STATE BOARD FOR COMMUNITY COLLEGES AND OCCUPATIONAL EDUCATION

May 9, 2012

TOPIC: The Faculty Challenge Grant Program

PRESENTED BY: Dr. Geri J. Anderson, Vice President and Provost

RELATIONSHIP TO THE STRATEGIC PLAN:
- Colorado students shall have the opportunity to succeed through high quality, cutting-edge instruction and educational services.

EXPLANATION:
Colorado Community College System President, Dr. Nancy McCallin, allocated $3M in funding to support the Faculty Challenge Grant Program, allowing the development of game and immersive activities into existing land-based courses. Using the funding, faculty were challenged to collaborate in innovative projects which address the growing educational uses of game-based and immersive learning. The primary intent of the Faculty Challenge Grant Program was to identify, improve, and scale sustainable, collaborative solutions that improve student success. It is intended that funded projects will be available to faculty and students throughout the CCCS.

The motivational and engagement aspects of games/immersive learning appear to offer promise for improving students’ persistence, retention, and completion. Colleges across the country are experimenting with Game Based Learning (GBL) by adding elements of game-based and immersive activities to their courses. This can take many forms, but may include the following:

- Alternate reality
- Augmented reality/location-based services
- Drill-and-practice games
- e-Learning w/ game dynamics as part of design
- Immersive simulations
- Integration of “off-the-shelf” games into courses
- Puzzles
- Scavenger hunts
- Virtual worlds

A game-based learning project uses game principles to improve teaching and learning experiences, with technology playing a facilitative role. Game principles include the following:

- End-state goal = winning (competition)
- Conflict(s) or challenge(s)
- Rules
- Player(s)
Work Session I.L.

- Motivation
- Feedback
- Practice
- Intensity
- Choice/involvement

An immersive learning project uses highly engaging educational “hooks” that bring the learning experience to life for students. Among the types of solutions potentially suitable are interactive video (e.g., students creating, editing, and repurposing video as a pedagogical tool); immersive environments (e.g., “virtual worlds”); augmented reality; remote instrumentation; adaptive learning platforms; social-media-based learning environments; and simulations. This list is not exhaustive; any solution that demonstrates the ability to increase deeper learning and engagement and the potential to scale will receive full consideration. In short, the student must be actively engaged in the experience, not simply watching a video or reading text. For immersive and game-based learning to succeed, the drivers must focus on motivation and engagement as strategies for improving student retention, progress and completion. Without a driving pedagogical rationale, the value of immersion and games in, by and for learning will be trivialized.

Fourteen CCCS faculty established the grant criteria and reviewed the proposals. Criteria included:

- Projects needed to be collaborative in nature. For example, interdepartmental or intercampus initiatives incorporating elements of game-based or immersive learning.
- Projects needed to incorporate behavior motivation considerations (for example, points, badges, leader boards, among others).
- A system for tracking student learning outcomes and evidence-based evaluation strategy needed to be developed.
- Faculty professional development was required
- Each proposal needed to demonstrate a shift in pedagogy - using games/immersive technology in support of learning.
- Priority was given to projects that moved from 100% classroom based to “hybrid” or “blended” learning. For example: “flipping” the classroom - doing things outside of class that used to be done in class (such as lectures), and using class time for collaborative activities. Blended learning provides students with both the flexibility of online learning (time and place) and the structure and engagement of the in-person classroom experience. CCCS is interested in exploring a variety of blended learning models, including various time-share models (e.g., 50:50, 60:40, or 30:70 face-to-face versus online).
- Proposals for “web-enhanced” courses that do not fundamentally change the instructional model were not considered.
Sixteen proposals totaling a request for $1.17M in funding were submitted by the April 15, 2012 deadline. An additional funding cycle will be available to faculty in October.

**RECOMMENDATION:**
No Action Required; Informational Only

**ATTACHMENT:**
Faculty Challenge Grant Program Abstracts
COMMUNITY COLLEGE OF AURORA

Project Name: Community College of Aurora Apprentice Project

Project Abstract: CCA is designing an immersive learning competition similar to the popular reality show, *The Apprentice*. Teams of approximately ten students across four departments (Film; Art and Design; Business, and Computer Science/Information Technology [IT]) will collaborate on real-life case studies for community organizations to launch a new business product over the course of the Spring 2013 semester—competing to win the title of 2013 Innovative Visionaries. The case study will be integrated into the courses’ syllabi and tied to learning objectives. Each team will be responsible for creating a product prototype, marketing and financial plan, media plan and all IT components.

