Increasing the Capacity of College Counseling Through Video Game Design

by Jonathan D. Mathis

The college admission process is a game. Rules, tools and procedures exist to advance the player toward a specific goal. Players' understanding of the game might result from the social and cultural capital disseminated by their families and immediate school community. Members of the school community are expected to offer each player various forms of support via college counseling efforts—establishing prior knowledge about the admission process; navigating the process via a prescribed blueprint; accessing essential resources; and articulating appreciation of the importance of college attendance (Conley 2005, Kuh, et al. 2007, St. John 2002, Venegas 2007).

Secondary schools are tasked with providing the experiences and resources necessary to navigate the college admission game. Scholars question schools' ability to provide an innovative experience and resources necessary for students to begin planning the next stages of their lives. Specifically, scholars challenge the mundane school environment: "Our students, raised on visual media, more often than not find school irrelevant and boring—a burden to be endured in order to obtain the certificates that will enable them to pursue their goals" (Selfe, Mareck and Gardiner 2007).

Previous literature suggests that "school gives kids manuals without games" (Gee 2007a), whereas students who benefit from social and cultural capital situated in their home and community are able to generate and apply the manuals to different contexts and demands. Application of the manual fosters translation—aiding in the understanding of various contextual environments. For students who lack social and cultural capital, manuals might be meaningless. If we view the college admission process as a game, what tools might college counselors use to assist underserved students preparing to navigate the process? A possible solution is to increase the capacity of college counseling efforts with the creation and use of an online video game.

There are several questions concerning outcomes of game usage. Fortunately, there are several things we do know about games. Scholars describe games as play-driven activities that foster elements of competition, including completion of specific tasks and objectives. Online games are those accessed via the Internet, including those supported by social network applications. Within games, there are rules and tools that help to facilitate a rigorous and engaging experience (Fullerton 2008, Mortensen 2009, Salen and Zimmerman 2004).

Teenagers—ages 12–17 years old—occupy the target audience for a college access video game. A study published by Pew Internet and American Life (2008) indicates that 97 percent of teens play games highlighting the potential audience and impact of a college access game. Of the 97 percent of teens playing games, 65 percent of male and 35 percent of female players describe their gameplay as daily. Players of a college access game align with projected high school enrollment figures totaling 16.4 million students (National Center for Education Statistics 2008a). If we focus solely on graduating seniors, projections for the class of 2007 suggest 3.2 million students (National Center for Education Statistics 2008b).

We also know that the use of video games provide students the chance to test manuals in a safe, simulated, contextual environment (Gee 2007a, Beck and Wade 2004, Keller, et. al 2007). Game designers incorporate instructional strategies within a multimodial environment to cultivate engagement, while utilizing narratives and feedback loops to promote a specific goal (Fullerton 2008, Gee 2007a, Gee 2007b, Salen and Zimmerman 2004).

Simply increasing the number of computers or access to technology, in low-income schools, will not guarantee an increase in appropriate usage. Instead, efforts for time and privilege granted for computer usage, infrastructure and staff training could support student access.

Games exist as tools with great potential to assist the instructional and social development of players. Students of the new technological age maintain "fewer inhibitions when it comes to experimentation and investigation" (Shumway 2008). A structured play experience, such as an online college access game not only supports inquiry, but students may walk away with invaluable support and content for next steps in navigating the admission process.

Keller and colleagues (2007) state, "Games provide low-risk environments and continuous assessment, reinforcing positive choices and encouraging players to take risks" (84). Games, then, embody the potential to create an environment where school-prescribed manuals are tested. New perspectives suggest gaming experiences present avenues for safe, situated learning that prepare students to enter into new contextual environments with new skills and understandings changed (Beck and Wade 2004).

