer.	A B C D E
6.	The challenge of solving problems with computers does not appeal to me.	A B C D E
7.	I do not feel threatened when others talk about computers.	A B C D E
8.	I don't think I would do advanced computer work.	A B C D E
9.	I think working with computers is enjoyable and stimulating.	A B C D E
10.	I feel aggressive and hostile toward computers.	A B C D E
11.	I am sure I could do work with computers.	A B C D E
12.	Figuring out computer problems does not appeal to me.	A B C D E
13.	It wouldn't bother me at all to take computer courses.	A B C D E
14.	I'm not the type to do well with computers.	A B C D E
15.	When there is a problem with a computer task that I can't immediately solve, I would stick with it until I have the answer.	A B C D E
16.	Computers make me feel uncomfortable.	A B C D E
17.	I am sure I could learn a computer language.	A B C D E

A=strongly agree	B=agree	C=not sure	D=disagree	E=strongly disagree

18.	I don't understand how some people can spend so much time working with computers and seem to enjoy it.	A	B	C	D	E
19.	I would feel at ease in a computer class.	A	B	C	D	E
20.	I think using a computer is very hard for me.	A	B	C	D	E
21.	Once I start to work with a computer, I would find it hard to stop.	A	B	C	D	E
22.	I could get good grades in computer courses.	A	B	C	D	E
23.	I will do as little work with computers as possible.	A	B	C	D	E
24.	I feel comfortable working with a computer.	A	B	C	D	E
25.	I do not think I could handle a computer course.	A	B	C	D	E
26.	If a problem is left unsolved in a computer class, I would continue to think about it afterward.	A	B	C	D	E
27.	Computers make me feel uneasy and confused.	A	B	C	D	E
28.	I have a lot of self-confidence when it comes to working with computers.	A	B	C	D	E
29.	I do not enjoy talking with others about computers.	A	B	C	D	E

30. What is the total number of students in your school?

A. Fewer than 125
B. 126-250
C. 251-500
D. 501-1000
E. More than 1000

CBI Demonstration Projects

Teacher Questionnaire
Part II

(Place all responses on the optical scan answer sheet only)

A=strongly agree	B=agree	C=not sure	D=disagree	E=strongly disagree

31.	There are some activities during the year that I would not have been able to do without the use of the computers.	A B C D E
32.	I can be more creative when I work with a computer.	A B C D E
33.	To be really successful with the project I attempted, I really need more computers.	A B C D E
34.	I think I could accomplish the same objectives next year with fewer computers.	A B C D E
35.	I find that one computer used for whole-group instruction and/or demonstration is adequate to accomplish my objectives.	A B C D E
36.	Unless I have access to a computer lab, I really won't be able to accomplish the project objectives next year.	A B C D E
37.	I can't say that the computer saved me time in performing my professional tasks	A B C D E
38.	Except perhaps for motivation, there really wasn't anything computer use did that I couldn't have done without the computer.	A B C D E
39.	As time passed, I found that using the computer really did speed up my professional work.	A B C D E
40.	As time passed, I noticed that students were making progress through the content more quickly than in the past.	A B C D E
41.	I noticed that computer use increased students' "time-on-task."	A B C D E
42.	Computer use helped students improve cooperation skills.	A B C D E
43.	Using the computer in my work has helped me use my time more efficiently.	A B C D E

A=strongly agree	B=agree	C=not sure	D=disagree	E=strongly disagree

44.	I have changed my methods of teaching as a result of using computers in this project.	A B C D E
45.	Computer use hasn't really changed my teaching methods.	A B C D E
46.	If asked, I could identify students who would not have been as successful in my class without the opportunity provided by the computer project.	A B C D E
47.	I could name students who rarely submit complete work, but who successfully completed tasks associated with computer use.	A B C D E
48.	I can't say that my "reluctant" students were any more successful with work in the computer project than they are otherwise.	A B C D E
49.	I can't say that the computer helped me perform my professional tasks more easily.	A B C D E
50.	The content of what I teach requires substantial time for an individual student to work at a computer station one-on-one.	A B C D E
51.	For the content of what I teach, a single computer for whole-group instruction and/or demonstration would be the most efficient use of the computer.	A B C D E
52.	I can't say that the computer really helped my students learn more quickly than traditional instruction.	A B C D E
53.	For the content of what I teach, small groups of students teamed around several computer stations would be the most efficient use of the computer.	A B C D E
54.	It is clear to me that computer use can be beneficial to students in my subject area in general.	A B C D E

