PUPILS' ATTITUDE TOWARD TECHNOLOOGY

PATT-USA

A First Report of Findings

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by

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INTRODUCTION

In 1984, research was begun in The Netherlands to determine the attitude toward and concept of technology held by students aged 12-15 years. As instrument was developed and a large scale sample was taken in that country. Results of the study were so striking that it was decided to present them at a number of international conferences and to promote the international extension of the research. Several researchers joined in the effort until, in 1989, more than twenty countries are involved with the Pupils' Attitude Toward Technology (PATT) research.

In 1987, Dr. William E. Dugger from Virginia Polytechnic Institute and State University (Va. Tech) attended a conference of persons working with PATT and suggested the replication of the PATT study in the United states. As a result of this visit, the decision was made that the PAtt study in the United States would begin with field-testing of the existing PATT instrument in cooperation with the PATT team from The Netherlands.

In the Spring of 1988, Dr. Marc deVries of the University of Technology in Eindhoven, The Netherlands, worked with Drs. E. Allen Bame and William E. Dugger to develop a PATT instrument for use in the United States. Dr. deVries assisted in the translation of the Dutch PATT instrument to English and to identify and change any expressions or words which were not traditionally used in the United States.

The Likert questionnaire was field tested in five middle schools in Virginia. Approximately 200 pupils in grades six and seven were given the instrument. One hundred other pupils in the same schools were asked to write a brief essay on "What I Think of Technology."

To test the instructions to the teachers, the researchers observed the administration of the instruments in four of the five test schools. As a result of these observations minor changes were made in the instructions to the teachers and students. The instrument was prepared in a packet to be mailed to teachers in the fifth test school to test the mailing procedures as well as the administration of the instrument when no researcher was present.

THE FIELD TEST

Analysis of the translated instrument consisted of:

1. a frequency analysis of all measured variables
2. a factor analysis of the attitude items
3. a Guttman analysis of the concept items

4. a reliability analysis of the attitude and concept items
5. t-tests on the attitude and concept scale scores with subgroups based on sex, age, grade, rural or urban school area, parents' profession, technological climate at home, and quality of a definition of technology.

Two hundred five (205) completed instruments were received from the five test schools. Eighty five (85) essays were received.

Some items were rephrased to improve wording and readability. The essay question was changed to ask for a brief statement of what the students thinks technology is. This was done to make it more suitable for inclusion on an optically scanned instrument. As a result of these minor modifications the, the final PATT-USA instrument was produced in May 1988.

THE PATT-USA INSTRUMENT

The PATT-USA instrument contains four parts. The first asks for a short description of what the student thinks technology is. The second part consists of eleven questions to gather demographic data about the respondents. In the third part statements are included to assess attitude toward technology. This section contains 57 statements with a five-part Likert scale for response. The attitude statements were originally organized into six scales:

1. interest in technology (Interest)

2. technology as an activity for both boys and girls (Gender)
3. consequences of technology (Consequences)
4. perception of the difficulty of technology (Difficulty)
5. technology in the school curriculum (Curriculum)
6. ideas about technological professions (Careers)

In the fourth part, thirty-one items made up the concept section of the instrument. These were written with a three-part Likert response. The statements were organized into four scales in the original instrument.

1. relationship between technology, human beings and society (Technology and Society)
2. relationship between technology and science (Technology and Science)
3. skills in technology (Technology and Skills)
4. the raw materials or "pillars" of technology (Technology and pillars)

DATA COLLECTION

Funding for the PATT-USA study was obtained from three sources; Virginia Tech provided funding to conduct the study in Virginia, The state of New Jersey contracted to conduct the study in that state and the International Technology Education Association (ITEA) funded the study in five other states. To obtain a wider geographic representation of

states, the five states funded by the ITEA were selected to be: Florida, Oklahoma, Ohio, Utah and Wisconsin.

In preparation to administer the instrument in the various states, letters were sent to the state supervisor of Technology Education or other key person in each state. A list of names and addresses of sixty junior high/middle school technology education teachers was requested from each contact person. These teachers were to be asked to participate in the study as local school contact persons and coordinators of the study.

A letter was sent to the nominees explaining the research and requesting their participation in the study. The return agreement form included space for the signature of the school principal or other administrator indicating administrative support of the data collection in the school. Pre-paid, addressed return envelopes were used for reply.

Each teacher who agreed to participate in the study was sent a packet of materials containing:

1. instructions to the contact teacher who was coordinating the study in the school

2. five sets of PATT-USA student instruments. Each set contained twenty instruments and instructions for administering the instruments. A separate questionnaire for the teachers was also included in each set of instruments to gather demographic, attitude and concept information from teachers.

3. an addressed, pre-paid return envelope.

The IA/Tech. Ed. teachers who coordinated the study in the schools were asked to administer the PATT-USA instruments to two or three of their classes and to ask two or three teachers of other subjects in their schools to also administer the instruments to their students. In this way it was hoped that some students who had not taken IA/Tech Ed. classes would be included in the study. The instruments were collected by the contact teacher in each school and returned to Virginia Tech for analysis.

Returned packets of completed instruments were:

1. numbered to identify forms by school and state. (the PATT-USA instruments did not have provision for state or school identification on the instrument)

2. forms were sorted to remove any instruction sheets and blank forms that had been returned and any mutilated or improperly marked forms.

3. packets were then sent to the Virginia Tech computer scoring center entry of data into the computer.

The original mailing of letters requesting participation of the teachers recommended by the state supervisors was sent by "bulk mail" to reduce postage costs. A deadline for response was included in the letter requesting participation. The bulk mail delivery was slower than expected resulting in receipt of the letter by most persons after the stated deadline for reply. Several telephone calls from participants of the request indicated that this may have had some negative effect on the number of

persons agreeing to participate. All subsequent mailings were done through first class mail.

RESULTS OF THE STUDY

Demographics- Describing the Sample

A total of 10,349 useable instruments were received from the seven states included in the study. Though, in each state, a list of approximately sixty names and addresses of potential contact persons were supplied, a much smaller number of teachers agreed to participate in the study. This resulted in smaller numbers of responses from each state than was originally planned, though the responses received was more than adequate to allow for the drawing of conclusions from the data received. (See Table 1)

A total of 10,269 of the subjects responded to this question. This included 6,256 (60.9%) boys and 4,013 (39.1%) girls. (Eighty did not answer this question or did not provide a useable response.) The classes where the instruments were administered were predominantly Industrial Arts/Technology Education (IA/Tech Ed.).
(Table 2)

Over 67 percent of the respondents were ages thirteen to fifteen. Since the instrument was designed to be administered to middle school students, this was the target age group, (Figure 3) It was assumed the students in the study would be ages thirteen to fifteen with the possibility of a small number of students age 16. In some cases, junior

high schools were included in the study or similar grades housed in high schools. The older students could only choose age sixteen or older in response to the age question. This resulted in a larger that expected number of students indicating age sixteen or older.

Students were asked to indicate their grade in school. (Table 4) Only responses for grades 6, 7, and 8 were provided. It was found that a number of the schools surveyed were junior high schools which included the ninth grade. Some schools included high school grades from which a small number of responses were received. When a student indicated an age of sixteen or older but did not respond to the question requesting grade in school, these responses were counted as ninth grade or higher. This accounts for the large number of responses (over half) in the ninth grade or above category.

Five questions were asked to assess the technological climate in the home. These dealt with the students' perception of the technological nature their father's and mother's jobs; the presence of technical toys in the home, a technical workshop in the home, and a computer in the home.(Tables 5 through 9) It should be noted that 59.6 percent of the respondents felt that their father's job had very much or much to do with technology.(Table 5) This can be contrasted with the 32.2 percent who felt their mother's job had very much or much to do with technology.(Table 6)

A majority (60.2 %) of the respondents indicated the presence of technical toys in the home.(Table 7) Only 33.1 percent indicated the presence of a technical workshop in the home (Table 8), while 46.9 percent indicated there was a computer in the home (Table 9).

The students were asked if they thought they would choose a technological profession. The response was divided evenly between the positive and negative responses. (Table 10)

When asked if they had brothers or sisters that have a technological profession or are studying for it, only a small number answers positively.(24.7%) (Table 11) This can be accounted for, in part, by the ages of the respondents. It would be expected that with nearly 85 percent of the respondents in the age range of twelve to fifteen, only a small number would have siblings old enough to be training for or in technological professions.

A question of great importance was, "Are you taking of have you taken Technology Education/Industrial Arts?" A large majority of the respondents to this question (76.8 %) responded positively. Such a response should be expected since the person coordinating the study in each school was an Industrial Arts/Technology Education (IA/Tech Ed) teacher. In many middle schools and junior high schools such study in required of all or most students. Thus, even in non-IA/Tech Ed classes where the instrument was

administered, there may be a number of students who had studied or were studying IA/Tech Ed .

TABLE 1

Frequency Distribution of Number of Students within each State

	FREQUENCY	PERCENT
VA	1805	17.4
NJ	1266	12.2
WI	1152	11.1
OH	2736	26.4
OK	608	5.9
FL	1072	10.4
UT	1710	16.5

TABLE 2

Frequency Distribution of the Gender of the Respondents

	FREQUENCY	PERCENT
Missing	80	.
Boy	6256	60.9
Girl	4013	39.1

TABLE 3

Frequency Distribution of the Age of the Students

	FREQUENCY	PERCENT
Missing	164	.
12 or younger	1743	17.1
13	3046	29.9
14	2708	26.6
15	1149	11.3
16 or older	1539	15.1

TABLE 4

Frequency Distribution of Number of Students within each Grade Level

	FREQUENCY	PERCENT
Missing	241	.
Sixth	886	8.8
Seventh	2536	25.1
Eight	1462	14.5
Ninth and beyond	5224	51.7

TABLE 5

Frequency Distribution of Responses to, "If your father has a job, indicate to what extent it has to do with technology."

Father's Profession

	FREQUENCY	PERCENT
Missing	405	.
Very Much	2679	26.9
Much	3252	32.7
Little	2674	26.9
Nothing	1339	13.5

TABLE 6

Frequency Distribution of Responses to, "If your mother has a job, indicate to what extent it has to do with technology."

	FREQUENCY	PERCENT
Missing	636	.
Very Much	1190	12.3
Much	1937	19.9
Little	3237	33.3
Nothing	3349	34.5

TABLE 7

Frequency Distribution of Responses to,"Do you have technical toys, like Tinkertoy, Erector Set or LEGO at home?"

	FREQUENCY	PERCENT
Missing	80	.
Yes	6182	60.2
No	4087	39.8

TABLE 8

Frequency Distribution of Responses to, "Is there a technical workshop in your home?"

	FREQUENCY	PERCENT
Missing	121	.
Yes	3388	33.1
No	6840	66.9

TABLE 9

Frequency Distribution of Responses to, "Is there a personal computer in your home?"

	FREQUENCY	PERCENT
Missing	67	.
Yes	4822	46.9
No	5460	53.1

TABLE 10

Frequency Distribution of Responses to, "Do you think you will choose a technological profession?"

	FREQUENCY	PERCENT
Missing	258	.
Yes	4984	49.4
No	5107	50.6

TABLE 11

Frequency Distribution of Responses to, "Do you have brothers or sisters that have a technological profession or that are studying for it?"

	FREQUENCY	PERCENT
Missing	176	.
Yes	2513	24.7
No	7660	75.3

TABLE 12

Frequency Distribution of Responses to, "Are you taking or have you taken Technology Education/Industrial Arts?"

	FREQUENCY	PERCENT
Missing	154	.
Yes	7826	76.8
No	2369	23.2

CROSS COMPARISONS ON DEMOGRAPHICS

An attempt was made to determine if differences existed between the responses given by boys and those given by girls in the study. This is first explored in the demographics section of the instrument. When comparing gender with age of the respondents,(Table 13) it is noted that there was a higher proportion of girls in the younger age groups. As age increased there was a larger proportion of boys in the age groups.

Similarly there was a higher percentage of girls in the lower grades. (Table 14) There was a noticeable shift in the proportion of boys and girls in the upper age and grade groups. There was a higher proportion of both boys and girls in the higher grades who were taking IA/Tech Ed courses.

An attempt was made to assess the technological environment in the home. The students were asked to indicate to what degree they thought their fathers' and mothers' jobs had to do with technology. Boys tend to rate the fathers' profession more technical in nature than girls.(Table 15) There was a trend toward a decreasing proportion of boys who felt their fathers' occupations had little to do with technology. There was a corresponding increase in the proportion of girls who felt their fathers' jobs had little to do with technology.

