

ABSTRACT

Press A+ To Play: The Emerging Field of Gamification in Higher Education

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Higher education faces a critical issue with producing and encouraging engagement in and out of the classroom, as students are finding more reasons to dismiss their coursework as a "means to an end" in the game of the degree-grab. Meanwhile, research from the unorthodox and previously-untapped field of game design offers to provide a unique solution to these educational concerns. In short, the newly-emerging field of gamification asks a simple question - how can we make the learning experience more meaningful and fun for the average student? In this expansion on the works of TEDx spokesperson Yu-Kai Chou and New York Times bestseller Jane McGonigal, I argue that game designers possess an invaluable expertise in holding the attention of and creating meaningful experiences for emerging adults. I then dissect the higher educational discipline from the perspective of a game engineer, to discuss and diagnose the critical failings of the institution in exciting and engaging its students. Finally, using Chou's pioneering Octalysis Framework, I will detail eight strategies for improving learning through a game design approach, concluding with a listed arsenal of engagement tools that be directly-applied to the programming and pedagogy of the classroom. By the end of this thesis, parents, student, educators, and administrators alike will have acquired actionable tools to increasing the enjoyment and engagement of their educational experiences.

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PRESS A+ TO PLAY: THE EMERGING FIELD OF
GAMIFICATION IN HIGHER EDUCATION

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PREFACE

The following represents the culminating work of a young boy's enthusiastic attempt to bring dragons to life. As a child, I developed a passion for both playing and understanding the design of games. This led my ten-year-old self to construct real-life action games for my six-year-old brother and his friends to play – each including a win-lose state, a set of unlockable skills, and a developing strategy that followed the young players as we swung sticks like swords in our backyard. Quite naturally, I played the mighty final foe which the young children had to vanquish.

As I leveled-up in my learning and unlocked the skills behind statistics, calculus, and microeconomic systems, I applied these lessons to my passion for games. I was turned onto the field of game theory in 2010, and continued to study its effects during my undergraduate years at Baylor University. Throughout these years, my passion for holistic and interdisciplinary learning were highlighted by my attention to pedagogy, curriculum development, and the diffusion of innovation in learning programs.

In 2013, I discovered the works of Jane McGonigal and Yu-Kai Chou, each of whom introduced gamification as a potential solution for real-world problems. Enchanted by the prospect of applying their work to the field of education, I sought to provide an organic and practical resource for the common educator to utilize these newly-emerging concepts in their systems of learning. This work represents an ongoing effort which I will further during my master's studies in higher education, and one which I am more than happy to discuss with anyone willing to fight to make learning fun.

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The completion of this work would not be possible without the consideration and hard work of Dr. Albert Beck and Diane Haun in the Baylor Honors Program, each of whom extended the grace and patience that an academic dreamer like myself would need to make this thesis a reality.

Finally, I give thanks for the incredible encouragement and inspiration from my mother and father. Mom, thank you for instilling in me the precious and immeasurably-valuable passion for learning for its own sake. Your heart for students and patience for my erratic behavior has been a rock in hard times and a rallying torch in times of growth. Dad, thank you for challenging me to engage actively with the world around me, fearlessly stretching myself and seeking to understand the world in a meaningful way. I hope that by the time I have had a son who sticks brads in birthday cards I will have learned half of the lessons that you have been patiently teaching me. Both of you have shown me an incredible love that I cannot possibly repay, and I want this work to be a reflection of how proud I am to be your son.

DEDICATION

To my parents,
who have taught me more with their love
than any classroom ever could.

CHAPTER ONE

Discovering Gamification

Critical Claim

Gamification presents a unique and highly-effective perspective on student engagement in education.

Claim Simplified

Gamification is education's next great aid.

The Fight For Student Engagement

In a world of rapidly-evolving technology, shifting cultural influences, and increased stakes in higher education, instructors and educators are vigorously fighting for increased student engagement. The key to such engagement is both enigmatic and elusive, as teachers and professors continue increasingly to lose the battle for the student's attention to cell phones, entertainment, social media, or other detractors from growth. Unfortunately, trends show this consistent decrease in student engagement in higher education could have devastating effects, and requires a new strategic perspective to improve its conditions.