CBI Demonstration Projects

Teacher Questionnaire
Part III

(Place all responses on the optical scan answer sheet only)

A=strongly agree	B=agree	C=not sure	D=disagree	E=strongly disagree

55.	I need more training on how to use a single computer station for whole-group instruction.	A B C D E
56.	I need more training on how to organize classroom activity for group work at computer stations.	A B C D E
57.	I need more training on how to organize instruction to make better use of a computer lab.	A B C D E
58.	I need more training on how to use computers for skill development.	A B C D E
59.	I need more training on how to use computers to increase student content knowledge.	A B C D E
60.	I need more training on how to measure the gains in student performance that I believe are being achieved using the computer.	A B C D E
61.	I need more planning time to properly integrate computers in the classroom.	A B C D E
62.	I need more training on what software is available to meet my instructional objectives.	A B C D E
63.	I need more training on how to use teacher productivity tools like gradebooks and word processing.	A B C D E
64.	I need more information about how other teachers in my subject area/grade level are using computers	A B C D E
65.	I need more training on how to evaluation the quality of software.	A B C D E

A=strongly agree	B=agree	C=not sure	D=disagree	E=strongly disagree

66.	My **software evaluation** training contributed to the success of this project.	A B C D E
67.	My inservice training on **how to diagnose and correct minor hardware and software problems** contributed to the success of this project.	A B C D E
68.	My inservice training in **programming** contributed to the success of this project.	A B C D E
69.	My inservice training in **word processing** contributed to the success of this project.	A B C D E
70.	My inservice training with **databases** contributed to the success of this project.	A B C D E
71.	My inservice training with **spreadsheets** contributed to the success of this project.	A B C D E
72.	My inservice training about **gradebooks and other teacher tools** contributed to the success of this project.	A B C D E
73.	My inservice training on **software availability for my subject area/grade level** contributed to the success of this project.	A B C D E
74.	My inservice training in **classroom management for computing** contributed to the success of this project.	A B C D E

CBI Demonstration Projects

Teacher Questionnaire
Part IV

(Place all responses on the optical scan answer sheet only)

For each item below, please choose the response that most closely matches your opinion. Use the following codes to express your responses, and fill in the appropriate bubble on your answer sheet:

A = "much improved"
B = "somewhat improved"
C = "not changed"
D = "been somewhat negatively affected"
D = "been very negatively affected"

much A=improved	somewhat B=improved	C=not changed	been somewhat D=negatively affected	been very E=negatively affected

75.	As a result of using computers, **my students' enthusiasm for subjects for which they used computers has...**	A B C D E
76.	As a result of using computers, **providing special opportunities for gifted students has...**	A B C D E
77.	As a result of using computers, **my students' enthusiasm for school in general has...**	A B C D E
78.	As a result of using computers, **providing special opportunities for handicapped or learning disabled students has...**	A B C D E
79.	As a result of using computers, **peer cooperation has...**	A B C D E
80.	As a result of using computers, **students working independently has...**	A B C D E
81.	As a result of using computers, **learning by my below average students has...**	A B C D E
82.	As a result of using computers, **learning by my average students has...**	A B C D E
83.	As a result of using computers, **learning by my above average students has...**	A B C D E
84.	As a result of using computers, **tailoring assignments to students' individual needs has...**	A B C D E

much A=improved	somewhat B=improved	C=not changed	been somewhat D=negatively affected	been very E=negatively affected

85. As a result of using computers, **diagnosing my students' learning problems has...** A B C D E

86. As a result of using computers, **the volume of work students produce has...** A B C D E

87. As a result of using computers, **the level of creativity among my students has...** A B C D E

Teacher Questionnaire
Part V

For each multiple-choice item below, please choose the response that most closely matches your opinion, and fill in the appropriate bubble on your optical scan answer sheet.

88. For your demonstration project, the computers were:

A. available only in a lab setting.
B. assigned to my classroom for the duration of the project.
C. wheeled in on mobile carts as needed.

89. To be most effective in the subject area or grade level targeted for this project, I think computers ought to be:

A. used in a lab setting.
B. assigned to individual classrooms on a fairly permanent basis.
C. wheeled in on mobile carts as needed by the teacher.

90. In your judgment, what ratio of students to computers needs to be achieved in order to maximize the benefits of CBI <u>in your subject area</u>? (For example, 2:1 means 2 students for 1 computer.)

