# READY OR NOT, HERE WE PLAY:

*THE IMPACT OF COLLEGEOLOGY GAMES ON COLLEGE READINESS, ACCESS AND STUDENT SUCCESS*

# Ready or Not, Here We Play:

## The Impact of Collegeology Games on College Readiness, Access and Student Success

Authors:

William G. Tierney

Gisele Ragusa

Zoë Blumberg Corwin

Tracy Fullerton

"Games lubricate the body and the mind."

–Benjamin Franklin

# Learning in College, Living in the Real World

James Garfield, who would become the 20th president of the United States, returned to his alma mater, the Western Reserve Eclectic Institute, in 1856 to take up a post as Professor. Garfield was the lone instructor in classical languages, English literature, philosophy, natural sciences, American history, geography, geometry and religion. Today, of course, the idea that one individual could master the information and ideas required to teach all courses would be preposterous. Professor Garfield was not only a very popular teacher, but was also structured enough to become Western's president; subsequently he turned to a political career and Western Reserve became Hiram College. Garfield also attended Williams College as an undergraduate when Mark Hopkins was president and famously stated, "The ideal college is Mark Hopkins on one end of a log with a student on the other."

We have come a long way from Garfield's day. Whereas until the middle of the 20th century attending a postsecondary institution remained a rarity for the vast majority of America's populace, today 15.4% of citizens between 18 and 24 have a postsecondary degree (U.S. Census, 2013). In Garfield's time less than 5% of white males even went to college. In the mid-19th century the country had approximately 380  postsecondary institutions, and the majority of them were private and sectarian (Snyder, 1993). Today we have over 4,700  trade schools, community colleges, four-year public and private universities, some of which are non-profit and others for-profit (NCES, 2012a). Although the for-profit sector has grown substantially so that it now accounts for roughly 9% of the share of postsecondary students, the vast majority of students – 72% (15,110,196) - attend public institutions – and about half of those - 47% (7,062,467) - attend two-year community colleges (NCES, 2012b). In Garfield's day we had neither community colleges nor public institutions, and the idea of 'profit' in education was not yet considered.

The expectation is that by 2025 the United States will need about 60% of its citizens with some form of postsecondary training if we are to remain competitive internationally (Lumina, 2012). We will not meet this necessary increase in college-going simply by "staying the course." Those

students who have families with college graduates or attend high schools with high college-going rates largely don't need additional advice about the importance of a college degree. They are most likely to apply and enroll in postsecondary institutions. Instead, those who will be first in their families to attend college or who attend high schools without a college-going culture are where we need to focus to find that increase. We will also find them amongst working adults who now recognize that a postsecondary certificate or degree matters.

And, indeed it does matter. We know that over a lifetime a college graduate is likely to earn $1.2 million more than a high school graduate (Kantrowitz, 2007); translated another way, a college graduate earns about $23,000 more per year than someone who only has graduated from high school (U.S. Census, 2012). We also know that during the recent recession, jobs were scarce for everyone; but the unemployment rate for high school grads was nearly double that of college grads – 8.3% versus 4.5% (U.S. Bureau of Labor, 2013).

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Increasing college attendance is not only about going to college but also about what some call "college readiness." Indeed, more students need to attend college. But even more need to be ready for the demands of college when they attend. They must have the academic skills to master the content of courses, and they must also have the non-academic, navigational skills for college or what is referred to as "college knowledge" to proceed through what for many will be alien environments. This type of knowledge includes better time management and financial literacy skills, and a more efficient and effective ability to take notes, to ask for advice, and to plan for careers once they graduate. The result is that going to college in the 21st century is very different from what it looked like only a generation ago, much less during Garfield's era in the 19th century.

# Learning in College *continued*

Consequently, our educational institutions – schools, community colleges and trade schools, and four-year institutions – are undergoing as significant changes as they have faced in a century. We know that the status quo will not get us where we want to go. Simply building more college campuses or adding more high school counselors is no longer a sufficient solution. Not only are schools under-resourced, but the manner in which teaching and learning occur must change with the consumers who use social media and technology in a manner not considered a generation ago.

