

# Games as a Lens on Learning

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Programmatic Excellence  
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CALIFORNIA STATE  
**UNIVERSITY**  
**E A S T B A Y**

## Abstract

Games sit at the edge of higher education, but at the center of popular culture. Eager to improve student engagement, universities and instructors are turning to games to increase student learning, but using a wide variety of approaches and techniques. In order to determine how the power of games could best be used in programmatic and curricular development at a typical state university campus, material was drawn from a literature review of academic journals and white papers, interviews and analysis of projects and programs from a pool of twelve comparable universities, and an examination and testing of available tools for creation and integration of game-like activities into the curriculum. Four areas of focus were identified, based on their promise in prominent texts: teaching non-game topics using game-learning elements across the curriculum; teaching gamification as a career skill, teaching video game design as a career path, and teaching the use of game-learning to K-12 teacher candidates. Broad benefits and successful models were identified for the incorporation of game-learning elements in the general curriculum and for teaching the use of these to K-12 teachers. These goals promise to be effective with only moderate investments. Gamification and video game design have become significantly specialized and focused fields of study which call for significant investments, but that can provide significant benefits, both to the students choosing this as a field and the university as a whole.

## Student Learning and Success Focus

### *Target Groups for Student Learning*

Four distinct groups of students were identified, based on promising indicators in the literature, to be indirect targets. The goal was to identify specific curricular and pedagogical impacts on their learning that could be implemented by their faculty.

1. All students in classes whose teachers want to employ game-like learning as a pedagogical tactic to increase engagement.  
Examples: Including a simple memory game in course materials to help math students learn formulas, or a controllable simulation to help geography students understand water resource issues.
2. Students who want/need knowledge of gamification for their (non-game) careers. Many fields are increasingly using games or game-like motivators (badges, leader lists, etc) to promote specific behaviors.  
Examples: Medical administration and nursing using gamification to get patients to properly take their medications, or manufacturing management using gamification to maintain quality control.
3. Students who want to enter the video games industry.  
Examples: Students majoring in Art, Computer Science, Business Administration, or Marketing.

4. Students who wish to teach any of the above three uses of games at the Elementary, Middle School, or High School levels.  
 Examples: Students studying for teaching credentials.

The above are all regular CSU East Bay undergraduate and graduate students who would benefit from the integration of games and game-like learning in the curriculum.

**Articulation of learning areas against CSU East Bay’s Institutional Learning Outcomes**

<b>PEIL Project Student Learning Area</b>	<b>Institutional Learning Outcome</b>
Game learning in general curriculum	Thinking and Reasoning Communication (optional but easily implemented) Diversity (engagement of disadvantaged students) Collaboration (optional but easily implemented) Sustainability (optional but easily implemented) Specialized Education (likely, but not necessary)
Gamification as career skill	Thinking and Reasoning Communication Specialized Education
Game Industry as career path	Thinking and Reasoning Communication Collaboration Specialized Education
Teaching K12 credential students game learning	Thinking and Reasoning Communication (optional but easily implemented) Diversity (engagement of disadvantaged students) Collaboration (optional but easily implemented) Sustainability (optional but easily implemented) Specialized Education

## Background

### *Introduction*

Using a multi-disciplinary approach, the team reviewed available scholarship, investigated programs at comparable universities, and examined tools. Some research was specific to one of the four Learning Areas, other research was shared and informed multiple Areas.

While investigation of games as a learning strategy dates back nearly a hundred years, with the dramatic rise in popularity of video and computer games among students of high school and college age, there has been a concomitant rise in academic research into games: Game Studies programs have been established at many universities around the world; the psychological and social effects of gaming are heavily investigated; over 10,000 academic articles, books, and influential white papers about games have been published since 2011 alone; and, particularly over the last three years, there has been extensive serious work done in the field of game-related learning.

As the focus in higher education has shifted over the last century from the acquisition of subject-specific skills and content knowledge to higher order skills like the ability to think, solve complex problems or interact critically through language and media, there is a growing understanding that games naturally support this form of education. They are designed to create a compelling complex problem space or world, which players come to understand through self-directed exploration. They are scaffolded to deliver just-in time learning and to use data to help players understand how they are doing, what they need to work on and where to go next. Games create a compelling need to know, a need to ask, examine, assimilate and master certain skills and content areas. Many academics now argue that games are, first and foremost, learning systems, and that this accounts for the sense of engagement and entertainment that players experience.