A. 1:1 (each child has access to his/her own computer)
B. 2:1 to 4:1
C. 5:1 to 9:1
D. 10:1 to 24:1
E. 25:1 or more (1 computer per classroom)

91. Assuming you have <u>at least one</u> computer and printer permanently assigned to your classroom, how would you place the other computers in the school for maximum benefit?

A. in a lab
B. assigned to individual classrooms
C. on mobile carts for use as needed

COMPUTER-BASED INSTRUCTION (CBI)

ANECDOTAL RECORD FORMS

TO BE USED IN

EVALUATION OF CBI PROJECTS

Project Title

Curriculum Area

Name of Teacher

Grade Level(s)

Name of School

DS Report Control Symbol 2118

Description of Computer-Based Instruction (CBI) Anecdotal Record Forms to be used in the Evaluation of the CBI Program:

Each demonstration site teacher will maintain a site record on a bi-weekly schedule. The record will provide the basis for completing the final evaluation. Record forms will be sent along with the completed evaluation form to the Computer Coordinator at the Regional Office in May 1989. The evaluation form will then be sent to the DoDDS office in Alexandria, Virginia, and the record forms will be kept on file for six months at the Regional Office. Reporting dates for CBI records are:

Type of Report	Reporting Dates
1st Semester CBI Record	January 20, 1989
Two-week CBI Record Form	February 10, 1989
Two-week CBI Record Form	February 24, 1989
Two-week CBI Record Form	March 10, 1989
Two-week CBI Record Form	March 24, 1989
Two-week CBI Record Form	April 14, 1989
Two-week CBI Record Form	April 28, 1989
Two-week CBI Record Form	May 12, 1989

Keep a copy of the completed record forms in your classroom until you have completed the final evaluation form which will be sent to you at a later date. The basic information needed for part of the evaluation form will come from these questions:

1. What software packages were most effective in achieving the objectives you had set?
2. What improvements (if any) have you noticed in student performance as a result of using the computer?
3. Has the number of computer workstations helped or hindered your work or your students' progress?
4. What prior inservice training contributed to the success of the project?
5. What additional training or information would have helped make the project more successful?
6. Did the use of the computers allow you to engage in activities that would have been impossible or extremely difficult to conduct without computers?
7. What changes (if any) have you made in your planned objectives in relation to student performance or other factors?

The CBI record forms, to be completed by CBI project teachers, reflect cumulative information needed for system-wide evaluation.

DAR-166

Teacher Name

First Semester CBI Record

Directions: Please respond to these 7 questions based on your experiences during the first semester of SY 1988-89. Consider each question carefully before you respond. Be specific in the comments you make. General comments are not as valuable in revealing valid program outcomes and needs. Where appropriate, attach a sample of student work to illustrate your comments. Please complete on or before January 20, 1989.

---

1. What recommendations would you make for setting up a new classroom CBI site?

2. What software packages did you feel were most effective in meeting your objectives during the first semester?

3. What improvements, if any, did you notice in student progress as a result of computer interaction during the first semester?

(Continued -->)

4. How has the number of computer workstations helped or hindered your work or students' performance thusfar?

5. What prior inservice training contributed to the success of the project thusfar? What additional training would have made the project easier to manage or more successful during the first semester?

6. Were there any class activities that would have been impossible or extremely difficult without a computer?

7. What modifications, if any, have you made in your student objectives for this project, based on the first semester student performance, based on the software you used, or based on other factors?

Teacher Name _____ Reporting Date _____

Two-Week CBI Record Form

Directions. Please respond to the 8 items on the basis of a two-week time frame. There may not be a response for every item during each two-week period. Consider each question or item carefully before you respond. Be specific in the comments you make. General comments are not as valuable in revealing valid program outcomes and needs. Where appropriate, attach a sample of student work to illustrate your comments.

---

1. Identify software used during this 2-week period:

2. State any student improvement or change noted as a result of computer interaction (e.g., skills, time-on-task, attitudes, etc.):

3. Explain how the number of computer workstations helped or hindered your work or students' progress:

4. Which inservice training activities contributed to project success during this 2-week period?

(Continued -->)

5. What additional inservice training is needed for better delivery of services to students?

6. What specific activities were engaged in, if any, that would be impossible or extremely difficult without a computer?

7. What changes, if any, have you made (or will make) in student objectives, based on student performance, based on the software you're using, or based on other factors?