In contrast, a higher proportion of boys and girls felt their mothers' jobs had little or nothing to do with technology. Girls tended to rate the mother's occupation lower than the boys. (Table 16) A comparison of the two responses indicates the students think their fathers' jobs are much more technical then their mothers'.

The presence of technical toys and a technical workshop in the home were considered to be factors in assessing the technological climate in the home. There appear to be differences in this climate for boys and girls. The proportion of boys reacting positively to both of these questions was higher than girls. (Tables 17 and 18)

When asked if there was a computer in the home, there was only a slight difference between the positive and negative responses. Computers appeared in the homes of the boys to a slightly greater extent than the girls. (Table 19)

It appears that boys have stronger aspirations toward technologically oriented jobs than girls. (Table 20) More boys (59.44%) responded positively to this while only (33.76%) of the girls responded positively. In contrast, 66.24 percent of the girls responded negatively while 40.56 percent of the boys responded negatively.

A higher proportion of those students who rated their father's job as being technological in nature reported the presence of technical toys in the home. This also was true for the presence of a technical workshop in the home. (Tables 21 and 22)

Similarly, a higher proportion of the students who rated their father's profession as being technological in nature reported the presence of a computer in the home. (Table 23) As the rating of the technological nature of the job decreased, there was a comparable decrease in the proportion of students reporting the presence of a computer in the home. The father's profession did seem to have an effect on the presence of a computer in the home.

The students' perception of the mother's occupation did not appear to have an effect on the technological climate in the home. (Tables 24, 25, 26)

A large proportion of the respondents (76.8%) indicated they had taken or were taking IA/ Tech Ed. (Table 2) Of those taking IA/Tech Ed., 65.40 percent were boys and 34.60 percent were girls. (Table 27) Though there was a higher proportion of boys in the study, a higher percentage of girls responded negatively to this question. When compared to the proportions of boys and girls in the total sample, boys appear to taking IA/Tech Ed. courses more than girls.

The influence IA/Tech Ed. courses might have on middle school/junior high students was of major interest of this study. It appears that there is no relationship between having taken an IA/Tech Ed course and technological climate in the home.(Tables 28 - 32)

TABLE 13

Cross Comparisons on Total Sample Demographics: Relationship of Gender and Age

FREQUENCY / PERCENT / ROW PCT / COL PCT	12 or younger	13	14	15	16 or younger	TOTAL
Boy	827	1662	1700	854	1134	6177
	8.15	16.38	16.75	8.42	11.17	60.87
	13.39	26.91	27.52	13.83	18.36	
	47.58	54.82	62.89	74.65	74.07	
Girl	911	1370	1003	290	397	3971
	8.98	13.50	9.88	2.86	3.91	39.13
	22.94	34.50	25.26	7.30	10.00	
	52.42	45.18	37.11	25.35	25.93	
TOTAL	1738	3032	2703	1144	1531	10148
	17.13	29.88	26.64	11.27	15.09	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	4	383.315	0.000
LIKELIHOOD RATIO CHI-SQUARE	4	391.127	0.000
MANTEL-HAENSZEL CHI-SQUARE	1	365.690	0.000
PHI		0.194	
CONTINGENCY COEFFICIENT		0.191	
CRAMER'S V		0.194	

EFFECTIVE SAMPLE SIZE = 10148
FREQUENCY MISSING = 201

TABLE 14

Cross Comparisons on Total Sample Demographics: Relationship of Gender and Grade in School

FREQUENCY / PERCENT / ROW PCT / COL PCT	Sixth	Seventh	Eight	Ninth & beyond	TOTAL
Boy	461	1291	826	3559	6137
	4.58	12.82	8.20	35.33	60.93
	7.51	21.04	13.46	57.99	
	52.27	51.19	56.65	68.30	
Girl	421	1231	632	1652	3936
	4.18	12.22	6.27	16.40	39.07
	10.70	31.28	16.06	41.97	
	47.73	48.81	43.35	31.70	
TOTAL	882	2522	1458	5211	10073
	8.76	25.04	14.47	51.73	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	3	258.339	0.000
LIKELIHOOD RATIO CHI-SQUARE	3	258.657	0.000
MANTEL-HAENSZEL CHI-SQUARE	1	230.080	0.000
PHI		0.160	
CONTINGENCY COEFFICIENT		0.158	
CRAMER'S V		0.160	

EFFECTIVE SAMPLE SIZE = 10073
FREQUENCY MISSING = 276

TABLE 15

Cross Comparisons on Total Sample Demographics: Relationship of Gender and "If your father has a job, indicate to what extent it has to do with technology"

FREQUENCY / PERCENT / ROW PCT / COL PCT	Very Much	Much	Little	Nothing	TOTAL
Boy	1701	2029	1610	719	6059
	17.18	20.49	16.26	7.26	61.19
	28.07	33.49	26.57	11.87	
	63.88	62.60	60.44	53.90	
Girl	962	1212	1054	615	3843
	9.72	12.24	10.64	6.21	38.81
	25.03	31.54	27.43	16.00	
	36.12	37.40	39.56	46.10	
TOTAL	2663	3241	2664	1334	9902
	26.89	32.73	26.90	13.47	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	3	41.323	0.000
LIKELIHOOD RATIO CHI-SQUARE	3	40.850	0.000
MANTEL-HAENSZEL CHI-SQUARE	1	34.672	0.000
PHI		0.065	
CONTINGENCY COEFFICIENT		0.064	
CRAMER'S V		0.065	

EFFECTIVE SAMPLE SIZE = 9902
FREQUENCY MISSING = 447

TABLE 16

Cross Comparisons on Total Sample Demographics: Relationship of Gender and "If your mother has a job, indicate to what extent it has to do with technology"

FREQUENCY / PERCENT / ROW PCT / COL PCT	Very Much	Much	Little	Nothing	TOTAL
Boy	773	1256	1968	1913	5910
	8.00	12.99	20.36	19.79	61.14
	13.08	21.25	33.30	32.37	
	65.40	65.08	61.10	57.38	
Girl	409	674	1253	1421	3757
	4.23	6.97	12.96	14.70	38.86
	10.89	17.94	33.35	37.82	
	34.60	34.92	38.90	42.62	
TOTAL	1182	1930	3221	3334	9667
	12.23	19.96	33.32	34.49	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	3	41.469	0.000
LIKELIHOOD RATIO CHI-SQUARE	3	41.567	0.000
MANTEL-HAENSZEL CHI-SQUARE	1	38.807	0.000
PHI		0.065	
CONTINGENCY COEFFICIENT		0.065	
CRAMER'S V		0.065	

EFFECTIVE SAMPLE SIZE = 9667
FREQUENCY MISSING = 682

TABLE 17

Cross Comparisons on Total Sample Demographics: Relationship of Gender and "Do you have technical toys, like Tinkertoy, Erector Set or LEGO at home?"

FREQUENCY / PERCENT / ROW PCT / COL PCT	Yes	No	TOTAL
Boy	3865	2356	6221
	37.81	23.05	60.86
	62.13	37.87	
	62.79	57.93	
Girl	2290	1711	4001
	22.40	16.74	39.14
	57.24	42.76	
	37.21	42.07	
TOTAL	6155	4067	10222
	60.21	39.79	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	1	24.330	0.000
LIKELIHOOD RATIO CHI-SQUARE	1	24.270	0.000
CONTINUITY ADJ. CHI-SQUARE	1	24.126	0.000
MANTEL-HAENSZEL CHI-SQUARE	1	24.327	0.000
FISHER'S EXACT TEST (1-TAIL)			0.000
(2-TAIL)			0.000
PHI		0.049	
CONTINGENCY COEFFICIENT		0.049	
CRAMER'S V		0.049	

EFFECTIVE SAMPLE SIZE = 10222
FREQUENCY MISSING = 127

TABLE 18

Cross Comparisons on Total Sample Demographics: Relationship of Gender and "Is there a technical workshop in your home?"

FREQUENCY / PERCENT / ROW PCT / COL PCT	Yes	No	TOTAL
Boy	2184	4030	6214
	21.45	39.59	61.04
	35.15	64.85	
	64.75	59.20	
Girl	1189	2777	3966
	11.68	27.28	38.96
	29.98	70.02	
	35.25	40.80	
TOTAL	3373	6807	10180
	33.13	66.87	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	1	29.168	0.000
LIKELIHOOD RATIO CHI-SQUARE	1	29.364	0.000
CONTINUITY ADJ. CHI-SQUARE	1	28.936	0.000
MANTEL-HAENSZEL CHI-SQUARE	1	29.165	0.000
FISHER'S EXACT TEST (1-TAIL)			0.000
(2-TAIL)			0.000
PHI		0.054	
CONTINGENCY COEFFICIENT		0.053	
CRAMER'S V		0.054	

EFFECTIVE SAMPLE SIZE = 10180
FREQUENCY MISSING = 169

TABLE 19

Cross Comparisons on Total Sample Demographics: Relationship of Gender and "Is there a personal computer in your home?"

FREQUENCY / PERCENT / ROW PCT / COL PCT	Yes	No	TOTAL
Boy	3109	3126	6235
	30.38	30.55	60.92
	49.86	50.14	
	64.80	57.51	
Girl	1689	2310	3999
	16.50	22.57	39.08
	42.24	57.76	
	35.20	42.49	
TOTAL	4798	5436	10234
	46.88	53.12	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	1	56.928	0.000
LIKELIHOOD RATIO CHI-SQUARE	1	57.073	0.000
CONTINUITY ADJ. CHI-SQUARE	1	56.622	0.000
MANTEL-HAENSZEL CHI-SQUARE	1	56.923	0.000
FISHER'S EXACT TEST (1-TAIL)			0.000
(2-TAIL)			0.000
PHI		0.075	
CONTINGENCY COEFFICIENT		0.074	
CRAMER'S V		0.075	

EFFECTIVE SAMPLE SIZE = 10234
FREQUENCY MISSING = 115

TABLE 20

Cross Comparisons on Total Sample Demographics: Relationship of Gender and "Do you think you will choose a technological profession?"

FREQUENCY PERCENT ROW PCT COL PCT	Yes	No	TOTAL
Boy	3639	2483	6122
	36.23	24.72	60.95
	59.44	40.56	
	73.32	48.87	
Girl	1324	2598	3922
	13.18	25.87	39.05
	33.76	66.24	
	26.68	51.13	
TOTAL	4963	5081	10044
	49.41	50.59	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	1	630.824	0.000
LIKELIHOOD RATIO CHI-SQUARE	1	639.656	0.000
CONTINUITY ADJ. CHI-SQUARE	1	629.797	0.000
MANTEL-HAENSZEL CHI-SQUARE	1	630.761	0.000
FISHER'S EXACT TEST (1-TAIL)			0.000
(2-TAIL)			0.000
PHI		0.251	
CONTINGENCY COEFFICIENT		0.243	
CRAMER'S V		0.251	

EFFECTIVE SAMPLE SIZE = 10044
FREQUENCY MISSING = 305

TABLE 21

Cross Comparisons on Total Sample Demographics: Relationship of "If your father has a job, indicate to what extent it has to do with technology" and "Do you have technical toys, like Tinkertoy, Erector Set or LEGO at home?"

FREQUENCY / PERCENT / ROW PCT / COL PCT	Yes	No	TOTAL
Very Much	1717	953	2670
	17.33	9.62	26.95
	64.31	35.69	
	28.66	24.33	
Much	1986	1254	3240
	20.05	12.66	32.70
	61.30	38.70	
	33.16	32.01	
Little	1595	1066	2661
	16.10	10.76	26.86
	59.94	40.06	
	26.63	27.21	
Nothing	692	644	1336
	6.98	6.50	13.49
	51.80	48.20	
	11.55	16.44	
TOTAL	5990	3917	9907
	60.46	39.54	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	3	59.727	0.000
LIKELIHOOD RATIO CHI-SQUARE	3	59.116	0.000
MANTEL-HAENSZEL CHI-SQUARE	1	50.895	0.000
PHI		0.078	
CONTINGENCY COEFFICIENT		0.077	
CRAMER'S V		0.078	

EFFECTIVE SAMPLE SIZE = 9907
FREQUENCY MISSING = 442

TABLE 22

Cross Comparisons on Total Sample Demographics: Relationship of "If your father has a job, indicate to what extent it has to do with technology" and "Is there a technical workshop in your home?"