The purpose of this paper is to discuss game design concepts suggested to foster engagement while considering the needs of underserved high school students preparing for the college admission process. The contextual nature of college counseling efforts in urban secondary school settings provides a backdrop for consideration of the manner in which game design and engagement might enhance current capacity of college counseling. The discussion focuses on two categories of game design—multimodal gaming environment and instructional strategies—with a focus on effective learning principles, experiential learning and narratives. To conclude, this paper discusses the rationale informing the use of games as tools to increase college counseling efforts. Since the focus is on use of an online college access video game, addressing the concept of the digital divide becomes essential.

The Digital Divide and College Access Efforts

A general understanding of the digital divide speaks to the "inequitable use of computer technology" (Morse 2004). Scholars suggest that the digital divide refers to inequalities and inequities of computer access among social and cultural groups. The divide refers not only to access, but also uses of technology within specific social groups versus peers (Groski 2002, Morse 2004). Scholars posit, "As with other domestic technologies, access to interactive play has been marked by great unevenness and deep digital divides falling along lines of class, gender, race, and age" also with consideration given to high-end versus low-end consumers (Kline, et al. 2003).

Previous research suggests there are motivated low-income high school students who effectively navigate the college and financial aid process, despite their limited access to the Internet. Simply increasing the number of computers or access to technology, in low-income schools, will not guarantee an increase in appropriate usage. Instead, efforts for time and privilege granted for computer usage, infrastructure and staff training could support student access (Venegas 2007).

Scholars encourage educational leaders and instructors to navigate digital landscapes with students, highlighting preferred content useful for instruction. Valentine and Bernhisel (2008) posit because "students are not technologically savvy across all tools," educators' roles include incorporating a wide range of technologies that facilitate learning with appropriate. Additionally, faculty are responsible to teach students how to "filter, evaluate, select, and use information" accessible via the Internet (Valentine and Bernhisel 2008).

The efforts of educational leaders and instructors do indeed suggest the potential of technology in the classroom, while also expanding the technological knowledge-base of both teacher and student (Valentine and Bernhisel 2008). Given the instructional potential in spite of the digital divide, we begin to understand the manner in which an online college access game might be used in an educational environment. The challenges associated with college counseling efforts highlight needs game designers may address through college access games.

Contextual Challenges for College Counseling

As we consider the potential of the college access game, the focus remains on the game's function as a tool confronting challenges associated with college counseling efforts. One potential outcome of using the game is a personalized play experience tailored to players' needs. Through such a medium, the game designer then individualizes college counseling which might contribute to students understanding of the college admission process.

High school counselors are able to direct students to appropriate resources in order to fulfill individual goals and aspirations. According to the American School Counselor Association, there are 13 standards of performance associated with the profession. Of the 13, the following four standards connect to college counseling:

> "(3) implements the individual planning component by guiding individuals and groups of students and their parents through the development of educational and career planning; (4) provides responsive services through the effective use of individual and small-group counseling, consultation and referral services; (9) monitors the students on a regular basis as they progress in school; (12) advocates for students" (ASCA 2005).

The selected standards inform tasks and roles specific to assisting students' postsecondary learning or professional pursuits.

Guidance counselors in underserved urban high schools are often faced with exorbitant counseling loads and high demands on time spent providing guidance (Corwin, et al. 2004). In underserved communities college counseling is not often a priority (McDonough 1997). Scholars have summarized some of the many duties assigned to counselors in underserved school communities: "academic, college, and career guidance; evaluation and assessment; management and coordination of class scheduling; and substitution and surveillance duties" for the school community (Corwin, et al. 2004). Many counselors in underserved high schools are believed to perform assigned duties without adequate resources. Scholars posit that students from working-class families are likely to have the most inadequate college counseling support (Hurst 2009; McDonough 1997).

Stanton-Salazar's (1997) construct of institutional agents is closely associated with college counselors' efforts to assist underserved students seeking to participate in postsecondary educational pursuits.