8. Other comments:

DoDDS Computer-Based Instruction (CBI) Program Evaluation - PHASE II

DIRECTIONS FOR ADMINISTRATION of STUDENT QUESTIONNAIRES

What is in Your Packet? (1) one teacher questionnaire, (2) 25 student questionnaires, (3) 1 teacher and 25 student optically-scannable answer sheets in an envelope, along with (4) an identifier label to use when returning the answer sheets. With your guidance, students will fill in the needed information for "student ID number" on their answer sheets and then to respond to the 50 items (28 items if in grades 5 and 6) by darkening the appropriate bubbles on the scanning form.

Administering the Student Questionnaire: First, make sure your students have #2 pencils, a copy of the questionnaire and one of the optical scanning answer sheets provided (do **not** use any other kind of scanning form). **Second,** students must fill in the "Student Identification Number" section of the answer sheet. Rather than a student ID, however, the student will write in the boxes provided a series of numbers you will have written on the blackboard. It is the same number (with one exception) that is required on the teacher questionnaire. (So you will need to complete at least the "Identification Number" tasks on your questionnaire before administering the student questionnaire.) If you refer to page 3 of the directions on the teacher questionnaire, you will see a sample teacher's number (4226203029). If this were your number, you would write two numbers on the blackboard: 4226203029 for the girls and 4226103029 for boys (the 5th box from the left is reserved to record gender). After students have transferred the correct number from the board onto the proper place on their answer forms, they should fill in the appropriate bubble beneath each number. **Third,** read through the instructions with your students and answer whatever questions arise. **Fourth,** students may proceed with the questionnaire items. Remind the students that erasures must be complete, that double-marked answers cannot be interpreted, that **all** items should be answered **on the optical scanning sheet only**, and that the answer sheet must be kept in mint condition in order to be read properly by the scanning equipment. **Fifth,** as the students finish, collect and check the answer sheets to see if students followed your directions. **Finally,** place the students' optical scanning sheets in a reinforced envelop (perhaps with a piece of cardboard for support) along with the answer sheet from **your** questionnaire, affix the enclosed label, and forward the envelop to your regional computer coordinator.

Questions about the Student Questionnaire:

To which of my students do I administer the student questionnaire? The student questionnaire should be administered to students who are in **grade 5 or above.** If your project involves student ranging above and below 5th grade, then administer the survey only to students in grade 5 and up.

You've only sent enough questionnaires and optical scanning forms for one class, but I have 3 classes involved in the project. Which class gets the questionnaire? **You** select the one class who will fill out the questionnaires and, if you have more than 25 students in the class, which students will complete the questionnaire. The other two classes will not be surveyed.

My project involves only a handful of students. What do I do with all the extra questionnaires and scanning sheets? Use only the questionnaires and answer sheets you need, administering the instrument to students who were involved with computer use in your project, and discard the rest.

Do all students respond to the same number of items? No. Students in grades 5 and 6 respond only to the first 28 items. Grades 7-12 continue the questionnaire to the end (50 items).

Return Date: The completed answer sheets must be returned to the regional office within **two weeks** of its receipt and, in any case, before the end of the school year. Thank you.

DAR-171

CBI PROJECT
STUDENT QUESTIONNAIRE

Directions: Before you start, you should have a #2 pencil and an optical scan answer sheet. Your teacher will tell you how to fill in some general information on the answer sheet before you begin the questionnaire. Then, when instructed to do so, you should begin responding to the 50 items, as follows: For each statement, decide whether you **STRONGLY AGREE, AGREE, NOT SURE, DISAGREE,** or **STRONGLY DISAGREE** with it. Then, indicate on the optical scan answer sheet your decision by filling in the **A** for **STRONGLY AGREE, B** for **AGREE, C** for **NOT SURE, D** for **DISAGREE**, or **E** for **STRONGLY DISAGREE**. (Ignore the **T** and **F** within the bubbles.)

Here are examples of answers properly marked on the answer sheet:

1. Sports is an important part of my school experience. A B C D E

Student #1
(This student agreed with the statement, but not strongly.)

Student #2
(This student strongly disagreed with the statement.)

Student #3
(This student was not sure whether she agreed or disagreed.)

What would your answer be?

