

# Gender and Diversity in E-Learning<sup>1</sup>

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## INTRODUCTION

Multimediality, interactivity, and inter-connection as well as independence of place and time are potentials of e-learning and can bring about an increase in quality and flexibility of learning. E-learning comprises a variety of scenarios, which differ in their didactic approach and application of media technology. Reinmann-Rothmeier (2002) refers to a model of Back, Seufert, and Kramhöller (1998) consisting of three scenarios according to the main function of new media in the learning process. In e-learning by interacting, the new media facilitate interactions between users and the system, in e-learning by distributing, the new media function as distributors of information, and in e-learning by collaborating, the new media are applied in order to support group work. This trisection traces roughly the history of e-learning. Up until the mid 1990s, e-learning mostly consisted of programs on CD-ROMs run by learners on single PC-units. With the spreading of the Internet, the search for and distribution of information via the Web has continuously grown in importance. Currently, efforts are being made to improve interactivity and collaboration between learners and teachers to overcome the isolation of e-learners using CBT. Blended learning concepts evolved and CSCL emerged as a research field to consider technical and didactic aspects of online collaboration.

Influenced by the shift in didactics from an instructional to a constructivist paradigm, current research questions are, however preferences, skills, and demands of users can be integrated into e-learning technology. Along with this development, gender aspects have become a focus of research. In this article, we will first clarify how the co-construct

tion between gender and technology can be understood without lapsing into dichotomous and self-reifying patterns. We will then outline the multifaceted network of gender aspects in e-learning. We aim to develop a list of demands for e-learning scenarios and will propose an approach for technical construction that takes gender and diversity demands into account.

## BACKGROUND

Research on gender and ICT has identified multiple aspects that affect gender differences regarding access to and use of computers. On the individual level, attitudes and competencies concerning the application and acceptance of computers are acquired to different extents. For example, more girls and young women use computers in a rather application-oriented way, whereas more boys and young men act rather playful and oriented on programming (Feierabend & Klinger, 2003). On the structural level, there is an obvious segregation of the information technology labor-market in many European countries (Ruiz Ben, 2002), so that women rarely gain influence on new technology development. On the symbolic level, a close link between technology and masculinity still prevails in the European and Anglo-American spheres, hindering girls and women in dealing with ICT.

A closer look, however, also shows that the variation of habits, preferences, and interests of ICT-users is by far more complex and differentiated than the postulation of the “digital divide” and the “female distance to technology” suggests. Gender research has pointed out that women and men are in

no way homogeneous groups. The diversity of the users of ICT has to be considered within as well as between gender groups. Referring to the keyword “co-construction of gender and technology”, current approaches of gender research examine how gender is being re-constructed in the complex network of interaction between individuals and technology.

Constructive realism (see Meßmer & Schmitz, 2004) means that male or female strategies of behavior concerning the use of technology are not determined by gender or biology. They are multiple, dynamic, and flexible. Aspects such as age, ethnicity, class, education, social, and economic factors shape these strategies of behavior. They emerge, however, in a society in which gender as a structural category is embedded in every social sphere and in which it is present even in technology itself. Consequently, the affiliation to a gender group is often characterized by similar experiences. These experiences may be constructed, but they are real within one’s perception and have an effect on the shaping of strategies and future behavior. Therefore user-oriented e-learning has to consider gender differences as well as the plurality of, and the mutual relations between individual, social, cultural, and technical facets.

## MAIN TRUST OF THE ARTICLE

### The Gendered Interactive Network of E-Learning

A gender- and diversity-oriented development of e-learning has to take all variables affecting the actual use of the technology and their interconnections into consideration: diverse learners, learning scenarios, and e-learning systems.

- a. Learners differ in terms of age, gender, and ethnicity, and also in regards to their computer literacy and discipline-specific competencies. Recent analyses have shown that the digital divide in the use of the internet depends less on gender alone than on a combination of age, education, and gender. Whereas male and female members of younger and well educated groups are almost equally online, the number of female users of the internet decreases strikingly in groups of higher age and lower levels of

education (Fluck & Wagner, 2003). Learners have different technical and economic resources at their disposal (e.g., computer equipment and programs), and girls and women are still likely to have inferior computer equipment than boys and men (Feierabend & Klinger, 2003). These gender differences are larger in technical and natural sciences and smaller in cultural and social studies (Middendorff, 2002).

Learners differ in their motivations, interests, and values and develop individual strategies of learning. There are many models of learning which classify learners, for example, according to the modality of sensual perception they prefer (visual, auditive, or haptic), the way they collect and process experiences (abstract or concrete), or the extent of instruction and interaction they require (e.g., field dependence). Instead of defining individual learning styles as fixed traits, current research tends to treat them as strategies, which are applied in different situations in order to fulfill different tasks. In addition, research on gender-specific learning preferences does not reveal consistent results. Yet the preference of many women to learn in groups seems to be confirmed (e.g., Leong & Hawamdeh, 1999; Frank, Kassancke, & Suhl, 2002; Rajagopal & Bojin, 2003).

The connection between learning and communication strategies is especially important for collaborative work. The prospects that virtual communication would overcome restrictions women experience in face-to-face communication were not realized. Some studies identified typically “male” competitive and “female” supportive and attenuative communication styles in huge, anonymous mailing lists (Herring, 1996). Communication processes in smaller teams, for example in doubles, via e-mail (e.g., Pohl & Michaelson, 1997) and in professional settings are much less shaped in a gender-specific way. Styles of communication generally depend very much on particular situations and are modified by the degree of anonymity and professionalism, the size of the group and their gender ratio, the frequency of contacts and the topics that are discussed (for details see Cornelius, 2002; Savicki, Lingenfelter, & Kelley, 1996).

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