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Collecting, Organizing, and Managing Resources for Teaching Educational Games the Wiki Way
by Shelley Henson Johnson, Brett Shelton, and David Wiley

As a reaction to the growing number of teachers using games in their curricula and the corresponding increase in university courses aimed at teaching the design of effective instructional games, we introduced a panel at the recent Games, Learning and Society conference in Madison, Wisconsin, in June 2006. This panel brought together a community of interested parties involved with teaching educational game design. We collaborated with attendees before the panel convened so that we could introduce resources such as syllabi, collections of readings, and discussions of theory in a wiki environment to which participants could contribute during the session. After the conference session, participants contributed a number of resources to the wiki, making it a useful resource for a specific community of users.

We discuss in this article the rich contents of the wiki and its use since the panel session. We also provide some discussion of how this resource can be leveraged by online self-organizing social systems, which could enrich the wiki by referencing, reusing, and even remixing its contents.

Growing Numbers of Educational Gaming Resources on the Web

Educators have begun to explore ways to use video games—and students' interest in gaming—to help meet the changing learning requirements of this generation, which Prensky (2001) has dubbed "digital natives." These students are accustomed to a high level of technological interactivity and respond to interactive digital environments that feed their need for self-directed, autonomous learning. With this group, gaming can be a useful teaching tool; games can supplement instruction, teach students valuable transferable life skills, and teach content in new, inventive ways (Gee 2003; Duncan, Scoresby, and Shelton 2006; Prensky 2000; Virvou, Katsionis, and Manos 2005). For example, computer games can support basic proficiencies and practices in science and arithmetic (Steinkuehler and Chmiel 2006) as well as history and politics (Squire and Barab 2004), build literacy skills (Duncan, Scoresby, and Shelton 2006; Steinkuehler 2007), and promote civics education and social responsibility (Barab et al. 2007).

Growing numbers of academic institutions, corporations, and game designers are teaming up to produce inexpensive, quality computer games for use in educational contexts. An enormous number of gaming for education resources are currently under development by a number of groups, including Microsoft and MIT, LucasArts, the U.S. Army, and other organizations (TEEM, Hidden Agenda) (Prensky 2003). Jones and Kalinowski (2006) describe building an online community where educators and game developers could do collaborative work. Other researchers recognize the pedagogical potential of games and are working to make educational games more engaging (e.g., Shelton and Wiley 2006). Still others are developing conceptual frameworks and exploring practical examples of how to insert games into larger educational contexts (Holland, Jenkins, and Squire 2003). Yet another initiative is the Learning about Learning-Technology-Design (L2TD), which is a National Science Foundation-funded forum where users can browse resources for designers of learning tools. With all of these efforts underway to provide help with and guidance for educational gaming, sifting through the wealth of information to find the most useful can be a daunting task. Our goal in developing the wiki was to gather many of these resources into one place, to make locating and using them easier for educators and researchers.

Collaboratively Building the Teaching Educational Games Resources Wiki

At a Games, Learning and Society (GLS) 2006 panel session, educators and researchers involved in educational game design collaborated to build a rich online resource using a wiki. The result is the Teaching Educational Games Resources wiki, which includes hundreds of educational gaming resources. These resources are openly available to teachers who wish to incorporate educational gaming into their courses, designers of educational games, and researchers interested in educational gaming.

The GLS '06 panel and attendees discussed several questions about educational gaming (Shelton and Wiley 2006). These included:

- When people teach classes about educational games, what are they doing?
- What articles and books do they use?
- What do their assignments look like?
- What kind of projects do their students complete?

Prior to the meeting, we solicited contributions from several individuals who teach educational game design classes, including the panel participants. We parsed these submissions by theme (instructional goals, assignments, readings, rubrics, etc.) and placed them on separate pages of a publicly available wiki. Everyone who contributed was invited to participate through the wiki, expanding areas to include literacy-oriented approaches as well as more traditional instructional approaches.