### *Games in the General Curriculum*

This focus of research resolved into three distinct sub-areas which the team investigated separately:

- Small games in the general curriculum
- Gamification of Pedagogy
- Serious games

Small games are quickly produced and narrowly defined. In some cases, the same games, eg flash cards or memory games, can be used across many disciplines and courses, with only changes in content. They are used at many universities, but peer reviewed research was mostly limited to effectiveness in K12 environments, though authors contacted by the team were optimistic about the applicability of their results to university environments.

Gamification, which is commonly defined as the use of typical elements of game playing (e.g., point scoring, competition with others, rules of play) to non-game applications to encourage engagement with an activity, product or service, has seen a surge in attention over the last three years. “Gamification of Pedagogy” is a phrase we coined to identify the use of these more social game elements in the running of the class. Some of these elements of games have been used in teaching for centuries -- charts of relative student accomplishments, competitive activities, etc. Over the last twenty years many of these uses have

actually declined with concerns for student privacy coming to the fore. It is only with newer digital tools that have become available since 2010 that gamification has seen a revival in secondary and tertiary education. There is no peer reviewed work in this sub-area, but there are many white papers of varying degrees of rigor written about gamification in industry and, to a lesser degree, education.

Serious games are those which are aimed at solving real world problems, such as resource management, rural poverty, or refugee crises. Only about two dozen games are broadly available, but new ones can be custom developed. These few games have been implemented in many university courses around the world and results published in peer journals. Some universities have created courses in serious gaming and one, Michigan State University, has established a serious gaming masters program. One of our team, Lonny Brooks, has serious games as his primary research focus, so our PEIL research has drawn on his prior research in both literature and practice.

### ***Gamification as a Career Skill***

The focus of this sub-area was to determine the possibility, appropriateness, and feasibility of teaching CSU East Bay students skills in gamification to help advance their careers in non-games fields. Common examples of this include the healthcare industry using gamification to increase patient compliance with medication regimes, or manufacturing using gamification to improve quality control in a factory. As the focus was not on the effectiveness of gamification *per se* but on the demand for it among employers, then interviews, industry magazines, and primary materials like Craigslist ads were the core source materials. As research proceeded this learning area quickly subdivided into two clearly distinct questions: was this in demand and feasible as a small scale effort, ie modules integrated into existing courses; and was this in demand and feasible as a significant in-depth effort, ie the creation of a major or option in User Experience or Interactive Design.

### ***Game Industry as a Career Path***

Probably the most straightforward of our learning areas, this looked at how skills for working in the video game industry could be taught at CSU East Bay. Prior to research, we had anticipated a solution involving the creation of a new option in the Art Department, but examination of programs at other universities and subsequent interviews revealed a range of options, from a three course sequence, to a coordinated set of options in multiple different departments.

### ***Teaching K12 Credential Students to Use Game Learning***

The use of game learning in primary and secondary education has been well studied and results published in a number of peer reviewed journals. Most work has covered the use of small games as described in our first learning area. The volume of the existing literature necessitated contextualizing their findings. We chose the framework outlined by the Partnership for 21st Century Skills, which structures the relevance of learning techniques in terms of key outcomes: Collaboration, Creativity, Critical Thinking, and Communication (the four C's) plus Digital Literacy (Paige). The choice was justified by the similarity of these outcomes to CSU East Bay's Institutional Learning Outcomes.

## Research and Findings

Because each of the four learning areas use different methods and had different objectives, each will be addressed separately with their findings.

### *Games in the General Curriculum*

In each of the identified subsets of this area, the objective was to identify game or game like learning techniques or tools that would be improve student learning across the curriculum at CSU East Bay. We then broke down these three steps:

- Identify game learning techniques and tools
  - Search academic journal papers, books, and white papers for relevant research
  - Identify a list of both leading universities across the US in this area and comparable universities to CSU East Bay
    - Determine appropriate contact people at these institutions
    - Interview them via email or telephone for promising options
- Assess whether these tools and techniques improve student learning
  - Consult the literature about this tool or technique, and/or
  - Interview users at other institutions, and/or
  - Test the particular tool or technique
- Assess appropriateness to CSU East Bay
  - Confirm that the learning outcomes above map to one or more of the CSUEB ILOs
  - Confirm that the students above are comparable to CSU East Bay student body
  - Ideally, test the tool or technique with CSU East Bay students

These methods were then applied to each of the three sub-areas.