> "College choice and college-going culture are complex and intricate processes at best, and they are made more complex by structural barriers in school systems. College counselors are often overburdened and undervalued by schools, particularly in institutions with a high percentage of underrepresented students. As a result, access to quality counseling and postsecondary education is still problematic for many" (Corwin, et al. 2004).

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Results from the Nelson, Robles-Pina and Nichter (2008) study suggest that administrative actions consume the time of counselors enabling "fewer activities related to counseling, consultation, curriculum, and coordination in high school." Greater disparity was noted among newer versus tenured school counselors, where new counselors articulated more time spent doing administrative and clerical tasks. Despite the inability to act, counselors, both novice and tenured, preferred the counseling activities over the administrative and clerical functions (Nelson, Robles-Pina and Nichter 2008).

Corwin and colleagues suggest that the capacity of college counseling efforts continues to be an issue within underserved high school students. Scholars and practitioners note the importance, but in practice, the reality of college counseling includes the following challenges: high student-to-counselor ratios, varying ability of college-specific counseling efforts within schools and prioritizes assigned by school- or system-based leaders (Perna, et al. 2008).

The use of technology and online games as tools to increase access to higher education suggests a need for an exchange of useful and/or tangible information, between the student and institutions of postsecondary educational institutions.

The roles and functions of high school counselors are numerous. Venegas (2007) presents elements for successful college counseling for urban high school counselors assisting in the college admission and enrollment process. Activities and objectives are posited to promote successful college counseling efforts: fostering students' and parents' understanding of the admission and financial aid processes, including Web-based applications; and training resources provided by college and university partners with the goal to increase access and intentional support efforts reaching low-income students and families (Venegas 2007).

The use of technology and online games as tools to increase access to higher education suggests a need for an exchange of useful and/or tangible information, between the student and institutions of postsecondary educational institutions. If we classify this exchange as e-learning within an online learning environment, Wilson (2004) research suggests that online learning and activity theory support the use of games to support college counseling efforts:

- learning can be seen as change through activity
- learning resources invite or afford certain activities
- action, particularly collaborative action, emerges over time within local settings
- learning outcomes are codetermined by designers and participants
- learning environments evolve over time
- assessment must also evolve and be sensitive to local conditions

The conclusions presented permit customization, innovation and evolution throughout the online environment. Incorporating the three concepts—customization, innovation and evolution—into game design are suggested as what differentiates games from "good" games.

Games and Game Design

What makes a "good" video game? Scholars suggest specific qualities that distinguish "good" video games. Video game designers consider the following positions as they create challenging and engaging play experiences:

> "…pleasure and emotional involvement are central to thinking and learning; collaboration and participation with others is essential to engaged thinking and learning; young people want to live in worlds outside and beyond their own cultural groups" (Gee 2007a).

In the case of a college access video game, designers are able to consider the previously mentioned positions while also crafting a transferable knowledge-base that informs the college admission process. Designers craft "good" games evidenced by players' potential to become experts and foster collaboration among peers. The next few sections focus on elements of game design supporting the concept of a player's engagement within the game environment.

Theory of Game Design

Designers facilitate and participate in iterative game design processes—repetition of the design, test, and evaluation stages. Game design involves collaboration among designers, as well as the use of creative production tools, and construction of goals and objectives for each player. Game designers are challenged to focus on the players' experience while serving as an advocate. Designers' commitment lends itself to a play-centric approach—players are actively engaged in the construction of the video game through play experiences (Fullerton 2008).

The success of computer and video games has been largely credited to the designer's ability to engage players. Engagement, as a focus in game design, includes game designers use of the following strategies: player positioning or point-of-view (POV), narrative arc and interactive choice (Dickey 2005).

A key feature explaining engagement with video games is seen by their multimodal nature. Multimodality describes the ability of video games to combine two worlds—visual and audio—while allowing the player to orchestrate the movement and progress of their selected virtual character.

