

PYP Teachers' Attitude towards Computer in Saudi Arabia

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Abstract: *Teachers' attitudes towards computers play a crucial role in the teaching learning process. The present paper aims to study and examine the attitude of university teachers engaged in teaching students of Preparatory Year Program in Saudi Arabia, towards computers in terms of age, rank, training and gender. Attitudes of a sample of 124 teachers of Qassim University, Saudi Arabia were assessed using Computer attitude scale (CAS) by Loyd and Gressard (1984), which is a Likert scale instrument based on four subscales: Computer Anxiety, Computer Confidence, Computer Liking and Computer Usefulness. The acquired data was analyzed using independent sample t-test and one way ANOVA through the statistical software named Statistical Package for social sciences (IBM SPSS, Version 21). Both the tests revealed that age, rank, training and gender have a significant effect on the teachers' attitude towards computer. The younger Lecturers are found to have more positive computer attitude. Moreover, male respondents in comparison to female ones show more interest and comfort in using computers. Similarly, teachers who have had some computer training show more positive computer attitude. The results also show an overall positive computer attitude of the PYP teachers in Qassim University. Considering these results, it is recommended to organize periodic computer training or workshops for faculty, especially for the females, on various programs, word processing, spreadsheets etc. for futuristic teaching /learning environment.*

Keywords: Pedagogical effectiveness; Preparatory Year Program; Computer Technology; Computer attitude; Independent sample t-test; one way ANOVA and SPSS

1. Introduction

The latest and most advanced educational system is assisted by Technology. Computer technology is changing the process and product of education with new creative ideas in teaching learning process. Due to ever-growing technological development and high demand of globalization and internationalization, it has become very important for faculty members in higher education to understand these changes and adopt computer based lecture as compared to traditional lecture. Computer based instructional applications are considered an effective alternative to traditional teaching methods (Pucel&Stertz, 2005). Preparatory Year Program is meant to prepare the students for professional colleges for higher studies which require students to use technology. Thus, the attitude of the PYP teachers towards computer may greatly influence their teaching and then their students. Hence, it is necessary to examine the attitude of Professors and Lecturers towards computer so that appropriate measures could be taken to enhance the computer literacy skills for professional development. Texas Collaborative for Teaching Excellence (2007) defines professional development as a systemic process of renewal, which ultimately creates or promotes an environment for learning and growth for students, faculty and institutions. Modern day professional development depends more on computers in a variety of fields including education (Moore, 2002; Saunders, 2003; Tebo, 2000). The study specifically investigated the attitude of PYP faculty towards computers in terms of age and rank. There is a common misconception in our society that machines are meant for males, not for females and also we find that there is a lack of encouragement that parents give to girls in context with machines like computers. So it becomes very necessary to find the gender gap in computer attitude development. Hence, the study finally examined whether

there is any differences between male and female faculty members toward computer attitude in Saudi Arabia. Moreover, the PYP teachers are meant to teach their relevant subjects and are trained for the too. However, there is a question whether they also need to have training in computer usage to be more competent in their jobs. Thus, the study includes training as another variable to investigate its role in shaping teachers' computer attitude.

2. Literature Review

All educational institutions are adopting technology based education. We cannot deny the fact that Computer technology has changed the traditional pattern of teaching in education. Many researchers have studied its different aspects. Ferguson & Wilson (2001) show that computers and communications technology has applications in all sectors of teaching and learning. Computer has now become an integral part of our education system. Okebukola (2005) prove that appropriately planned and deployed information and communication technologies (ICT) constitute a patent tool for effective delivery of quality higher education. So it is important to find the attitude of teachers towards computers for effective delivery of lectures.

The concept of computer attitude is widely discussed in Literature. Loyd&Loyd (1985) studied the reliability and validity of an instrument for the assessment of computer attitudes. Loyd&Gressard (1984) studied the effects of sex, age and computer experience on computer attitudes. They express that it is becoming increasingly evident that familiarity with computers and the ability to use them affectively will be of crucial importance to success in many different field. Computer experience is therefore gaining wide recognition as crucial component of the educational process (Loyd&Gressard, 1984). Evaluation studies and

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reports showed that computer anxiety and lack of confidence influence the acceptance of computers as a tool in teaching learning process (Smith & Kotrlik, 1990; Woodrow, 1991). However, there are two important factors which are helpful to avoid fear and build confidence i.e. computer ownership and computer experience. The importance of these two factors is depicted in many studies. Griffin (1988) found that teacher attitude towards computers is an important factor related to the teacher's role towards the effective use of computer in education.