FREQUENCY / PERCENT / ROW PCT / COL PCT	Yes	No	TOTAL
Very Much	1197	1460	2657
	12.12	14.78	26.91
	45.05	54.95	
	36.23	22.22	
Much	1150	2083	3233
	11.65	21.09	32.74
	35.57	64.43	
	34.81	31.70	
Little	683	1970	2653
	6.92	19.95	26.87
	25.74	74.26	
	20.67	29.98	
Nothing	274	1058	1332
	2.77	10.71	13.49
	20.57	79.43	
	8.29	16.10	
TOTAL	3304	6571	9875
	33.46	66.54	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	3	337.136	0.000
LIKELIHOOD RATIO CHI-SQUARE	3	341.863	0.000
MANTEL-HAENSZEL CHI-SQUARE	1	331.679	0.000
PHI		0.185	
CONTINGENCY COEFFICIENT		0.182	
CRAMER'S V		0.185	

EFFECTIVE SAMPLE SIZE = 9875
FREQUENCY MISSING = 474

TABLE 23

Cross Comparisons on Total Sample Demographics: Relationship of "If your father has a job, indicate to what extent it has to do with technology" and "Is there a personal computer in your home?"

FREQUENCY / PERCENT / ROW PCT / COL PCT	Yes	No	TOTAL
Very Much	1465	1203	2668
	14.77	12.13	26.90
	54.91	45.09	
	31.15	23.06	
Much	1534	1714	3248
	15.47	17.28	32.75
	47.23	52.77	
	32.62	32.86	
Little	1180	1489	2669
	11.90	15.01	26.91
	44.21	55.79	
	25.09	28.55	
Nothing	524	810	1334
	5.28	8.17	13.45
	39.28	60.72	
	11.14	15.53	
TOTAL	4703	5216	9919
	47.41	52.59	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	3	106.548	0.000
LIKELIHOOD RATIO CHI-SQUARE	3	106.856	0.000
MANTEL-HAENSZEL CHI-SQUARE	1	101.715	0.000
PHI		0.104	
CONTINGENCY COEFFICIENT		0.103	
CRAMER'S V		0.104	

EFFECTIVE SAMPLE SIZE = 9919
FREQUENCY MISSING = 430

TABLE 24

Cross Comparisons on Total Sample Demographics: Relationship of "If your mother has a job, indicate to what extent it has to do with technology" and "Do you have technical toys, like Tinkertoy, Erector Set or LEGO at home?"

FREQUENCY / PERCENT / ROW PCT / COL PCT	Yes	No	TOTAL
Very Much	697	491	1188
	7.20	5.07	12.28
	58.67	41.33	
	12.03	12.65	
Much	1185	741	1926
	12.25	7.66	19.90
	61.53	38.47	
	20.45	19.09	
Little	1993	1233	3226
	20.60	12.74	33.34
	61.78	38.22	
	34.39	31.76	
Nothing	1920	1417	3337
	19.84	14.64	34.48
	57.54	42.46	
	33.13	36.50	
TOTAL	5795	3882	9677
	59.88	40.12	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	3	15.369	0.002
LIKELIHOOD RATIO CHI-SQUARE	3	15.357	0.002
MANTEL-HAENSZEL CHI-SQUARE	1	2.761	0.097
PHI		0.040	
CONTINGENCY COEFFICIENT		0.040	
CRAMER'S V		0.040	

EFFECTIVE SAMPLE SIZE = 9677
FREQUENCY MISSING = 672

TABLE 25

Cross Comparisons on Total Sample Demographics: Relationship of "If your mother has a job, indicate to what extent it has to do with technology" and "Is there a technical workshop in your home?"

FREQUENCY / PERCENT / ROW PCT / COL PCT	Yes	No	TOTAL
Very Much	435	747	1182
	4.51	7.74	12.26
	36.80	63.20	
	13.60	11.59	
Much	679	1242	1921
	7.04	12.88	19.92
	35.35	64.65	
	21.23	19.26	
Little	1161	2056	3217
	12.04	21.32	33.35
	36.09	63.91	
	36.30	31.89	
Nothing	923	2402	3325
	9.57	24.90	34.47
	27.76	72.24	
	28.86	37.26	
TOTAL	3198	6447	9645
	33.16	66.84	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	3	67.430	0.000
LIKELIHOOD RATIO CHI-SQUARE	3	68.446	0.000
MANTEL-HAENSZEL CHI-SQUARE	1	43.238	0.000
PHI		0.084	
CONTINGENCY COEFFICIENT		0.083	
CRAMER'S V		0.084	

EFFECTIVE SAMPLE SIZE = 9645
FREQUENCY MISSING = 704

TABLE 26

Cross Comparisons on Total Sample Demographics: Relationship of "If your mother has a job, indicate to what extent it has to do with technology" and "Is there a personal computer in your home?"

FREQUENCY / PERCENT / ROW PCT / COL PCT	Yes	No	TOTAL
Very Much	589	599	1188
	6.08	6.18	12.27
	49.58	50.42	
	12.99	11.63	
Much	958	973	1931
	9.89	10.05	19.94
	49.61	50.39	
	21.12	18.89	
Little	1561	1668	3229
	16.12	17.22	33.34
	48.34	51.66	
	34.41	32.39	
Nothing	1428	1910	3338
	14.74	19.72	34.46
	42.78	57.22	
	31.48	37.09	
TOTAL	4536	5150	9686
	46.83	53.17	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	3	34.563	0.000
LIKELIHOOD RATIO CHI-SQUARE	3	34.643	0.000
MANTEL-HAENSZEL CHI-SQUARE	1	26.150	0.000
PHI		0.060	
CONTINGENCY COEFFICIENT		0.060	
CRAMER'S V		0.060	

EFFECTIVE SAMPLE SIZE = 9686
FREQUENCY MISSING = 663

TABLE 27

Cross Comparisons on Total Sample Demographics: Relationship of "Are you taking or have you taken Technology Education/Industrial Arts?" and Gender

FREQUENCY | PERCENT | ROW PCT | COL PCT	Boy	Girl	TOTAL
Yes	5094	2695	7789
	50.21	26.56	76.78
	65.40	34.60	
	82.44	67.95	
No	1085	1271	2356
	10.69	12.53	23.22
	46.05	53.95	
	17.56	32.05	
TOTAL	6179	3966	10145
	60.91	39.09	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	1	284.367	0.000
LIKELIHOOD RATIO CHI-SQUARE	1	279.097	0.000
CONTINUITY ADJ. CHI-SQUARE	1	283.555	0.000
MANTEL-HAENSZEL CHI-SQUARE	1	284.339	0.000
FISHER'S EXACT TEST (1-TAIL)			0.000
(2-TAIL)			0.000
PHI		0.167	
CONTINGENCY COEFFICIENT		0.165	
CRAMER'S V		0.167	

EFFECTIVE SAMPLE SIZE = 10145
FREQUENCY MISSING = 204

TABLE 28

Cross Comparisons on Total Sample Demographics: Relationship of "Are you taking or have you taken Technology Education/Industrial Arts?" and "If your father has a job, indicate to what extent it has to do with technology"

FREQUENCY / PERCENT / ROW PCT / COL PCT	Very Much	Much	Little	Nothing	TOTAL
Yes	2112	2511	1984	942	7549
	21.48	25.53	20.17	9.58	76.76
	27.98	33.26	26.28	12.48	
	79.73	78.01	75.04	71.26	
No	537	708	660	380	2285
	5.46	7.20	6.71	3.86	23.24
	23.50	30.98	28.88	16.63	
	20.27	21.99	24.96	28.74	
TOTAL	2649	3219	2644	1322	9834
	26.94	32.73	26.89	13.44	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	3	42.736	0.000
LIKELIHOOD RATIO CHI-SQUARE	3	42.023	0.000
MANTEL-HAENSZEL CHI-SQUARE	1	41.335	0.000
PHI		0.066	
CONTINGENCY COEFFICIENT		0.066	
CRAMER'S V		0.066	

EFFECTIVE SAMPLE SIZE = 9834
FREQUENCY MISSING = 515

TABLE 29

Cross Comparisons on Total Sample Demographics: Relationship of "Are you taking or have you taken Technology Education/Industrial Arts?" and "If your mother has a job, indicate to what extent it has to do with technology"

FREQUENCY / PERCENT / ROW PCT / COL PCT	Very Much	Much	Little	Nothing	TOTAL
Yes	907	1505	2509	2471	7392
	9.44	15.67	26.13	25.73	76.98
	12.27	20.36	33.94	33.43	
	77.32	78.30	78.38	74.72	
No	266	417	692	836	2211
	2.77	4.34	7.21	8.71	23.02
	12.03	18.86	31.30	37.81	
	22.68	21.70	21.62	25.28	
TOTAL	1173	1922	3201	3307	9603
	12.21	20.01	33.33	34.44	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	3	15.055	0.002
LIKELIHOOD RATIO CHI-SQUARE	3	14.929	0.002
MANTEL-HAENSZEL CHI-SQUARE	1	6.730	0.009
PHI		0.040	
CONTINGENCY COEFFICIENT		0.040	
CRAMER'S V		0.040	

EFFECTIVE SAMPLE SIZE = 9603
FREQUENCY MISSING = 746

TABLE 30

Cross Comparisons on Total Sample Demographics: Relationship of "Are you taking or have you taken Technology Education/Industrial Arts?" and "Do you have technical toys, like Tinkertoy, Erector Set or LEGO at home?"

FREQUENCY / PERCENT / ROW PCT / COL PCT	Yes	No	TOTAL
Yes	4767	3015	7782
	46.97	29.70	76.67
	61.26	38.74	
	77.90	74.80	
No	1352	1016	2368
	13.32	10.01	23.33
	57.09	42.91	
	22.10	25.20	
TOTAL	6119	4031	10150
	60.29	39.71	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	1	13.137	0.000
LIKELIHOOD RATIO CHI-SQUARE	1	13.061	0.000
CONTINUITY ADJ. CHI-SQUARE	1	12.963	0.000
MANTEL-HAENSZEL CHI-SQUARE	1	13.135	0.000
FISHER'S EXACT TEST (1-TAIL)			0.000
(2-TAIL)			0.000
PHI		0.036	
CONTINGENCY COEFFICIENT		0.036	
CRAMER'S V		0.036	

EFFECTIVE SAMPLE SIZE = 10150
FREQUENCY MISSING = 199

TABLE 31

Cross Comparisons on Total Sample Demographics: Relationship of "Are you taking or have you taken Technology Education/Industrial Arts?" and "Is there a technical workshop in your home?"

FREQUENCY / PERCENT / ROW PCT / COL PCT	Yes	No	TOTAL
Yes	2737	5022	7759
	27.08	49.68	76.76
	35.28	64.72	
	81.63	74.34	
No	616	1733	2349
	6.09	17.14	23.24
	26.22	73.78	
	18.37	25.66	
TOTAL	3353	6755	10108
	33.17	66.83	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	1	66.636	0.000
LIKELIHOOD RATIO CHI-SQUARE	1	68.593	0.000
CONTINUITY ADJ. CHI-SQUARE	1	66.229	0.000
MANTEL-HAENSZEL CHI-SQUARE	1	66.630	0.000
FISHER'S EXACT TEST (1-TAIL)			0.000
(2-TAIL)			0.000
PHI		0.081	
CONTINGENCY COEFFICIENT		0.081	
CRAMER'S V		0.081	

EFFECTIVE SAMPLE SIZE = 10108
FREQUENCY MISSING = 241

TABLE 32

Cross Comparisons on Total Sample Demographics: Relationship of "Are you taking or have you taken Technology Education/Industrial Arts?" and "Is there a personal computer in your home?"

FREQUENCY PERCENT ROW PCT COL PCT	Yes	No	TOTAL
Yes	3745 36.85 48.01 78.59	4055 39.90 51.99 75.11	7800 76.74
No	1020 10.04 43.15 21.41	1344 13.22 56.85 24.89	2364 23.26
TOTAL	4765 46.88	5399 53.12	10164 100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	1	17.247	0.000
LIKELIHOOD RATIO CHI-SQUARE	1	17.297	0.000
CONTINUITY ADJ. CHI-SQUARE	1	17.052	0.000
MANTEL-HAENSZEL CHI-SQUARE	1	17.245	0.000
FISHER'S EXACT TEST (1-TAIL)			0.000
(2-TAIL)			0.000
PHI		0.041	
CONTINGENCY COEFFICIENT		0.041	
CRAMER'S V		0.041	

EFFECTIVE SAMPLE SIZE = 10164
FREQUENCY MISSING = 185

EFFECT OF DEMOGRAPHIC CHARACTERISTICS ON ATTITUDES AND CONCEPTS ABOUT TECHNOLOGY

As previously stated, the original instrument used in the Netherlands consisted of six attitude scales: (1) Interest in Technology, (2) Technology as an Activity for Both Girls and Boys, (3) Consequences of Technology in Society, (4) Technology in the School Curriculum, (5) Technology in the School Curriculum, and (6) Ideas about Technological Professions, and four concept scales: (1) Relationship between Technology and Human Beings and Society, (2) Relationship between Technology and Science, (3) Skills in Technology, and (4) Raw Materials or 'Pillars' of Technology.

