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Prospective Teacher's Attitudes Toward Computers

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A wide variety of technologies is currently used in educational settings (Mitchell & Paprzycki 1993, Paprzycki & Mitchell, 1991, Vidakovic & Paprzycki, 1993). However, within the last couple of years, most of these technologies are being used (and enriched) in a computer-based environment. It is obvious that it will be teachers (present and future) who will play a decisive role in how successful the technology will be in education. At the same time, there seems to linger a widespread belief that teachers are more hesitant and less likely to embrace computer technology than other professionals.

We have decided to investigate the validity of this belief on a population of prospective teachers and examine students' attitudes toward computers in relationship to gender, age and academic major. We developed a survey to examine the level of computer anxiety. The aim of this paper is to present the preliminary results of our study.

Methodology

To obtain measures of students' attitudes toward computers, we used a simple and widely used self-report survey with questions written in a Likert scale format (Gronlund, 1981). A list of favorable or unfavorable attitude statements was presented and students were asked to respond to each statement on a five-point scale: strongly agree, agree, undecided, disagree, and strongly disagree (see Appendix 1 for the complete survey). The scoring of a Likert-type scale was based on assigning weights from 1 to 5 for each position on the scale (the weights for unfavorable questions were reversed).

Questions were combined into four groups representing particular areas of interest. Questions 1, 2, 4, 6, 7, 8, 9, 16 and 21 characterize the individuals' current feeling about computers. Questions 3, 5, 17, 20, 22 and 24 assess the perceived need for the computer (in the past, presently and in the future) and the perceived role of computers (in the present and in the future). Questions 10, 11, 13 and 15 address the individuals' attitude toward learning. Questions 12, 14, 19 and 23 deal with the attitude toward the Computer Literacy course itself.

Three major factors were considered: academic major, gender and age. For each of these factors a comparison was run inside each school and between the two schools. For the academic major we have made two comparisons: teachers vs. non-teachers and a five-way comparison between the prospective teachers, natural science students, arts and humanities students, business students and undecided. The results were statistically analyzed using ANOVA combined with the Duncan's multiple comparison test (for the statistically significant ANOVA results). For the Duncan's multiple comparison test the standard significance level of 0.05 was used.

During the Fall 1993 Semester a total of 69 surveys were collected at the University of Hartford (UH), an urban university in a major metropolitan area. They consisted of 33 females and 36 males, 68 youngstudents and 1 older student (where young is defined as up to 25 years old), and 2 prospective teachers. During the Spring 1993, Summer

1993 and Fall 1993 a total of 62 surveys were collected at the University of Texas of the Permian Basin (UTPB), a state-supported regional university in a predominantly rural area. They consisted of 16 females and 46 males, 30 younger and 32 older students and 22 prospective teachers. Since the number of prospective teachers and older students at UH was small, the comparisons between teachers and non-teachers, as well as, older vs. younger students were performed for the UTPB only.

Results

Data relative to overall attitudes, feelings about computers, opinions about the role of computers, and attitudes toward the role of computers and toward learning were analyzed.

Overall attitude

The primary thrust of our study was to compare the prospective teachers with students in other majors. The results were somewhat surprising. We found no significant difference between prospective teachers and the rest of the student body in the overall attitude toward computers and on question by question basis. When comparing all five groups of majors (combined from both schools) there was also no difference between their overall attitude toward computers. These results argue against the notion that prospective teachers have an anti-technological attitude. They also suggest that the difference in attitudes toward computers may not depend upon the academic major. We found that students at UTPB had more positive overall attitudes toward computers than the students from UH. Significant differences in the overall attitude toward computers were also observed when age and gender were considered. We found that UTPB young students were more positive toward computers than UH young students. At the same time there was no significant difference between young and old UTPB students. UTPB female students are more positive toward computers than UH female students; there was no difference between male students between the two schools or between male students and female students inside each school.

Feelings about computers

There was no difference between the two schools in general, between the majors, or teachers and non-teachers at UTPB in terms of feelings about computers. Young students from UTPB felt more comfortable with computers than young students from UH. They were also more comfortable with computers than the older (UTPB) students. There were no significant gender differences.