These design techniques allow game designers to create meaningful virtual environments transporting players into unfamiliar territory. Thus, the game environment becomes a safe, contextually-situated learning experience that has "the potential to make people smarter and more thoughtful" (Gee 2007a). If these concepts for design are employed in a college access game, players are exposed to opportunities that enhance understandings and mastery of admission processes. The focus of this article includes multimodal gaming environments, as well as three instructional strategies—effective learning principles, experiential learning, and narratives.

Multimodal Experience in Gaming

A key feature explaining engagement with video games is seen by their multimodal nature. Multimodality describes the ability of video games to combine two worlds—visual and audio—while allowing the player to orchestrate the movement and progress of their selected virtual character. Such engagement within the game permits the player's ability to alter the game world including building a new one, with new landscapes, buildings and possibly characters (Fullerton 2008, Gee 2007a).

The semiotic domain contributes to understanding multimodal game design. Semiotic domains possess defining characteristics including "a set of practices that recruits one or more modalities… to communicate distinctive types of meaning" (Gee 2007b). More specifically, semiotic domains include "an area or set of activities where people think, act, and value in certain ways" (Gee 2007b). Both definitions contribute to the understanding of a gaming environment that blends many features and definitions to promote experiential learning, including the rules and boundaries associated with game design (Fullerton 2008). When designers take advantage of the multimodal game environment, players respond to environmental, auditory and visual cues that provide feedback—support or provide alternative actions taken—in support of the player's attempt to achieve the goal of the game.

Instructional Strategies Used in Educational Games

Successful video games demonstrate the ability to teach higher-order thinking skills—strategic thinking, problem solving, plan formulations, plan execution, and adaptation to change—through designers' effort to "integrate ideas about learning and the organization of learning inside and outside of schools" (Gee 2007a, Federation of American Scientists 2006). Instructional experiences and outcomes, such as strategic thinking, interpretative analysis and problem solving, are among many learning principles incorporated into educational games.

Effective Learning Principles

Several principles of learning are used for creating "good" computer and video games. Scholars have classified learning principles into three categories—empowering learners, problem solving and understanding—and discuss how these principles are embodied through various functions of games. The design technique of empowering learners includes the following learning principles: co-design, customize, identity, manipulations, and distributed knowledge. Seven learning principles are posited as having the ability to promote problem solving in game design: well-ordered problems, pleasantly frustrating, cycles of expertise, information "on demand" and "just in time", fish tanks, sandboxes, and skills as strategies. Lastly, the two principles posited for fostering high-order thinking in video games are system thinking and meaning as action image (Gee 2007a).

Table 1. Learning Principles in Games

Empowered Learners	Problem Solving	Understanding
Co-Design	Well-Ordered Problems	System Thinking
Customize	Pleasantly Frustrating	Meaning as Action Image
Identity Manipulations and Distributed Knowledge	Cycles of Expertise Information "On Demand" and "Just in Time"	
	Fish Tanks	
	Sandboxes	
	Skills as Strategies	

Table 1: Gee, 2007a

Although each of these principles warrant discussion, co-design, pleasantly frustrating and meaning as action image promote an engaging play experience. Co-design suggests that gameplay include co-construction of the game, where the player has an active role in production and consumption of the game experience. Players' actions symbolize interactivity where their actions and decisions co-create the movement of the game.

Problem-based learning (PBL) is a design option for experiential learning. Games that utilize PBL simulate students' work in teams within a working environment where students are tasked with deciphering the "learning objectives from carefully structured narrative scenarios."

Pleasantly frustrating as a learning principle speaks to the need of a rigorous but enjoyable engagement between the player and the game. The game's feedback structures and messages confirm the player's efforts and movement toward success. The meaning as action image principle describes an experiential learning environment where game designers use the characteristics and objectives embodied within the game create meaning. The gaming environment serves as a virtual construction that aims to situate content in a rigorous, multimodal, engaging, and challenging context (Gee 2007a). Players are able to apply their understanding of the roles and use of tools through the actions required to advance gameplay (Fullerton 2008).