The Task of Defining Student Engagement

To establish actionable goals from which an analysis of current trends will carry meaning, it is important to define student engagement and the various methods for measuring it. This is not a new challenge facing educators, but has taken on a new meaning in recent years as online and mixed-credit schooling systems are becoming more

pervasive. Unfortunately, the sudden need to redefine and manifest student engagement has led professionals within the field to create inconsistent and nebulous ideas of it. In the Emerald Insight publication *Student Engagement Handbook: Practice in Higher Education*, a collaborative journal of articles from over 80 senior lecturers and student affairs professionals, editor Elisabeth Dunne explains the importance of clearly-defining student engagement: “Undoubtedly, there is a need to better understand the variety of interpretations and conceptualizations that constitute ‘student engagement’ since otherwise it has the potential to become a valueless hotchpotch of words and activities, with little shared meaning.”¹ Dr. Vicki Trowler and Dr. Paul Trowler of the University of Lancaster agree. When they published an executive summary of quantitative research on engagement in higher education, they qualified their work by stating that “It is the clear that the term ‘student engagement’ carries a number of quite diverse meanings. The danger is that people run the risk of talking past each other...thinking they are talking about the same thing when in reality they are not.”² Recently, increased efforts in student affairs have concentrated around the subject of student engagement. The National Survey on Student Engagement (NSSE) and associated work by the Community College Survey on Student Engagement (CCSSE) represent efforts specifically dedicated understanding and measuring student engagement. According to Carnegie Foundation award-winner Dr. Elizabeth Barkley in her book *Student Engagement Techniques: A Handbook for College Faculty*, the NSSE and CCSSE define engagement as “the frequency with which students participate in activities that represent effective educational

¹ Dunne, xvi

² Trowler, V. & Trowler, P. (2010). *Student Engagement Evidence Summary*. New York, NY: Higher Education Academy.

practices, and conceive of it as a pattern of involvement in a variety of activities and interactions both in and out of the classroom and throughout a student's college career."³ According to NSSE director Jillian Kinzie in a 2008 interview, "Student engagement has two key components. The first is the amount of time and effort students put into their studies and other activities that lead to the experiences and outcomes that constitute student success. The second is the ways the institution allocates resources and organizes learning opportunities and services to induce students to participate in and benefit from such activities."⁴ With such a stance, the NSSE and CCSSE place equal responsibility on both the efforts of the student and the outlets of the institution, all-the-while maintaining a focus on output. Dr. Elizabeth Barkley takes this one step further, building together the pieces a transformative learning experience. In her summary, college teachers tend to describe engagement as the intersection between *motivation* and *active learning* (5-6). However, Barkley concedes of two increasing levels of engagement which educators set their sights on. "While combined motivation and active learning promote basic student engagement, some teachers are pushing for more: they want students to be truly transformed by their educational experiences."⁵ Dr. Patricia Cranton, Professor of Adult Education at Penn State, pioneered motivational concepts in transformative learning at the collegiate level in her text *Understanding and Promoting Transformative Learning: A Guide for Educators of Adults*. In it, she writes that "transformative learning is a process by which previously uncritically assimilated assumptions, beliefs, values, and

³ Elizabeth Barkley, *Student Engagement Techniques: A Handbook for College Faculty*.

⁴ Barkley, 4.

⁵ Barkley, 6.

perspectives are questioned and thereby become more open, permeable, and better justified.”⁶ William Perry’s famous Theory of Intellectual and Ethical Development, better known as the “Perry Model,” categorizes this transition as one from Dualism (in which students hold black-or-white considerations for all subjects of study) through Multiplicity (acknowledgement of legitimate uncertainty) and towards Contextual Relativism (a relativity and respect for all answers based on the integrity of their logic and empirical evidence). Finally, a fourth stage in the Perry Model entitled Commitment within Relativism indicates a synthesis between both objective analysis *and* personal values, allowing the students to achieve self-actualization within their developed worldview.⁷ This state of engagement, a holy grail for those in higher education, may seem like an impossible frame of reference for measuring and controlling student behavior and teacher success. This thesis will not focus on the systems of learning required to produce students at the third or fourth stage of Perry’s model. Instead, emphasis will be placed on the categories of student engagement that can be most-readily impacted by Core-Drive mechanics of gamification (the subject of Chapter Two). In their studies, student engagement analysts Fredericks, Blumenfeld, and Paris (2004) defined these categories of engagement into behavioral, emotional, and cognitive patterns.⁸ Based on this, and the evidence collected on trends in student engagement, we arrive at our critical definition.