Dusick (1998) defines attitude as "an evaluative disposition based upon cognition, effective reactions, behavior intentions, and past behaviors which can influence future cognitions, effective responses, intentions, and behaviors". Aiken (1996) defines an attitude as a "learned predisposition to respond positively to certain objects, situations, institutions, concepts or persons." A person's attitude toward computer is affected by many factors such as:

- Computer liking, computer confidence, computer anxiety or comfort (Loyd & Gressard, 1984)
- Achievement (Bandalos & Benson, 1990)
- Usefulness and value (Loyd & Loyd, 1985)
- Age and gender (Colley & Comber, 2003)
- Subject area and years of computer use (Teo, 2008)
- Levels of technology use in class rooms (Al-Zaidiyeen, 2010)
- Self-efficacy (Rovai & Childress, 2002)

Chen & Chang (2006) show that attitudes, skills and practice are interrelated variables. They also indicate that aspects of teacher technology competence vary according to number of teaching years, home computer access, and length of in-service training.

Several studies have found the effect of gender on the computer attitude. Krendletal. revealed that males have more positive attitude towards computers compared to females. On the contrary, Barrier & Margavio's (1992) indicated that males attitude towards computer was more negative than that of females. Thus, gender-related studies have produced conflicting results.

An intensive literature review yield very less research that investigated the effect of age, rank and gender on computer attitude in Saudi Arabia. Mehdi (2013) investigated the impact of teacher's age, experience, and gender on the integration of ICT into language teaching and found out that there was no significant difference in using ICT between the two groups of teachers according to their age and experience. However, the female teachers had reported less use of ICT in their instruction than male teachers. Zaid, Jamaludin & Abas (2012) investigated the teachers' attitudes and self-efficacy towards using e-learning for teaching undergraduate students in Saudi Universities and found no significant difference in the teacher candidates' attitudes and self-efficacy toward e-learning on the basis of gender and age group.

Higher education in Saudi Arabia has been making huge strides. The computer technology offers infinite opportunities for improving education and perception towards effective use of these technologies. However, the

Saudis have been unable to reap the optimal benefit at all levels of operation. Use of computer technology in education depends on how well teachers integrate them in their teaching. Therefore, it is necessary to investigate the computer attitude of PYP teachers. The purpose of this study is to investigate the teachers' computer attitudes with respect to age, rank and gender in PYP using computer attitude scale. This study is significant in that it points out the areas which significantly affect the teachers' computer attitudes and recommends actions to improve them, encourages teachers to incorporate technology in their teaching and thus, prepare their students for the future technology-based professional studies.

3. Methodology

3.1 Research Questions

The data for this study was collected through survey. With the help of survey methodology, we can find general results about the sample. However, we should be very attentive while taking data from the sample. The survey methodology could help the researcher to go to the field and collect data on the topic from the sample of the population in a very short time. The independent variables of this study are age, rank, gender and training. The dependent variable is the computer attitudes of PYP faculty (Professors and Lecturers) of Qassim University. This study tries to find the answers to the following questions:

Q.1 What are the attitudes of the PYP faculty in Qassim University towards computers?

Q.2 What is the effect of age on computer attitude of the PYP faculty in Qassim University?

Q.3 What is the effect of rank on computer attitude of the PYP faculty in Qassim University?

Q.4 What is the effect of computer training on computer attitude of the PYP faculty in Qassim University?

Q.5 What are the differences between male and female PYP faculty towards computer attitudes?

3.2 Sample

The data for this study was collected from N =124 faculty members of Preparatory Year Program at Qassim University, Saudi Arabia. Among them, 62 are Professors and 62 are Lecturers. Overall, higher participation was observed from the female respondents. In the majority, 79 (63.7%) of the respondents have taken computer training. Details of the demographic profile of the respondents are shown in Table 1.