In addition to co-design, rigor and experiential learning, game designers might subscribe to the following four features to construct the play experience: clear learning goals; broad experiences and practice opportunities that continue to challenge the learner and reinforce expertise; continuous monitoring of progress, and use of this information to diagnose performance and adjust instruction to learner level mastery; encouragement of inquiry and questions, and response with answers that are appropriate to the learner and context. The facilitation of these features might be constructed in the game through the use of contextual bridging, time on task, motivation and strong goal orientation, scaffolding, personalization, and infinite patience (Federation of American Scientists 2006). The combining of these features and elements of game design not only promote an engaging play experience, but each serves to improve education and training.

Experiential Learning

Problem-based learning (PBL) is a design option for experiential learning. Games that utilize PBL simulate students' work in teams within a working environment where students are tasked with deciphering the "learning objectives from carefully structured narrative scenarios." An example of PBL games would include a simulation that evaluates medical students' responses to "plausible clinical cases involving case history, clinical investigation, diagnosis, and treatment… [E]ducators compel students to intervene in a simulated environment where each intervention creates consequences that prompt further action" (Begg, Drewhurst and Macleod 2005).

Experiential learning is common among "serious games" utilized by several industries, including medicine. Gee (2005) describes these games as an "authentic professionalism" experience given the game's ability to offer training and development of highly contextualized skills. Serious games reduce risks associated with learning within the context of the simulation. Experiential learning is highlighted through the simulated real games which require "skills, knowledge, and values [that] are distributed between the virtual characters and the real-world player in a way that allows the player to experience first-hand how members of that profession think, behave and solve problems" (Gee 2005).

In order to create an experiential instructional learning experience through games, designers are tasked to "select the skills and knowledge to be distributed, build in a related value system as integral to gameplay, and clearly relate any explicit instructions to specific contexts and situations" (Gee 2005). The duty of care assigned to selection and integration of content, coupled with the task of incorporating design components are critical for fostering a learning environment unique to "good" educational games.

Narratives

The use of narratives in game design displays their potential for instructional ability and reinforcement. Amory (2007) posits:

> "…educational games should be designed as *narrative spaces* where *story* and *plot* (rhetoric acts) allow players to actively construct their own meaning/understanding through the use of plot devices that can include *backstory* and *cut scenes*" (64).

Scholars have described the potential of narratives as a means of scaffolding and supporting problem

solving by way of immersion and agency, demanding participation and multimodal spatial learning environments. Types of narrative-use in gameplay is posited to exist as a continuum between fantasy and realism-based, and can be integrated through reflection, evaluation, illustration, exemplification, and inquiry (Dickey 2006).

Goal-Based Scenarios (GBS) and Role-Playing Games (RPG) are two examples in which narratives are used in game design. Within GBS, narratives are integrated to support learning, foster content and contextual skill development, highlight mission, cover story, roles and scenario operations for the game. RPG relies on narratives, or story lines, to advance gameplay. The narrative offers a medium through which the character can undergo changes by way of the challenges confronted within the game. In RPG, narratives establish setting and the initial motivation for participants playing the game (Dickey 2006).

The design of Massively Multiple Online Role-Playing Games (MMORPG), and outcomes stem from "multi-modal environments, which require players to access and integrate various forms of information and to act upon that knowledge… [providing] an open-ended environment" (Dickey 2007). Narratives are used to elicit intrinsic motivation, while providing "choice, control, collaboration, and achievement" and also "scaffolding for problem-solving" (Dickey 2007).

How might games foster a player's development of mastery in strategic thinking and aspects of management—resources, tasks, environmental demand, and relationships? Scholars suggest that the required use of higher order skills will facilitate such development. In addition, scholars also suggest that the use of games to promote practical skills training fosters learning in situated contexts, without the potential for danger, harm or resource expense associated with training in a given context (Federation of American Scientists 2006). These skills become increasingly important through the various stages of the college admission process.