⁶ Cranton, vi.

⁷ Moore, 140-144.

⁸ “School Engagement: Potential of the Concept, State of the Evidence.” *Review of Educational Research*.

Student Engagement Defined. Student engagement shall be defined as the synthesis of student motivation and active learning at the point-of-contact between educational programming and student participation. This can be influenced by impacts on student emotion and self-efficacy (motivation), changes in pedagogical practice (active learning), variations in how a school identifies with its students (programming), and shifts in the level of effort demonstrated by the student (participation). Although there is significantly more attention that could be given to the particulars of this definition, this definition carries enough clarity for which educational systems can be measured and improved with actionable goals.

Student Engagement Translated. Since most instructors tend to agree on how student engagement is manifested, a set concrete characteristics of this concept can be given. According to a summary of 44 phenomenographic studies conducted by Dr. Lois Ruth Harris, teachers sought out engagement with the following attributes⁹:

1. Participating in classroom activities and following school rules (Attention)
2. Being interested in and enjoying participation in what happens at school (Interest)
3. Being motivated and confined in participation in what happens at school (Engagement)
4. Being involved by thinking (Pursuit)
5. Owning and valuing learning (Passion)

⁹ “A Phenomenographic Investigation of Teacher Conceptions of Student Engagement in Learning.” 57.

In general, Harris found that teachers conceive of engagement as a hierarchy moving from behavioral to psychological and then cognitive engagement. Following this continuum of engagement which Harris' subjects expressed, we can devise our own continuum for reference: attention, interest, engagement, pursuit, and passion, from least-engaged to most-engaged. These terms have been added to the Harris excerpt as a shorthand representation of the values expressed by educators in her study. In addition, Harris found that many teachers were focused on behavior and participation rather than on learning outcomes. "If you are engaged, you are learning, subconsciously you are learning, whether you are aware of it or not," said one teacher.¹⁰ This study re-affirms the educator's desire to achieve student engagement characterized by more than simple participation. It provides a convenient framework for which gamification can be applied to move students from a state of attention through interest, engagement, pursuit, and finally passion. We shall refer to this five-step evaluative measure as the Engagement Continuum.

The Stakes of Student Engagement

Educators are beginning to sense the growing pressure to engage their students. According to Fredricks, Blumenfeld, and Paris in their journal entry *School Engagement: Potential of the Concept, State of the Evidence*, it may serve as one of the last defenses against widespread apathy and ignorance. "The concept of school engagement has attracted growing interest as a way to ameliorate low levels of academic achievement, high levels of student boredom and disaffection, and high dropout rates in urban areas,"

¹⁰ Harris, 59.

they write.¹¹ Denise Pope, senior lecturer at the Stanford Graduate School of Education, agrees with this summary. In her book *Doing School: How We Are Creating a Generation of Stressed-Out, Materialistic, and Miseducated Students*, she argues that students in the current American high school system are being systematically trained to perceive schooling as a boring ‘grade game’ in which they try to get by with as little effort as possible.¹² The problem often stems deeper, as Dr. Jennifer Fredricks explains. In Fredricks and Eccles’ work “Children’s Competence and Value Beliefs from Childhood to Adolescence,” they found that all sexes, age groups, and social demographics are experiencing steep declines in motivation.¹³ “There are historical, economic, theoretical, and practical reasons for the growing interest in student engagement,” writes Fredricks. “Historians note a general decline in respect for authority and institutions among students,” with one consequence being “that students can no longer be counted on to automatically respect and comply with the behavioral and academic expectations imposed by teachers and school administrators.” She notes that these observations are “particularly troubling” due to the increase in the global economy, which requires the student to be well-versed in synthesizing ideas and critically evaluating solutions.¹⁴ From the analysis of professionals, the procurement of student engagement is a necessary role of educators because traditional models of respect or discipline do not carry as much weight in producing successful learning or cognitive development. Most educators agree that an increase in student engagement is pivotal to

¹¹ Fredricks, Blumenfeld, Paris, 59.