Table 1: Socio-demographic characteristics of participants (N = 124)

Demographic information of respondents	Frequency (%)
AGE	
25-35 years	10 (8.1)
35-45 years	80 (64.5)
More than 45 years	34 (27.4)
RANK	
Professors (Assistant/Associate)	62 (50)
Lecturers	62 (50)
COMPUTER TRAINING	
Taken	45 (36.3)
Not taken	79 (63.7)
GENDER	
Male	55 (44.4)
Female	69 (55.6)

3.3 Instrument

The instrument used in this study was computer attitude scale (CAS) by Loyd and Gressard (1984a) to measure differences in attitudes towards computers. The CAS has 40 Likert-scale items involving statements of attitudes towards computers and the use of computers. CAS consists of four subscales: Computer Anxiety, Computer Confidence, Computer Liking and Computer usefulness. The purpose of the computer anxiety subscale is to assess the fear of computers, while that of computer confidence subscale is to assess the confidence or ability to use computers. Computer liking subscale assesses the enjoyment in working with computers. Computer usefulness subscale assesses the perceived usefulness of computers for present or future work. (see Appendix for CAS scale)

Each subscale has ten items and respondents rate items by indicating to what extent they agree or disagree with the expressions in each item (from strongly disagree to strongly agree with five choices). In each subscale, there are five positively worded items and five negatively worded items. The examples of negatively worded statements included in CAS are 'Computers make me feel nervous' or 'I don't like computers at all', whereas statements like 'I would like working with computers' or 'I feel confident to use computers' are positively worded items or statements. While using the instrument, the researcher recodes the score associated with negatively items or statements such that all the positive responses are counted as a high score. Hence all the items represent statements of attitude towards computers. Loyd&Loyd (1985) reported high reliability on the total score (.95) while reliability coefficient for above scales were estimated as .90 for computer anxiety, .89 for computer confidence, .89 for computer liking and .82 for computer usefulness. Many other researchers (Nash & Moroz, 1997; Loyd&Gressard, 1984; Woodrow, 1991) also reported high reliability and good factorial stability for the scale.

3.4 Data Analysis

Questionnaire containing questions related to general information and computer attitude scale by Loyd&Gressard (1984) was given to the participants and they were requested to return in one week. Data for the survey study was collected after one week and analyzed using the Statistical Package for social sciences (IBM SPSS, Version 21). An

alpha value less than 0.05 was considered statistically significant. Student's t-test and One Way Anova were applied to find the difference between the groups related to age, rank, computer training and gender. Tables are formulated for the better understanding of the results.

4. Results and Findings

The results of this study are explained below along with the relevant tables.

a) Summary of the Attitude Results

Attitude towards computer was measured in terms of anxiety, confidence, liking and usefulness subscales in the CAS (Loyd&Gressard, 1984). A total of N = 124 faculty members of PYP, Qassim University participated in the survey and they responded to all items in CAS and no data was found missing in the questionnaire. The researchers did not record any information that may disclose the personal identity of the respondents. Table 2 represents the summary of the means and standard deviations of each subscale of CAS.

Table 2: Summary of the means and Standard deviations

Subscale	Mean	Standard deviation
Computer anxiety	36.5	7.89
Computer confidence	36.9	7.31
Computer liking	37.3	5.12
Computer usefulness	37.2	5.36
CAS (Total score)	148	21.61

The respondents who answered all the questions have a maximum score of 50 and a minimum of 10 score for each subscale. However, it can be noticed that overall computer attitude (CAS) is well above the midpoint of the scale (100) and these findings reveal that respondents in general have fairly positive attitude towards computers (Table 2). This is consistent with the findings of other studies carried out with teachers and educators by many researchers (Loyd&Gressard, 1984; Loyd&Loyd, 1985; Yuen& Ma, 2001).

b) The Effect of Age on Computer Attitude

A one way ANOVA was performed to compare the impact of age on computer attitude. Participants were divided into three age-groups: 25-35 years; 35-45 years, and 45 years and above. The dependent variable was found to be normally distributed and equal variances are assumed based upon the results of Levene's test. There is a statistically significant difference in computer attitude total score and also for each subscale for the three age groups: $F(2,121) = 14.789$, $P = 0.001$. The magnitude of the difference in the mean (Effect size) is also shown in the Table 4.