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Close to 95% of all teenagers use the internet and 75% of those users hang out online daily. At the same time, the traditional college counselor who advised students and their parents about going to college is an artifact of the past. Although the student-to-college counselor ratio should be about 250:1, nationally it is approximately twice that, and in some states such as California it's three times what it should be. The result is a double whammy: the fiscal problems of schools and states preclude the possibility of having effective counselor to student ratios, and the users – students – are much more likely to make use of social media in ways that may appear foreign to adults.

College readiness can no longer be left to traditional teaching and learning formats as if the larger world cannot intrude. Indeed, although critics prefer to paint educational institutions as resistant to change, that has not been the case; educational institutions have always kept pace with changes in the larger society, albeit not as quickly as some of us would like. By the turn of the 20th century, for example, U.S. research universities rivaled the best schools in the world. At those institutions the breadth of Professor Garfield's teaching gave way to professorial depth, and the trend continued unabated throughout all of higher education into the 21st century. The number of postsecondary institutions also dramatically increased by 1950. Attending and graduating from high school had become the norm by 1960. The word "dropout" entered the lexicon, signifying that leaving high school was to be prevented. All of these examples underscore a system trying to keep pace with larger societal transformations.

We can expect even greater changes over the next decade. One key shift will be how social media and technology improve postsecondary education. What those specific improvements are, and how they take shape remains to be seen, or more likely, invented. What we do know is that we need more students attending college. We need more students graduating in a shorter time frame, and being ready for a career. We also know that just as the traditional college counselor has gone by the wayside, the tasks of the counselor and the needs of his or her students are as great as ever.

The term "college readiness" was once irrelevant and then implicit. In Garfield's America most adolescents did not finish high school, and if they did, college was not often a secondary option. Students interned in law offices to become lawyers, simply became teachers, or entered a trade as an apprentice. College was largely for the wealthy or those who sought religious training. One century later the country had increased college-going rates, but who went to college remained segmented – more often than not by race, gender, and/or socioeconomic status. By the 1960s, some high schools had quite high college-going rates and others had but a handful of students headed to college. Those high schools with high college-going rates graduated students who were "college-ready." There was really no consideration for "college readiness." A high school diploma from a particular segment of America's schools certified that students were ready for college.

As the United States expanded its notion of who might go to college, however, a high school degree no longer signaled "college readiness." Just as "dropouts" came into the vernacular in the 1950s, "college readiness" has been a point of conversation for less than a generation. And even the term itself is changing as postsecondary education and workplace landscapes transform.

We first employed college readiness as largely a transition phrase: were students ready for college on day one of their freshman year in college? College readiness today, however, pertains not simply to if one is ready for college, but also if one has learned those skills and strategies necessary to persist in college and to graduate. It is entirely likely that in the near future the term will take on a third meaning and also involve "career readiness." Does college readiness enable students to develop a mindset for thinking about, and preparing them for, careers and workplaces once they graduate?

# Learning in College *continued*

How students learn basic literacy and numeracy now needs to be combined with what some define as "deeper learning." The rote learning approach where memorization was central has failed. Alternatively, an approach that avoids mastery of content areas has been equally unsuccessful. Further, subject matter mastery is not the only criteria for success in college. Well-prepared students also have skills and strategies that are not found in traditional academic subject areas, in other words, the strategies and skills that help them to navigate college, or "college knowledge." These are things that low-income students and those whose families have not attended college typically do not learn in their high schools. How to work in groups, manage time, navigate college learning environments, communicate in multiple registers, and effectively create and maintain a diverse set of academic experiences are essential for college – and career – success.

We must be able to develop learning strategies that enable students to master the competencies associated with deeper learning such as working collaboratively, thinking critically, and mastering academic content. Learning needs to focus specifically on the development of an academic mindset and learning how to learn, often referred to as metacognition. Learning activities need to be circumscribed by attention to instilling in students the ability to think critically about their lives and to communicate effectively.



The implications are twofold. First, we have to use new methods and technologies to do what others once did. And second, we have to forge new working relationships across organizational entities and sectors. Thus, on the one hand, rather than assume that more teachers, counselors, in-class "seat time," and other traditional options will increase college access, enrollment and retention, we need to make use of new media and new working relationships. Similarly, simply building more campuses and assuming that the divide between public and private should stay as it once was overlooks opportunities and the potential for dramatic growth and improvement.