¹² Pope, 34.

¹³ Fredricks, 521.

¹⁴ Fredricks, Blumenfeld, Paris, 59.

the lasting success of higher education – however, few agree on how that can be achieved.

The Problems with Traditional Engagement

If educators can agree on the aforementioned goals of student motivation, active learning, developmental programming, and student participation, then they are not executing the right strategies for accomplishing those tasks from the student's perspective. In the *Contemporary Educational Psychology's* journal entry "Predicting High School Students' Cognitive Engagement and Achievement: Contributions of Classroom Perceptions and Motivation," Barbara Greene and her colleagues investigate the impact of self-efficacy, instrumentality, and goals on students' cognitive engagement and achievement. After surveying 220 high school students over the course of three months, Greene notes that "students' perceptions of the instrumentality of the learning tasks were very important." As she provides practical suggestions for instructors, she writes that "teachers need to consider that different types of lesson introductions and/or encouragement will be required to ensure all students in a given setting develop a sense of instrumentality and adopt mastery goals."¹⁵ Although students demonstrate a desire to know the purpose behind their studies, research shows that teachers aren't prioritizing that in their instruction. Dr. Harris' phenomenographic investigation from the teacher's perspective revealed that "while student learning begins to enter participant awareness ...the focus in these categories remains primarily on getting students to participate in school and classroom activities. These types of student engagement may be considered

¹⁵ Greene, 477.

engagement in schooling instead of in learning.”¹⁶ Harris’ observation perfectly captures the shortcomings of traditional engagement models when she describes it as “engagement in schooling instead of in learning.” Students find it hard to register the value of their studies, making it easier for them to rationalize other decisions or display apathy regarding their schoolwork. This establishes a framework in which they would rather select another use of their time, and many choose to so.

As an added pressure to educators, dramatic increases in the costs of higher education are calling for a more efficient use of the classroom. According to the National Center for Education Statistics, the average cost of tuition at 4-year institutions has risen from \$4,406 to \$23,872 in current dollars in the past thirty years.¹⁷ A 2013 Bloomberg article states that college costs have surged more than 500% since 1985, largely as a result of money spent on instructors and class time.¹⁸ Universities are facing increasing pressure to increase the retention and graduation rates of its students. According to the National Student Clearinghouse Research Center’s 2015 report which tracked the Fall 2009 cohort across six years of schooling, college completion rates are not only declining but accelerating in their decline. Tracking approximately 96 percent of college students nationwide, it concluded that 52.9 percent of students graduated from their first institution of enrollment within six years, a 2.1 percent drop from the 2008 cohort and a

¹⁶ Harris, 74.

¹⁷ National Center for Education Statistics, 2015.

¹⁸ Jamrisko, Michelle, and Ilan Kolet. "College Costs Surge 500% in U.S. Since 1985: Chart of the Day." *Bloomberg*. Bloomberg, 26 Aug. 2013. Web. 4 Mar. 2016.

consistent trend across age, gender, and full-or-part-time status.¹⁹ The study makes a point of indicating that current efforts in engagement are not necessarily connected with this daunting trend; however, it is clear that higher education is in dire need of engagement measures which can ensure the success of its students and the university as a whole.

These issues dominate the educational landscape for curriculum developers and professors, as they struggle to find new ways to help students to buy-in to their set of challenges and goals, actively participate in the learning process, and feel motivated to succeed within the model. It is useful, therefore, to begin investigating a field in consumer behavioral programming that has demonstrated a much greater proficiency for ensuring both engagement and critical thinking – the game design industry.

From Game Design To Education: The Birth Of An Alliance

Exodus To The Virtual World

According to the Entertainment Software Association (ESA), in 2015 the United States had 155 million members playing video games, with 42% of those playing regularly at more than 3 hours per week.²⁰ This number will continue to grow as access to technology increases, and the group of individuals participating in gaming will continue to diversify. The ages of are evenly distributed across all gamers, females make

¹⁹ Shapiro, Doug, Afet Dunder, Phoebe Khasiala, WakhunguXin Yuan, Angel Nathan, and Youngsik Hwang. *Completing College: A National View of Student Attainment Rates – Fall 2009 Cohort*. Rep. Herndon, VA: National Student Clearinghouse Research Center, 2015. Print.