Total Funding Amount Requested: $99,704.00

Project Name: Colorado Virtual Studio System

Project Abstract: The Colorado Virtual Studio System will transform the student experience in the creation of original content from an act of insular personal expression to an act of communication to a generalized audience through the incorporation of real world market conditions and considerations in the creative process. The Colorado Virtual Studio System will create a plug and play modular virtual economy adaptable to a variety of creative, technical, and entrepreneurial programs throughout the community college system. Students in such programs will be more engaged in their course work, and more successful in the job market on graduation.

Total Funding Amount Requested: $99,833.00

Project Name: Going Beyond the Book: A Planning Project to Promote Immersive and Game-based Learning

Project Abstract: CCA is requesting a planning grant to guide us through improving what we are currently providing through our Center for Simulation, expand the use of immersive and game-based learning across the college through a vigorous professional development program, and share what we develop with colleagues around the state. The planning project will help our college take the necessary steps to develop faculty and increase their awareness of immersive learning resources, provides curriculum and simulation resources for immersive learning, and to coordinate faculty across disciplines to collaborate on projects.

Total Funding Amount Requested: $99,653.00
COMMUNITY COLLEGE OF AURORA

Project Name: CSI: Aurora

Project Abstract: CSI: Aurora captures the popularity of forensic television shows and teaches the reality of forensic work through an immersive learning exercise involving a mock crime scene and mock criminal trial, with student participation from archaeology, forensic anthropology, criminal justice, paralegal, and science departments. Students in each department gain practice in specific methodologies as they related to real-world applications in a criminal case. For example, forensic anthropology students apply what they have learned about the human skeleton to identify a victim of a crime. The goal of this proposal is to expand on the current Spring 2012 crime scene lesson into five possible scenarios for upcoming semesters with more students, more departments, and more excitement.

Total Funding Amount Requested: $74,541.00

COMMUNITY COLLEGE OF DENVER

Project Name: Linear Equations Battleship Animation/Distribution

Project Abstract: Linear Equations Battleship is a game developed from a collaboration among colleagues at the Community College of Denver. The game is currently played as a paper board game in an in-class setting. By developing Linear Equations Battleship into a digital animated game format, we will enable students to be engaged in an interactive, competitive learning experience as well as be able to take their learning outside of the classroom. The digital version of Linear Equations Battleship will be easily adaptable for Developmental Math classes and College Algebra, and will be made easily accessible for use by instructors and students at any college.

Total Funding Amount Requested: $68,000.00
FRONT RANGE COMMUNITY COLLEGE

Project Name: Games Based Learning MOOC

Project Abstract: What is a MOOC? A MOOC is a massive online open course. This type of course is designed for large scale learning and knowledge sharing between professionals. This proposal is requesting $51,305 to develop four immersive and game-based learning MOOCs. These MOOCs will include online, synchronous as well as asynchronous sessions using a combination of Web 2.0 tools, commercial off the shelf games, and immersive environments to teach CCCS faculty, instructors, and staff how to implement immersive and games based learning.

Total Funding Amount Requested: $54,430.00

Project Name: Project Outbreak

Project Abstract: Project Outbreak is an augmented reality (AR) simulation that uses an interactive narrative where the student groups are working as microbiology interns for CDC Investigator who has been called in to investigate a mysterious illness and must quickly track down patient zero before the epidemic threshold is reached. Student groups will extend their learning with mobile technologies and Internet based Web 2.0 and social media tools.

Total Funding Amount Requested: $57,960.00

Project Name: Psychology Gaming Lab

Project Abstract: Psychology Lab Game proposes to develop a game for PSY101 students to compete against themselves and as a class while learning PSY101 content. The Game will consist of eight different activities including memory games, virtual brain dissection, and training a virtual rate. Upon completion, students will be elevated in status from the role of a distanced sports fan to owner of the team. Classes will compete with other classes for a spot in the super bowl at semester’s end. This game will be free to students and can be modified for use in any class or discipline in the CCCS.