To be sure, any change brings with it not only opportunities but also risks. We are not suggesting adopting new technologies helter-skelter as if they will solve all of education's problems. We also are aware that any new technology or working relationship can fail. New working arrangements require a degree of flexibility with which many will not be comfortable. The "public good," for example, was once a relatively clear term: the public funded public entities to help resolve a problem for the broad swath of society. Clean drinking water is a public good funded by the public and maintained by public organizations. Everyone pays and everyone benefits from clean drinking water, and a government entity provides that water. Education also has been thought of as a public good. The assumption that we are now going to forge a new relationship with those who turn a profit raises questions for some of us.



But even the notion of the public good has changed over time. In Garfield's time fire companies were privatized so that if a neighbor's house caught fire, one fire company would attempt to put the fire out in that house but not in any others if they did not have insurance with that company. Over time, the idea changed to the point that protection from fire became a public good.

The result is that with all these changes that are necessary if the country is going to get where we need to go, we are going to need to take risks. We know that we cannot simply continue doing what we have done. In doing so, our educational organizations may look and work differently tomorrow from today. One risk that may have a significant payoff pertains to utilizing social media and technology to help students acquire non-cognitive abilities that will enable college readiness, in the fulsome meaning of the term discussed above.

" If the country is going to get where we need to go, we are going to need to take risks. We know that we cannot simply continue doing what we have done."

# Designing Games that Help Students Learn

In the fall of 2009, we embarked on one such risk. Our approach was to engage low-income and first-generation high school students in the college preparation process by meeting them where they were – in online and game spaces. We recognized the importance of moving beyond simple web-based approaches to more effectively connect with students. In response to the Internet gaining traction in prior years, colleges and college preparation organizations had created a multitude of websites as resources for students, families and practitioners. The vast majority of the websites, however, were passive in nature and few offered individualized interactive support.



After garnering financial support from our university, a team of researchers from the Pullias Center for Higher Education connected across campus with the nationally respected USC Game Innovation Lab. Thus began an interdisciplinary collaboration that has been maintained through frequent and in-depth communication. Very soon after, we reached out to local high school students and practitioners as partners in our quest to design useful, effective, and fun games about college. Researchers from the STEM Education Research group in the Viterbi School of Engineering have assisted in evaluating the games.

From our work with student participants in a face-to-face mentoring program we run through the Pullias Center, we understood that many qualified students were slipping through the cracks when it came time to apply to college. These were students who had done well in school, had met college requirements, but who lacked the support and knowledge – at home and/or at school – to successfully complete and submit college applications. Consequently, we determined that the first game should focus on the college application process. Drawing from insight from student focus group participants, we then identified the central themes of the game: balancing academics and extracurriculars, managing time, and keeping track of deadlines. These were all themes that pertain to valuable college knowledge and social capital related to college success but are seldom focused on in classrooms or through websites. The team conceptualized and developed the game and then engaged in an extensive process of iterating on game mechanics and game narratives. After successfully play-testing a paper game prototype with over 300 high school students in Los Angeles, our intent to create one college access game evolved into a commitment to developing a suite of games. Additional funding enabled us to do so. To date, we have completed three games and are in the process of developing a fourth, all of which are intended to improve college access for diverse students.

The first game, *Application Crunch*, is a card game that helps high school students to gain college knowledge and navigate college and university application processes. This game served as a prototype for *Mission: Admission*, a web-based college access game situated in the social networking platform, Facebook. The third game, *Future Bound*, is designed for middle school youth. It is also focused on college access; however, given that middle schoolers have not yet advanced to college choice processes, the focus of the game is on goal setting, career aspiration, and other precollege factors. *Graduate Strikeforce,* the fourth game in the series, focuses on the challenge of choosing the right college. Players have to weigh financial decisions, financial aid options and lifestyle choices in order to successfully progress through the game.

# A Theory of Action for our Research

The manner in which we have proceeded differs from traditional notions of research that are disinterested from impacting public policy and are primarily concerned with communicating within academe. We also have put forward an ecocultural notion of change where the focus has been on communities of learners rather than a single learner. The result is that our theory of action has six important tenets:

*1.*   Research informs policy.