Role of computers

Overall, UTPB students were more positive as far as the assessment of the role of computers and their future computer needs than UH students. There was no difference between the majors, teachers and non-teachers at UTPB, or young students in both schools. At the same time older students at UTPB are more positive than younger students. There was no difference between UH female students and UTPB female students. UTPB male students were more

positive in their assessment of the role of computers than UH male students. There was no gender-related differences inside each school.

Attitudes toward learning

In general, UTPB students had a better attitude toward learning than UH students. There was no difference between all majors or teachers and non-teachers at UTPB. Young students from UTPB were more positive in their attitude toward learning. There was no difference between the younger and older students at UTPB. UTPB female students had a better attitude toward learning than UH female students, but there was no difference between male students in both schools as well as no difference between genders inside each school.

Attitudes toward a Computer Literacy course

In general, UTPB students were more positive than UH students in their attitudes toward the Computer Literacy course. There was no difference between the majors or teachers and non-teachers (UTPB). UH younger students were more positive toward the course than UTPB younger students. There was no difference between younger and older students at UTPB. UTPB female students were more positive toward the course than UH female students, whereas the attitudes of male students in both campuses did not differ. Inside the schools there was no significant difference between the genders.

Question by question comparisons

When comparing the schools there were six questions in which significant differences were observed: 5, 11, 12, 14, 15, 22 (questions related to the computer as a tool, attitude toward learning and the Computer Literacy course). In all cases UTPB students had more positive attitude than UH students which matches the results presented above. For the five groups of academic majors (combined from both schools), the only significant differences occurred for questions 1 and 8. Business majors and prospective teachers were the least frustrated by computers, whereas natural science majors and undecided students were the most frustrated. Undecided students (followed by students from arts and humanities) were most likely to believe that computers will enslave people, the business majors and prospective teachers were least likely to believe it. The only gender-related differences (combined from both schools) occurred for questions 9 and 22. Female students believed that computers save time and expected to use them more often in the future. The largest number of significant differences occurred between younger and older students. The only case when younger students were more positive was in their belief that everybody is capable of using computers (question 6). For questions 3, 11, 14, 15, 20 and 22 (related to the need for computers, attitude toward learning and the course) older students are more positive than younger students.

Conclusions

The results of this study must be considered tentative because of the small sample involved. The results, how-

ever, do suggest that there is no significant difference between the prospective teachers and other students' attitudes toward computers. There may be significant differences when considering age and gender. There also seem to be substantial differences between students at UTPB and UH. The last result supports Connell's (1991) suggestion that attitude toward computers may be more site specific than generalizable. We do not want to present any additional generalization, as this was only a pilot study and additional data collection is necessary. Based on the results presented above, and the response from the students and colleagues we are in the process of redesigning our survey. The new survey will be administered in the Spring 1994 semester.

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Appendix 1

Indicate the extent to which you agree or disagree with the statements listed below. Be sure to respond to every statement.

1. I am frustrated by computers.
2. My experience in working with computers is negative.
3. Many times in the past I had a need for a computer but didn't know how to use it.
4. I feel uncomfortable each time I start to work with computers.
5. I will use the computer after college.
6. Only smart people use computers.
7. I think that I will never be successful working with computers.

8. I am afraid that one day computers will take over and enslave people.
9. I think that computers do not save me time.
10. One cannot learn about computers by her/himself.
11. I am interested in learning more about computers.
12. Computer Literacy courses should be a requirement for all high school students.
13. Sufficient instructions should be provided when using computers.
14. This course will make me appreciate the use of computers in my field.
15. I am always ready to learn new things.
16. I feel uncomfortable when I see that other students know more about computers than I do.
17. I think that the computer is a tool that I will never need to use.
18. This course will help me in other courses where computers are used.
19. This course will have a big impact on my choice of courses I will take next semester.
20. Using computers should be a part of all courses.
21. One can get addicted to the computer just as one can get addicted to drugs.
22. I expect to use computers much more than I have before.
23. Taking this course will help me overcome my frustration with computers.
24. I think that the role of computers in daily live will increase in the next ten years.

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