²⁰ *Essential Facts About The Computer and Video Game Industry*. Los Angeles, CA: Entertainment Software Association, 2015. Print.

up 44% of the gaming population, and the average gamer has been playing video games for 13 years.

In his book *Exodus to the Virtual World: How Online Fun is Changing Reality*, economist Dr. Edward Castronova provides an interesting model for understanding why individuals would be willing to forfeit hours in the real world for the sake of a virtual good. After analyzing the millions of individuals who spend several hours a week engaged in some synthetic world, he chose to examine the cultural value of a virtual landscape and the market value of virtual goods. From the perspective of utility and function, Castronova argues that “there’s no difference, either culturally or economically, between production in [games] and production in the real world.”²¹ Using this utility concept, Castronova argued that members of the real world who select to invest in virtual or synthetic worlds act like migrants moving back and forth worlds to maximize their personal utility. For some, this advantageous utility is strictly economic – players can make additional money transferable to the real world by engaging in these games. However, the vast majority of these gamers indulge in virtual worlds for others reasons – all of which strike at the core of intrinsic motivation and engagement principles. “Time and attention are migrating from the real world into the virtual world,” he writes. “There will be more fun, for more people. Simple economic theory predicts that in this competition, the real world is going to lose. This loss will put pressure on the real world to adapt.”²²

²¹ Castronova, 12.

²² Castronova, 7.

The Revolution In Fun

Dr. Jane McGonigal recognizes this point of impact and reflects upon it in her New York Times bestselling book *Reality Is Broken: Why Games Makes Us Better and How They Can Change the World*. Immediately after quoting Castronova on his economic theory, she writes the following in a call-to-arms for her colleagues:

The real world just doesn't offer up as easily the carefully designed pleasure, the thrilling challenges, and the powerful social bonding afforded by virtual environments. Reality doesn't motivate us as effectively. Reality isn't engineered to maximize our potential. Reality wasn't designed from the bottom up to make use happy.

And so, there is a growing perception in the gaming community: Reality, compared to games, is broken.²³

Although McGonigal acknowledges that the technological interface of virtual worlds presents several advantages that aid engagement, she is not writing about the use of video games in the classroom. Rather, McGonigal is indicating that professionals in all fields should begin to take a more in-depth analysis of the emotional, social, and behavioral effects of the engagement platforms they wish to create. Fortunately, she has good news for those who feel ill-equipped to handle such a task:

Game developers know better than anyone else how to inspire extreme effort and reward hard work. They know how to facilitate cooperation and collaboration at previously unimaginable scales. And they are continuously innovating new ways to motivate players to stick with harder challenges, for longer, and in much bigger groups. These crucial twenty-first century skills can help all of us find new ways to make a deep and lasting impact on the world around us.²⁴

The skills demonstrated by game developers undoubtedly reflect the exact type of social programming that educators search for in a twenty-first century context. Their capacity

²³ McGonigal, 3.

²⁴ McGonigal, 13.

to construct systems of predicted behavior with an in-depth understanding of the consumer's mental and emotional state represents an extreme asset for instructors hoping to inspire their students to actively engage with their content.

Raph Koster, seasoned creative officer and game developer for Sony Online Entertainment and Electronic Arts, can attest to this assessment. In his book, *The Theory of Fun for Game Design*, he gives a brief description of fun based on its Gaelic form “*fonn*,” meaning pleasure. “Fun is all about our brains feeling good – the release of endorphins into our system,” he writes. “One of the subtlest releases of chemicals is at that moment of triumph when we learn something or master a task,” he writes, claiming that “there are many ways we find fun in games...but this is the most important.” He concludes, “Fun from games arises out of mastery. It arises out comprehension. It is the act of solving puzzles that makes games fun. In other words, with games, learning is the drug.”²⁵ Koster expresses the plight of game developers as one in which the correct pacing of content and mastery must be well-tuned to the consumer or they will get bored – whether through frustration or completion of the game. “The definition of a good game is therefore ‘one that teaches everything it has to offer before the player stops playing.’ That’s what games are, in the end. Teachers. Fun is just another word for learning.”²⁶

Building A Human-Focused Design

Yu-Kai Chou, renowned TEDx spokesperson and the first self-declared expert in gamification theory, defines gamification as “the craft of deriving fun and engaging elements found typically in games and thoughtfully applying them to real-world or

²⁵ Koster, 40.