In order to validate the a prior groupings of the attitude and concept scales and to reduce the 58 attitude and 71 concept questions into meaningful scales, two principal components factor analyses with varimax rotations were computed, one on the attitude items (Items 12-69) and one on the concept items (Items 70-100). The results of the factor analysis on the attitude items yielded five factors, (1) General Interest in Technology, (2) Attitude Toward Technology, (3) Technology as an Activity for Both Girls and Boys, (4) Consequences of Technology, and (5) Technology is Difficult. The high loading questions for each factor follow. (**Note:** All negative items, which are flagged by '*', were

recoded to have values which are consistent with the other items within a factor.)

1. General Interest in Technology (Low scores indicate greater interest)

   - 12. When something new is discovered, I want to know more about it immediately.
   - 16. At school you hear a lot about technology.
   - 17. I will probably choose a job in technology.
   - 18. I would like to know more about computers.
   - 23. I like to read technological magazines.
   - 28.* I will not consider a job in technology.
   - 34. If there was a school club about technology I would certainly join it.
   - 38. Technology at home is something schools should teach about.
   - 39. I would enjoy a job in technology.
   - 44. I should be able to take technology as a school subject.
   - 45. I would like a career in technology later on.
   - 50. There should be more education about technology.
   - 52. I enjoy repairing things at home.
   - 56. Technology as a subject should be taken by all pupils.
   - 63. Working in technology would be interesting.
   - 69. With a technological job your future is promised.

2. Attitude Toward Technology (High scores indicate positive attitudes)

- 29. There should be less TV and radio programs about technology.
- 33. I do not understand why anyone would want a job in technology.
- 48. Using technology makes a country less prosperous.
- 54. Technology causes large unemployment.
- 55. Technology does not need a lot of mathematics.
- 58. I think machines are boring.
- 60. Because technology causes pollution, we should use less of it.
- 64. A technological hobby is boring.

3. Technology as an Activity for Both Girls and Boys (Low scores indicate that technology is for both)
   - 13. Technology is as difficult for boys as it is for girls.
   - 19. A girl can very well have a technological job.
   - 24. A girl can become a car mechanic.
   - 30.* Boys are able to do practical things better than girls.
   - 35. Girls are able to operate a computer.
   - 41.* Boys know more about technology than girls do.
   - 47.* Boys are more capable of doing technological jobs than girls.
   - 53. More girls should work in technology.
4. Consequences of Technology (Low scores indicate positive consequences.)
   - 14. Technology is good for the future of the country.

- 20. Technology makes everything work better.
- 25. Technology is very important in life.
- 31. Everyone needs technology.
- 36. Technology has brought more good things than bad.

5. Technology is Difficult (Low scores indicate that technology is perceived as being difficult.)
   - 15. To understand something of technology you have to take a difficult training course.
   - 21. You have to be smart to study technology.
   - 26. Technology is only for smart people.
   - 43. To study technology you have to be talented.
   - 49. You can study technology only when you are good at both mathematics and science.

The principal components factor analysis on the concept items resulted in one factor. All items were recoded such that a '1' reflected knowledge about technology and a '0' was misinformation or no knowledge about technology. (e.g., For Item 73. 'I think technology has little to do with our energy problem', responses of "agree" or "don't know" were assigned the value of '0' and a "disagree" was assigned the value of '1'.) The one factor's items pertain to general knowledge about technology. All but four concept items loaded on the factor. Those four items did not contribute to the scale or define a second scale. The four items <u>not</u> included in the scale are as follows:

- 70. When I think of technology I mostly think of computers.
- 74. When I think of technology, I mostly think of equipment.
- 81. You need not be technological to invent a new piece of equipment.
- 98. When I think of technology I mainly think of working with wood.

The items that define the five attitude and one concept factors were then summed to create the five subscores. To determine if the demographic characteristics have any effect on attitudes/concepts toward technology, analyses of variance (ANOVA's) and independent t-tests were conducted. A complete listing of the ANOVA's and t-tests may be viewed in Appendix B. The results of those analyses follow. Please note that for this study **significant** implies that alpha is less than or equal to 0.01.

The gender of the respondents had a significant effect on all attitude subscales. Boys (mean=2.51) indicated a greater interest in technology than girls (mean=2.98), and boys (mean=2.04) rated technology as having a more positive consequence than did the girls (mean=2.12). It is interesting to note that even though the boys (mean=3.39) exhibited a more positive attitude toward technology than do the girls (mean=3.33) the males also perceive technology as being more difficult. The girls (mean = 1.66) view technology as being

an activity for both boys and girls to a greater extent than do the boys (mean = 2.28). In addition there is a significant difference between boys and girls on their knowledge about technology, i.e., boys appear to be more knowledgeable.

The general interest in technology of high school students was significantly greater than that of those in the lower grades. There was no direct linear relationship between grade level and the view that technology is an activity for boys and girls; however, the sixth and seventh graders agreed with that point of view significantly more than the eight and more advanced students. Ninth and beyond students view technology as being significantly more difficult than sixth or seventh graders. Sixth graders responses to the consequences of technology were significantly more "negative" than the other grade levels. No differences attributed to the grade level of the respondents were found on their general attitudes toward technology. Students in the eighth grade and ninth and beyond grades scored significantly higher on the concept factor, Knowledge about Technology, than students in the sixth and seventh grades.

The extent that a student's father was reported as having a job dealing with technology was significantly related to four of the attitude subscores, General Interest in Technology, Attitude Toward Technology, Technology as an Activity

for Both Girls and Boys, and Consequences of Technology. Students who indicated that their fathers had job dealing with "very much" technology rated their general interest significantly higher than the other students; those reporting "much" were significantly higher in general interest than those reporting "little" or "nothing". Even those students whose fathers' jobs have "little" to do with technology rated their interest in technology significantly greater than those whose fathers' jobs have "nothing" to do with technology. Pertaining to Attitude Toward Technology, Those students whose fathers have jobs dealing with "very much" or "much" technology have a significantly better attitude than those whose fathers' jobs have "little" or "nothing" to do with technology. There was also a significant difference in attitude between those whose fathers have jobs which have "little" to do with technology versus those whose fathers have jobs which have "nothing" to do with technology. The differences attributed to the technological nature of a father's profession on the attitude scale, Technology as an Activity for Both Girls and Boys, were not linear, i.e., those students reporting "little" or "much" view technology as an activity for both sexes significantly more than students who reported "nothing". Students with fathers who have jobs that deal to some extent with technology had a more

positive view on the consequences of technology than did the students whose fathers' jobs had nothing to do with technology. The more technology represented in the fathers jobs corresponded to a greater knowledge about technology. Students whose fathers have jobs that deal to some extent ("very much" to "little") with technology scored significantly higher on the concept factor, Knowledge about Technology than those whose fathers have jobs with "nothing" to do with technology. The students who responded "little" also have significantly more knowledge than those who responded "nothing" to the extent their fathers have technological jobs.

The amount that students' mothers had jobs which deal with technology was significantly related to four of the five attitude subscores. Regarding the general interest subscale, the results were the same as those pertaining to father's profession, i.e., it is a direct linear relationship with significance between each level of response. If the mothers' jobs had anything to do with technology, then their children had a significantly better attitude toward technology than those whose jobs had "nothing" to do with technology. For situations in which the mothers' jobs had "nothing" to do with technology, the students viewed the consequences of technology in a significantly more negative light than the other students. Results pertaining to the subscore, Tech-

nology is an Activity for both Girls and Boys are not as clear. That is, the significance difference is between those reporting "much" or "little" and those reporting "nothing". The former group view technology for all regardless of sex to a significantly greater extent than the latter group. The technological vent of mothers' professions also had a non-linear effect on childrens knowledge about technology. Those reporting "little" or "much" had significantly higher "scores" than those reporting "very much" or "nothing"; those whose mothers have jobs dealing "very much" with technology scored higher than only one group, those reporting "nothing".

The existence of technical toys in the home had a significantly positive impact on all attitude scales. Having technical toys at home also had a significant effect on the knowledge about technology that students have.

Having a technical workshop in the home does not appear to have the effect that having technical toys does. Students who come from homes equipped with technical workshops have more general interest in technology, a better general attitude toward technology, and a greater positive view on the consequences of technology. Similarly to the results pertaining to technical toys, students living in homes with technical workshops scored higher on the concept scale than did the other students.

Having a personal computer in the home had a significant positive effect on three attitude subscales, General Interest in Technology, Attitude Toward Technology, and Consequences of Technology. However, those having personal computers viewed technology as being significantly more difficult than those who did not have home computers. This contrasts with the finding that students with personal computers scored significantly higher on the concept, Knowledge of Technology, than the other students.

Students who think they will choose a technological profession were significantly more likely to have a greater general interest in technology, a more positive attitude toward technology, a better view of the consequences of technology, and greater knowledge about technology than those shying away from a technological profession.

Taking or having taken Technology Education/Industrial Arts made a significant difference on all attitude scales, as well as the concept scale. The effect was positive with the exception to the attitude scale, Technology is an Activity for Both Girls and Boys. On that scale those who had not taken the classes viewed technology as an activity for both sexes to a significantly greater extent than those who had taken the classes. Students who took such classes displayed

greater knowledge about technology than did students who had no exposure to the classes.

APPENDIX A

Survey Instrument

Printed in U.S.A. NCS Trans-Optic® MP18-28215-321 A2403

PUPILS' ATTITUDE TOWARDS TECHNOLOGY

Developed by: Virginia Tech - Technology Education and Eindhoven University, The Netherlands

We are interested in your opinion on technology. Therefore, we would like you to answer some questions on this subject. This is not a test. There are no right or wrong answers. You are not to be graded on this. Do not take too much time for one question. You should only need about 25 minutes for the whole questionnaire. The first set of questions are about you so we can get to know you better. These are followed by statements about technology. Indicate to what extent you agree or disagree with them. In the last set of statements you only have to indicate agree, disagree or don't know.

Please give a short description of what you think technology is:

WRITE ONLY INSIDE THIS BLOCK

USE NO 2 PENCIL ONLY

WRONG 1 (A) (TA) (N) (TD) (D)
WRONG 2 (A) (TA) (N) (TD) (D)
WRONG 3 (A) (TA) (N) (TD) (D)
RIGHT 4 (A) (N) (TD) (D)

1. Are you a boy or a girl? ..... 1. (B) Boy (G) Girl
2. How old are you? ..... 2. (12) or younger (13) (14) (15) (16) or older
3. What is your grade in school? 3. (6) (7) (8)

	Very Much	Much	Little	Nothing
4. If your father has a job, indicate to what extent it has to do with technology. .... 4.	(VM)	(M)	(L)	(N)
5. If your mother has a job, indicate to what extent it has to do with technology.... 5.	(VM)	(M)	(L)	(N)

6. Do you have technical toys, like Tinkertoy, Erector Set or LEGO at home? ..... 6.	(Y) Yes	(N) No
7. Is there a technical workshop in your home? ..... 7.	(Y) Yes	(N) No
8. Is there a personal computer in your home? ..... 8.	(Y) Yes	(N) No
9. Do you think you will choose a technological profession? ..... 9.	(Y) Yes	(N) No
10. Do you have brothers or sisters that have a technological profession or that are studying for it? ..... 10.	(Y) Yes	(N) No
11. Are you taking or have you taken Technology Education/Industrial Arts? ..... 11.	(Y) Yes	(N) No