During the presentation, we gave attendees the wiki address and walked them through the table of contents. Then we asked them to go to the wiki during the session and add resources they thought would be appropriate to each of the sections. The panel, composed of instructors of educational game design classes from a variety of disciplines including communications, computer sciences, and instructional design, then presented their thoughts on different approaches to and theories of teaching educational game design. Panelists took turns explaining instructional approaches and the resources they found most useful in their endeavors. Attendees, ranging from interested gaming enthusiasts to instructors teaching game design at the high school level, offered verbal suggestions and comments throughout the presentation. These same attendees were very active in adding resources, making more than 50 additions to the wiki during the hour-long panel session. They even added new categories we had not previously considered. The original categories were collapsed into one page titled Classroom Help, and ten new categories were created. Attendees shaped the wiki into something very different from what the organizers expected, making what they thought, as a community, would be a tremendously useful resource for both educators and researchers.

As a result, the wiki now contains hundreds of resources for teachers, designers, and researchers (Table 1). Reading lists include nearly a hundred useful articles and books. The Classroom Help and Additional Teaching Resources pages include online classes in gaming and game design, syllabi, and links to conferences and academic programs. A section on technical resources lists and describes software, games, and game engines. And, of course, there is a voluntary contributors page where contributors can leave contact information if they are willing to be contacted.

Usage of the Wiki

Interest in the wiki has been high since it was made public at the GLS conference. In fact, in a Google search for "educational games" and "resources," the wiki appears as the third listing of approximately a million and a half results, indicating (among other things) that many external Web pages link to it.

On the other hand, the wiki has not been updated much since the conference session that produced it. In fact, the average number of changes per wiki page in the six months after the conference was 1.0 changes per page. Reviewing the number of entries on each page's history indicates that many pages have not been changed at all since the session (Figure 1).

This is largely the result of our use of the wiki, which was quite different from the manner in which wikis are typically produced. Because almost all of the resources in the wiki were contributed either before the session by session panelists, who carried out their discussion via e-mail, or by session participants who discussed their contributions to the emerging wiki in real time, there has been little use of the discussion feature on the Teaching Educational Games Resources wiki. Similarly, the composition of the panelists means that most of our wiki's contributors are academics who either study educational gaming or teach university-level classes in educational game design.

In some ways, then, our wiki was produced by a fairly narrow community. Because the wiki is not drawing new contributors, evidenced by the low level of changes and additions since the conference presentation and by the almost nonexistent use of the discussion option, its community remains fairly small. The quality of a person's experience in any community will depend on how well the community matches the social and usability requirements of the user (de Souza and Preece 2004). Given its relatively narrow origins, the wiki may not meet the needs of the wider community. For instance, educators with questions or an interest in discussion would likely find their social requirements unfilled. Contributions from a more diverse community, including teachers and even students who are involved in educational gaming and game design, would help revitalize the wiki.

What's Next? Adoption by an Online Self-Organizing Social System

One way to encourage the wiki's continued development would be to make it part of an Online Self-Organizing Social System (OSOSS). OSOSSs are online systems that bring together large numbers of people who self-organize to solve problems and accomplish goals (Wiley and Edwards 2002). Examples of sites that support these systems include digg, Wikipedia, Ozmozr, and del.ici.ous. In these communities, usefully contextualized resource-sharing occurs as members of the community reference, reuse, and remix content that they find in the open environment of the Web. Online environments such as digg or Ozmozr support community resource-sharing on a large scale. In these social environments, groups form and share resources with one another, collaborating to filter through the myriad of resources available on the Web. Digg allows users to post online sites or articles to the community, where a discussion can ensue. Users can also vote up or down on the quality of the postings. Ozmozr uses a social folksonomic approach to sorting through resources using tags, aggregation readers, and a unique "share this" design that allows users to share resources from inside the system or while surfing the Web.