²⁶ Koster, 46.

productive activities.” However, he writes in his 2003 book *Actionable Gamification* that he would’ve originally hesitated to use that term to describe the process. “This process is what I call ‘Human-Focused Design,’” he writes. When compared to Function-Focused Design, he writes that “Human-Focused Design optimizes for human motivation in a system as opposed to optimizing for pure functional efficiency within the system.”²⁷ He would later write that the reason we call this discipline “Gamification” is because “the gaming industry was the first to master Human-Focused Design.”²⁸ According to Chou, it is clear that game developers have best-mastered this skill set because their content has no other purpose than to actively please their consumer – even when compared to film and television, games must make the actions of the consumer the primary source for their satisfaction. “The harsh reality of game designers is that, no one ever *has* to play a game...the *moment* a game is no longer fun, users leave the game and play another game or find other things to do.”²⁹ This high-stakes environment for pure engagement ensures that successful game designers know how to hold the attention of their audiences and make their decisions both meaningful and satisfying. Engineers of engagement, when attempting to produce human-focused designs, refer to the work of game designers first because of their proven success. This is why we refer to such engagement principles as gamification.

This affirms Dr. Castronova’s economic theory of virtual worlds, in which the user must find a utility advantage to their virtual world in order to sustain the opportunity

²⁷ Chou, 8.

²⁸ Chou, 9.

²⁹ Chou, 9.

cost of engaging in it. Furthermore, Castronova continues Chou's characterization of game development by highlighting the high-stakes it has in pleasing its consumer, stating that "because of the competitive pressures of the marketplace, the people who design these huge game worlds do so with the objective of making their users happy all the time."³⁰

Gamification Defined

With this understanding of gamification as a human-focused design, we can clearly-define gamification and dispel several misconceptions about the newly-emerging field. According to Chou, Castronova, McGonigal, and the game design community, gamification refers to:

- Appealing to emotional and internal drives
- Appealing to social and cultural constructs
- Appealing to creative and expressive urges
- Appealing to a desire for growth and gratification

By contrast, gamification does *not* specifically refer to:

- Using video games in the classroom
- The use of recreational activities for learning
- Turning challenges into competitions with points

Although these may result from the aforementioned appeals driven by gamification, they are the tools for a greater design within a human-focused system. This understanding of

³⁰ Castronova, 17.

gamification provides for a broadened and researched field in behavioral study based in Core Drives and human-centric appeals. As a result, proven principles of engagement in game design can be extrapolated through gamification and applied with great success to other fields with similar roles and controls.

Gamification, Education's Next Great Ally

When game designers talk about systems for success, they are trained to consider a variety of elements in their engines of gameplay – win/lose states, rules, skills, allies, rewards, difficulty level, etc. However, this type of language is common amongst all successful practices in any industry – except these elements are more commonly known as goals, constraints, resources, partners, feedback, and learning curves, respectively. This would make gamification useful to some extent in most fields concerning human behavior and development. However, there is a more-specific application for which gamification is most adept. Gamification thrives in a system with a clear win/lose condition, accepted rules, diverse skills, meaningful allies, salient rewards, and an appropriate degree of difficulty. Given this understanding of gamification, it is the field of education which is poised perfectly to maximize its effects and improve its student engagement.