*2.*   Research is only useful if it is translated in a manner that is meaningful to the broader public.

*3.*   The focus and content of research may change based on the needs of different constituencies (e.g. venture capitalists, state policy makers, academic researchers).

*4.*   Systemic policy reform (e.g. college readiness) is neither uni-directional (research to policy) nor confined only to policy makers and researchers. Systemic change occurs within an ecosystem comprised of multiple stakeholders (e.g., business, the media, the general public).

*5.*   Rarely are large ideas (e.g., deeper learning) entirely adopted; ideas need to be broken into discrete and man ageable reforms with clear objectives and time frames.

*6.*   Effective change occurs over a sustained period of time which requires the change agent to communicate in multiple mediums in a consistent and systematic manner.

# What we Have Learned

We have played each of the games with diverse students throughout Los Angeles in order to ascertain their impact. In the games Application Crunch and Mission: Admission, we measured the impact of students' understanding of college application and admission practices, in addition to their self-confidence in applying for, getting into, and enrolling in college. We also tracked students' decision-making processes during play. Key decisions that we focused on were application process strategies and the choices that players made in preparing for college applications and college choice.



Similarly, with Future Bound, we measured students' understanding of the importance of college and career aspirations. Different from the two high school games, because middle schoolers are not yet in college application processes and will not be in the near term, we focused on students' thoughts about college, their projected career aspirations, and what it took to reach such aspirations.

We found that students across age groups needed to play our games multiple times (a minimum of two rounds) to demonstrate gains and improvements in understanding of college and career access. This was represented both in the assessment of players' knowledge about college and career preparedness, and in the manner and nimbleness of their game play. The quickness and decisiveness of the choices and actions that they took during play increased dramatically with each round of play. We noted this in observing them and via the computer-generated data in the two digital games.

An additional finding came from the confidence or "efficacy" that students/players had in their ability to attend college and take steps towards reaching a desired career. We termed this "college-going efficacy." We found that if the students played the games only once, their college-going efficacy decreased. This could be attributed to the age-old notion of "a little bit of knowledge is a dangerous thing." In other words, if the students found out by playing the games the first time how little they knew about college, they were less confident in their ability to get into and to go to college. This was most obvious in the two high school games. Importantly, once the students replayed the game, they made quicker and more college appropriate decisions in their play, and they became more efficacious about going to college. Students who played the game two or more times demonstrated significant increases in their college-going efficacy.

# What we Have Learned *continued*


APPLY TO COLLEGE
WITH ACTIVITY CARDS IN ENVELOPES

A key observation noted was on cooperation versus competition during play. The majority of play unfolded cooperatively among middle and high school players. Advanced players, however, started to exhibit competition as they progressed to higher levels of the game. This observation is supported by developmental and social cognitive theory and learning behavior research (Bandura, 2002; Kohlberg, 1973). We also observed key differences in gender-related play "style." Female players were generally process-oriented and they engaged in help-seeking and help-giving to a greater degree than their male peers. Males were driven to finish a round of play and appeared to contemplate play decisions less frequently and with less intensity. These findings are supported by research on gender and technology use (Guy, 2007, Walker, 2011).

All three of the Collegeology games provided an essential "safe space" for learners (Austrian, 2011) to make life related mistakes that didn't have career related consequences. Players of the games were able to try out ideas as they navigated the college application or career aspiration process without a life changing consequence. For example, if they missed a deadline on a college application in the game, they learned about its consequence in a safe environment and self-corrected (particularly in subsequent game play rounds) without suffering costs in real life. Or, if they made an unfavorable career choice that had limits in a first round of play, they could adjust that choice in subsequent game rounds. These "safe errors" in decisions not only provided space for life decision adjustments without dire costs, they facilitated students' learning in meaningful ways that are connected to reality and therefore generalizable to choice making in everyday life (Mayer, 2011).