### *Small Games in the General Curriculum*

Small games are effective if they are well integrated into the curriculum (Brom, Preuss, Klement). The most common usages at universities similar to CSUEB are:

- Games available off the shelf from textbook publishers
- Simple-to-modify games
- Games developed by the instructor with intermediate software, or
- Custom developed with game mechanics that are specific to the course or discipline

Faculty using each of these types of small games were identified on other campuses through the literature and through Google searches of syllabi. Attempts to contact individuals from the list of leading and comparable universities (other than those previously identified) proved problematic as few campuses had any centralized system for sharing teaching tools. The exception was those using an online learning system add-on. For example, the StudyMate from Respondus integrates with Blackboard or Canvas and requires a full-campus site license. Universities using StudyMate, such as Sacramento State and CSU Northridge, were able to refer us to faculty users. Faculty users at CSU East Bay were found through personal contacts and informal inquires.

Games from textbook publishers are always locked to specific textbooks and the content cannot be changed. Access is limited to students who purchase the textbook (physical or electronic) or to students

on campuses that have purchased some form of site license from the publisher. The games are generally quite simple, but feature multimedia components specific to the topic (eg images of painting for art history texts, or animations of reactions for chemistry texts).

Simple-to-modify games include flash cards, memory games, and multimedia quizzes. These can be easily put together by instructors with simple software. For example, a flash-card template can be filled out for different course-specific facts or concepts and distributed electronically (or even on paper) to students. StudyMate is a large scale example of this and Anki is a small scale example. They are limited to very simple, inflexible formats, but they are used at a dozen universities we contacted and thousands of instructors across the country.

The next level up are games that are developed by the instructor with intermediate software. This requires little or no programming but does have a learning curve. Games can be significantly more specialized with these packages, allowing a variety of interactions, use of relevant animations, different types of feedback. Examples of these uses would be a math problem with trains and acceleration that animates the answers the student submits, or a chemistry animation of temperature and pressure in an ideal gas. An example of this kind of platform would be GameSalad. Given the popularity of these platforms, they are probably used at a number of universities on our list, but we were unable to document any examples.

Custom developed games are obviously the most ideal solution to the integration of games into the curriculum. These would allow simulations or game mechanics that are specific to the course or concept being taught. These require more complex platforms and the use of a programming language. Examples would be Adobe Flash and its Actionscript language, Corona and the Lua language, or the CreateJS HTML5 framework and the Javascript language. The limitation is the cost of external development, the lack of available time of internal staff developers, and/or the lack of capacity of student developers. We were able to locate a six universities using this approach, nearly all with game elements developed by the faculty members teaching the class.

However, the most intriguing result was from Michigan State University, where there were many examples of graduate students in the Serious Games Masters Program developing games for undergraduate classes in other departments. This resolved the issue of resources by using one need (for real world experience in game creation for the graduate students) to solve another (for improved student learning for the undergraduates). This solution seemed such a good fit for CSU East Bay, that we recast this category as “Custom Developed by Game Design Students”.

All of these games fall into a category that has been well tested (Becta, Brom) and shown to be generally effective for increasing engagement, memory of facts, and (if well designed) understanding of concepts. Learning outcomes for the simpler games (flashcards and memory games) are restricted to discipline-specific facts, formulas, and vocabulary. However, the intermediate and advanced games can allow for collaboration, critical thinking, and experimentation, in addition to more complex discipline-specific concepts, methods, and theories (Brom). The Custom Developed by Game Design Students category adds a significant layer of outcomes for the game design students (critical thinking, communication, collaboration, specialized education, and even sustainability, in that it encourages a model of creation rather than consumption).

