

# Equity and the Development of Technological Fluency

Brigid Barron, Jennifer Tackman, Caitlin Martin, Emma Mercier, Aditja Johri, Zanette Johnson, Susie Wise, Marie White, Sara McPhee & Peter Worth

Stanford University, Stanford CA 94305  
Tel: (650) 725-0194, Fax: (650) 725-7412  
Email: BarronBJ@Stanford.edu

## Introduction

Using computers to generate knowledge and creatively meet personal goals are aspects of what has been called technological fluency (NRC, 1999). Although opportunities to develop technological fluency in school vary widely, youth have other opportunities to learn to use computers in informal and out of school settings. In the learning ecologies framework that guides the current research, the tools available, the social practices, and the relationships formed in physical contexts where students spend time are considered crucial sources of learning (Barron, in press). Distributed resources such as books and online tutorials are also considered to be important resources. The goal of this study was to investigate individual differences in experience and learning resources.

## Results and Discussion

Experience with fluency-building activities. To look at students' history of experiences they were asked to indicate the number of times they had participated in a total of 16 activities ranging from creating a multimedia presentation to writing programming code. To examine how students differed in their breadth of experience, we created an experience score based on the number of fluency-building experiences students had participated in at least once. A median split was used to define a more and less experienced group. A chi square analyses indicated no relationship between experience level and gender,  $X^2 = .01$ ,  $df=1$ ,  $p \leq .55$ .

Perceived learning sources. Students were asked to mark from a list all the ways they learn about computers. More experienced students reported relying on five out of sixteen sources significantly more than less experienced students. These were learning from reading books  $X^2 = 7.34$ ,  $df=1$ ,  $p \leq .001$ , the use of tutorials to learn,  $X^2 = 3.7$ ,  $df=1$ ,  $p \leq .05$ , learning from a community center,  $X^2 = 6.73$ ,  $df=1$ ,  $p \leq .02$ , learning from an after school club,  $X^2 = 7.41$ ,  $df=1$ ,  $p \leq .02$ , and learning from their mother,  $X^2 = 10.8$ ,  $df=1$ ,  $p \leq .001$ . The relationship of gender and experience level to the number of learning sources utilized as analyzed with a univariate ANOVA. This analysis yielded a main effect of experience level  $F(3, 69) = 9.1$ ,  $p < .001$ . Students with greater experience reported significantly more sources of learning ( $M=4.9$ ,  $SE=.48$ ) than those with less experience ( $M= 7.1$ ,  $SE=.51$ ).

## References

- Barron (in press). Learning ecologies for technological fluency: Gender and experience differences. *Journal of Educational Computing Research*
- National Research Council. (1999). *Being fluent with information technology*. Washington, DC: National Academy Press.

## Acknowledgments

This research was supported by a CAREER award from the National Science Foundation awarded to the first author, REC-238524.