DO WELL IN COLLEGE
BY EARNING BADGES
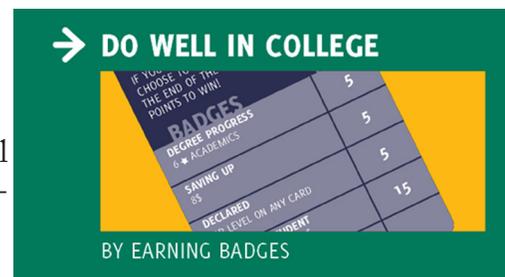
We learned that to truly demonstrate long-term impacts from games for college, connections to other resources associated with college access are important. One challenge to game play is that when it ends, it ends. By this we mean that connections to extension type resources are limited by the game situation unless these connections are made deliberate via curricular expansion or other such activities that broaden learning to real life. Resource expansion is essential to achieving broad impact from the game, as this helps to ground knowledge gained from game play into other situations, thus enabling generalization.

One of the most important findings from our game research is that games should be fun and engaging. Games are social. Players seek out a social fabric in game play. Students who played with us had fun and were engaged both with the game and with one another during play. We noted interaction across students during game-play, and with adults, cheers during game related triumphs, and smiles throughout game-student interactions. Students frequently gave voice to their game characters by playfully narrating their moves aloud. Games held students' attention for extended periods; game play was recived favorably during subsequent play sessions. While one might think that fun is not necessary for learning to occur, Schunk and colleagues found it be a mediator to learning, particularly if it is to be generalized to other situations (Schunk, 2011). Given that we wanted the learning from our Collegeology games to be generalizable from game to real application to college, this was a critical finding in our research. As such, building in player-to-player interaction is an important consideration to future game development.

# College Access Games: Strengths and Challenges

Games are highly interactive and employ both learning through social interaction and decision-making perspectives (Bandura, 2002, Schunk, 2011). They enable students to practice real life skills, decision-making, and planning in safe spaces (Austrian, 2011; Walker, 2011). The Collegeology games have provided an important arena for middle and high school students to practice college going skills, role play through game interaction, and safely try out ideas for careers and future-focused decisions. The games also facilitate social and cooperative learning, and goal directed choice making. Ultimately, the games provide a fun space for gaining college going and career choice social capital (Bourdieu, 1986) that cannot be easily replicated in conventional learning environments.

Game play extends developmentally sound practices of learning through play into the adolescent landscape like no other medium. Teens love games, especially technology mediated games. They also continue to enjoy play; however this is often stifled in traditional educational environments. Teachers, counselors and educational leaders often do not consider play an important aspect of the adolescent experience. Play is set aside after early childhood as a mechanism of valued learning space except in athletic arenas. All too frequently, educators and others in schools forget that play makes learning fun and that students are more likely to engage deeply with school content if what they are doing is truly playful.

Through Collegeology Games, students learn critical life skills through play that can bring equity to college access especially for first generation college students and others who are underrepresented in universities and colleges. The self-selected and self-created character development that is embedded in the games enables identity development and some level of anonymity among players as they navigate the college application process and make career choices. Through this process, students are free to safely make mistakes and try out novel ideas while thinking and deciding about their futures in important ways. The strategies that they use in their decisions can also generalize beyond the immediacy of the game into future career decisions.

Unfortunately, games and game-related interventions also present challenges and difficulties. One important challenge that we identified is that measuring the impact of games is often difficult. The evidence for learning is sometimes hidden beneath the mechanics of the game and it needs to be teased out from the data captured through the game's software. For example, in our work

we found that what at first glance appeared simply to be a student rushing through a game, upon closer examination revealed that a student had achieved mastery of a set of decisions made during game play. This is very important to consider because once one achieves mastery of a skill or strategy, that skill or strategy is ready for generalization to other areas. This was repeatedly noted in looking at the information garnered for the games.

Another difficulty for using college access games is carving out time in teachers' and students' busy schedule for game play. We encountered this challenge through our play testing in which we determined that the games required a minimum of two rounds of play and optimally multiple rounds to achieve maximal impact. For example, Mission: Admission play occurs during real time over the course of a week. The prolonged play-time is critical to facilitate lessons related to keeping track of deadlines and managing time. Yet the extended time presents a challenge of how to embed the games into K-12 curriculum because teachers have rigorous standards-based curriculum to deliver that is governed by school district mandated curriculum pacing guides.