	AGREE	TEND TO AGREE	NEUTRAL	TEND TO DISAGREE	DISAGREE
12. When something new is discovered, I want to know more about it immediately..... 12.	(A)	(TA)	(N)	(TD)	(D)
13. Technology is as difficult for boys as it is for girls. ..... 13.	(A)	(TA)	(N)	(TD)	(D)
14. Technology is good for the future of this country. ..... 14.	(A)	(TA)	(N)	(TD)	(D)
15. To understand something of technology you have to take a difficult training course. ..... 15.	(A)	(TA)	(N)	(TD)	(D)
16. At school you hear a lot about technology. ..... 16.	(A)	(TA)	(N)	(TD)	(D)
17. I will probably choose a job in technology. ..... 17.	(A)	(TA)	(N)	(TD)	(D)
18. I would like to know more about computers. ..... 18.	(A)	(TA)	(N)	(TD)	(D)
19. A girl can very well have a technological job. ..... 19.	(A)	(TA)	(N)	(TD)	(D)
20. Technology makes everything work better. ..... 20.	(A)	(TA)	(N)	(TD)	(D)
21. You have to be smart to study technology. ..... 21.	(A)	(TA)	(N)	(TD)	(D)
22. I would not like to learn more about technology at school. ..... 22.	(A)	(TA)	(N)	(TD)	(D)
23. I like to read technological magazines. ..... 23.	(A)	(TA)	(N)	(TD)	(D)
24. A girl can become a car mechanic. ..... 24.	(A)	(TA)	(N)	(TD)	(D)
25. Technology is very important in life. ..... 25.	(A)	(TA)	(N)	(TD)	(D)
26. Technology is only for smart people. ..... 26.	(A)	(TA)	(N)	(TD)	(D)
27. Technology lessons are important. ..... 27.	(A)	(TA)	(N)	(TD)	(D)
28. I will not consider a job in technology. ..... 28.	(A)	(TA)	(N)	(TD)	(D)
29. There should be less TV and radio programs about technology. ..... 29.	(A)	(TA)	(N)	(TD)	(D)
30. Boys are able to do practical things better than girls. ..... 30.	(A)	(TA)	(N)	(TD)	(D)
31. Everyone needs technology. ..... 31.	(A)	(TA)	(N)	(TD)	(D)
32. I would rather not have technology lessons at school. ..... 32.	(A)	(TA)	(N)	(TD)	(D)
33. I do not understand why anyone would want a job in technology. ..... 33.	(A)	(TA)	(N)	(TD)	(D)
34. If there was a school club about technology I would certainly join it. ..... 34.	(A)	(TA)	(N)	(TD)	(D)
35. Girls are able to operate a computer. ..... 35.	(A)	(TA)	(N)	(TD)	(D)
36. Technology has brought more good things than bad. ..... 36.	(A)	(TA)	(N)	(TD)	(D)
37. You have to be strong for most technological jobs. ..... 37.	(A)	(TA)	(N)	(TD)	(D)
38. Technology at home is something schools should teach about. ..... 38.	(A)	(TA)	(N)	(TD)	(D)
39. I would enjoy a job in technology. ..... 39.	(A)	(TA)	(N)	(TD)	(D)
40. I think visiting a factory is boring. ..... 40.	(A)	(TA)	(N)	(TD)	(D)
41. Boys know more about technology than girls do. ..... 41.	(A)	(TA)	(N)	(TD)	(D)
42. The world would be a better place without technology. ..... 42.	(A)	(TA)	(N)	(TD)	(D)

Over Please

43.	To study technology you have to be talented.	43.	A	TA	N	TD	D
44.	I should be able to take technology as a school subject.	44.	A	TA	N	TD	D
45.	I would like a career in technology later on.	45.	A	TA	N	TD	D
46.	I am not interested in technology.	46.	A	TA	N	TD	D
47.	Boys are more capable of doing technological jobs than girls.	47.	A	TA	N	TD	D
48.	Using technology makes a country less prosperous.	48.	A	TA	N	TD	D
49.	You can study technology only when you are good at both mathematics and science.	49.	A	TA	N	TD	D
50.	There should be more education about technology.	50.	A	TA	N	TD	D
51.	Working in technology would be boring.	51.	A	TA	N	TD	D
52.	I enjoy repairing things at home.	52.	A	TA	N	TD	D
53.	More girls should work in technology.	53.	A	TA	N	TD	D
54.	Technology causes large unemployment.	54.	A	TA	N	TD	D
55.	Technology does not need a lot of mathematics.	55.	A	TA	N	TD	D
56.	Technology as a subject should be taken by all pupils.	56.	A	TA	N	TD	D
57.	Most jobs in technology are boring.	57.	A	TA	N	TD	D
58.	I think machines are boring	58.	A	TA	N	TD	D
59.	Girls prefer not to go to a technical school.	59.	A	TA	N	TD	D
60.	Because technology causes pollution, we should use less of it.	60.	A	TA	N	TD	D
61.	Everybody can study technology.	61.	A	TA	N	TD	D
62.	Technology lessons help to train you for a good job.	62.	A	TA	N	TD	D
63.	Working in technology would be interesting.	63.	A	TA	N	TD	D
64.	A technological hobby is boring.	64.	A	TA	N	TD	D
65.	Girls think technology is boring.	65.	A	TA	N	TD	D
66.	Technology is the subject of the future.	66.	A	TA	N	TD	D
67.	Everybody can have a technological job.	67.	A	TA	N	TD	D
68.	Not everyone needs technology lessons at school.	68.	A	TA	N	TD	D
69.	With a technological job your future is promised.	69.	A	TA	N	TD	D

FROM NOW ON YOU ONLY HAVE THREE CHOICES:

		AGREE	DISAGREE	DON'T KNOW
70.	When I think of technology I mostly think of computers.	70. A	D	DK
71.	I think science and technology are related.	71. A	D	DK
72.	In technology, you can seldom use your imagination.	72. A	D	DK
73.	I think technology has little to do with our energy problem.	73. A	D	DK
74.	When I think of technology, I mostly think of equipment.	74. A	D	DK
75.	To me technology and science are the same.	75. A	D	DK
76.	In my opinion, technology is not very old.	76. A	D	DK
77.	In technology, you can think up new things.	77. A	D	DK
78.	Working with information is an important part of technology.	78. A	D	DK
79.	Technology is as old as humans.	79. A	D	DK
80.	Elements of science are seldom used in technology.	80. A	D	DK
81.	You need not be technological to invent a new piece of equipment.	81. A	D	DK
82.	Technology has a large influence on people.	82. A	D	DK
83.	I think technology is often used in science.	83. A	D	DK
84.	Working with your hands is part of technology.	84. A	D	DK
85.	In everyday life, I have a lot to do with technology.	85. A	D	DK
86.	In technology, there is little opportunity to think up things yourself.	86. A	D	DK
87.	Science and technology have nothing in common.	87. A	D	DK
88.	The government can have influence on technology.	88. A	D	DK
89.	I think the conversion of energy is also part of technology.	89. A	D	DK
90.	In technology, you use tools.	90. A	D	DK
91.	Technology is meant to make our life more comfortable.	91. A	D	DK
92.	When I think of technology, I mainly think of computer programs.	92. A	D	DK
93.	Only technicians are in charge of technology.	93. A	D	DK
94.	Technology has always to do with mass production.	94. A	D	DK
95.	In technology, there are less opportunities to do things with your hands.	95. A	D	DK
96.	Working with materials is an important part of technology.	96. A	D	DK
97.	Technology has little to do with daily life.	97. A	D	DK
98.	When I think of technology I mainly think of working with wood.	98. A	D	DK
99.	Technology can mainly be found in industry.	99. A	D	DK
100.	There is a relationship between technology and science.	100. A	D	DK

APPENDIX B

Analysis of Variance and T Tests

TTEST PROCEDURE

VARIABLE: GENR General Interest in Technology

Q1	N	MEAN	STD DEV	STD ERROR
Boy	6256	2.50671286	0.70522895	0.00891624
Girl	4013	2.98490592	0.72905322	0.01150866

VARIANCES	T	DF	PROB > |T|
UNEQUAL	-32.8464	8345.2	0.0001
EQUAL	-33.0856	10267.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.07 WITH 4012 AND 6255 DF
PROB > F'= 0.0198

VARIABLE: NEGA Negative Attitude

Q1	N	MEAN	STD DEV	STD ERROR
Boy	6254	3.38910481	0.74366820	0.00940373
Girl	4011	3.32895886	0.66416505	0.01048696

VARIANCES	T	DF	PROB > |T|
UNEQUAL	4.2700	9226.0	0.0001
EQUAL	4.1662	10263.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.25 WITH 6253 AND 4010 DF
PROB > F'= 0.0001

VARIABLE: GEND Gender Differences

Q1	N	MEAN	STD DEV	STD ERROR
Boy	6256	2.28210841	0.78686398	0.00994836
Girl	4012	1.66300592	0.60088967	0.00948668

VARIANCES	T	DF	PROB > |T|
UNEQUAL	45.0370	9959.8	0.0001
EQUAL	42.5158	10266.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.71 WITH 6255 AND 4011 DF
PROB > F'= 0.0001

VARIABLE: DIFF Technology is Difficult

Q1	N	MEAN	STD DEV	STD ERROR
Boy	6256	3.33534474	0.86274816	0.01090776
Girl	4012	3.61493021	0.82818247	0.01307512

VARIANCES	T	DF	PROB > |T|
UNEQUAL	-16.4196	8802.7	0.0001
EQUAL	-16.2736	10266.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.09 WITH 6255 AND 4011 DF
PROB > F'= 0.0044

VARIABLE: CONSQ Consequences of Technology

Q1	N	MEAN	STD DEV	STD ERROR
Boy	6256	2.03934356	0.74461052	0.00941414
Girl	4012	2.11901795	0.73599702	0.01161972

VARIANCES	T	DF	PROB > |T|
UNEQUAL	-5.3277	8622.5	0.0001
EQUAL	-5.3142	10266.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.02 WITH 6255 AND 4011 DF
PROB > F'= 0.4176

VARIABLE: KNOW Knowledge about Technology

Q1	N	MEAN	STD DEV	STD ERROR
Boy	6082	15.45511345	6.31534736	0.08097930
Girl	3905	14.73393086	6.13614648	0.09819406

VARIANCES	T	DF	PROB > |T|
UNEQUAL	5.6662	8496.9	0.0001
EQUAL	5.6308	9985.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.06 WITH 6081 AND 3904 DF
PROB > F'= 0.0479

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q2 AGE

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q2	5	12 or younger 13 14 15 16 or older

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 10185 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: GENR General Interest in Technology

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	4	84.10258352	21 02564588	37.73
ERROR	10180	5672.44120358	0.55721426	PR > F
CORRECTED TOTAL	10184	5756.54378710		0.0001

R-SQUARE	C.V.	ROOT MSE	GENR MEAN
0.014610	27.7047	0.74646786	2.69436892

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q2	4	84.10258352	37.73	0.0001

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: GENR
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=10180 MSE=0.557214

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=1791.22

NUMBER OF MEANS	2	3	4	5
CRITICAL RANGE	0.0495506	0.0521055	0.0537495	0.0549846

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q2
A	2.79891	1743	12 or younger
A			
A	2.75550	3046	13
B	2.69682	2708	14
C	2.58060	1149	15
C			
C	2.53562	1539	16 or older

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q2 AGE

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q2	5	12 or younger 13 14 15 16 or older

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 10181 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: NEGA Negative Attitude

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	4	10.33647837	2.58411959	5.08
ERROR	10176	5175.19293300	0.50856849	PR > F
CORRECTED TOTAL	10180	5185.52941137		0.0004

R-SQUARE	C.V.	ROOT MSE	NEGA MEAN
0.001993	21.1908	0.71313988	3.36533357

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q2	4	10.33647837	5.08	0.0004

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: NEGA
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=10176 MSE=0.508568

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=1790.49

NUMBER OF MEANS	2	3	4	5
CRITICAL RANGE	0.047348	0.0497893	0.0513602	0.0525404

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q2
A	3.43742	1539	16 or older
B	3.37139	1743	12 or younger
B			
B	3.35616	1148	15
B			
B	3.34849	3045	13
B			
B	3.34328	2706	14

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q2 AGE

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q2	5	12 or younger 13 14 15 16 or older

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 10184 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: GEND Gender Differences

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	4	83.86639419	20.96659855	34.76
ERROR	10179	6140.12344022	0.60321480	PR > F
CORRECTED TOTAL	10183	6223.98983441		0.0001

R-SQUARE	C.V.	ROOT MSE	GEND MEAN
0.013475	38.0526	0.77666904	2.04104057

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q2	4	83.86639419	34.76	0.0001

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: GEND
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=10179 MSE=0.603215

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=1791.01

NUMBER OF MEANS	2	3	4	5
CRITICAL RANGE	0.0515584	0.0542169	0.0559275	0.0572126

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q2
A	2.18547	1149	15
B	2.11724	1539	16 or older
B			
B	2.09417	2708	14
C	1.97679	3046	13
D	1.90820	1742	12 or younger