To assess usefulness of different platforms, 50 different tools were studied based on web descriptions (first and third party) and academic or white paper references. The tools ranged from simple flash card programs through sophisticated programming languages (textbook-specific tools were not examined). Each was analyzed for ease

of learning, ease of use, and flexibility and sophistication of the games that could be produced. Of these, 16 were chosen for closer testing. These were downloaded and used to create sample games. While we were unable to test the produced games on CSU East Bay undergraduates, two team members assessed the appropriateness of the platforms to the CSU East Bay faculty and students using a 19 point rubric. The two best platforms for each level of complexity were identified.

<b>Type of Small Game for Use in Curriculum</b>	<b>Best Platforms for CSUEB Outcomes</b>
Simple-to-Modify Game	StudyMate (for Blackboard) Anki and AnkiWeb
Games Developed by the Instructor with Intermediate Software	GameSalad Scratch
Custom Developed by Game Design Students with Mechanics Specific to (non-game) Course or Discipline	Javascript with CreateJS Processing with Hermes
Games Available Off-the-shelf from Textbook Publishers	Only relevant if the textbook is already being used

### *Gamification of Pedagogy*

Using the same methodology, we examined what we called the Gamification of Pedagogy. As discussed above, running part of a class like a game has a long history. It was heavily impacted by the passage of FERPA privacy regulations in the 1970s, but has seen a significant revival in the last five years with the advent of digital tools that can allow for easy anonymizing and FERPA-compliant tracking and sharing.

Gamification of pedagogy can be implemented in a simple way (with levels and badges, etc) by many instructors by themselves, in class or through Blackboard. This is most effective as a means of providing familiar markers and frames of reference for underserved student groups who often feel uncomfortable or alienated with the structure and culture of education (Woo, Bleumers). Complex gamification has broader efficacy (Schell) but requires substantial training to implement.

Many classes at many institutions use simple casual tactics that we would associate with gamification (Deterding, Kapp), but few are consciously using more complex tools. In research, eight universities were found referring to the use of gamification in their classroom teaching. Of these only four classes seemed to use it substantially. Despite much positive (non-peer reviewed) press (Zichermann), our interviews and other research found little evidence of even moderate use in education.

Because of recent questions about the efficacy of simplistic gamification (Gartner), and the paucity of tested models, this channel of inquiry was closed during a round of formative assessment.

### *Serious Games*

Our research on serious gaming in organizational communication courses at CSU East Bay allowed us to evaluate the benefits of serious gaming as a “tool to think with” (Papert, 1985; deWinter, 2010)

and to determine that serious gaming works as an expressive medium for students to develop critical thinking for dealing with contradiction and for becoming strategic social innovators (Brooks, Keyser, Meneses, in press). In 2010 and in 2011, one member of our team, Professor Brooks, and two graduate researchers conducted a media content and qualitative analysis of students who played an alternative reality game known as Urgent Evoke. An alternate reality game (ARG) is an interactive narrative that uses the real world as a platform, often involving multiple media and game elements, to tell a story that may be affected by participants' ideas or actions.

Urgent Evoke was directed by Jane McGonigal, former director of games research at the Institute For The Future and developed by the World Bank Institute. Players were asked to explore and solve urgent social problems like hunger, poverty, disease, conflict, climate change, sustainable energy, lack of health care and education. The game presented ten weekly missions:

1. Social Innovation
2. Food Security
3. Power Shift
4. Water Crisis
5. The Future of Money
6. Empowering Women
7. Urban Resilience
8. Indigenous Knowledge
9. Crisis Networking
10. What Happens Next...

In 2010, the game's ten-week inaugural round, participants across the world "logged onto the game's site (via Internet, where available, but also over mobile telephones for those in developing countries lacking Internet access) every Wednesday at midnight to access a new 'urgent evoke,' or a description of a problem that players would work to solve." (Bauer, 2011). Although focused on Africa, out of a total of 8000 players, only 400 were African (Bauer, 2011). UrgentEvoke created a mythology based on the African continent. In a graphic comic book interface, players were presented with a storyline each week connected with a particular mission. In the comic portrayed, an "urgent evoke" emanated from a secret network of change agents who would take on the mission and attempt to resolve it. Through the graphical novel created and online videos posted, players entered this network. As one video for UrgentEvoke proclaimed, "This is not a simulation. You are about to tackle real problems. Welcome to the EVOKE Network. There's an old saying here: 'If you have a problem, and you can't solve it alone, evoke it.' An evoke is an urgent call to innovation."