Total Funding Amount Requested: $100,000.00
MORGAN COMMUNITY COLLEGE

Project Name:  Sim Spray Paint Gun Simulator – Morgan Community College Collision Repair Program

Project Abstract:  The Auto Collision Repair program at Morgan Community College would like to purchase a SimSpray immersive virtual reality painting simulation unit. This unit is designed to assist in the teaching of spray painting and coating fundamentals. Using SimSpray decreases the expense of paint used to teach spray painting and delivers a “Green” ROI to the classroom and the environment. SimSpray allows students to practice painting before ever stepping into the paint book and it simulates several different painting environments such as the paint booth and a spray shop.

Total Funding Amount Requested:  $34,938.00

PIKES PEAK COMMUNITY COLLEGE

Project Name:  Gaming Literacy: An ENG 090 Class in a Video Game Format

Project Abstract:  The proposed Pikes Peak Community College (PPCC) project will pilot the gamification of a hybrid developmental education writing course that uses an achievement-based assessment model (levels, badges, etc.). The pilot seeks to increase student learning, engagement, and retention through collaborative practice, peer-generated feedback, and student choice in coursework. A collaboration of PPCC’s Educational Services and Student Services Divisions, students in the course will write and design an Interactive Fiction game and engage in a Minecraft-based re-design of the Centennial campus from the viewpoint of students using services. Course findings will be shared through a Livebinder to facilitate system-wide course recreation.

Total Funding Amount Requested:  $32,726.00
PUEBLO COMMUNITY COLLEGE

Project Name: Teaching Business with WoW

Project Abstract: This grant proposal seeks to utilize the commercial off-the-shelf game, World of Warcraft (WoW). WoW and its market economy as a real-time laboratory for business and economics faculty and students. The goal of this project is to increase student engagement, persistence, retention, and completion through game-based learning.

Total Funding Amount Requested: $60,506.00

Project Name: Business Simulation Game for Introduction to Business

Project Abstract: The PCC project “Business Simulation for Introduction to Business Courses” brings gaming into the classroom as the business simulation game relates to each class session. Introducing simulation, the project involves starting and managing a business of the student’s choice embedding the simulation into our basic business course.

Total Funding Amount Requested: $30,677.00

RED ROCKS COMMUNITY COLLEGE

Project Name: M-Apps 4 Math (Mobile Applications for Math)

Project Abstract: The Red Rocks Community College (RRCC) Math department will implement game-based learning in MAT 060: Pre-Algebra through a collaborative project with the RRCC Computer Science department. The goal of the project will be to assess the impact of game-based learning on student success in developmental math and identify the most effective game-based learning tools—custom or “off-the-shelf” gaming applications, while at the same time providing two CIS students with a valuable internship opportunity.

Total Funding Amount Requested: $73,476.00
TRINIDAD STATE JUNIOR COLLEGE – Trinidad Campus

**Project Name:** Diesel Fundamentals Competition

**Project Abstract:** The Diesel Fundamentals Competition area a collaborative effort that incorporates virtual simulation as well as real world applications to encourage students in technological development. Students compete on computer based virtual reality programs that teach fundamentals in Diesel Mechanics using an immersive simulation, game based platform. Students begin by using the self-paced tutorials on the virtual software. Students compete on performance, efficiency, strategy, and competency. Students are given points based off ability. Then, students compete on stand alone simulators using their hands and strategies to diagnose problems.

**Total Funding Amount Requested:** $99,676.00

**Project Name:** Robot Technologies and Competition Program

**Project Abstract:** The Robot Technologies and Competition Program is an interactive program that uses immersive simulation and VEX robotic design systems to learn the fundamentals of robotics and compete in VEX robotics competitions around the state and nation. It also includes industrial applications with curriculum that uses game based and immersive simulation as teaching fundamentals. Other applications include creating games and competitions for robots from entry level game play (VEX) robots to industrial welding, assembly line, work envelopes, sensors, manipulators and end effectors, object detection, programming, and many other applications. Students will learn robotics from entry level to industrial applications.

**Total Funding Amount Requested:** $98,004.79

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TRINIDAD STATE JUNIOR COLLEGE – Alamosa Campus

**Project Name:** Solar Technologies Collaborative Project

**Project Abstract:** The Solar Technologies Collaborative Project is a program that will teach students fundamentals in Solar Technology and design/maintenance through immersive simulation and hands on simulators. Students will learn fundamentals using immersive virtual reality software that simulates the process for solar energy and storage techniques. The software uses functions that assess the outcomes of each student’s success. Solar thermal energy training system modules are then used to apply fundamentals using hands on techniques.
**Total Funding Amount Requested:** $94,627.76

### SUMMARY

<table>
<thead>
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