Table 3: Descriptive Statistics

Subscale	25-35 years N = 10		35-45 years N = 80		45 years and above N = 34	
	Mean	S.D	Mean	S.D	Mean	S.D
Computer Anxiety	39.7	7.72	38.2	7.74	31.5	6.05
Computer Confidence	40.5	7.59	38.5	7.06	32.1	5.51
Computer Liking	39.8	6.66	38.4	4.79	34.0	3.81
Computer Usefulness	38.3	7.48	38.1	4.89	34.9	5.21
CAS	158.3	26.92	153.2	20.62	132.6	13.49

Table 4: Summary of One way ANOVA test

Subscale	F	P	Difference	Effect Size (η^2)
Computer Anxiety	F(2,121)=11.02	0.001	Significant	15.4%
Computer Confidence	F(2,121)=12.32	0.001	Significant	16.9%
Computer Liking	F(2,121)=12.00	0.001	Significant	16.6%
Computer Usefulness	F(2,121)=4.43	0.014	Significant	6.8%
CAS	F(2,121)=14.79	0.001	Significant	19.6%

Post Hoc comparison is done using the Tukey HSD test which indicates that the age significantly affects the teachers' attitude towards computer. The findings indicate that the younger teachers/ freshmen have higher means, depicting a more positive attitude (see Table 3). Similarly, it can be seen that faculty of age 45 years and above feel less comfortable and confident in using computers. Hence, it shows a reverse role on all the subscales. (see Figure. 1 below).

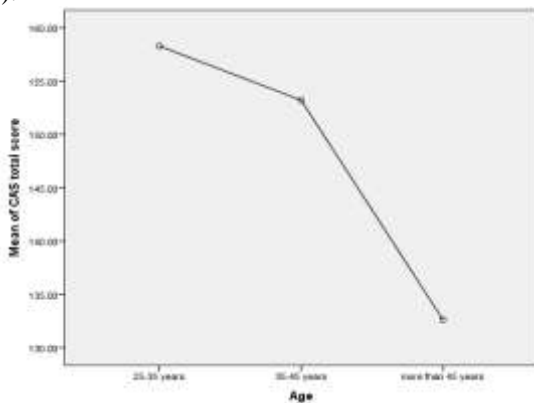


Figure 1

c) The Effect of Rank on Computer Attitude

An independent samples t-test was conducted to determine if a difference existed between the mean computer attitude scale score of Professors and Lecturers working in Qassim University, Saudi Arabia. There is a statistically significant difference in CAS total score for Professors (N = 62, M = 139.7, S.D = 19.75) and Lecturers (N = 62, M = 156.3, S.D = 20.29); $t(122) = -4.61, P = 0.001$. The results indicate that Lecturers have a more positive attitude compared to Professors. The present study also proved that Lecturers are more comfortable and confident while using computers. And detailed information is shown in Table 4 to have the clear understanding of the test. The magnitude of the difference of two groups i.e. Effect size is also given in the Table 5. It can be seen that less ranked faculty have higher means, showing more positive attitude.

Table 5: t-test summary table

Subscale	Rank	Mean	S.D	Difference	t (d.f)	P	Effect Size (η^2)
Computer Anxiety	Professor	33.8	7.50	L>P	$t = -4.02$ (122)	0.001	11.7%
	Lecturer	39.2	7.39				
Computer Confidence	Professor	34.5	6.94	L>P	$t = -3.94$ (122)	0.001	11.3%
	Lecturer	39.4	6.89				
Computer Liking	Professor	35.6	4.91	L>P	$t = -3.97$ (122)	0.001	11.4%
	Lecturer	39.1	4.76				
Computer Usefulness	Professor	35.8	5.58	L>P	$t = -3.07$ (122)	0.003	7.1%
	Lecturer	38.7	4.75				
CAS Total Score	Professor	139.7	19.75	L>P	$t = -4.61$ (122)	0.001	14.8%
	Lecturer	156.3	20.29				

These results reinforce the results for the variable of 'age': Lecturers are generally younger in age than Professors. In other words, young lecturers in PYP are found to be more inclined toward the use of computers, whereas the older lot that is mainly Professors feel less comfortable in using the computers.

d) The Effect of computer training on Computer Attitude

Table 6 shows that computer trained faculty has more positive attitude towards the use of computer. The same trend can be seen on all the subscales showing that the faculty who are computer trained have higher means.