Missions were composed of three major elements and active web links: a Learn, an Act, and an Imagine. With each new "urgent evoke," players clicked on Learn and had the opportunity to research and learn about the issue, consider the challenge posed by the game's designers that accompanied each "urgent evoke," and accept the mission. Urgent Evoke was not a graphically immersive online video game and accepting the mission on Urgent Evoke did not bring players to a new, simulated world within which to complete that mission; "rather, players were expected to act" on the mission within their own communities and document their efforts with video, photos, or a blog post by clicking on the Act link (Bauer, 2011).

In the Imagine link, the third and final step, participants were asked to consider the issue of the week in the future, and to describe how the issue affected them in the future. Players earned points for completing each mission, and could be awarded more points by other players for such things as creativity and collaboration. At the end of the inaugural ten weeks, players were asked to submit their own “Evokation,” that is, a plan to tackle a problem. Players who completed all ten weeks of the game and submitted an “Evokation” received a certificate for social innovation; those players whose “Evokations” were particularly noteworthy were considered for funding to enact their idea, scholarships, and a chance to attend a social innovation conference in Washington, D.C. (Bauer, 2011).

We asked students to complete a journal detailing their involvement with each mission; students were only required to complete five out of the ten missions. We analyzed student journals based on their reflection of their Evoke gaming experience (n=32 students) and conducted a focus group interview with 7 students. This study takes a phenomenological approach by inquiring into the perceptions and experiences of the participants in an online forecasting game. We looked for emergent themes across our data:

1. Resistance to serious gaming as an educational tool or students no longer pursued gaming in order to become more career oriented
2. Serious gaming became a meaningful experience that made possible an emerging collective wisdom despite the initial awkwardness expressed in theme 1.
3. Serious gaming emerged as a new source of learning and literacy of gaming in the classroom.

These themes are just a few that we explore; additional research will deepen this list. By exploring and listening to students, we wanted to take an honest assessment of how we could begin to find wisdom in multi-player forecasting games like UrgentEvoke.

### ***Gamification as a Career Skill***

As indicated above, because our focus was not on the effectiveness of gamification *per se* but on the demand for it among employers, our methodology was only linked to the specialized education learning outcome. While we drew on some national sources, like industry magazines, our primary method was to interview local employers and examine employment ads.

This was unquestionably the least productive area of research. Although gamification has received substantial exposure in the press (over 1000 journal and magazine articles in the last two years), of 50 major San Francisco Bay Area employers that were contacted, none were looking for gamification skills.

In searching employment ads, we made a monthly search for the words “gamification”, and “gamify” on Craigslist, Oodle, and Geebo. Excluding cross-listings, there were only an average of 14 postings nationally per month. Use of other search terms and listings did not significantly alter results. Considering the published attention that gamification has been receiving, this was a shockingly low number.

To provide context, a comparison was made with the nearest full time career position, a User Experience Designer, who would be able to implement gamification along with many other considerations in an

in-depth and complex way. Employment ads, excluding cross-listings, numbered in excess of 750 per month, nationally. It could be that interest in gamification is masked in the growing demand for user experience designers, but this latter is a dedicated profession requiring at minimum a bachelor's degree in User Experience.

### ***Game Industry as a Career Path***

With revenues of \$65 Billion per year, the Video Game Industry has overtaken the Music and Movie Industries in profits and hiring (NPD). According to the U.S. Bureau of Labor Statistics, employment for careers within software publishers – including those in game design – are projected to increase by 30% from 2010-2020 (BLS). Despite being a world center for the Game Industry, only one university (UC Santa Cruz) of our area's seven public universities (3 UCs and 4 CSUs) has a Game Design or Game Development Bachelors Degree.

Our methodology was to

- Examine existing game design programs at a variety of universities around the country
- Identify any features, methods, or structures that would be of value to the CSU East Bay
- Consider their relevance in terms of CSU East Bay's students and institutional learning outcomes

Currently no CSU campuses have a game design or game development degree program, and only CSU Chico has a minor. In the UC system, only Santa Cruz offers a bachelors and Irvine offers minor. There are public university models elsewhere in the country: North Carolina State, Kent State (OH), Michigan State, Arizona State, Shawnee State (OH), Ferris State (MI), Dakota State (SD), Southern Polytechnic State (GA), University of Utah, University of Wisconsin Stout, UC Santa Cruz, and University of Texas Dallas.