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q2 AGE

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q2	5	12 or younger 13 14 15 16 or older

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 10182 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: DIFF Technology is Difficult

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	4	41.38720041	10.34680010	14.08
ERROR	10177	7480.07090684	0.73499763	PR > F
CORRECTED TOTAL	10181	7521.45810725		0.0001

R-SQUARE	C.V.	ROOT MSE	DIFF MEAN
0.005503	24.8773	0.85732003	3.44619099

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q2	4	41.38720041	14.08	0.0001

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: DIFF
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=10177 MSE=0.734998

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=1790.59

NUMBER OF MEANS	2	3	4	5
CRITICAL RANGE	0.0569191	0.0598539	0.0617424	0.0631611

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q2
A	3.54997	1740	12 or younger
B	3.47027	3046	13
B			
B	3.43967	2708	14
C	3.35916	1539	16 or older
C			
C	3.35715	1149	15

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q2 AGE

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q2	5	12 or younger 13 14 15 16 or older

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 10184 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: CONSQ Consequences of Technology

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	4	23.06758677	5.76689669	10.48
ERROR	10179	5600.76937053	0.55022786	PR > F
CORRECTED TOTAL	10183	5623.83695730		0.0001

R-SQUARE	C.V.	ROOT MSE	CONSQ MEAN
0.004102	35.7948	0.74177345	2.07229150

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q2	4	23.06758677	10.48	0.0001

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: CONSQ
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=10179 MSE=0.550228

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=1791.01

NUMBER OF MEANS	2	3	4	5
CRITICAL RANGE	0.0492419	0.0517809	0.0534147	0.054642

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q2
A	2.14582	1742	12 or younger
B	2.08246	1149	15
B			
B	2.08025	3046	13
B			
B	2.06429	2708	14
C	1.97980	1539	16 or older

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q2 AGE

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q2	5	12 or younger 13 14 15 16 or older

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q2	5	12 or younger 13 14 15 16 or older

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE
PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER,
ONLY 10184 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: CONSQ Consequences of Technology

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	4	23.06758677	5.76689669	10.48
ERROR	10179	5600.76937053	0.55022786	PR > F
CORRECTED TOTAL	10183	5623.83695730		0.0001

R-SQUARE	C.V.	ROOT MSE	CONSQ MEAN
0.004102	35.7948	0.74177345	2.07229150

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q2	4	23.06758677	10.48	0.0001

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: CONSQ
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE,
NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=10179 MSE=0.550228

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=1791.01

NUMBER OF MEANS	2	3	4	5
CRITICAL RANGE	0.0492419	0.0517809	0.0534147	0.054642

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q2
A	2.14582	1742	12 or younger
B	2.08246	1149	15
B			
B	2.08025	3046	13
B			
B	2.06429	2708	14
C	1.97980	1539	16 or older

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q2 AGE

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q2	5	12 or younger 13 14 15 16 or older

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 9903 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: KNOW Knowledge about Technology

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	4	7272.82223575	1818.20555894	47.32
ERROR	9898	380287.77334135	38.42066815	PR > F
CORRECTED TOTAL	9902	387560.59557710		0.0001

R-SQUARE	C.V.	ROOT MSE	KNOW MEAN
0.018766	40.8878	6.19844078	15.15964859

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q2	4	7272.82223575	47.32	0.0001

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: KNOW
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=9898 MSE=38.4207

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=1738.31

NUMBER OF MEANS	2	3	4	5
CRITICAL RANGE	0.417668	0.439203	0.453061	0.463471

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q2
A	17.1206	1492	16 or older
B	15.0876	2625	14
B			
B	14.9748	1110	15
B			
C B	14.7359	2976	13
C			
C	14.4124	1700	12 or younger

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q3 GRADE

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q3	4	1 2 3 4

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 10108 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: GENR General Interest in Technology

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	3	46.14126327	15.38042109	27.37
ERROR	10104	5678.76378558	0.56203125	PR > F
CORRECTED TOTAL	10107	5724.90504885		0.0001

R-SQUARE	C.V.	ROOT MSE	GENR MEAN
0.008060	27.8283	0.74968744	2.69397647

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q3	3	46.14126327	27.37	0.0001

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: GENR
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=10104 MSE=0.562031

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=1667.77

NUMBER OF MEANS	2	3	4
CRITICAL RANGE	0.0515732	0.0542324	0.0559435

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q3
A	2.77410	886	1
A			
A	2.76256	1462	3
A			
A	2.76084	2536	2
B	2.62873	5224	4

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q3 GRADE

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q3	4	Eight Ninth and beyond Seventh Sixth

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 10104 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: NEGA Negative Attitude

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	3	2.45738948	0.81912983	1.61
ERROR	10100	5144.39795264	0.50934633	PR > F
CORRECTED TOTAL	10103	5146.85534213		0.1852

R-SQUARE	C.V.	ROOT MSE	NEGA MEAN
0.000477	21.2087	0.71368504	3.36506550

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q3	3	2.45738948	1.61	0.1852

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: NEGA
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=10100 MSE=0.509346

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=1667.59

NUMBER OF MEANS	2	3	4
CRITICAL RANGE	0.0490992	0.0516309	0.0532599

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q3
A	3.37819	5221	Ninth and beyond
A			
A	3.37042	886	Sixth
A			
A	3.35581	1462	Eight
A			
A	3.34150	2535	Seventh

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q3 GRADE

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q3	4	Eight Ninth and beyond Seventh Sixth

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 10107 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: GEND Gender Differences

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	3	58.92294344	19.64098115	32.43
ERROR	10103	6118.00086058	0.60556279	PR > F
CORRECTED TOTAL	10106	6176.92380402		0.0001

R-SQUARE	C.V.	ROOT MSE	GEND MEAN
0.009539	38.1220	0.77817915	2.04128610

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q3	3	58.92294344	32.43	0.0001

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: GEND
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=10103 MSE=0.605563

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=1667.45

NUMBER OF MEANS	2	3	4
CRITICAL RANGE	0.0535385	0.056299	0.0580753

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q3
A	2.11140	5224	Ninth and beyond
B	2.01818	1461	Eight
C	1.95515	886	Sixth
C			
C	1.94025	2536	Seventh

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q3 GRADE

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q3	4	Eight Ninth and beyond Seventh Sixth

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 10107 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: DIFF Technology is Difficult

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	3	16.85868810	5.61956270	7.62
ERROR	10103	7453.12028312	0.73771358	PR > F
CORRECTED TOTAL	10106	7469.97897122		0.0001

R-SQUARE	C.V.	ROOT MSE	DIFF MEAN
0.002257	24.9409	0.85890254	3.44375350

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q3	3	16.85868810	7.62	0.0001

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: DIFF
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=10103 MSE=0.737714

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=1666.89

NUMBER OF MEANS	2	3	4
CRITICAL RANGE	0.0591022	0.0621496	0.0641105

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q3
A	3.50190	2536	Seventh
A			
A	3.48527	885	Sixth
A			
B A	3.44620	1462	Eight
B			
B	3.40781	5224	Ninth and beyond

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q3 GRADE

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q3	4	Eight Ninth and beyond Seventh Sixth

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 10107 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: CONSQ Consequences of Technology

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	3	13.94859941	4.64953314	8.43
ERROR	10103	5570.28223885	0.55134933	PR > F
CORRECTED TOTAL	10106	5584.23083826		0.0001

R-SQUARE	C.V.	ROOT MSE	CONSQ MEAN
0.002498	35.8503	0.74252901	2.07119158

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q3	3	13.94859941	8.43	0.0001

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: CONSQ
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=10103 MSE=0.551349

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=1667.45

NUMBER OF MEANS	2	3	4
CRITICAL RANGE	0.0510858	0.0537198	0.0554148

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q3
A	2.16836	886	Sixth
B	2.09319	2536	Seventh
B			
B	2.07679	1461	Eight
B			
B	2.04247	5224	Ninth and beyond

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q3 GRADE

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q3	4	Eight Ninth and beyond Seventh Sixth

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 9830 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: KNOW Knowledge about Technology

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	3	4430.96648973	1476.98882991	38.15
ERROR	9826	380427.41153672	38.71640663	PR > F
CORRECTED TOTAL	9829	384858.37802645		0.0001

R-SQUARE	C.V.	ROOT MSE	KNOW MEAN
0.011513	41.0287	6.22225093	15.16561546

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q3	3	4430.96648973	38.15	0.0001

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: KNOW
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=9826 MSE=38.7164

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=1618.22

NUMBER OF MEANS	2	3	4
CRITICAL RANGE	0.434552	0.456958	0.471376

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q3
A	15.6764	5065	Ninth and beyond
A			
A	15.5327	1423	Eight
B	14.2855	2487	Seventh
B			
B	14.0889	855	Sixth

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q4 FATHER'S PROFESSION

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q4	4	Little Much Nothing Very Much

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 9944 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: GENR General Interest in Technology

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	3	180.43169240	60.14389747	109.79
ERROR	9940	5445.11487997	0.54779828	PR > F
CORRECTED TOTAL	9943	5625.54657237		0.0001

R-SQUARE	C.V.	ROOT MSE	GENR MEAN
0.032074	27.5184	0.74013396	2.68959602

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q4	3	180.43169240	109.79	0.0001

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: GENR
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=9940 MSE=0.547798

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=2220.28

NUMBER OF MEANS	2	3	4
CRITICAL RANGE	0.0441285	0.0464038	0.0478679

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q4
A	2.94316	1339	Nothing
B	2.78050	2674	Little
C	2.63704	3252	Much
D	2.53593	2679	Very Much

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q4 FATHER'S PROFESSION

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q4	4	Little Much Nothing Very Much

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 9940 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: NEGA Negative Attitude

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	3	31.46677445	10.48892482	20.59
ERROR	9936	5060.98989847	0.50935889	PR > F
CORRECTED TOTAL	9939	5092.45667291		0.0001

R-SQUARE	C.V.	ROOT MSE	NEGA MEAN
0.006179	21.2034	0.71369383	3.36594176

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q4	3	31.46677445	20.59	0.0001

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: NEGA
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=9936 MSE=0.509359

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=2218.04

NUMBER OF MEANS	2	3	4
CRITICAL RANGE	0.0425735	0.0447687	0.0461812

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q4
A	3.41296	2678	Very Much
A			
A	3.40104	3252	Much
B	3.33595	2674	Little
C	3.24627	1336	Nothing

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q4 FATHER'S PROFESSION

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q4	4	Little Much Nothing Very Much

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 9943 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: GEND Gender Differences

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	3	9.01896912	3.00632304	4.92
ERROR	9939	6072.67640488	0.61099471	PR > F
CORRECTED TOTAL	9942	6081.69537400		0.0020

R-SQUARE	C.V.	ROOT MSE	GEND MEAN
0.001483	38.2401	0.78166150	2.04409084

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q4	3	9.01896912	4.92	0.0020

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: GEND
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=9939 MSE=0.610995

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=2220.16

NUMBER OF MEANS	2	3	4
CRITICAL RANGE	0.0466057	0.0490087	0.050555

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q4
A	2.10709	1339	Nothing
A			
B A	2.06100	2679	Very Much
B			
B	2.02682	2674	Little
B			
B	2.01842	3251	Much

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q4 FATHER'S PROFESSION

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q4	4	Little Much Nothing Very Much

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 9943 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: DIFF Technology is Difficult

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	3	5.59321304	1.86440435	2.52
ERROR	9939	7366.75496390	0.74119680	PR > F
CORRECTED TOTAL	9942	7372.34817694		0.0564

R-SQUARE	C.V.	ROOT MSE	DIFF MEAN
0.000759	25.0184	0.86092787	3.44118475

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q4	3	5.59321304	2.52	0.0564

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: DIFF
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=9939 MSE=0.741197

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=2220.11

NUMBER OF MEANS	2	3	4
CRITICAL RANGE	0.0513325	0.0539793	0.0556824

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q4
A	3.46990	1339	Nothing
A			
A	3.46152	2679	Very Much
A			
B A	3.44184	3252	Much
B			
B	3.40562	2673	Little

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q4 FATHER'S PROFESSION

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q4	4	Little Much Nothing Very Much

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 9943 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: CONSQ Consequences of Technology

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	3	99.59040433	33.19680144	61.40
ERROR	9939	5373.68464211	0.54066653	PR > F
CORRECTED TOTAL	9942	5473.27504644		0.0001

