

DIGITAL GENDER GAP IN EDUCATION. A NEW CASE OF INEQUALITY FOR GIRLS?

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Abstract

In the literature on the gender issues concerning computing in education, it is argued that an alarming digital gender gap is growing up, affecting lives of both girls and boys as far as their inclusion in the information society, is concerned. Gender differences in computing have been widely reported by various experts in the educational field. Computers are not biased per se. However, the way computers are used can reinforce gender bias. Also, the lack of access to them, the lack of experience, parents and teachers' attitudes, expectations and behavior, peer pressure, the lack of role models and stereotyped software are among the long list of features thought to contribute to gender inequity. This paper presents some of them in order to point out the importance of the emerging technological and computing gender gap in education.

INTRODUCTION

In our days, rapid changes take place daily, as result of explosive growth of new technologies and globalisation of economy. In particular, computer technology has profoundly changed what we learn, how we learn it, and how we apply that learning in the workplace and throughout our lives. There is a widespread belief that the transition to the "information society" requires computer literate workers who will be able to use effectively this technology (Gilster, 1997). ICT skills are considered as a prerequisite for future success (Plotnick, 1999). However, it is far less certain that all of us are equipped to take full advantage of this technology.

Nevertheless, the interest, in public discourse, is focused mainly in the economic consequences, ignoring any gender dimension, as well as the danger of marginalisation and social exclusion of women, the creation of what is known as "digital gap" between sexes. In educational bibliography, research reveals a gender gap in computing. Particularly, the introduction of Information technology in Primary and Secondary Education, internationally has been realised that produced a new field of "primacy of male sex.

In comparison with boys, girls have less experience with computers (Schumacher & Morahan-Martin, 2001), less confidence in their computing abilities (Young, 2000), and less interest in computers (American Association of University Women, 1998). These features may contribute to the gender imbalances in employment in technical fields, where women comprise the 20 percent of the information technology work force, and continue to be underrepresented in systems analysis, software design, programming, and technological entrepreneurship (American Association of University Women, 2000). The different representation in percentage of two sexes in this technological job market reveals also a new brain - drain of talents.

In the bibliography of educational research, many are the factors which have been offered for this gender gap:

- Family and social environment,
- Stereotyped perceptions of teachers for the relation of two sexes and computers (hidden curriculum),
- Content of Programs of Study (curriculum),
- Content of educational software.

The digital gender gap seems to derive from the early experiences with computers at home and are likely to be important in shaping girls' orientation toward them and their willingness to explore the technology fully. Playing with computer and educational software can provide an introduction to computer literacy, creating familiarity and building confidence in skills (Cassell & Jenkins, 1998). However, the data show that the parental support is determined to a large extent by the sex of children and is given generously to boys (Janssen, Reiner and Plomp, 1997). The attitude of parents but also of the "important others", such as teachers, constitute may serious social barriers in technological and digital education of girls, as their behavior perpetuate the assumption that computers constitute cognitive tools addressed to boys (Yeloushan, 1989) and also the social opinion of "masculine" picture of technology (Zuga, 1996) and computers, that tends finally to activate the phenomenon of "self-fulfilling prophecy" (Brosnan, 1998).

The opportunities of access to and use of computers at home constitute another important factor that contributes to a digital gender gap. It has been realised that boys have more probabilities than girls to use computers in

this context (Janssen Reiner and Plomp, 1997). Contrary to boys, girls are likely to use computers often exclusively at school. This phenomenon underlines the different "digital and technological capital" that girls and boys possess from the beginning of their school life. As for the sentiment of lower self-confidence of women and girls using of computers is often remarked upon. According to Collis (1991) girls would strongly defend the abilities of their sex in general terms, but be hesitant about their own potential and choices². Collis identified this situation as paradoxical ("We can, but I can't" paradox).

Boys enter school more familiar than girls with computers in large part because boys play computer games more (Kaiser Family Foundation, 1999). Despite the recent growth of games designed for girls, girls still buy only 12 percent of multimedia games (Gorriz & Medina, 2000). Most games fail to attract girls because they are designed primarily for the male market, employing combat and sports themes, often lacking female characters, or limiting females to the roles of passive victims to be rescued or huge-breasted vixens with guns ("pink software" or "Barbie Fashion Designer") (Cassell and Jenkins, 1998, Gailey, 1993; Provenzo, 1991, Raphael, 2002). Similarly, educational software often contains stereotyped gender roles (Birahimah, 1993; Hodes, 1996) and violence that has been shown to induce greater stress in girl users than boy users (Cooper, Hall, & Huff, 1990).

However, in the school environment it has been realised that a complex of situations encourages and perpetuates gender inequalities. It has been pointed out that the behavior and the expectations of teachers are determined to a large extent by the sex of their students (Brosnan, 1998). Thus, teachers tend to behave in different way to girls and boys because of their stereotyped perceptions about social determined roles for each sex. Also, Acker and Oatley (1993:258) have pointed out that after the introduction of Information technology in education, "a boy-centered computer culture growing up in schools or within classrooms". Moreover, has been formulated the opinion that the school activities in the technological educational laboratories of school units are competitive, so not attractive for girls, who prefer team-work (Opie, 1998).

Still, it has been pointed out that the lack of women teaching Information technology constitutes absence of role models for students, fact that reflects to a large extent also the social reality, as few women follow career in this sector. On the contrary, the presence in the school of female teachers with specialisation in the Information technology, in combination with the change of instructive methodology, appears to have equalizing results for students of both sexes (Pryor, 1993).

CONCLUSIONS

In the modern society of technology, the girls are called to negotiate their integration with not equivalent terms, commencing from different starting lines and building, as emerges, a "technological and digital capital" showing a deficit. The not sufficient parental and social support, the lack of models for imitation and occasions of access, the early experiences with computers mainly in the school environment, the stereotyped behavior of teachers and schoolmates, not suitable curriculum with the interests and the cognitive style of learning of students, constitute that elements that determine to a large extent the personal growth and professional development of girls in the new "information society". In Greek reality, where Computer learning just recently was introduced in our educational system and soon in Primary Education as part of National Curriculum, it is important to re-examine the way of use and exploitation of new technologies in school.

¹ In the international bibliography, are formulated four (4) at least interpretations of term "digital gap" (digital divide) (Fink and Kenny, 2003):

- Gap in access to use of ICTs,
- Gap in the ability to use of ICTs,
- Gap in actual use,
- Gap in the impact of use in the economic life.

² This phenomenon is also reflected in the neologism that is often met in bibliography in order to express the lack of self-confidence of girls concerning computers "computer - phobic".

Characteristically they are the conclusions of the study *Gender Gaps – Where Schools Still Fail Our Children* (AAUW, 1998:4): “A discouraging new gap is emerging, as computer science becomes the new “boys’ club.” The failure to include girls in computer science courses threatens to make women bystanders in the technological 21st century. Some say computer access may one day bridge the educational gap between wealthy and poor students. But little attention has been given to how computer technology is affecting the educational gap between girls and boys. The goal should not simply be to “fix” girls to think like boys. Instead, we need to assess the role of computer technology in schools to ensure that it promotes equity and collaboration among all students”.

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