All these programs fall into three categories

- Short sequences or minors (3-6 quarter or 2-4 semester classes)
- Dedicated bachelor degree
- Multiple department/Multiple degree programs

Most of these speak for themselves, but attention should be drawn to the short track offerings (3 quarter or 2 semester classes) offered as an alternative within another degree program (many similar structures exist at CSU East Bay in other subjects). Also noteworthy is the multiple department model showcased by the University of Utah in which students have the choice of a BS in Game Development and Programming, a BA in Game Design, and a BA in Game Business and Marketing. Each of these degrees is housed within an existing department (Computer Science, Art, and Business), but all share capstone projects in joint teams.

Analysis of course offerings at these comparable institutions shows that each of these would offer high articulation against nearly all of CSU East Bay's ILOs. For the most part, this learning accrues solely to the students in the program, but if game design students work with non-game classes, learning can “spill over” to benefit far more students

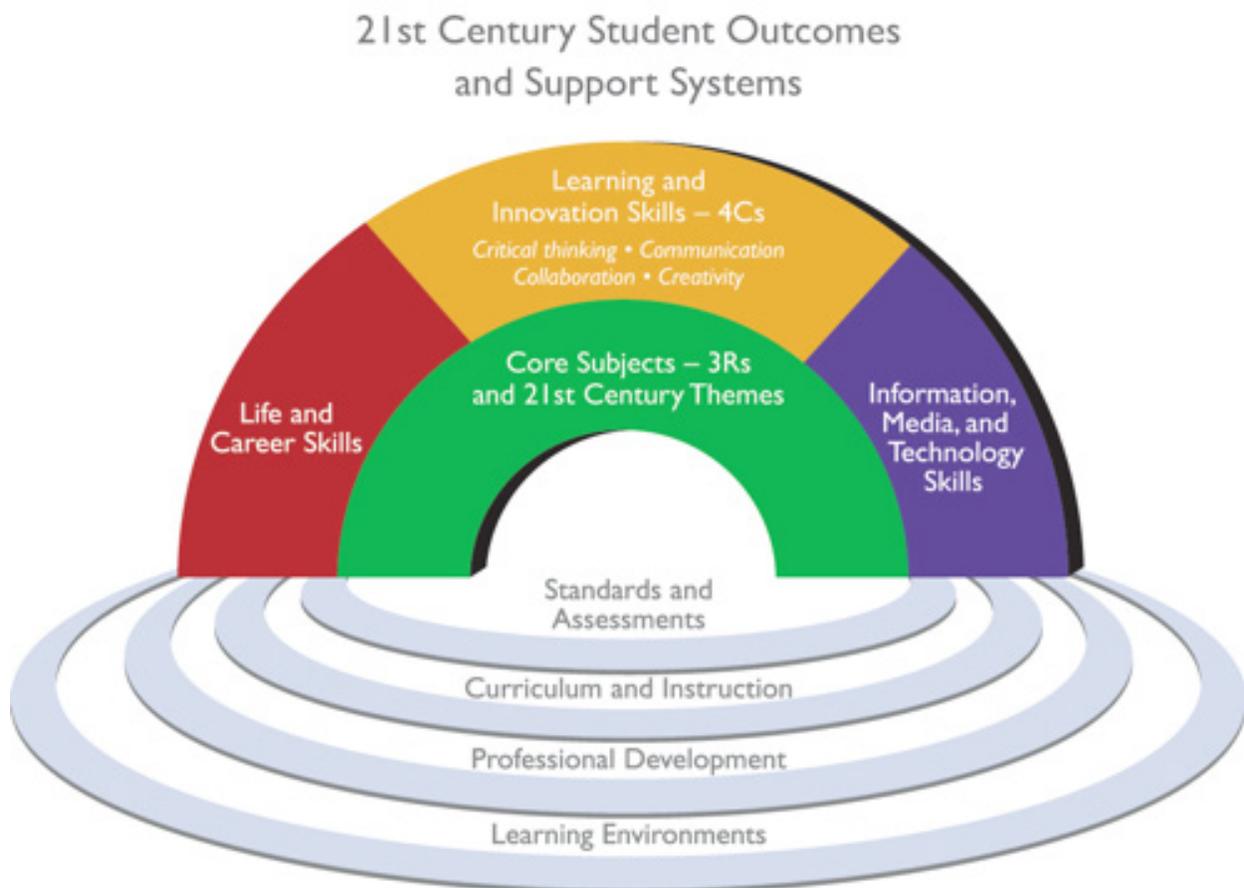
## Teaching K12 Credential Students to Use Game Learning

“Passion, practice and persistence are key to success in life and games help teach these if they are played in the right ways.”

