

NECC : proposal <http://center.uoregon.edu/ISTE/NECC2009/program/>

FORMAL SESSION: BYOL (bring your own laptop), 1 hour

Teaching Computer Game Design Using Storytelling Alice
Jill Denner, Linda Werner, & Pat Rex

25-word description:

Participants will learn an instructional approach to teaching computer game design using Storytelling Alice, a 3-D animation software package that introduces key programming concepts.

Purpose and Objectives

The goal of this session is to introduce teachers to a step-by-step approach to teaching computer game design that has proven successful with middle school students. This approach has been tested and refined with middle school students in out-of-school settings. At the end of the session, participants will understand the logic of Storytelling Alice software, know how to incorporate interactive “challenges” into their instruction, and have produced their own small game or interactive story. They will also learn how computer game design can engage students who are underrepresented in technical fields.

Outline

The instructors will first provide a five minute overview of the game design classes that they have offered to middle school students in California over the last six years. As part of this overview, they will describe the logic and learning structure of Storytelling Alice software, and what their research says that students learn by programming games. For the majority of the session, each participant will complete a series of challenges on the computer that are designed to teach students how to program a game. Each challenge is designed to teach a particular element of a game, such as creating keyboard or mouse-controlled interactivity in a fighting game, or building a counter to keep score of correct answers in a trivia game. The instructors will spend five minutes walking the participants through the first challenge using a projected image on a screen. For the next forty minutes, the participants will be able to move through the challenges at their own pace, either on their own or with a partner.

To accommodate quick learners, there will be 20 challenges available, but not all will be required for participants to benefit from the session. Instructors will provide one-on-one support and answer questions as need. In the last ten minutes of the session, the instructors will provide a description of and links to additional challenges, which will be available in a virtual Teachers Lounge that is currently being built. Finally, participants will talk about their plans for how to use the challenges to teach students game design.

Storytelling Alice software is available free at www.alice.org but works only on PC platforms.

The Challenges will be available free at <http://psweb.etr.org/alice/>

Supporting Research

Game design has the potential to promote the kind of thinking that prepares students for an increasingly digital world. The strategy of computer game design and programming has been used in several settings to engage students who would not otherwise be interested in IT intensive programs (Denner, 2007; Kafai, 2006; McCue, 2008; Repenning & Ioannidou, 2008). For many youth, games are engaging, and are seen as a “cool” way to be involved with computing. But game creation offers much more than fun. Programming a computer game offers opportunities for students to develop a way of thinking that will position them to be competitive in an increasingly digital age (Hayes & Games, 2008). In particular, computer game design and programming with a partner addresses multiple areas of the NETS·S, including creativity and innovation, communication and collaboration, and critical thinking/problem solving/decision making.

Currently, there are many programming environments that make computer game design quickly accessible for children and less tech-savvy adults by removing some of the barriers to learning to program (Kelleher & Pausch, 2005). But there are few instructional resources to help teachers to use these programming environments in their classrooms.

Educators want instructional materials: As part of our current research, we recently posted a web-based survey, which was completed by 858 educators across the US (80% were middle or high school teachers; most were computer science or technology teachers). The findings show that although 29% had experience teaching digital game-building to youth, 75% stated that the major challenge to teaching it is the lack of curriculum or instructional materials. This session is designed to begin to fill that gap.

Presenter Background

Jill Denner earned her Ph.D. in Developmental Psychology and has been studying learning and problem solving in after-school settings with a focus on gender and social context for over ten years. She has been the Principal Investigator on three NSF-funded projects that focus on computer game design and IT fluency; two have focused on using game design as a strategy for increasing girls’ interest in IT careers. Relevant publications include articles in the Journal of Educational Computing Research and Meridian: A Middle School Computer Technologies Journal. Dr. Denner is the co-editor of a book on gender and gaming, published in 2008 by MIT Press.

Linda Werner has a Ph.D. in Computer Science and is on the faculty at University of California Santa Cruz. She has been invited to share her research on pair programming and computer fluency at the university and middle school levels at international conferences, as well as NSF and ACM JETT/TECS sponsored workshops. Publications have appeared in the Journal of Computer Science Education Online. Dr. Werner has extensive experience as an educator and researcher at the university, community college, high school, and junior high levels. She is actively involved in working to increase the numbers of female computer science students. In addition, she has many years of experience as a software engineer.

Pat Rex has more than 15 years of experience as a webmaster, designer, writer and trainer. She currently oversees the technical aspects of several projects, responsibilities which

include establishing and managing online communication systems, developing interactive online trainings, writing curriculum, and creating and managing websites, and is project manager for a website development project. Before joining ETR, Pat headed a successful desktop publishing business, managed employee communications for a Fortune 500 company, and was a university writing instructor. Pat graduated magna cum laude from San Francisco State University with a B.A. in English and Drama. She later earned an M.A. in English at San Francisco State after completing a special teacher training program.