Computer Self-Efficacy, Anxiety & Attitude toward Computer of Polytechnic College

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Abstract: In order to investigate reasons contributing to the decline in enrollment in computing programs in colleges and universities, this study examined student attitudes towards computing throughout an introductory computing course. The study was conducted to examine the status of computer use and attitudes among polytechnic students. It also identifies the relationships among the variables and the predictors of computer attitudes. External variables (such as computer experience and frequency of use), perceived usefulness and confidence are included as potential antecedents of attitudes toward computer [1]. This paper is a preliminary analysis of the computer attitude data of all students in all courses. The results indicated that after statistically significant increases in positive attitudes toward computers. The conclusion is that initial enthusiasm for computers, which may come from familiarity with using computers for recreational activities, drops rapidly as the work of learning computing concepts and skills begins.

Keywords — *ATCS, Linkert Type Scale, CDDM, Classical Test Theory, Item Response Theory, CP.*

I.INTRODUCTION

To ensure that computers are successfully integrated in teaching and learning and eventually, improve the students' learning process requires commitment from both students and teachers. Students, for example need to be prepared with strong basics in computer use. This is proven true when students with better basic skills in computer have positive attitudes toward the use of computer for learning purposes. Mastering computer technology and harnessing it for widespread and comprehensive use among the students is not an easy task. This becomes even more challenging when this technology is progressing and changing rapidly. Students need to have the right kind of attitudes to be able to keep up- to-date with the rapid changes that occur in computer technologies. According to Divine and Wilson (1997), developing positive attitudes among the students is more critical than merely increasing students' computer skills because "positive attitudes will automatically lead to the learning of computer skills". This study is mainly motivated by the fact that attitudes of polytechnic students toward computers is still not widely explored in the Gujarat, even though quite a number of polytechnic have included this subject in their syllabus. To prepare students' mental framework for future learning of computer skills, we need to know the conditions and factors that affect the formation of their attitude toward computers. It is especially interesting to know what these young people really think of, expect from, fear and know about these new technologies.

II.REVIEW OF RELATED LITERATURE

If students are to adopt computer technologies, they must have the right kind of attitudes toward computers. Researchers have investigated the relationship between computer attitudes and computer adoption or uptake. The importance of attitudes and beliefs for learning to use new technologies is widely acknowledged [2] regarding the meaning of attitudes, different researchers gave different but somehow related definitions of the word. Aiken (1980) described attitudes as "learned predispositions to respond positively or negatively to certain objects, situations, concepts, or persons". Some other researchers used psychological constructs to explain attitudes [3] Loyd and Gressard (1984), for example, divided the construct 'attitudes' into four different variables, which are: (1) computer liking; (2) computer anxiety; (3) computer confidence, and: (4) perceived usefulness of the computer. The multidimensionality concept of attitudes towards computers is also supported by Wang, Chen and Shi (2007) when they proposed three dimensions to represent this construct. However, simple uni-dimensional perspective of the attitude toward computer is also widely applied by many researchers, for example Divine and Wilson (1997) who are contented with the dimension computer liking, and Mitra (1998) who prefers computer anxiety as the sole dimension to represent attitude toward computers. By identifying the predictors of computer anxiety, use of computers among students can be better explained. If students perceived the usefulness of computer and feel confident in using it, this will lead to more positive attitudes, thus tend to use computer more. Similarly, Garland and Noyes also found that confidence correlate positively towards computer attitude, whereas GAO (2005) found that perceived usefulness is positively correlated with computer attitude. Shaw and Giacquinta (2000) discovered that technological students are using computers more frequently, for a wider array of purposes, and for greater number of hours each week than students in other non technical branches. They also reported completing more formal instruction and more positive attitudes toward the value of computers in academic studies.

III.OBJECTIVES OF THE STUDY

- To explore the polytechnic student's attitudes toward computer (ATC)

- To examine the relationships between the polytechnic students' ATC & their gender, course, department and course duration.

- To identify the predictor(s) of attitudes toward computers.

IV. HYPOTHESIS

- There will be no significant difference between the ATC of boys and girls of polytechnic.

- There will be no significant difference among the ATC of the students of the different course, department of polytechnic.

- There will be no significant difference between the ATC of the students of part time & full time courses at polytechnic.

V. DELIMITATION OF THE STUDY

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IX. METHODOLOGY

The 120 students of sir Bhavsinhji polytechnic, Bhavnagar were the population of this study. They were the students of full time and part time diploma courses in civil, mechanical, electrical, auto, fabrication, textile, commercial practice, costume design & dress making. The sample consists of 120 students selected by stratified random sampling technique including 80 boys and 40 girls in the sample.

X. PROCEDURE

The information used for this study was gathered through a questionnaire, which comprises of three different sections. The investigator administrated the ATCS to the students selected in the sample in normal classroom conditions. First

students has filled up the basic data and then investigator has presented an example on the black board and then explained the procedure for responding to the items of the ACTS. He has removed the difficulties of the students and after that they have completed their response on the tool without any tight time limit.
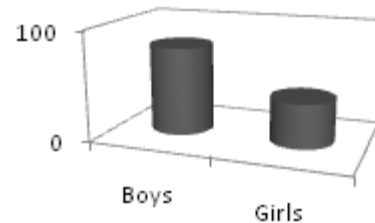

