



Computer use and the gender gap: The issue of access, use, motivation, and performance

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Abstract

Since the beginning of computerization, it has been of interest whether there are differential effects on computer behavior, in particular in terms of computer access, computer use, and motivational variables, such as computer self-efficacy. The current research addresses the questions if the gender-related differences in this respect persist to the present day and if there is also a difference in actual performance characteristics. A sample of 48 university students (23 male) was administered a technology self-efficacy questionnaire, a survey on computer access, recorded a user diary, and turned in a computer task. Results show that the gender gap is closing as far as computer access and self-efficacy are concerned. Also, female and male students report comparable amounts of computer usage for their studies. User behavior appears to be gender-specific as males spend more time at the computer for personal purposes. There is also some evidence that male students outperform female students at a computer task (remastering of Power-Point slides). Conclusions for creating computer-based learning environments are discussed.

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1. Introduction

The use of personal computers for educational purposes and web-based teaching technology is a focus of high interest and much is expected from the increase in availability and

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accessibility of multi-media communication technology in order to advance education at all levels. The German Rectors' Conference, for example, proposed the view that computer based information technology and virtual learning platforms could mediate major qualitative changes in the educational system, because both increased numbers and more specific courses could be offered through distance learning or blended learning programs which can be accessed without any time or space constraints (Hochschulrektorenkonferenz, 1998).

Although it can be taken for granted that the use of computers has pervaded most of the modern professional and, in large parts, personal spheres, a number of issues still need clarification. Research has demonstrated, for example, that computer access, computer-related skills, and computer use may not be as general as assumed in the projections of the planners, so that the material and the psychological requirements of media-based learning environments may create new gaps and barriers to education. In particular, gender needs to be taken seriously as a possible variable, as will be reviewed below. The focus of this paper is to view the most recent developments in computer access and use, as well as the prevailing attitudes about computers in education so that we can better understand the opportunities and risks associated with computer-based learning environments. In addition, we will address the issue of gender differences in computer performance.

1.1. Computer access

Middendorf (2002) surveyed more than 11,000 German university students to look at various aspects of self-reported computer use. The data showed that computer access has become a reality for nearly all students (97%), although not all of them (85%) actually owned a computer. These data corresponded with results from a survey collected in 1998/99 among Anglo-American students which yielded similar percentages of computer ownership among students (Jackson, Ervin, Gardner, & Schmitt, 2001). The research supports the notion that there has been a steep increase in computer availability. Whitley (1996), for example, had found that 31% of male students and 27% of female students (high school and college) had their own computers. It remains to be seen whether or not access to computers or owning hardware and software is a sufficiently relevant indicator for media use and media literacy (Jackson et al., 2004; Van Dijk, 2004).

1.2. Computer use

Middendorf (2002) found in a survey among students in Germany that the mean duration of computer use was about 14 h a week out of which 7.6 h were study-related. Most preferred applications were email, Internet search, and word processing. Gender specific user behaviors were identified as follows: Females visited public computer pools less frequently than males, and they were also somewhat less likely to own a computer (80% vs. 88%) and to have Internet access at home (45% vs. 63%). The gender differences in computer access were not affected by differences in academic subjects studied. Furthermore, gender differences appeared with regard to duration of computer work. Males spent about 5 h more at the computer per week than females. This was found to be due to a more extensive use of the computer for personal purposes (as opposed to school assignments and study-related purposes) and the pursuit of self-generated (as opposed to assigned) tasks. The intensity of computer use for females, however,

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