Education carries direct and obvious counterparts to the elements of game design, but possesses a unique characteristic that sets it apart from the contending fields of business, medicine, law, and government – it is a tightly-controlled closed system with quantifiable results. Game design and education have startlingly-similar administrative roles. The developer (educator) sets the achievements (lesson objectives) for his players (students), provides a variety of weapons (resources) for their journey (development), and

builds a series of small challenges (homework) and might boss battles (exams) in order to evaluate their progress. In most cases the developer has even more in common with the instructor, as he can create team quests (group projects) for his players, give them power-ups (extra credit) for accomplishing tasks, allow skill-specializations (electives), and dictate the look and feel of the environment (classroom) within which the player will explore. In addition, successful gamification requires there to be clear and actionable goals. These are very straightforward in primary education, and can be clarified within higher education by the use of syllabi, making them ripe for successful gamification. With the ingenuity of a game designer, the field of education would appear to be ideal for improvement using gamification.

This chapter sought to provide context for the exciting and unlikely allying of education with the newly-emerging field of gamification, describing the latter as the next great ally of the former. However, upon discovering the full definition of gamification and the strong correlation it carries with the role of educators, it is perhaps worthwhile to consider relationship in a reciprocal context.

Critical Claim Revisited

Gamification is education's next great aid.

Critical Claim Revised

Gamification and education's next great ally.

Learning To Play

In order for educators to fully understand the direct, actionable methods they can use to improve student engagement in their programs, they must attempt to understand

the mechanics of game play and the effect it has on the consumer. By discovering both the interface necessary to engage students and the programming required to create it, they will learn several tools and techniques for the results they desire.

CHAPTER TWO

Abstracting The Eight Core Drives

Critical Claim

The Octalysis Framework creates new strategic perspectives for reinventing student engagement.

The Octalysis Framework: The Eight Core Drives

In his book *The Octalysis Framework*, Yu-Kai Chou recognized a need to take the engagement principles in game design and reproduce them in a language accessible to all other disciplines. Since education marks the field most-primed to maximize the positive effects of gamification, this thesis substantiates Chou's work using behavioral economics and educational psychology to help apply the Octalysis framework specifically to student engagement.

The following index seeks to categorize and test the core motivators that determine consumer engagement – in this case, the engagement of the student. Yu-Kai Chou's framework will be applied to techniques in classroom instruction, educational programming, event programming, and student interaction in an effort to more-definitively perceive the strengths and shortcomings of higher education from the perspective of a game designer. Additional research supporting trends in Chou's framework will accompany each of the eight Core Drives as a reference.

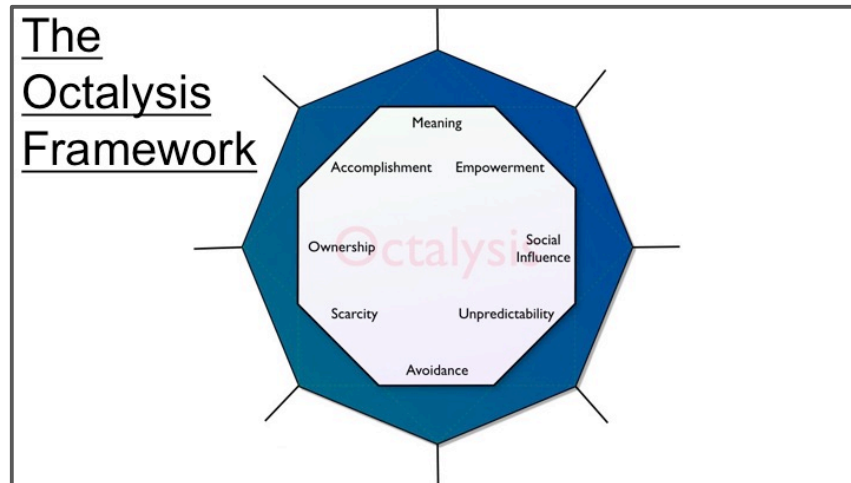


Figure 1: The Octalysis Framework (Eight Core Drives)

Core Drive 1: Epic Meaning & Calling

The first Core Drive establishes purpose and intrinsic value; it calls the player to action because it creates a dire need, presents a noble cause, or connects the player to a greater entity. “This is the drive where people are motivated because they believe that they are engaged in something bigger than themselves,” Cho writes.¹ He lists the user-generated content on Wikipedia, brand loyalty to Apple, and school football rivalries as examples of epic meaning producing a predictable and positive engagement. In addition, he argues that cultural values such as that of filial piety (a Chinese dedication to intense respect of one’s elders) also produce a sense of belonging and purpose. For the player to enthusiastically engage with the tasks set before him or her, the meaning behind it must be made clear.

