



Cultivating teamwork and discovering my students' hidden but impressive intellectual talents through a game-design curriculum

**Denise Stalnaker, Globaloria Educator
Randolph Technical Center, Elkins, WV**

I was born and raised in West Virginia, and have been a teacher here for the past 25 years, of which 12 at the Randolph Technical Center (RTC) in Elkins. Experienced teachers like me, often find it hard to change. However, in this era of the 21st century, in the new context of the global knowledge economy, our students need a different kind of education. I am one of those educators who understand that we must find new ways for engaging and inspiring today's students and that using digital tools and new kinds of projects can help a great deal in the process.

Learning-by-design and project-based learning have reformed me as a teacher. This reform is best witnessed in my game-design classes where my students have participated in a new and innovative program called Globaloria (www.Globaloria.org). This program was invented by Dr. Idit Harel Caperton and distributed in our state since 2007 by the World Wide Workshop Foundation (www.WorldWideWorkshop.org). It was initiated and funded by our Governor and First Lady, Joe and Gayle Manchin, with support from the Benedum Foundation, West Virginia Center for Professional Development, and Verizon West Virginia. I was very pleased to hear that last month, Dr. Steve Paine, WV Department of Education's Superintendent of Schools, decided to support Globaloria as West Virginia Department of Education's 21st century partnership initiative (now called Global-21).

Globaloria is a year-long wiki based game-design curriculum, in which students learn to use Flash and various Web 2.0 tools to design and develop games with an educational or social purpose. Students work individually and in teams, blog about their learning, interact with professional Flash designers, do presentations, and many other related activities. I have learned so much myself, and want to share three experiences from my students' Globaloria classes in the past two years.

Courtney and Emily

Since January 2009, my students **Emily** (18) and **Courtney** (18) have been demonstrating collaboration and teamwork and a host of other skills (such as self learning, technical creativity, research, and project management) as they develop their first ever original web-game they named "***Learn the Bones.***" Courtney explains on her wiki: "*Our game is about learning the scientific names of the bones and their locations in the body.*" It's not the typical experience for public school students to learn about the skeleton system by making a game or to learn how to program games as a means for learning school subjects, plus utilizing teamwork and technology skills all at the same time! Moreover, Emily and Courtney have been especially excited about the fact that their game can be used to help other kids learn about the human skeleton.

Figures 1, 2 3 and 4 describe their project work so far as found on their wikis and blogs. These clearly reflect their complex game development process.



Figure 1. Game Title Screen provides two options for the player: *PLAY* the game, or learn *ABOUT* the game, how it was made and who made it.



Figure 2. Skull Level. Rolling over the bones with the mouse reveals the scientific name of the bone. Player must click on each of the bones and drag it to the picture of the skull. Then, when finished, click the skull graphic in the corner to continue.

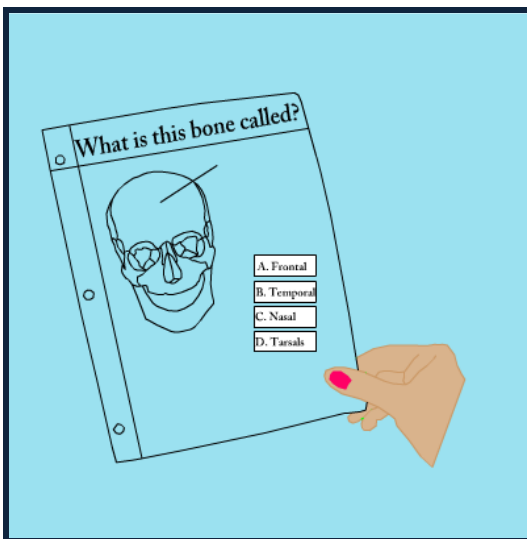


Figure 3. Feedback Screen. After the player completes correctly all the drag-and-drop, the player is asked questions related to that level — right answers score 2 points, and wrong answers lose a point.