R-SQUARE	C.V.	ROOT MSE	CONSQ MEAN
0.018196	35.5764	0.73530030	2.06681920

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q4	3	99.59040433	61.40	0.0001

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: CONSQ
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=9939 MSE=0.540667

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=2220.16

NUMBER OF MEANS	2	3	4
CRITICAL RANGE	0.0438414	0.046102	0.0475565

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q4
A	2.29343	1339	Nothing
B	2.10158	2674	Little
C	2.01238	3251	Much
C			
C	1.98493	2679	Very Much

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q4 FATHER'S PROFESSION

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q4	4	Little Much Nothing Very Much

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 9673 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: KNOW Knowledge about Technology

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	3	6668.35465398	2222.78488466	57.93
ERROR	9669	371020.94608002	38.37221492	PR > F
CORRECTED TOTAL	9672	377689.30073400		0.0001

R-SQUARE	C.V.	ROOT MSE	KNOW MEAN
0.017656	40.7836	6.19453105	15.18877287

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q4	3	6668.35465398	57.93	0.0001

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: KNOW
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=9669 MSE=38.3722

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=2148.57

NUMBER OF MEANS	2	3	4
CRITICAL RANGE	0.375445	0.394804	0.40726

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q4
A	15.7809	2593	Very Much
A			
A	15.6998	3181	Much
B	14.9235	2616	Little
C	13.2658	1283	Nothing

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q5 MOTHER'S PROFESSION

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q5	4	Little Much Nothing Very Much

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 9713 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: GENR General Interest in Technology

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	3	147.23448850	49.07816283	89.37
ERROR	9709	5331.90031896	0.54917091	PR > F
CORRECTED TOTAL	9712	5479.13480746		0.0001

R-SQUARE	C.V.	ROOT MSE	GENR MEAN
0.026872	27.5522	0.74106066	2.68966176

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q5	3	147.23448850	89.37	0.0001

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: GENR
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=9709 MSE=0.549171

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=2036.53

NUMBER OF MEANS	2	3	4
CRITICAL RANGE	0.046134	0.0485127	0.0500433

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q5
A	2.84428	3349	Nothing
B	2.66554	3237	Little
C	2.57505	1937	Much
D	2.50670	1190	Very Much

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q5 MOTHER'S PROFESSION

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q5	4	Little Much Nothing Very Much

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 9709 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: NEGA Negative Attitude

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	3	22.91809252	7.63936417	14.94
ERROR	9705	4961.13954979	0.51119418	PR > F
CORRECTED TOTAL	9708	4984.05764231		0.0001

R-SQUARE	C.V.	ROOT MSE	NEGA MEAN
0.004598	21.2793	0.71497845	3.35997209

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q5	3	22.91809252	14.94	0.0001

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: NEGA
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=9705 MSE=0.511194

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=2035.98

NUMBER OF MEANS	2	3	4
CRITICAL RANGE	0.0445163	0.0468116	0.0482886

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q5
A	3.41190	3237	Little
A			
A	3.37585	1936	Much
A			
A	3.37174	1190	Very Much
B	3.29637	3346	Nothing

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q5 MOTHER'S PROFESSION

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q5	4	Little Much Nothing Very Much

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 9712 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: GEND Gender Differences

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	3	10.34347022	3.44782341	5.63
ERROR	9708	5940.26581428	0.61189388	PR > F
CORRECTED TOTAL	9711	5950.60928450		0.0007

R-SQUARE	C.V.	ROOT MSE	GEND MEAN
0.001738	38.2084	0.78223646	2.04728980

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q5	3	10.34347022	5.63	0.0007

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: GEND
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=9708 MSE=0.611894

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=2036.44

NUMBER OF MEANS	2	3	4
CRITICAL RANGE	0.0486984	0.0512094	0.0528251

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING		MEAN	N	Q5
	A	2.09083	3348	Nothing
	A			
B	A	2.04353	1190	Very Much
B				
B		2.02629	1937	Much
B				
B		2.01621	3237	Little

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q5 MOTHER'S PROFESSION

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q5	4	Little Much Nothing Very Much

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 9711 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: DIFF Technology is Difficult

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	3	2.18443357	0.72814452	0.99
ERROR	9707	7157.65145356	0.73737009	PR > F
CORRECTED TOTAL	9710	7159.83588713		0.3975

R-SQUARE	C.V.	ROOT MSE	DIFF MEAN
0.000305	24.9449	0.85870256	3.44239522

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q5	3	2.18443357	0.99	0.3975

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: DIFF
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=9707 MSE=0.73737

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=2036.35

NUMBER OF MEANS	2	3	4
CRITICAL RANGE	0.0534601	0.0562165	0.0579902

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q5
A	3.45389	3347	Nothing
A			
A	3.44774	3237	Little
A			
A	3.44301	1190	Very Much
A			
A	3.41322	1937	Much

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q5 MOTHER'S PROFESSION

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q5	4	Little Much Nothing Very Much

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 9712 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: CONSQ Consequences of Technology

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	3	52.07854272	17.35951424	31.59
ERROR	9708	5335.00076399	0.54954684	PR > F
CORRECTED TOTAL	9711	5387.07930671		0.0001

R-SQUARE	C.V.	ROOT MSE	CONSQ MEAN
0.009667	35.7652	0.74131427	2.07272790

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q5	3	52.07854272	31.59	0.0001

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: CONSQ
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=9708 MSE=0.549547

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=2036.44

NUMBER OF MEANS	2	3	4
CRITICAL RANGE	0.0461508	0.0485304	0.0500616

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q5
A	2.16868	3348	Nothing
B	2.04700	3237	Little
C B	2.01948	1190	Very Much
C	1.98258	1937	Much

Pupils' Attitude Toward Technology -- 1988-89

Comparisons of Mean Scores on the Factors and the Demographics

Total Sample
Q5 MOTHER'S PROFESSION

ANALYSIS OF VARIANCE PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
Q5	4	Little Much Nothing Very Much

NUMBER OF OBSERVATIONS IN DATA SET = 10349

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 9445 OBSERVATIONS CAN BE USED IN THIS ANALYSIS.

DEPENDENT VARIABLE: KNOW Knowledge about Technology

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	3	6014.41177268	2004.80392423	52.25
ERROR	9441	362224.54471223	38.36717982	PR > F
CORRECTED TOTAL	9444	368238.95648491		0.0001

R-SQUARE	C.V.	ROOT MSE	KNOW MEAN
0.016333	40.9749	6.19412462	15.11688724

SOURCE	DF	ANOVA SS	F VALUE	PR > F
Q5	3	6014.41177268	52.25	0.0001

DUNCAN'S MULTIPLE RANGE TEST FOR VARIABLE: KNOW
NOTE: THIS TEST CONTROLS THE TYPE I COMPARISONWISE ERROR RATE, NOT THE EXPERIMENTWISE ERROR RATE

ALPHA=0.05 DF=9441 MSE=38.3672

WARNING: CELL SIZES ARE NOT EQUAL.
HARMONIC MEAN OF CELL SIZES=1978.77

NUMBER OF MEANS	2	3	4
CRITICAL RANGE	0.391196	0.411367	0.424346

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

DUNCAN GROUPING	MEAN	N	Q5
A	15.8898	3150	Little
A			
A	15.6214	1886	Much
B	15.1690	1154	Very Much
C	14.0581	3255	Nothing

TTEST PROCEDURE

VARIABLE: GENR General Interest in Technology

Q6	N	MEAN	STD DEV	STD ERROR
No	4087	2.81245520	0.72849882	0.01139532
Yes	6182	2.61598874	0.75622767	0.00961807

VARIANCES	T	DF	PROB > |T|
UNEQUAL	13.1753	8971.5	0.0001
EQUAL	13.0753	10267.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.08 WITH 6181 AND 4086 DF
PROB > F'= 0.0090

VARIABLE: NEGA Negative Attitude

Q6	N	MEAN	STD DEV	STD ERROR
No	4084	3.26754524	0.69511899	0.01087718
Yes	6181	3.42849131	0.72052669	0.00916475

VARIANCES	T	DF	PROB > |T|
UNEQUAL	-11.3156	8955.9	0.0001
EQUAL	-11.2329	10263.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.07 WITH 6180 AND 4083 DF
PROB > F'= 0.0121

VARIABLE: GEND Gender Differences

Q6	N	MEAN	STD DEV	STD ERROR
No	4086	2.10149232	0.77127866	0.01206597
Yes	6182	2.00072638	0.78423199	0.00997425

VARIANCES	T	DF	PROB > |T|
UNEQUAL	6.4367	8845.6	0.0001
EQUAL	6.4149	10266.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.03 WITH 6181 AND 4085 DF
PROB > F'= 0.2441

VARIABLE: DIFF Technology is Difficult

Q6	N	MEAN	STD DEV	STD ERROR
No	4086	3.41694404	0.85763120	0.01341688
Yes	6181	3.46207464	0.86130472	0.01095538

VARIANCES	T	DF	PROB > |T|
UNEQUAL	-2.6055	8770.9	0.0092
EQUAL	-2.6032	10265.0	0.0092

FOR HO: VARIANCES ARE EQUAL, F'= 1.01 WITH 6180 AND 4085 DF
PROB > F'= 0.7659

VARIABLE: CONSQ Consequences of Technology

Q6	N	MEAN	STD DEV	STD ERROR
No	4086	2.16620982	0.76208514	0.01192214
Yes	6182	2.00895881	0.72357940	0.00920284

VARIANCES	T	DF	PROB > |T|
UNEQUAL	10.4410	8426.2	0.0001
EQUAL	10.5520	10266.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.11 WITH 4085 AND 6181 DF
PROB > F'= 0.0003

VARIABLE: KNOW Knowledge about Technology

Q6	N	MEAN	STD DEV	STD ERROR
No	3948	14.02026342	6.01624309	0.09574956
Yes	6038	15.91570056	6.29562810	0.08102005

VARIANCES	T	DF	PROB > |T|
UNEQUAL	-15.1117	8704.9	0.0001
EQUAL	-14.9689	9984.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.10 WITH 6037 AND 3947 DF
PROB > F'= 0.0018

TTEST PROCEDURE

VARIABLE: GENR General Interest in Technology

Q7	N	MEAN	STD DEV	STD ERROR
No	6840	2.77724242	0.74027491	0.00895086
Yes	3388	2.52342962	0.74639125	0.01282315

VARIANCES	T	DF	PROB > |T|
UNEQUAL	16.2304	6703.5	0.0001
EQUAL	16.2755	10226.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.02 WITH 3387 AND 6839 DF
PROB > F'= 0.5771

VARIABLE: NEGA Negative Attitude

Q7	N	MEAN	STD DEV	STD ERROR
No	6837	3.33269245	0.70023029	0.00846853
Yes	3387	3.43155131	0.73866672	0.01269232

VARIANCES	T	DF	PROB > |T|
UNEQUAL	-6.4791	6439.7	0.0001
EQUAL	-6.5969	10222.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.11 WITH 3386 AND 6836 DF
PROB > F'= 0.0003

VARIABLE: GEND Gender Differences

Q7	N	MEAN	STD DEV	STD ERROR
No	6840	2.04220325	0.76579883	0.00925948
Yes	3388	2.04566994	0.81066189	0.01392734

VARIANCES	T	DF	PROB > |T|
UNEQUAL	-0.2073	6421.6	0.8358
EQUAL	-0.2113	10226.0	0.8327

FOR HO: VARIANCES ARE EQUAL, F'= 1.12 WITH 3387 AND 6839 DF
PROB > F'= 0.0001

VARIABLE: DIFF Technology is Difficult

Q7	N	MEAN	STD DEV	STD ERROR
No	6839	3.43407906	0.85990068	0.01039805
Yes	3388	3.46354782	0.86011007	0.01477687

VARIANCES	T	DF	PROB > |T|
UNEQUAL	-1.6309	6751.7	0.1030
EQUAL	-1.6311	10225.0	0.1029

FOR HO: VARIANCES ARE EQUAL, F'= 1.00 WITH 3387 AND 6838 DF
PROB > F'= 0.9843

VARIABLE: CONSQ Consequences of Technology

Q7	N	MEAN	STD DEV	STD ERROR
No	6840	2.11345273	0.73942163	0.00894055
Yes	3388	1.98577824	0.74286975	0.01276265

VARIANCES	T	DF	PROB > |T|
UNEQUAL	8.1934	6724.8	0.0001
EQUAL	8.2063	10226.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.01 WITH 3387 AND 6839 DF
PROB > F'= 0.7515