Table 6: t-test summary table

Subscale	Have taken Computer Training	Mean	S.D	Difference	t (d.f)	P	Effect Size (η^2)
Computer Anxiety	Yes	42.5	5.37	Y>N	$t = 8.42$ (122)	0.001	36.8%
	No	33.1	7.00				
Computer Confidence	Yes	42.6	4.65	Y>N	$t = 8.93$ (122)	0.001	39.5%
	No	33.7	6.51				
Computer Liking	Yes	39.5	5.14	Y>N	$t = 3.70$ (122)	0.001	10.1%
	No	36.1	4.72				
Computer Usefulness	Yes	38.9	5.31	Y>N	$t = 2.62$ (122)	0.010	5.3%
	No	36.3	5.19				
CAS Total Score	Yes	163.5	16.33	Y>N	$t = 7.5$ (122)	0.001	31.6%
	No	139.1	19.16				

e) The Effect of Gender on Computer Attitude

An independent samples t-test was conducted to determine if a difference existed between the mean computer attitude scale score of males and females faculty members working in Qassim University, Saudi Arabia. There is a statistically significant difference in CAS total score for males (N = 55, M = 156.5, S.D = 19.52) and females (N = 69, M = 141.2, S.D = 20.88); $t(122) = 4.18, p = 0.001$. Results indicated that males have a more positive attitude as compared to females. As far as subscales are concerned, there is no significant difference between the males and females related to mean scores of computer liking and computer usefulness subscale. Male respondents have a more positive attitude towards computer with respect to computer anxiety and computer confidence subscale. Table 7 depicts the results of independent samples t-test showing gender differences in computer attitudes. The magnitude of the difference of two groups i.e. Effect size is also shown in the Table 7.

Table 7: t-test summary table

Subscale	Gender	Mean	S.D	Difference	t (d.f)	P	Effect Size (η^2)
Computer Anxiety	Male	41.6	5.45	M>F	$t = 7.99$ (122)	0.001	34.4%
	Female	32.5	7.20				
Computer Confidence	Male	41.7	5.11	M>F	$t = 8.26$ (122)	0.001	35.9%
	Female	33.1	6.52				
Computer Liking	Male	37.0	5.32	M=F	$t = -0.55$ (122)	0.580	0.2%
	Female	37.6	4.99				
Computer Usefulness	Male	36.2	5.86	M=F	$t = -1.94$ (122)	0.055	3.0%
	Female	38.1	4.80				
CAS	Male	156.5	19.52	M>F	$t = 4.18$ (122)	0.001	12.5%
	Female	141.2	20.88				

5. Discussion

The study was initiated with the premise of investigating the role of age, rank, training and gender towards the computer attitude of university teachers in Qassim University, Saudi Arabia. The short summary of the results in this study is as follows:

- 1) Faculty, in general, exhibited positive responses on all the four subscales of computer attitudes which are anxiety, liking, confidence and perceived usefulness. However, younger faculty, who are mostly Lecturers, showed a more positive attitude towards computer on all subscales in contrast to the older faculty i.e. Professors.
- 2) There were significant differences in gender, in terms of their attitude towards computer. Male respondents are found more optimistic towards computer on subscales of anxiety and confidence than female respondents. However, gender does not seem to have any significant difference on the other two subscales of computer attitudes i.e. liking and usefulness.
- 3) As expected, computer training plays a very important role in maintaining the attitude towards computer. The study revealed that computer trained teachers are found positive on all the four subscales of computer attitude in contrast to the ones who had had no such training.

In higher education, the most important characteristic of a university teacher is being an expert in one's own discipline and in this era of technology, this seems impossible without being well versed and skilled in computer usage. The teachers in higher education and especially in PYP are required to prepare their students for performing successfully in the professional colleges and job market thereafter. Teachers' own attitude towards computer greatly influences their teaching approaches and methodologies and, in turn their students' learning. In this modern world of latest technology, if some university teachers still follow the same traditional pattern of teaching, there is a need to focus on their professional development in terms of computer skills for futuristic teaching and learning. Thus, computer training becomes a very important part of teaching profession. The training is helpful to empower teachers with innovative teaching techniques that would help the students to inculcate and develop higher levels of learning, and relate and apply the concepts in real life situations.