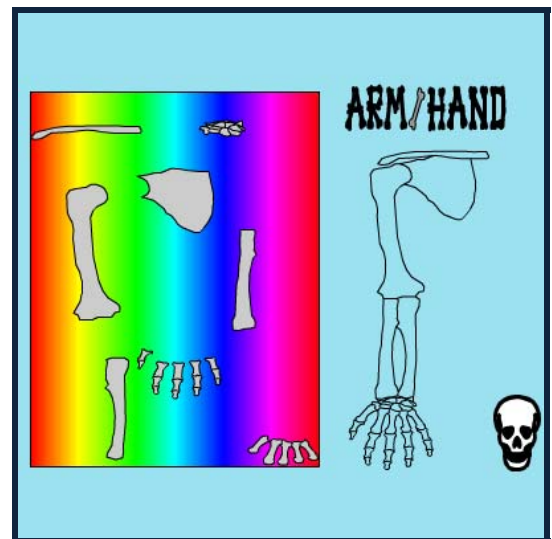


Figure 4. Arm-Hand Level. Similar interaction pattern as in Skull Level (Figure 2).

Naming their team “**Cosmic Energy**” (which builds on their first initials and their team spirit), Courtney and Emily have been working on their game daily the entire spring semester for about 90 minutes per day. This is not a simple task. After playing and reviewing some educational games, they had to come up with an idea for their game, divide the necessary work – research about human body and skeletons,

designing screens, writing, and programming code – and get things done. *“We organized first, and listed everything we had to do, and then we decided what each of us was going to do,”* Emily remarked.

I truly enjoy seeing them engaged in their research about the human skeleton, learning Flash animation, design and ActionScript programming, and thinking about what makes an educational game fun to their future users. In fact, we believe that their game can be used in a variety of other classes in our school – health, anatomy, and nursing.

The two girls are also breaking the local stereotype that gaming is primarily for “techies” or “gamers” who are typically boys. That’s what makes me even prouder of their engagement and progress in their creation of a full-playing, scoring game. They entered my Globaloria course with basic computer skills and had never taken a computer programming class before. Neither girl had an interest in pursuing game design or technology as a career. Both girls, however, are honor-roll students and have a strong science background, which explains why they were drawn to that subject when they started planning their game. Emily and Courtney were super excited when their game won first place in this year’s West Liberty State College Flash Competition (<http://faculty.westliberty.edu/2009festival/index.htm>).

Travis and Cody

In this same class, another interesting collaboration had recently emerged that gives a whole new meaning to the potential of “distance learning in public education,” placing it in the context of a statewide social network for gaming. My student **Travis**, an 11th grader at Randolph Technical Center in Elkins, and **Cody**, an 8th grade student of my Globaloria colleague Ingrida Barker who teaches at Sandy River Middle School in Avondale, decided to work together on a game. This virtual team, 243 miles apart, decided to design a game called *“What is Globaloria?”* It will be published on our network, and also shown at other schools across the state in order to encourage students to get into game design through the Globaloria program.

Travis is currently taking the Game Design II class with me at RTC, and he claims that he wants to arrange to take Game Design III next year. In fact, Travis considers himself “a serious gamer,” who has now grown to not only enjoy playing videogames and online games, but also to programming games. He says Globaloria got him into planning a career in game design!

Travis (17) and Cody (14) have never met in person. They decided to name their team *“RTCSRMS”* (the abbreviation of the names of their two schools), and they are planning their game by using their Wiki pages, Skype, Flash, and other tools provided by the Globaloria Platform. We are all watching them and learning how they work as a virtual team, how they divide the tasks, how they learn together and from each other.

My Globaloria colleague **Ingrida Barker** and I are particularly excited as educators, not only because we are cultivating collaboration between two age groups (middle and high school), but also because Elkins is in the northern part of the state and Avondale is in the southern-most part of the state. We are quite far from each other. It is a five-hour drive across the state – and not something we often do as educators or students! Many of our students live in rural communities and come from low-income families, so they do not have many opportunities to travel and work with youth outside of their communities or counties. Therefore, connecting them via the Globaloria social network for learning together is totally unique and a huge leap for them (and for us as educators).