A third challenge for the use of games was measuring affective and knowledge-based impacts in the games. We developed pre- and post- concept inventories (or "tests" of conceptual understanding) about college knowledge and career aspiration as measures of impact of the Collegeology games. We paired these measures with affective measures of college-going efficacy and college aspiration. These are "soft" constructs that rely on self-report to some degree so are often valued less in the academic literature. This information can be challenging to correlate with decision-making processes that exist in the quasi-reality of game environments.

A final challenge is that games are time limited. By this we mean that once the game is over, the intervention ends. As a consequence, we are in the process of developing wrap-around curriculum to support teachers in extending lessons from games. We would also like to expand the suite of games to address additional aspects of college and financial aid processes.

The strengths of using games to engage youth in college and career decision making practices as a means of improving college access far outweigh the difficulties and limits of the games. Moving forward, we will address the challenges we have identified as we continue to strive to bring equity to diverse students' college access through games.

# The Way Forward

**A schema for analysis and evaluation:** We have much left to learn about the impact of games on increasing equity in college access for all students. One of the challenges is to make effective decisions on how to fully measure the impacts that the games have on students' college knowledge, college related decision-making, and career aspirations. Formatively, we have addressed this issue using the previously described metrics; however our successes are a "work in progress" effort.  To fully evaluate the impact that the games have on students' college access, enrollment, retention and career pathways, we need to track students who have played our games as they progress from high school to college and, ultimately, to their careers. As such, we have crafted a multidimensional analytical schema for evaluating the games. The schema includes the components of what we need to know to move Collegeology forward and is represented graphically on the following page.

Evaluation of the Collegeology Games suite is outcome-focused and in line with the overall goal of the program of increased college access for all students. Importantly, all mediating factors and "college readiness," which become determinants of college access and retention success, are represented in the model. These include the roles that teachers and counselors play in these processes,
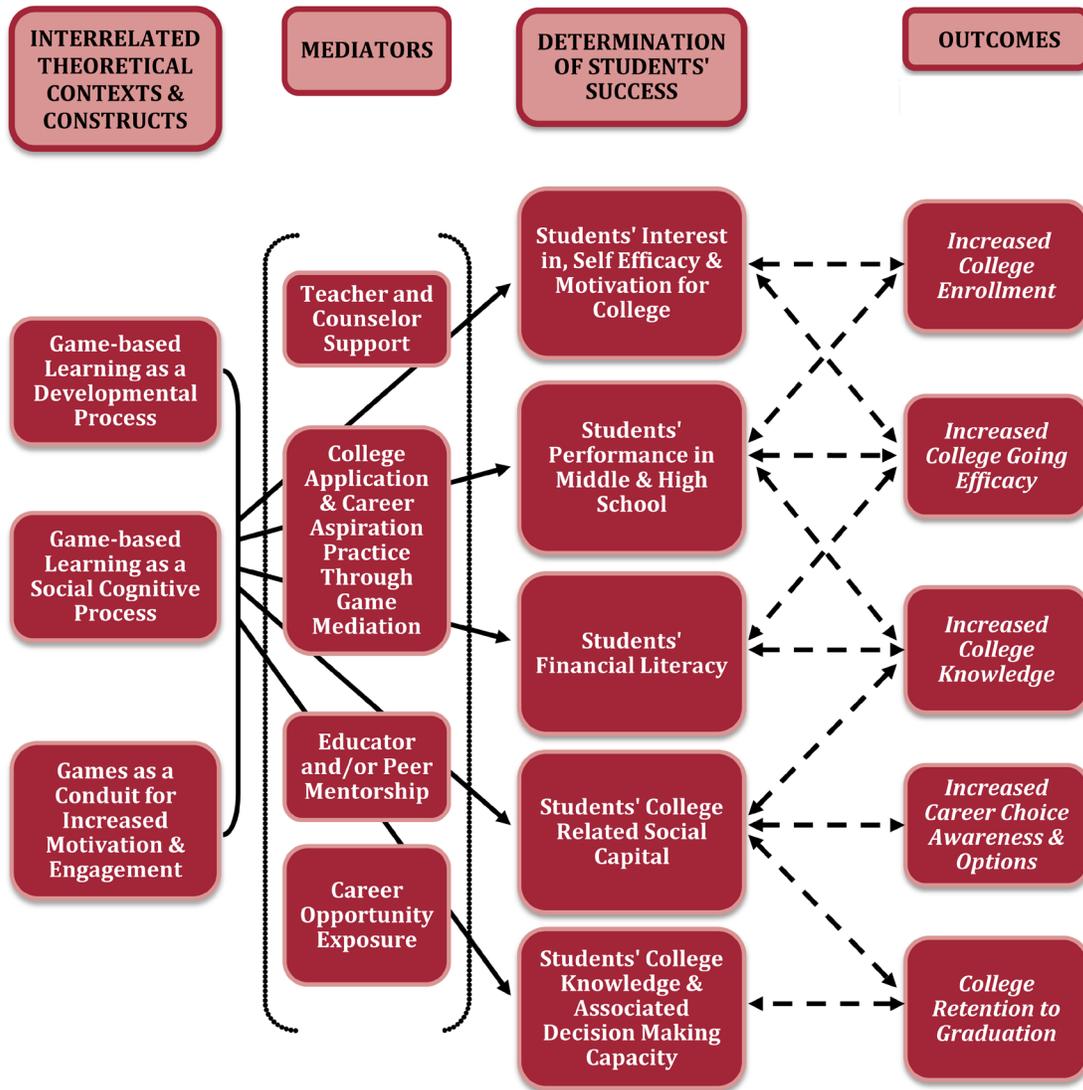