Our long-term goal is for the Teaching Educational Games Resources wiki to become an integral part of an OSOSS-like community. Enmeshing the wiki in such a community would enrich the resource in a number of ways. The Games wiki and projects like it are just the kind of resources that online sharing communities locate and share with one another. Having users talk about the wiki in these social sharing environments would help it become more contextualized for people who encounter it and help users more effectively exploit the resources available there. Also, linking the wiki to an OSOSS would enhance the sense of community and further enrich the resource. Haythornthwaite et al. (2000) found that getting community members actively involved in a reciprocal exchange of resources helps them feel more comfortable in the community. A feeling of community also allows for a more democratic approach to content development and allows users to "establish their own sense of balance within the system, to use their own vernacular for indexing and retrieval" (Sturtz 2004, 4). That vernacular will allow for member-generated categories, supporting effective discovery and reuse of resources (Recker and Wiley 2001). So just as attendees of the GLS conference created, collapsed, and remixed wiki content into new categories, offering easier and more accessible forms of democratic content development should assist in developing the feeling of community for specific users. At the same time, the wiki can assist in establishing that community through its use as a portal for educators or academics interested in educational gaming and game design. When users of the wiki bring it into OSOSSs that they frequent, it will become an even more vibrant, findable, and reusable resource for an emerging community.

If it is adopted into existing OSOSSs, the wiki can help catalyze the emergence of an online community for those interested in educational gaming. A number of elements will be required, however, to power that process of adoption. After studying many self-organizing systems, from bird flocking and synchronous insect phenomena to traffic patterns and human cell behavior, Strogatz (2003) found that a healthy, long-lasting system is open to the contributions of many members. This indicates that, if we want the wiki to be a primary and enduring resource for teachers, students, and researchers, we must make every effort to open the wiki to multiple sources of contribution. On a more practical level, given Garton, Haythornthwaite, and Wellman's (1997) finding with UseNets that large, heterogeneous networks are best for obtaining new resources, our resource for educational gaming must tap into existing networks of educational game instructors, such as that at GLS 2006. In addition, we must continue to publicize the wiki through other means—such as general education conferences, game development summits, and research design lab Web sites—in order to link it to more large networks, thereby increasing the pool of potential contributors as well as connecting it to an ever-wider network of OSOSSs.

While valuable resources such as the Teaching Educational Games Resources wiki continue to emerge, locating and sorting through it all can be a daunting task. An OSOSS can help educators and researchers identify and filter resources. A practical choice, then, is to use these online community-driven spaces to share, discuss, recommend, and explain instructional gaming resources. As one step in this direction, the Games wiki has been shared with an educational gaming group on Ozmozr. Additionally, in a follow-up conference session to the GLS '06 panel, conference participants will be encouraged to post the wiki to digg and other OSOSS environments in which they participate, as well as to join the Ozmozr group and invite their colleagues. This, in turn, can drive additional contributions to and interest in the wiki. These interested individuals may then contribute more useful resources to the wiki, keeping it vibrant and full of current, relevant information.

Conclusion

Academics, game designers, and educational content developers have recognized the pedagogical value of gaming (Becta 2007; Buchanan 2005; Shelton 2007) as witnessed by the contributions at the panel discussion between educators and enthusiasts at recent games-and-learning conferences. Researchers, designers, and users of educational games have begun producing resources to improve educational gaming and make educational games more accessible to teachers wanting to incorporate gaming into their classes. There are now millions of resources on the Web about educational gaming. As these resources continue to multiply, teachers need help identifying directly useful resources.

Teaching Educational Games Resources is a wiki that contains hundreds of educational gaming resources. The wiki is an open structure that allows contributors to shape, organize, and create categories as they contribute more resources. Organizing the conference panel around the wiki content provided for an interesting conversation during the session and led to many valuable resources being added to the wiki by session participants. But it may be even more useful to consider the wiki's potential as it is shared, tagged, discussed, and contextualized by OSOSSs across the Web.

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