VARIABLE: KNOW Knowledge about Technology

Q7	N	MEAN	STD DEV	STD ERROR
No	6639	14.69769544	6.20875999	0.07619975
Yes	3309	16.11755817	6.25001257	0.10865069

VARIANCES	T	DF	PROB > |T|
UNEQUAL	-10.6992	6570.3	0.0001
EQUAL	-10.7229	9946.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.01 WITH 3308 AND 6638 DF
PROB > F'= 0.6573

TTEST PROCEDURE

VARIABLE: GENR General Interest in Technology

Q8	N	MEAN	STD DEV	STD ERROR
No	5460	2.73993469	0.74112639	0.01002989
Yes	4822	2.64140687	0.75992413	0.01094351

VARIANCES	T	DF	PROB > |T|
UNEQUAL	6.6373	10055.8	0.0001
EQUAL	6.6477	10280.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.05 WITH 4821 AND 5459 DF
PROB > F'= 0.0729

VARIABLE: NEGA Negative Attitude

Q8	N	MEAN	STD DEV	STD ERROR
No	5456	3.34102721	0.69067347	0.00935052
Yes	4822	3.39140530	0.74048360	0.01066355

VARIANCES	T	DF	PROB > |T|
UNEQUAL	-3.5521	9908.0	0.0004
EQUAL	-3.5674	10276.0	0.0004

FOR HO: VARIANCES ARE EQUAL, F'= 1.15 WITH 4821 AND 5455 DF
PROB > F'= 0.0001

VARIABLE: GEND Gender Differences

Q8	N	MEAN	STD DEV	STD ERROR
No	5460	2.03983800	0.76428279	0.01034327
Yes	4822	2.04214513	0.79924575	0.01150977

VARIANCES	T	DF	PROB > |T|
UNEQUAL	-0.1491	9995.1	0.8815
EQUAL	-0.1495	10280.0	0.8812

FOR HO: VARIANCES ARE EQUAL, F'= 1.09 WITH 4821 AND 5459 DF
PROB > F'= 0.0014

VARIABLE: DIFF Technology is Difficult

Q8	N	MEAN	STD DEV	STD ERROR
No	5460	3.47063797	0.85354714	0.01155131
Yes	4821	3.41431238	0.86710759	0.01248833

VARIANCES	T	DF	PROB > |T|
UNEQUAL	3.3110	10080.6	0.0009
EQUAL	3.3143	10279.0	0.0009

FOR HO: VARIANCES ARE EQUAL, F'= 1.03 WITH 4820 AND 5459 DF
PROB > F'= 0.2590

VARIABLE: CONSQ Consequences of Technology

Q8	N	MEAN	STD DEV	STD ERROR
No	5460	2.11967338	0.75456247	0.01021172
Yes	4822	2.01707106	0.72560839	0.01044934

VARIANCES	T	DF	PROB > |T|
UNEQUAL	7.0225	10205.9	0.0001
EQUAL	7.0055	10280.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.08 WITH 5459 AND 4821 DF
PROB > F'= 0.0052

VARIABLE: KNOW Knowledge about Technology

Q8	N	MEAN	STD DEV	STD ERROR
No	5297	14.51727393	6.14082393	0.08437459
Yes	4703	15.91175845	6.30263257	0.09190402

VARIANCES	T	DF	PROB > |T|
UNEQUAL	-11.1772	9792.3	0.0001
EQUAL	-11.1945	9998.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.05 WITH 4702 AND 5296 DF
PROB > F'= 0.0662

TTEST PROCEDURE

VARIABLE: GENR General Interest in Technology

Q9	N	MEAN	STD DEV	STD ERROR
No	5107	3.11557408	0.64027978	0.00895956
Yes	4984	2.25786149	0.59659513	0.00845066

VARIANCES	T	DF	PROB > |T|
UNEQUAL	69.6413	10067.5	0.0001
EQUAL	69.5814	10089.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.15 WITH 5106 AND 4983 DF
PROB > F'= 0.0001

VARIABLE: NEGA Negative Attitude

Q9	N	MEAN	STD DEV	STD ERROR
No	5103	3.19893262	0.65574992	0.00917964
Yes	4984	3.54033988	0.73246662	0.01037526

VARIANCES	T	DF	PROB > |T|
UNEQUAL	-24.6446	9908.1	0.0001
EQUAL	-24.6767	10085.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.25 WITH 4983 AND 5102 DF
PROB > F'= 0.0001

VARIABLE: GEND Gender Differences

Q9	N	MEAN	STD DEV	STD ERROR
No	5107	2.03272096	0.77844803	0.01089298
Yes	4984	2.04876701	0.78409833	0.01110661

VARIANCES	T	DF	PROB > |T|
UNEQUAL	-1.0314	10078.9	0.3024
EQUAL	-1.0315	10089.0	0.3023

FOR HO: VARIANCES ARE EQUAL, F'= 1.01 WITH 4983 AND 5106 DF
PROB > F'= 0.6074

VARIABLE: DIFF Technology is Difficult

Q9	N	MEAN	STD DEV	STD ERROR
No	5107	3.44767966	0.85788078	0.01200450
Yes	4984	3.43852327	0.86300312	0.01222428

VARIANCES	T	DF	PROB > |T|
UNEQUAL	0.5344	10079.7	0.5931
EQUAL	0.5345	10089.0	0.5930

FOR H0: VARIANCES ARE EQUAL, F'= 1.01 WITH 4983 AND 5106 DF
PROB > F'= 0.6724

VARIABLE: CONSQ Consequences of Technology

Q9	N	MEAN	STD DEV	STD ERROR
No	5107	2.22999478	0.77441931	0.01083661
Yes	4984	1.90363497	0.66820613	0.00946502

VARIANCES	T	DF	PROB > |T|
UNEQUAL	22.6826	9940.3	0.0001
EQUAL	22.6421	10089.0	0.0001

FOR H0: VARIANCES ARE EQUAL, F'= 1.34 WITH 5106 AND 4983 DF
PROB > F'= 0.0001

VARIABLE: KNOW Knowledge about Technology

Q9	N	MEAN	STD DEV	STD ERROR
No	4944	14.00930421	6.01605466	0.08556035
Yes	4874	16.41731637	6.26344118	0.08971607

VARIANCES	T	DF	PROB > |T|
UNEQUAL	-19.4235	9786.9	0.0001
EQUAL	-19.4291	9816.0	0.0001

FOR H0: VARIANCES ARE EQUAL, F'= 1.08 WITH 4873 AND 4943 DF
PROB > F'= 0.0048

TTEST PROCEDURE

VARIABLE: GENR General Interest in Technology

Q10	N	MEAN	STD DEV	STD ERROR
No	7660	2.73970655	0.75912455	0.00867359
Yes	2513	2.54862875	0.71188451	0.01420082

VARIANCES	T	DF	PROB > |T|
UNEQUAL	11.4829	4529.1	0.0001
EQUAL	11.1160	10171.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.14 WITH 7659 AND 2512 DF
PROB > F'= 0.0001

VARIABLE: NEGA Negative Attitude

Q10	N	MEAN	STD DEV	STD ERROR
No	7658	3.36092731	0.71088277	0.00812345
Yes	2512	3.38278154	0.72705444	0.01450632

VARIANCES	T	DF	PROB > |T|
UNEQUAL	-1.3145	4197.4	0.1888
EQUAL	-1.3295	10168.0	0.1837

FOR HO: VARIANCES ARE EQUAL, F'= 1.05 WITH 2511 AND 7657 DF
PROB > F'= 0.1633

VARIABLE: GEND Gender Differences

Q10	N	MEAN	STD DEV	STD ERROR
No	7659	2.04021584	0.78465163	0.00896584
Yes	2513	2.03458208	0.76329718	0.01522641

VARIANCES	T	DF	PROB > |T|
UNEQUAL	0.3188	4383.1	0.7499
EQUAL	0.3144	10170.0	0.7532

FOR HO: VARIANCES ARE EQUAL, F'= 1.06 WITH 7658 AND 2512 DF
PROB > F'= 0.0923

VARIABLE: DIFF Technology is Difficult

Q10	N	MEAN	STD DEV	STD ERROR
No	7660	3.44691036	0.84819226	0.00969125
Yes	2513	3.43543573	0.89693040	0.01789215

VARIANCES	T	DF	PROB > |T|
UNEQUAL	0.5639	4086.8	0.5728
EQUAL	0.5801	10171.0	0.5619

FOR HO: VARIANCES ARE EQUAL, F'= 1.12 WITH 2512 AND 7659 DF
PROB > F'= 0.0005

VARIABLE: CONSQ Consequences of Technology

Q10	N	MEAN	STD DEV	STD ERROR
No	7659	2.08115942	0.74642325	0.00852902
Yes	2513	2.03837379	0.72963582	0.01455492

VARIANCES	T	DF	PROB > |T|
UNEQUAL	2.5362	4364.5	0.0112
EQUAL	2.5072	10170.0	0.0122

FOR HO: VARIANCES ARE EQUAL, F'= 1.05 WITH 7658 AND 2512 DF
PROB > F'= 0.1651

VARIABLE: KNOW Knowledge about Technology

Q10	N	MEAN	STD DEV	STD ERROR
No	7440	15.12567204	6.25018883	0.07246139
Yes	2456	15.42345277	6.23979767	0.12590887

VARIANCES	T	DF	PROB > |T|
UNEQUAL	-2.0498	4198.5	0.0404
EQUAL	-2.0481	9894.0	0.0406

FOR HO: VARIANCES ARE EQUAL, F'= 1.00 WITH 7439 AND 2455 DF
PROB > F'= 0.9239

TTEST PROCEDURE

VARIABLE: GENR General Interest in Technology

Q11	N	MEAN	STD DEV	STD ERROR
No	2369	2.87189056	0.72157419	0.01482513
Yes	7826	2.63815091	0.75328210	0.00851506

VARIANCES	T	DF	PROB > |T|
UNEQUAL	13.6718	4054.6	0.0001
EQUAL	13.3608	10193.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.09 WITH 7825 AND 2368 DF
PROB > F'= 0.0103

VARIABLE: NEGA Negative Attitude

Q11	N	MEAN	STD DEV	STD ERROR
No	2367	3.32387893	0.69273003	0.01423852
Yes	7824	3.37902359	0.72089876	0.00815004

VARIANCES	T	DF	PROB > |T|
UNEQUAL	-3.3612	4039.2	0.0008
EQUAL	-3.2903	10189.0	0.0010

FOR HO: VARIANCES ARE EQUAL, F'= 1.08 WITH 7823 AND 2366 DF
PROB > F'= 0.0173

VARIABLE: GEND Gender Differences

Q11	N	MEAN	STD DEV	STD ERROR
No	2369	1.97201250	0.75950960	0.01560453
Yes	7825	2.05778533	0.78487687	0.00887277

VARIANCES	T	DF	PROB > |T|
UNEQUAL	-4.7782	4019.5	0.0001
EQUAL	-4.6950	10192.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.07 WITH 7824 AND 2368 DF
PROB > F'= 0.0496

VARIABLE: DIFF Technology is Difficult

Q11	N	MEAN	STD DEV	STD ERROR
No	2369	3.35555087	0.83725402	0.01720183
Yes	7825	3.47495847	0.86491326	0.00977756

VARIANCES	T	DF	PROB > |T|
UNEQUAL	-6.0348	4018.3	0.0001
EQUAL	-5.9308	10192.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.07 WITH 7824 AND 2368 DF
PROB > F'= 0.0521

VARIABLE: CONSQ Consequences of Technology

Q11	N	MEAN	STD DEV	STD ERROR
No	2369	2.17387083	0.74657339	0.01533875
Yes	7825	2.03749095	0.73729629	0.00833489

VARIANCES	T	DF	PROB > |T|
UNEQUAL	7.8123	3870.7	0.0001
EQUAL	7.8648	10192.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.03 WITH 2368 AND 7824 DF
PROB > F'= 0.4464

VARIABLE: KNOW Knowledge about Technology

Q11	N	MEAN	STD DEV	STD ERROR
No	2298	14.47171453	6.30499872	0.13152551
Yes	7622	15.41314616	6.22084068	0.07125488

VARIANCES	T	DF	PROB > |T|
UNEQUAL	-6.2935	3746.0	0.0001
EQUAL	-6.3391	9918.0	0.0001

FOR HO: VARIANCES ARE EQUAL, F'= 1.03 WITH 2297 AND 7621 DF
PROB > F'= 0.4201