Figure 1: Student Catefory

XI. ANALYSIS OF THE DATA

The analysis of was implemented for item analysis, reliability and validity of the ATCS, achieving the objectives of the study and testing the hypothesis. Item analysis, reliability and validity of the ATCS were done in the frame works of classical Test Theory (CTT) & Item response Theory (IRT). The factor analysis was applied for construct validation of the ATCS. The hypotheses were tested using the ANOVA. A graph theory based index was applied for testing the uni dimensionality of the ATCS. Variables are measured by means of 5 Likert-type scaled items, following that of computer comfort/anxiety dimension by Loyd and Gressard (1984). Sample items include "I feel comfortable when using computers" and "Working with computers makes me nervous" (negatively worded). For this section, respondents were asked to rate their attitudes based on five descriptors ranging from "Strongly disagree" to "Strongly agree". Perceived usefulness of computers and confidence in using computers are accessed via the Likert-type instrument, which is adopted from the Computer Attitude Scale (CAS) by Loyd and Gressard (1984). In the present investigation a Linkert type five point rating scale was developed and validated to measure the student's attitude toward computer. It was called Attitude toward Computer Scale. The ATCS was developed by combining the items of the scale of Kerman and Howard (1990) and Reece and gable (1992). There were 30 items in the ATCS. It was a self report type tool. The five points or response alternative were completely agree…., Neutral….. Completely disagree. This tool was validated for item analysis, reliability and validity in the frame work of classical test theory (CTT) and item response theory (IRT). IRT is a modern measurement theory. [5] The outcomes of the validation procedure are presented in the section of result. Here it is sufficient to note that the ACTS was a reliable and valid tool.

XII. RESULT & DISCUSSION

The present study mainly aimed to know that the attitude of the students of the Polytechnic college. Hence the person (120) x item (30) matrix was analyzed for the descriptive

statistics such as frequency distribution of the student scores on the ATCS, mean(82.19),standard deviation(11.41), Skewness(0.043),Kurtosis(-0.99),standard errors of mean(1.04) of the distribution were calculated using SPSS. These descriptive statistics of the student scores on the ATCS are presented in table 1.

TABLE 1: Student Statistic

Scores	Frequency	Scores	Frequency	Scores	Frequency
59	1	77	4	94	4
61	2	78	1	95	3
62	1	79	3	96	3
63	1	80	4	97	3
64	2	81	1	98	2
65	1	82	1	99	1
67	1	83	2	100	2
68	5	85	5	101	3
69	4	86	4	104	2
70	3	87	3	106	1
71	4	88	2		
72	3	89	4		
73	3	90	6		
74	4	91	5		
75	7	92	2		
76	5	93	2		

It can be observed from above table that the mean of the student's scores on the ATCS was 82.19 (68.50%). It means that these students attitude toward computer was Positive. The standard deviation of the scores was 11.41. It indicates that relatively small individual differences in the students attitude toward computer. Thus it was found that the student of polytechnic college had positive attitude toward computer and they had favorable feeling for computer. The investigator was interested to explore the relationship between the student's attitude toward computer and their gender, department's i.e. civil, mechanical, electrical etc. Student's attitude towards computer was related to their department or branches of the course but not their gender or duration of courses.
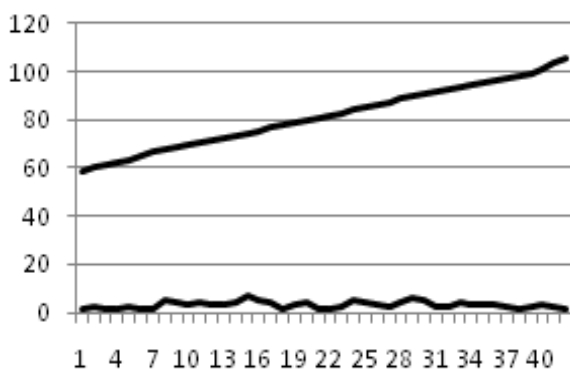

Figure 2:

Table below presents the mean scores on the ATCS by gender and department

Table 2: Mean Scores on The ATCS By Gender And Department

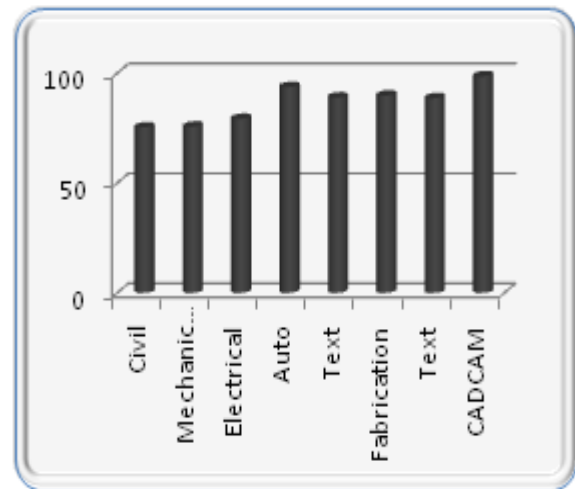| Gender		Department							
Boys	Girls	Civil	Mechanical	Elect	Auto	Text	Fabrication	Text	CDDM
79.87	87.21	75.38	75.76	79.31	93.75	89	89.89	88.67	98.67

Figure 3: Mean Scores on ATCS

CONCLUSION

As a final note, studying attitudes toward computer among students are critical for the successful implementation of computer and information technology in the classroom. Findings of such studies will determine the proper direction toward the success of technology incorporation in the classroom. Additionally the instilling of positive attitude toward computers will assist the nation to achieve its goal of an information literate society who is able to keep abreast with the latest technology development. The study was initiated with the premise of investigating how learning computing skills, affected students' attitudes toward computers. Data on gender, major, campus and age were collected and will be reported on in future analysis. Future studies could focus specifically on classes which are all programming. Another possibility is to look at the attitudes of students across different courses in a major to see the impact on retention. For example, a future study could include a preparatory unit addressing student expectations. Another possibility is to organize the material around problems which incorporate recreational use (e.g. games)

Acknowledgements

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