The latest discussion about the most suitable pedagogical thinking and skills include computer skills as the most important part of pedagogy. The rationale is to develop students skilled in computer technologies for the success and development of the society. For this, the role of teachers is very crucial as they are responsible to inculcate and develop the positive computer attitude in students. Faculty, both male and female, must be given an equal chance to develop themselves futuristically through faculty professional development program with the main focus on improving their computer attitude. This will lead them to learn and adopt new technology-based pedagogy to their individual teaching situations so as to influence their students positively. In short, university teachers must possess required computer skills and learn emerging teaching methodologies, strategies and approaches through Computer-mediated professional development (CMPD) so

that they groom students in a much better way and enhance their own teaching careers as well.

6. Limitations

This research study has its own limitations. The study is limited to PYP faculty from Qassim University. Participants from different universities can be taken so as to provide a broader picture of the status of computer attitudes and skills. Moreover, further research can be carried out to assess in what ways the positive attitude of teachers can influence the students' computer attitude.

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Appendix

Loyd&Gressard Computer Attitude Scale (CAS)

Below are a series of statements. There are no correct answers to these statements. They are designed to permit you to indicate the extent to which you agree or disagree with the ideas expressed. Circle the best describes how you feel about that statement

1=Strongly Disagree (SD)

2=Disagree (D)

3=Undecided (U)

4=Agree (A)

5=Strongly Agree (SA)

		SD	D	U	A	SA
1	Computers do not scare me at all.	1	2	3	4	5
2	I am no good with computers.	1	2	3	4	5
3	I would like working with computers.	1	2	3	4	5
4	I will use computers many ways in my life.	1	2	3	4	5
5	Working with a computer would make me very nervous.	1	2	3	4	5
6	Generally, I would feel OK about trying a new problem on computer.	1	2	3	4	5
7	The challenge of solving problems with computers does not appeal to me.	1	2	3	4	5
8	Learning about computers is a waste of time.	1	2	3	4	5
9	I do not feel threatened when others talk about computers.	1	2	3	4	5
10	I do not think I would do advanced computer work.	1	2	3	4	5
11	I think working with computers would be enjoyable and stimulating.	1	2	3	4	5
12	Learning about computers is worthwhile.	1	2	3	4	5
13	I feel aggressive and hostile toward computers.	1	2	3	4	5
14	I am sure I could do work with computers.	1	2	3	4	5
15	Figuring out computer problems does not appeal to me.	1	2	3	4	5
16	I will need a firm mastery of computers for my work.	1	2	3	4	5
17	It would not bother me at all to take computer Courses.	1	2	3	4	5
18	I am not the type to do well with computers.	1	2	3	4	5
19	When there is a problem with a computer run that I can't immediately solve, I would stick with it until I have the answer	1	2	3	4	5

20	I expect to have little use for computers in my daily life.	1	2	3	4	5
21	Computers make me feel uncomfortable.	1	2	3	4	5
22	I am sure I could learn a computer language.	1	2	3	4	5
23	I do not understand how some people can spend so much time working with computers and seem to enjoy it.	1	2	3	4	5
24	I cannot think of any way that I will use computers in 1 my career.	1	2	3	4	5
25	I would feel at ease in a computer class.	1	2	3	4	5
26	I think using a computer would be very hard for me	1	2	3	4	5
27	Once I start to work with the computer, I would find it hard to stop.	1	2	3	4	5
28	Knowing how to work with computers will increase my job possibilities.	1	2	3	4	5
29	I get a sinking feeling when I think of trying to use a computer.	1	2	3	4	5
30	I could get good grades in computer courses.	1	2	3	4	5
31	I will do as little work with computers as possible.	1	2	3	4	5
32	Anything that a computer can be used for, I can do just as well some other way.	1	2	3	4	5
33	I would feel comfortable working with a computer.	1	2	3	4	5
34	I do not think I could handle a computer course.	1	2	3	4	5
35	If a problem is left unsolved in a computer class, I would continue to think about it afterward.	1	2	3	4	5
36	It is important to me to do well in computer classes.	1	2	3	4	5
37	Computers make me feel uneasy and confused.	1	2	3	4	5
38	I have a lot of self-confidence when it comes to working with computers.	1	2	3	4	5
39	I do not enjoy talking with others about computers.	1	2	3	4	5
40	Working with computers will not be important to me in my life's work.	1	2	3	4	5