Figures 5, 6, and 7 exhibit a few screens of what they have produced so far, as found on their wikis.

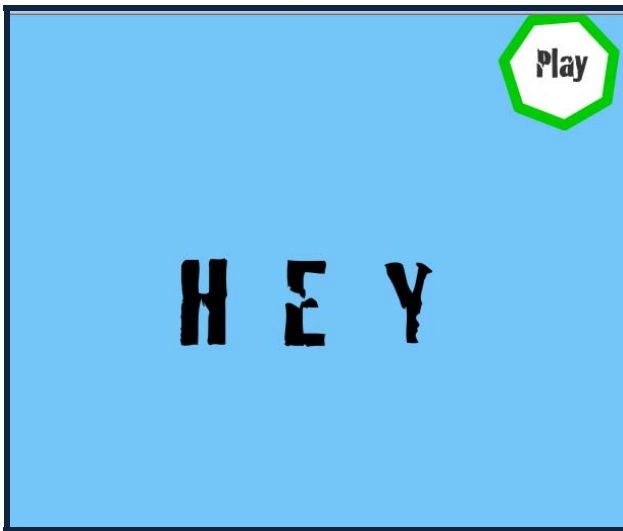


Figure 5. A scene from the "What is Globaloria?" game that Travis is developing



Figure 6. A scene from the "What is Globaloria?" game that Cody is developing.

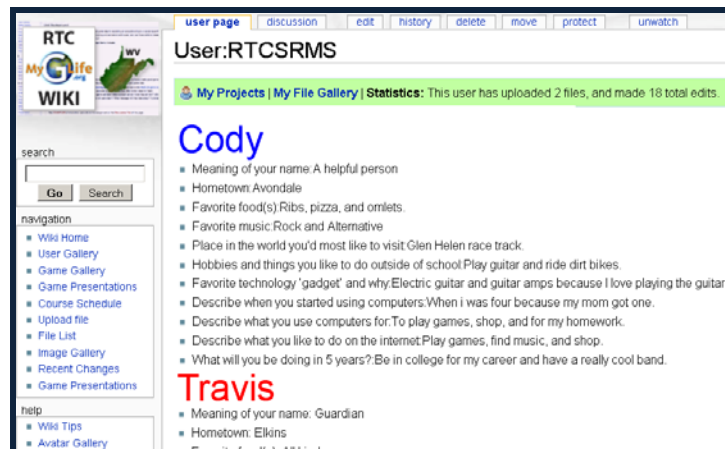


Figure 7. Travis and Cody created a team wiki page. They use it to learn about each other and to communicate and plan their game "What is Globaloria?"

In a recent conversation, my colleague Ingrida made these observations: "I think online collaboration is vital for the development of the 21st century skills. Living in a remote rural county in West Virginia, my students do not get the opportunity to learn from other students across the state and see what is happening in the schools across the state. Globaloria presents this opportunity through an online medium and lets students meet students, teachers, and professionals they would never dream of doing via regular means of communication." She later added, "Cody and Travis are working successfully on creating a unified project without really ever meeting face to face. They are using Web 2.0 tools to communicate, brainstorm, and come to a common decision via wiki, blogs, Skype, or GTalk. Globaloria is not only opening the physical boundaries of learning. It's opening their mindsets as well as the opportunities for learning."



Figure 8. The Globaloria-WV network participating schools.

<http://www.mylife.org/usa/wv> RTC (high school) and SRMS (middle school) are quite far from each other in distance and students' ages; however, being connected on a learning network, students are beginning to form teams to develop games together

Brandon, Toby, Kris, James and Clint

Last academic year, **Brandon, Toby, Kris, James and Clint**, students in my fall semester Globaloria game-design class, were frustrated that we did not offer it during the spring semester due to scheduling problems. I decided to contact another Globaloria colleague, **Patrick Smith**, an instructor at the Marshall Community Technical Center (MCTC), and with funding from the World Wide Workshop Foundation, we arranged for my five high-school students from Elkins to register in Patrick's community college class in Huntington (188 miles away). My students formed a team, and joined this class for college credit as an independent-study group. This was an exciting experiment in the context of the Globaloria program. Naming their team "**The Five Experimental Ninjas**," my students worked hard on all the assignments. Because all five of them are avid gamers, they came up with an idea for a multi-level, RPG right-scrolling game about world history. Their motivation was derived from both their collaborative effort of making a cool videogame – which they totally loved – and also from wanting to show the college students that they were suitable for the course, and even better!