Answer Sheet

	A	B	C	D	E
1.	(T)	●	○	○	○
1.	(T)	(F)	○	○	●
1.	(T)	(F)	●	○	○
1.	(T)	(F)	○	○	○

Be sure to respond to all the items, to put all your answers on the answer sheet, and to fill in ONLY ONE ANSWER for each statement. If you have any questions about these directions, please be sure to ask your teacher.

WHEN INSTRUCTED, YOU MAY BEGIN THE QUESTIONNAIRE

A=strongly agree B=agree C=not sure D=disagree E=strongly disagree

1.	If I had my own computer, I'd use it to help with my homework.	A B C D E
2.	I can be more creative with a computer.	A B C D E
3.	Society is becoming too dependent on computers.	A B C D E
4.	I can express my ideas more clearly when I use a computer.	A B C D E
5.	Someday, a computer is going to start a war by accident.	A B C D E
6.	It takes a good math mind to really use computers.	A B C D E

A=strongly agree	B=agree	C=not sure	D=disagree	E=strongly disagree

7.	Computers create more problems than they solve.	A B C D E
8.	I can never get as much time at a computer as I'd like.	A B C D E
9.	In a few years, all the interest in computers will die out.	A B C D E
10.	I like working with computers.	A B C D E
11.	If I had my way, I'd ban all computers.	A B C D E
12.	I would spend most of the school day at a computer if I could.	A B C D E
13.	Sometimes, I get really impatient with people who aren't computer literate.	A B C D E
14.	I don't understand why a lot of people are so interested in computers.	A B C D E
15.	It wouldn't bother me if I found out that the government had information about me in one of its big computers.	A B C D E
16.	Computers can help students raise their test scores.	A B C D E
17.	Most videogames aren't as exciting as people say they are.	A B C D E
18.	People who spend all their time at a computer are wasting a lot of good time.	A B C D E
19.	I can't picture myself making a living someday with a computer.	A B C D E
20.	Computers will never live up to the claims people make about them.	A B C D E
21.	People who are afraid of computers are being silly.	A B C D E
22.	I have no interest in learning more about how to use a computer.	A B C D E
23.	I'm not the kind of person who would work well with a computer.	A B C D E
24.	Computers solve more problems than they create.	A B C D E
25.	Society wouldn't work very well these days without computers.	A B C D E
26.	Sometimes a computer can really mess things up.	A B C D E
27.	When people start talking about computers, I feel really out of place.	A B C D E
28.	Do you have access to a computer outside of school?	Yes = A No = B

GRADES 5 AND 6, STOP HERE!
GRADES 7 AND ABOVE, CONTINUE TO THE NEXT PAGE

A=strongly agree	B=agree	C=not sure	D=disagree	E=strongly disagree

29.	The computer makes it easier to be creative in my work.	A	B	C	D	E
30.	If I had enough money, I'd probably spend a lot of time at a videogame arcade.	A	B	C	D	E
31.	People who say computers are a threat to society don't know what they're talking about.	A	B	C	D	E
32.	I'm smart enough to learn just about anything I want to know about computers.	A	B	C	D	E
33.	We would all be better off without computers.	A	B	C	D	E
34.	Computer scientists probably do interesting work.	A	B	C	D	E
35.	I think just about everybody ought to have his/her own computer.	A	B	C	D	E
36.	People are too quick to blame a computer for mistakes.	A	B	C	D	E
37.	I'm not interested in taking computer classes.	A	B	C	D	E
38.	I think computers are great.	A	B	C	D	E
39.	Computers in society give too many people too much information about people.	A	B	C	D	E
40.	I really get tired of people who can't stop talking about computers.	A	B	C	D	E
41.	People get too upset about kids who use their own computer to break into another computer illegally.	A	B	C	D	E
42.	I think I'd like to work with computers after I get out of school.	A	B	C	D	E
43.	Someday computers are going to get out of control.	A	B	C	D	E
44.	Computers are so smart that sometimes they make me feel dumb.	A	B	C	D	E
45.	Computers are too complicated for me to use.	A	B	C	D	E
46.	If I had my way, every student in school would have his/her own computer.	A	B	C	D	E
47.	Someday I'll probably lose a job to a robot.	A	B	C	D	E
48.	Students should be taught more about computers.	A	B	C	D	E
49.	I don't think I'm very good at using a computer.	A	B	C	D	E
50.	Computers will solve more problems in our world than most people can even imagine.	A	B	C	D	E

Appendix 16

END

U.S. Dept. of Education

Office of Education
Research and
Improvement (OERI)

ERIC

Date Filmed

March 29, 1991