James Gee, 2010

Children and young adults are learning through games, video games in particular. Games are embedded in the children’s everyday lives, where they actively become producers and creators of knowledge (Lave & Wenger, 1991). Video games’ design features of engagement, involvement and skills of pattern solving provide the essential elements for learning (Squire, 2010).

Envisioning how to harness the game design elements for academic learning and achievement is possible when using the 21st Century Skills, illustrated below:



### ***Collaboration***

Using student teams and the game, EQUATIONS, in a 7th grade mathematics class increased peer tutoring, and mutual concern and less competitiveness. The students’ increases in satisfaction in the tasks were due to the interdependence of the task. The slight decrease in competitiveness is possibly due to the perception that competitiveness equals scarcity of reinforcement (Devries & Edwards, 1973). Empirical evidence from McFarlane, Sparrowhawk, and Heald (2002) studies show games in classroom settings increase students’ deductive reasoning, collaborative problem solving, cooperative learning, and peer tutoring.

### *Creativity*

Games embrace and foster children's sense of play, cultivating their questioning disposition, and reinforce the power and importance of play.

Gamification offers the promise to alter school-based rules to motivate students at the emotional level, their sense of identity and their social positioning (Lee & Hammer, 2011). Their work at Teachers College Columbia University has a "game layer" that "fosters concrete goal-setting, clear communication, and the conscious development of student identity as learners" (p. 2).

The three parts of "flow" defined as being intensely focused and most satisfied: 1) challenging problems that do not deskill, 2) practice, with some failure, until the problem is challenging, but solvable with effort, which is the state of flow 3) practice equals solving the problem and then seeking another problem that is more challenging and requires more skill (Gee, 2010).

### *Critical Thinking*

Ito (2009) conducted a 3 year ethnographic study of children's media practice, linking peer, school, and home environments. Findings included a tremendous diversity of media practice that can be divided into two areas. First, "Friendship Driven Space" that provides the children opportunities to think critically about online identity and digital footprint. Second, using media literacy to "Geek Out", which provides the opportunity to foster civic responsibility.

Games encourage interest-driven learning: engagement, caring about subject matter, and captivating learners' interest (Steinkuehler, 2010). In Steinkuehler's qualitative study with middle school students the gaming reading curricula bridged the "third space" of the peer, school, and home culture. The games, as educational materials, are student centered and the knowledge gained moves toward the students' learning goals. An important reading skill, self correcting for comprehension, increased. He also found that gaming pedagogy is comparable to community organization, asking the question: What do you as a community want to accomplish? How should you marshal resources (time, materials) to accomplish your goal?

### *Communication*

- Interactive narratives promote collaborative problem solving, and position game players as producers (Squire).
- Combining high interactivity with narratives, games promote learning (Becta, 2001).

### *Digital Literacy*

- Bridging 3rd space, games and reading (Steinkuehler)
  - Literacy increases as children self correct
  - Educational materials move toward the students' learning goals (student centered)
  - Pedagogy is comparable to community organization
- Empowering students through increasing social capital in digital literacy (Pinkard, Nichole)

### *A Case Study*

- Quest-to-learn school in NYC:
  - Designing experiences for students to master in order to solve problems
  - Innovation is the goal
  - Goal to have 6th-12th by 2015

## Recommendations for Practice

### 1. *Small games are worth implementing across the curriculum.*

They increase engagement and can promote all Institutional Learning Outcomes.