Patrick Smith, the MCTC instructor, describes our experiment: *"Five high-school students from RTC participated in my college-level class remotely. Throughout the semester, these students were the epitome of self-learners. In fact, they posed very few questions as they diligently worked on their assignments and gaming project. On Globaloria Year-End Presentation Day, I met them for the first time in person. They arrived at MCTC with their teacher Denise, and the pride and synergy of these students was apparent as they presented their incredible game. My college-level students were*

impressed, and possibly even a little embarrassed, by the educational depth and technical skill shown by the Randolph Technical Center students' game. I thoroughly enjoyed the whole experience."

Figures 9, 10, 11 and 12 feature a few screens of "The Five Experimental Ninjas" game they named "Zeit Geist." It is designed to teach world history, a topic these students found rather boring and wanted to bring to life for friends in their school. They also met with the school's history teacher to define the game. Technically, they used collision detection, scoring, character animation and movement, and other ActionScript code to produce a truly interactive, multi-level history game. On their own, they came to know Flash (and history) much better than I, their teacher.



Figure 9. They named their game "Zeit Geist," a German word which means time travel. The opening title to the game gives players the options to see a Demo, Read the Rules, Look at Links (related to the content of the game), or Play the Game.

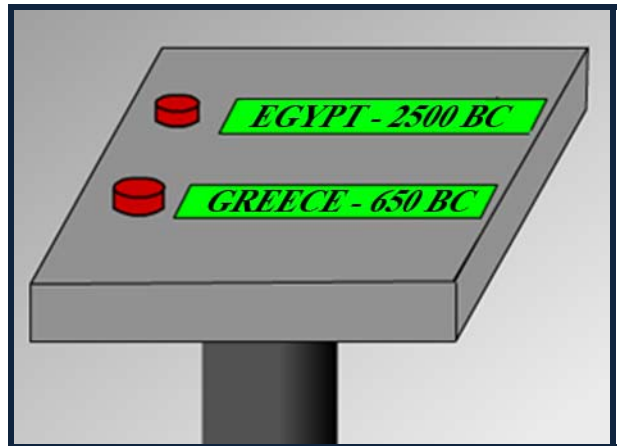


Figure 10. "Zeit Geist" Game Menu. Players choose which country and time period to enter (Egypt or Greece).

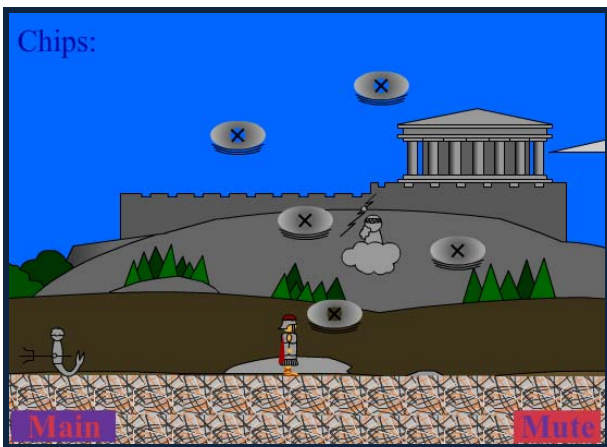


Figure 11. A scene from the Greece level. The main character, the background scenes, as well as the music and sounds effects change depending on the nation and time period.