and the impact that students' knowledge, social capital, motivation, financial literacy, exposure to career opportunities, and interest have on increasing college access. Importantly, because the games are situated in role-played, "reality spaces," key actors such as teachers, students and counselors are included in the game space. Integral skills and strategies necessary for college access and retention are represented as success determinants and aligned with the games' intended outcomes. These determinants are embedded in the games' structures and contents, thus enabling exposure and practice of them in game-based, role-play scenarios.

To date, we have touched the surface of this evaluation schema through our game development and pilot testing. We have engaged in several case studies at schools to determine next steps in fully operationalizing our Collegeology program. In the future, it will be necessary to bring the games to scale for distribution and assessment of impact at broader levels. This will require additional funding, development of games that target specific strategies necessary for college success, and ongoing robust impact testing.

Moving forward, we will design and test curricular resources that can accompany each of the games as a concrete mechanism for enabling teachers and their students to expand upon game learning and facilitate additional practices of college and career decision making. This will help teachers and counselors to incorporate the games into their day so that use of the games becomes ubiquitous in classrooms.

## Figure 1: Collegeology Games Evaluation Schema



INTERRELATED THEORETICAL CONTEXTS & CONSTRUCTS

MEDIATORS

DETERMINATION OF STUDENTS' SUCCESS

OUTCOMES

Game-based Learning as a Developmental Process

Game-based Learning as a Social Cognitive Process

Games as a Conduit for Increased Motivation & Engagement

Teacher and Counselor Support

College Application & Career Aspiration Practice Through Game Mediation

Educator and/or Peer Mentorship

Career Opportunity Exposure

Students' Interest in, Self Efficacy & Motivation for College

Students' Performance in Middle & High School

Students' Financial Literacy

Students' College Related Social Capital

Students' College Knowledge & Associated Decision Making Capacity

Increased College Enrollment

Increased College Going Efficacy

Increased College Knowledge

Increased Career Choice Awareness & Options

College Retention to Graduation

# The Way Forward *continued*

**Developing sustainable business models:**  The challenge of creating educational games within a university (or non-profit) is not merely in creating and testing games, but in sustaining them. Foundations, the U.S. Department of Education, state governments and a potpourri of agencies are interested in funding such ideas. They may even be interested in funding a specific idea that has been proposed to them. But inventing a game, and testing to see if it works, is a very different undertaking to creating the conditions that might enable a game to go viral and generate a profit for a company. Organizations and the players within them, should do what they do best. Those who work in universities are best when they understand problems, propose solutions, develop a prototype, and see if it works. What academics are not particularly good at is sales, marketing, and business development.