- Consider campus purchase of StudyMate for Blackboard (discuss with administration at Sacramento State, CSU Northridge, and CSU Fullerton, where it is in current use)
- Promote the use of small games to faculty members who may be unaware of proven benefits

### 2. *Serious games have produced successes in learning and research at CSU East Bay.*

- Continue existing support of the program in Department of Communication
- Consider and encourage other departments to feature serious games if appropriate ones are available

### 3. *Gamification, in and of itself, is not worth pursuing at this time.*

The broader field of User Experience Design is booming, but would require a new major option.

### 4. *The game industry is underserved by public universities in the Bay Area and California.*

Some type of program would be popular. While a new major option is one option, a shorter sequence or minor will provide many benefits.

### 5. *Promote teaching the use of game learning in Teacher Education.*

Use of games is highly effective in K12 teaching and absent from much of the current curriculum.

### 6. *Leverage existing skills and options to expand learning in Teacher Education and Art.*

CSU East Bay already has faculty who can teach game design in a short sequence and student who want to learn. These can be leveraged to provide needed game learning support in Teacher Education. We recommend creating a short three quarter Game Making for Service track in the Art Department's existing Multimedia option, and assigning senior capstone students to work with Teacher Education classes to develop educational games to maximize outcomes in both Teacher Education and in the classes those certificated will teach in the community once they graduate.

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## **Resources**

The Institute of Play, the leading think tank in the field <http://www.instituteofplay.org/>  
Best report on games and diversity <http://ipts.jrc.ec.europa.eu/publications/pub.cfm?id=5819>  
Quest to Learn, the New York Times featured, game-focused K12 school, <http://q2l.org/>  
Games + Learning + Society at <http://www.gameslearningsociety.org/>  
Examples of advanced educational games <http://www.nobelprize.org/educational/>  
Examples of serious games <http://www.darfurisdying.com/> and <http://www.darfurisdying.com/>

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For Serious Gaming, Prof. Lonny Brooks at [lonny.brooks@csueastbay.edu](mailto:lonny.brooks@csueastbay.edu)

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**Jeanette Bicais** is an Associate Professor and Chair of Teacher Education at CSU East Bay. A K-5 classroom teacher for 17 years, she returned to earn her doctorate from UC Berkeley researching how English Learners write in a language other than their home language. Her current research continues to be in the K-12 community on ways in which the teacher and the students use language to extend the children's writing abilities. AT CSUEB, she has taught courses in the Master's, Option in Curriculum Program and in the Multiple Subject Credential Program.

**Lonny J Avi Brooks** is an Assistant professor in the Communication Department at CSU East Bay. His current manuscript is *\*Futures, Inc.: Communicating the Future of Digital Culture\** (in final review at MIT Press). His research of long term thinking is part of a larger study of how organizations (especially forecasting think tanks), interaction designers, and college youth envision the future of communication technologies. His research analyzes how the distribution of stories organizations and individuals create works to forward, mitigate, or restrain technological and scientific innovation. He is currently Chair of the Communication And The Future (CATF) division of the National Communication Association. He is the Lead Faculty for the Long Term and Futures Thinking project in education (CSUEB) whose goal is to foster the development of thoughtful, engaged citizens for whom critical, creative and long-term thinking are habits of mind: [www.longtermandfuturesthinking.org](http://www.longtermandfuturesthinking.org)

**Phillip Hofstetter** serves as Chair of the Art Department at CSU East Bay and teaches in the Multimedia Graduate Program. Phil has led a diverse career in the arts with work in the theater, photography, documentary television, and major stints at Bay Area art museums. Over a 23 year period as a multimedia and video producer for several archaeological excavations in Yucatán and Guatemala, his work has appeared on National Geographic television, the Discovery Channel, and in Archaeology Magazine and website. His volume, *Maya Yucatán-An Artist's Journey*, features an account and photography of his experiences in the ancient landscapes of the peninsula.

**Brian McKenzie** is an Associate Professor at CSU East Bay. His research and teaching draws heavily on his 30 years as a successful entrepreneur and small business manager. Brian received his BA degree from the University of British Columbia in 1974, his MBA from the University of Victoria in 1997 and his PhD from the University of Victoria in 2003. Brian has been honored with the 1999 Academy of Management Entrepreneurship Division Innovations in Pedagogy Award, the 2000 USASBE Model Undergraduate Program Award, the 2004 USASBE Best Conceptual Paper Award and the 2008 Marvin Remmich Outstanding Faculty in Teaching Award.

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