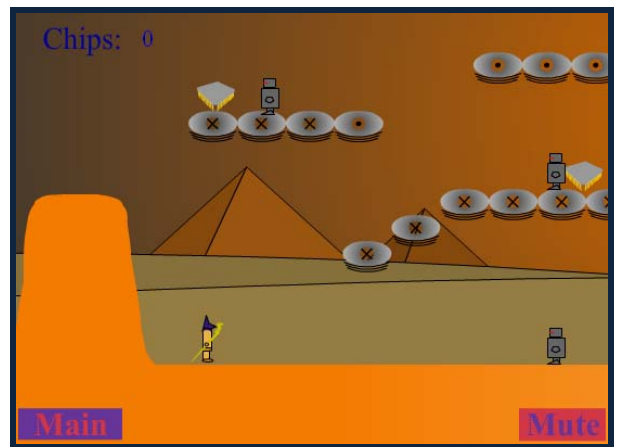


Figure 12. A scene from the Egypt level. Player can see the Chips score (top left), and always select to go back to the main menu, or to mute the music and sound effects (at bottom left and right of screen).

One student, James, also produced a video about the team’s presentation to the First Lady and the Globaloria Advisory Board in May 2008 and posted it on YouTube (Figure 13).



Figure 13. The Five Experimental Ninjas Demo of their “Zeit Geist” world history video game:
<http://www.worldwideworkshop.org/press/video-faq>, (see video clips #7 and #9).

New Learning Competencies

Effective contexts for honing new learning competencies – that are good for both students and educators – are hard to find! However, as an educator who strongly believes that all our students at RTC, and in West Virginia overall, must hone 21st-century skills and new learning competencies with digital media technology, I personally gain so much energy each day from seeing all my students – boys and girls – engaged, inspired, and hard working. Day after day, for long periods of time, they are focused on making their educational games using the most advanced digital tools and educational technologies. Moreover, they aren’t creating just any games; **their games have to have a social or educational purpose**. Therefore, they also learn a great deal of content along the way.

Designing and programming games – which are complex systems to design, program, produce, and manage – provide an ideal context for experiencing real-world collaboration and learning teamwork skills. It became a major emphasis for me in teaching this program.

I also found myself learning how design games (that’s a topic for another article) and how to team up with other West Virginia educators like never before. This context puts me and my students in a real-work type of setting. Even the least technical students grow to overcome difficulties through teamwork and to be proud of their accomplishments. They often comment on how they like to work in teams and feel like professional video game designers.

Figures 14, 15, 16, and 17 provide a few additional examples of my student’s games about purposeful, educational and social issues.



Figure 14. *Food Fall* is a health game where players must control a character moving with a tray trying to catch healthy food and avoid the unhealthy food.

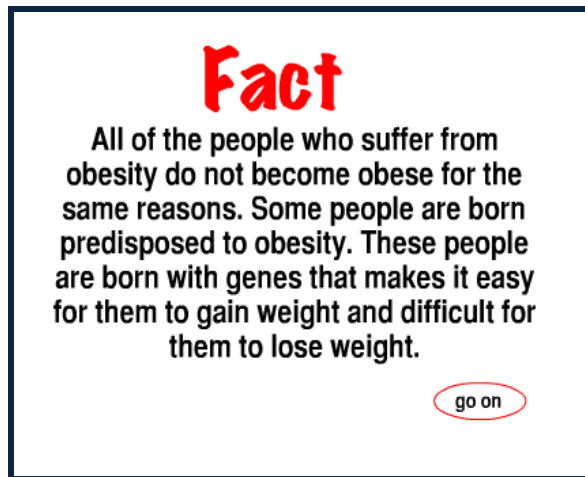


Figure 15. Between game levels, facts about obesity or healthy eating habits are presented. Research was conducted into the topic of obesity in our nation, and what would be a useful interface and play interaction for fostering healthier diet.