To sustain inventors within a university, models exist whereby products are spun-off into a separate company outside the university. Thus far, models reflect the physical and biological sciences a majority of spun-off companies are rooted in medial sciences. Few models exist for the social sciences or for education sciences. What we are interested in is a model where a company can market products, improve current ones, and feed profits back to the university. Those within the university should be tasked with developing new products as well as testing the current ones and suggesting improvements for others. The flow of creation—product development – testing – implementation - refinement and new development—is a clear enough formula, but very few successful models exist as a prototype within universities.

Risks are inherent in the undertaking, chief of which is failure. The reward structure for the creation of games within an academic environment is minimal. Academic organizations largely remain wedded to typical criteria for indicators of success – publications and revenue from research. Businesses run by profit. The success rate of new ventures is quite low. The result is a dual hesitation to create new enterprises.



An additional concern has to do with what we mentioned above with regard to the public good. Unlike clean water, fire prevention or other goods and services that are provided to the broad public free of charge, the creation of games that are sustainable hinge on profit earned from customers. If a key concern for college readiness is to help those who are least prepared, it stands to reason that they will also be the least likely to afford to pay for services such as games, apps or the  related accoutrements that go with them. The challenge then is how to maintain the goals one had to start an initiative but also to be rewarded in a manner that is necessary to sustain one's interest in the development of new forms of social media and game products.

The alternative is to acknowledge that monetizing ideas within the academy is not viable, which is a possibility, but an unfortunate one. Universities have been engines of innovation and creativity. Some of society's most significant advances in bio-technology, medicine, and engineering have begun or received contributions from academics within the university. Our assumption has been that the social sciences have the same potential. We have yet to prove our case, but we have learned five points as a start-up:

1. Initial investment from the university is critical; internal funding sends a signal within and outside the university that the undertaking is a priority.

2. Collaboration across academic units is essential; the creation of educational games requires interdisciplinary colaboration in ways that are uncommon at the moment.

3. A support structure within the university to develop such initiatives is imperative. Academics have certain capabilities but generally not all that are required to start a successful business. The university has to have some sort of infrastructure that facilitates the creation, development and implementation of a business plan.

4. Selling and marketing the ideas to multiple groups is mandatory. As opposed to simply writing and speaking with other academics, based on our theory of action, we have had to have on-going conversations with multiple groups. Such dialogues necessitate communicating in different registers.

5. Working across different organizational cultures – one a university and the other a start-up business – requires perhaps more communication than is required by a stand-alone company.

# Conclusion

Developing Collegeology Games has been a unique and multi-faceted undertaking. We have garnered financial support through the university, local philanthropic institutions, national Foundations and the U.S. Department of Education. We have brainstormed with program officers, entrepreneurs, game designers, other academics, and a wide range of practitioners and students. A constant in our conversations has been great enthusiasm for the mission of the project and game-based approach. Business-minded individuals have also expressed genuine optimism over potential to generate revenue through the games. What remains elusive is the best way to move forward with a business model, how to generate traction among players, and how to ensure that the primary motive for the project – to increase access to college information and support for under-served youth – remains a central focus of our work as we move towards growing a company. These are also issues that have resonated with individuals we have spoken with over the past few years. Foundations who have funded university-based projects struggle to advise them on how to develop sustainable models, many for-profit game companies desire to provide services that extend to low-income consumers, and everyone grapples with how to generate traction among users.

As we move forward with the project, our approach is multi-pronged. We will continue to draw on our strengths as a research-based project and draw on mixed-methods approaches to evaluate the ways in which students interact with games, how learning occurs during game play, and how the institutional context of play affects how and what students learn. Our challenge will be to determine how to best ascertain the effects of game play on actual college-going behaviors and outcomes. We are currently pursuing a hybrid business model where revenue generated through game products is reinvested into the project. Building a company is complex and challenging; our path forward will rely on guidance from experts within and outside of the university. For the company to be successful, we must attract massive numbers of players. Attracting players is also strongly aligned with our primary goal of offering college support to under-served youth. We will continue to draw upon our relationships with college access practitioners to disseminate the game through their online communications and through presentation to practitioner organizations. We recognize, however, that for the games to be truly successful, we will need to invoke more relevant and broader reaching PR strategies so that games optimally go viral and are passed along from player to player. Finally, in order for the games to remain anchored to our mission, we will remain in close contact with our target audience by continuing to brainstorm, playtest, and pilot with them.

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