

Is Technological Literacy of Incoming Freshmen Related to Ethnicity and Family Income?

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BACKGROUND AND METHOD

Much has been written recently regarding the "digital divide" separating our nation's ethnic minority students from their non-minority peers. It is apparent that some minority students may be less likely than other students to have access to a personal computer in their home, but the degree to which this may be mediated by family income and whether there are differences among ethnic groups is still under study.

Two sources provide information on this issue with respect to University of Washington students. The [1999 Entering Student Survey](#) asked incoming students about their experience with and access to personal computers. Matching data on ethnicity and family income were drawn from the University of Washington Student Database, and complete data were obtained on 1,277 students.

Technological Literacy

The *Entering Students Survey* asked students how often in the past year they had used a computer to accomplish various tasks, how comfortable they felt with using a computer, and whether they expected to have a computer in their residence during autumn quarter at UW.

Ethnicity

Information on student ethnicity was obtained from the University Student Database for each student who returned a completed questionnaire. Three ethnic groups were defined: White (n=854), Asian (n=343), and under-represented minority (n=79). Because of small numbers, the last category was created by combining African-American, Hispanic, Native-American and Pacific Islander students. International students and students who self-identified as "Other" were not included.

Family Income

Income was also taken from the Student Database. This self-report information is obtained by asking students to copy the figure reported on a specific line of their family federal income tax return.

RESULTS

Previous Experience

It is apparent that students have a great deal of experience using computers before they enter the UW. Based on thirteen computer-related tasks listed in the *Entering Student Survey*, we found that in our sample of over 1,000 freshmen, only 2% had never used a computer in a high school class, lab, or library, 1.4% had never used a computer to do school assignments at home, and fewer than 1% had never used a word processor. The most frequently reported level of use of the Internet and email was *daily* or *nearly every day*.

Students with higher family incomes made significantly more use of computers in a high school class or library, or to do school assignments at home than did students with lower family incomes. They also made more frequent use of a word processor. No other differences were statistically significant. A larger number of differences between high and low incomes were found by ethnicity, and in fact only the three tasks with the lowest overall level of use were not significant. In each case, Asian students tend to use computers to accomplish the listed tasks most frequently, and under-represented minorities least frequently. However, for both family income and ethnicity, no difference accounted for more than 2% of the total variation in usage.

During the past year how often did you:

Use a computer:

- in a high school class, lab, or library † ‡
- at home to do school assignments † ‡
- at home to do own projects or creative work †
- at home for fun or to play games †

Use a word processor † ‡

Use a spreadsheet †

Use presentation software

Use the Internet †

Communicate using e-mail †

Participate in on-line discussions †

Research using on-line library or Internet resources

Create pages using the Internet †

Write computer programs

† Significant differences ($p < .05$) by ethnicity

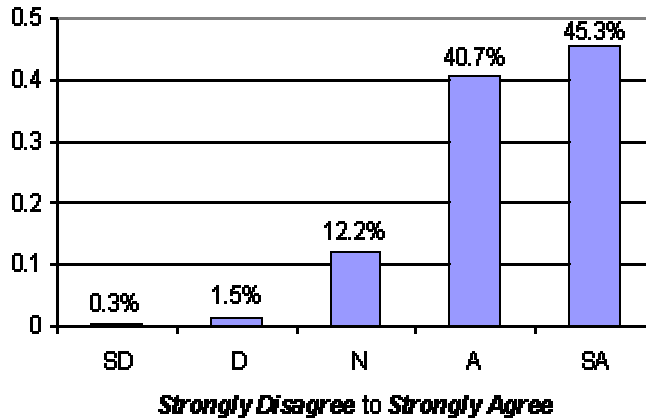
‡ Significant differences ($p < .05$) by family income

Comfort

Given the extent of their experience with computers, it is not surprising that most students agreed with the statement, *I feel comfortable using a computer*. Using a five-point rating scale from *strongly disagree* to *strongly agree* the mean response was a very high 4.29.

Comfort was not affected by family income or ethnicity. The average response for students whose family income was above the median was 4.29, vs. 4.30 for those below the median. Further, average responses for the various ethnic groups differed by a negligible 0.04.

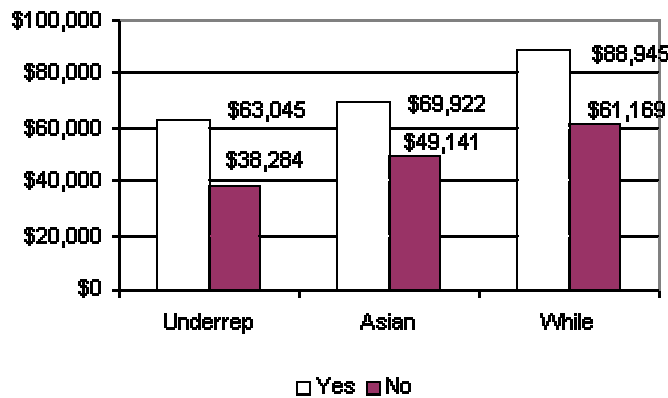
'I feel comfortable using a computer'



Expected Access

Students of different ethnicities and income levels did not share similar expectations with regard to access to a personal computer in their residence while at the UW. On the Entering Student Survey, students were asked, *Will you own or have access to a computer in your residence autumn quarter?* In comparing students who answered *yes* (83%) to those who answered *don't know* (16%) or *no* (1%), it was apparent that under-represented minority students were least likely to expect to have access to a computer in their residence (70%), compared to Asian (81%) and White students (86%). For each ethnic group, students who expected to have access to a computer in their residence had a significantly higher income than did students who did not expect residential access. Because there were consistent differences among the average incomes of the ethnic groups, it appears that both ethnicity and income play a role in residential access. In fact, the figure below suggests that income may play the bigger role.

Average Family Income by Ethnicity and Computer in Residence



CONCLUSIONS

While the digital divide may be significant in other population segments, it does not appear to be a major source of difference among UW students, especially in terms of their comfort with using computers. Furthermore, nearly all new freshmen, regardless of income or ethnicity, are arriving on the UW campus with some exposure to computing in their schools and homes. However, underrepresented minorities and students of lower family incomes are less likely to be able to count on a computer in their UW residence. Having computers readily available in public campus locations appears to remain important, especially for these groups.