

National Center for Women & Information Technology

PROMISING PRACTICES

How Can Unbiased Software Facilitate Girls' Interest in IT?

A Checklist for Evaluating Software (Case Study 1)



K-12 Education

To avoid gendered outcomes, we recommend that teachers carefully select and use software that appeals to girls as well as boys. A sample tool for guiding this selection is provided on the back of this sheet.

EDUCATIONAL SOFTWARE IS GREAT, BUT ...

Educational software (ES), including games adapted for classroom use, can increase students':

- Motivations, interests, and enjoyment of science, technology, engineering, and mathematics.
- Academic achievement.
- Cognitive skills, such as spatial ability.

Unfortunately, ES often has embedded gender stereotypes that reinforce masculine and feminine social roles and may promote gendered career interests. These embedded stereotypes can also create discomfort or anxiety that lead to under-performance and less interest and self-efficacy in IT.

TEACHERS INFLUENCE THEIR STUDENTS

Because teachers influence their students' occupational intentions, they may be able to use this influence to reduce the gender imbalance in computing. Girls' positive attitudes toward computing can be promoted when teachers:

- Model interest and confidence with computers and software.
- Call on girls for technical support, not just boys.
- Employ teaching strategies that equalize student access to computers and encourage use of computers.
- Carefully select and use unbiased ES in class.

QUESTIONS TO ASK WHEN EVALUATING EDUCATIONAL SOFTWARE

Consider the content, appearance, and structure of the software. To what extent are there both male and female central characters; and do they act in non-stereotyped positive ways? For example, do girls have roles beyond being a victim or a prize? Are women's interests central or "special"? Do the appearance, packaging, voices, and soundtrack take into account preferences of different groups? Can the program accommodate different learning styles, roles, and skills? Is it possible to use the software in a collaborative way? Teacher responses to these questions will help make the extent of embedded gender bias apparent and help guide selection of the least biased software.

RESOURCES

- Bhargava, A. (2002). Gender Bias in Computer Software Programs: A Checklist for Teachers. *Information Technology in Childhood Education Annual*, 205-218.
- Heemskerk, I., Brink, A., Volmanw, M., & Dam, G. t. (2005). Inclusiveness and ICT in education: a focus on gender, ethnicity and social class. *Journal of Computer Assisted Learning*, 21(1).
- McNair, S., Kirova-Petrova, A., & Bhargava, A. (2001). Computers and Young Children in the Classroom: Strategies for Minimizing Gender Bias. *Early Childhood Education Journal*, 29(1).

STRATEGIES FOR UNBIASED COMPUTER USE IN THE CLASSROOM

Adapted from McNair, et al. (2001)

Role Models

- Ask students' mothers to help children with computers in the classroom, but be sure to train them in advance.
- Invite professionals, including women professionals, to the classroom for demonstrations of computer work. For example, teachers can invite students' parents who are computer engineers to demonstrate how to open and build a computer.
- Model interest and eagerness to learn about computing.

Teaching Strategies

- Integrate computers in instruction and use them routinely.
- Provide easy access and adequate time for children's computer use – don't just use it as a reward to keep students busy.
- Make computer use a social activity by having students work in pairs or groups – but make sure the boys don't dominate the keyboard and mouse. Use timers or other ways of enforcing turn-taking.
- Give students equal opportunities to participate.
- Help reluctant computer users with specific computer tasks, such as how to search a website.

Evaluate and Select Unbiased Software

- See a pre-tested checklist on the back of this sheet for evaluation and selection of software.
- Heemskerk, et al. (2005) suggest another tool for reviewing and selecting unbiased educational software.

NCWIT offers practices for increasing and benefiting from gender diversity in IT at the K-12, undergraduate, graduate, and career levels.

This case study describes a research-inspired practice that may need further evaluation. Try it, and let us know your results.

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P R O M I S I N G P R A C T I C E S

Checklist for Evaluating Software in Terms of Gender Bias*
 with Case Study 1



K-12 Education

Name of program _____
 Publisher _____
 Age of children for which program is appropriate: from _____ to _____
 Curricular/Interest area _____
 Comments _____

Please read the statements given below and tick the appropriate box:

Characters in the Software Program	Often	Sometimes	Never	Not Applicable
Female and male characters are equally represented.				
The intensity of physical actions assigned to female as equal to those assigned to male characters.				
The characters are not stereotyped by occupational roles (female baby sitters and male police persons).				
The type of emotional statements attributed to females and males are not stereotypic.				
Content of Programs				
The content is free of sexist language.				
The extent and frequency of aggressive and/or destructive behaviors is limited or non-existent.				
Content and overall style of the program appeal to both boys and girls.				
Non human objects are not assumed to be male.				
The number of elements of competitiveness vs. cooperation among characters is balanced.				
The software program provides opportunities for group interactions at the computers.				
Rewards in the Software Program				
Both female and male oriented rewards for correct answers are used.				
Rewards include both words and graphics.				
Program allows children to choose their own token reward system.				

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