Whether high order or practical skills, potential or actual achievement, the "power of video games is not in their present state just as it is, but in their potential: what we can do with them if we want to innovate" (Gee 2007a). The integration of technology, gaming and literacy "may prepare [players] to operate, communicate, and exchange information effectively in a world increasingly digital and transnational—and in ways that their formal [learning environment] does not" (Selfe, Mareck and Gardiner 2007). Thus, game designers have the power to create engaging play experiences that disseminate the skills and practices critical to the successful navigation of the college admission process.

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Increasing College Counseling Capacity

Gameplay is posited as having the potential to expand cognitive abilities, while also serving as a medium for the development and rehearsal of skills in respect to assigned contexts, goals and situations. Game designers construct play experiences where players acquire practical skills training while developing expertise (Federation of American Scientists 2006). Therefore a college access games has the potential to increase the capacity of college counselors by its design.

Gameplay has the capacity to assist in the acquisition of new knowledge and complex skills, and promotes the outcome of strengthening the American education system (Federation of American Scientists 2006). These outcomes are produced through the instructions and tools provided through the content and design of games and technology: self-generative, authentic and drawing from and responding to "the lives, histories, and experiences of the youth and communities they serve" (Hall 2006, Benton Foundation 2003).

Game designers have the potential to utilize content distributed by college counselors to teach players not only how to navigate the admission process, but how to play the game and inform peers of elements pertaining to the college enrollment process.

Despite the suggested outcomes for the gaming experience and meaningful play, it is important to include a brief caveat about the reliance challenges of educational games to promotion of an engaged, technologically-based, learning experience. Squire (2005) suggests that educators should not look at increasing technology as a solution to meet all needs of learners. Instead, technology might be seen as a resource that changes the culture of schools to be able to meet the needs of and sustain outcomes for learners. One such recommendation is to provide students opportunities to learn through different media forms, structured to cultivate different abilities at different rates.

The potential power of video games as a learning tool has been articulated with the use of instructional principles, feedback and interactivity. As stated by Squire (2005), the integration of technology and video games are not the sole tools needed to affect change in the lives of students and individual outcomes. The Federation of American Scientists (2006) calls for action from educational institutions, with specific focus on innovation. Their recommendations go beyond simply getting students into the institution, but also to include redesigning instructional practices, learning opportunities and environments, as well as increased use of technology to foster collaboration, interactivity, simulation, and games (Federation of American Scientists 2006).

Scholars suggest that students are able to manage literacies: institutional and cultural (Selfe, Mareck and Gardiner 2007). A college access game allows participants to function in a contextually-simulated environment. The gameplay environment makes it "possible for players to participate in valued communities of practice and as a result develop the ways of thinking that organize those practices" (Shaffer, et al. 2005). College access video games might use multiple learning principles, a well-articulated system of objectives, and meaningful challenges to assist students in understanding how to navigate the college enrollment process. Players' developed expertise inspires designers and other game enthusiasts to create arenas where the exchange of information and insight is possible.

Video games allow students to learn and play in a meaningful way while removing risks and encouraging experimentation. "[T]he virtual worlds of games are powerful because they make it possible to develop *situated understanding*" (Shaffer, et al. 2005). Learning the rules of play and continuous engagement within the game has been linked to the emotional connection and investment of the players.

Feedback for players within the gameplay experience establishes understanding, motivation and possibly the cultural, human, and social capital necessary to navigate the college admission game. Game designers have the potential to utilize content distributed by college counselors to teach players not only how to navigate the admission process, but how to play the game and inform peers of elements pertaining to the college enrollment process. With appropriate content and objectives embedded within the game, a college access game might commence successful college counseling efforts increasing access to higher education for underserved student populations. Players will not only acquire a new knowledge of the college enrollment process, players can receive instantaneous feedback and support in a safe, situated virtual environment.

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