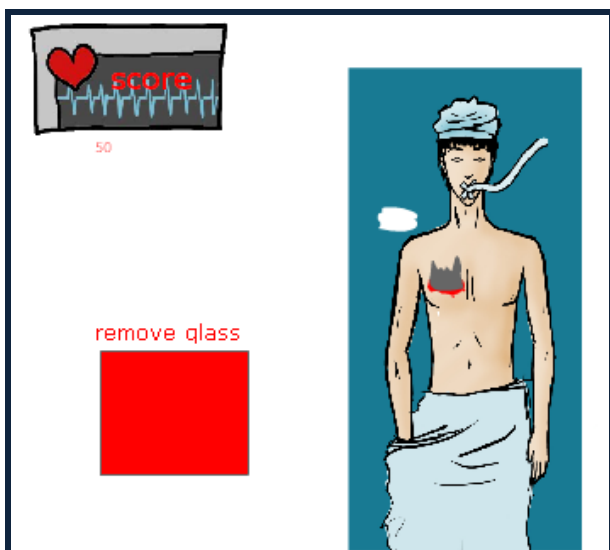


Figure 16. *Emergency Surgeon* is a health game where players select different medical tools and do surgery. This game includes a health bar and drag-and-drop interaction.

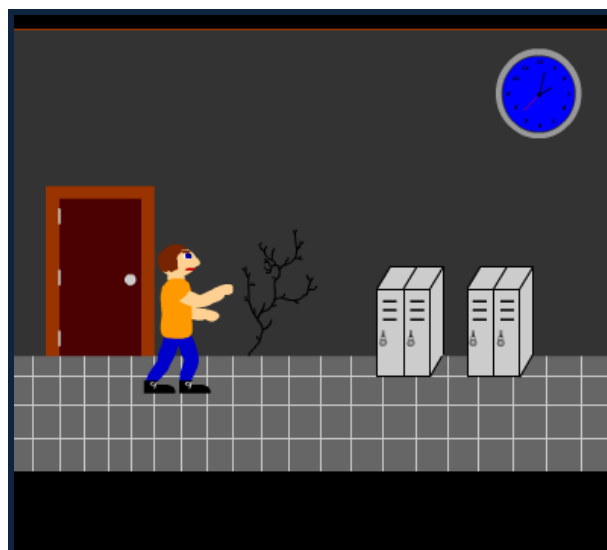


Figure 17. *When Zombies Attack* is a math game where players must solve sets of mathematical problems to defeat the zombies that have taken over the school. The game includes a timer and a scoring system.

In a recent entry in the progress report on her blog, Courtney has this to say: “I worked with the coding that Brian gave us, but ran into problems. Then I sent him back an email asking about the codes that were on the email. Coding is quite difficult.” Brian Judy is a professional game developer who participates as needed, on demand, in “**Expert Live**” sessions (these are provided by the World Wide Workshop as part of their professional support program). It is fantastic to see my students in West Virginia engage in conversations about gaming interface features and code with a real pro and learn what they need, just in time.

Emily, who lists “Cheerleading and Reading” as her hobbies on her wiki page, wrote in her blog last semester: *“I have done a lot of the coding for my group's game “Food Fall.” I knew nothing about coding and it was very challenging. I used the tutorials on the wiki and I found some others online that were helpful. The people from Globaloria helped out a lot with coding troubles we were having [via Webex]. I have learned a lot in game design. I had never used Flash before; it is a wonderful program that you can do many things with. Overall, Game Design has been a wonderful class and I'm glad I had the opportunity to take the class. I have learned a lot and I know the skills I learned will help me in the future.”* She decided to take Game Design II and in March of this semester, she wrote in her blog: *“I used Flash to write about the game my partner and I are making in Game Design II. The one I wrote this time is a lot better compared to the first one I wrote when I was in Game Design I. I have learned a lot more about Flash so I can do more things than I could. Imagining your game is good to do because it makes you think about the time of game your making and how you are going to do it.”*

This is my second year of leading a Globaloria class. I am not sure exactly how, but it happens year after year: each team member learns how to take a role and goes about doing it. Maybe it happens because they all must complete their roles and responsibilities or the game simply will not work! This is a comprehensive learn-by-design curriculum, and a very exciting project-based learning program for my students – and for me as a teacher too – and I recommend it to anyone in West Virginia or other states.

April 30, 2009

For more information from the author, please contact: dnstalna@access.k12.wv.us

Globaloria is a program of the World Wide Workshop Foundation (www.WorldWideWorkshop.org).
For more information about Globaloria info@WorldWideWorkshop.org