This is reflected poignantly in the Contemporary Educational Psychology (CEP) journal in Greene and Miller’s entry entitled “Influences on Achievement: Goals,

¹ Chou, 66.

Perceived Ability, and Cognitive Engagement.” As they documented the relationship between college students’ self-reported goal orientation, perceived ability, cognitive engagement, and course achievement they were able to categorize their behavior into either shallow-thinking or meaningful cognitive engagement.² In their conclusion, they noted that their results consistently maintained the hypothesis that “perceived ability and student learning goal scores are positively related to reports of meaningful cognitive engagement.” In addition, it confirmed that while achievement itself was positively affected by both perceived ability and learning goals, the effect of those variables was indirect as it relied on operating through meaningful cognitive engagement. Finally, they found that “students guided by performance goals tend to rely on only shallow processing strategies and do so in an unreflective manner.”³

Students who focused entirely on performance demonstrated poorer engagement and achievement than their counterparts who had perception of their ability and a learning for them to reach. This reflects the Core Drive of Epic Meaning & Calling, because it allows the student to place his education with the context of a greater cause or perceive of himself as uniquely prepared to face it.

Core Drive 2: Development & Accomplishment

The second Core Drive claims that people are addicted to growth, progress, and mastery. It represents a need to feel like we are becoming better people and experiencing success in our endeavors. In Chou’s words, “It is what focuses us on a career path, generates our enthusiasm and commitment to learning a new skill, and ultimately

² Greene, 184.

³ Greene, 188.

motivates us by showing us how far we've come and how much we've grown"⁴ He describes Ebay as a successful site utilizing the second Development & Accomplishment because it's bidding system creates a feeling of winning and its ranking service provides satisfaction for working well within the system. In addition, he highlights the need for game designers at this level to focus on the provision of information and guidance for new users – if the learning curve is too flat or too steep, it can result in disengagement. In other words, the player should know what constitutes development, and be able to reasonably accomplish the tasks to get there.

In his famous TEDx talk, author and businessman Daniel Pink discusses this concept more thoroughly as the pretext for his book *Drive: The Surprising Truth About What Motivates Us*. In it, he discusses three critical components of mastery and how they manifest themselves. "Mastery is a mindset," he says, explaining how one can perceive of their skills, ability, and intelligence as either fixed or something with potential. "Mastery is a pain," he adds, pointing out that a commitment to mastery includes an acceptance of the pain and effort required to get there. "Finally, mastery is an asymptote," he states, indicating that while we can get close to mastery, we will never achieve it and should take joy in the pursuit itself.⁵

Pink's analysis of mastery in the workplace has produced professional and managerial leaders who have helped their employees and business teams gain tremendous success and satisfaction. This is because they are establishing and focusing on the development and accomplishments of their work rather than on their position in life.

⁴ Chou, 93.

⁵ Pink, Daniel H. *Drive: The Surprising Truth About What Motivates Us*. New York, NY: Riverhead, 2009. Web. 14 Mar. 2016.

Communicators in the educational sector should keep in mind that a feedback mechanism for perceiving and celebrating development helps all participants remain engaged.

Core Drive 3: Empowerment & Creativity

This third Core Drive moves the player to think creatively, affect his environment, and feel a sense of autonomy and freedom which allows him to more passionately pursue his goals. According to Chou, “humans are by nature creative being, and we yearn to learn, imagine, invent, and partake in creative processes where the journey in and of itself brings happiness.” He also states that the third Core Drive is positioned as the most intrinsically motivating and positive of the Core Drives, but that it “is also the hardest to implement correctly.”⁶ He describes the development of competitive gameplay in *Starcraft* and Chess as creative evolutions in strategy, and describes what it would take to transform a child that loves card games into one that memorizes the periodic table for fun. “As designers, it is important to recognize that they understand the goal, build ownership and familiarity with their tools, and use their unique strategies and experience towards that.”⁷

In a 2015 journal entry with the American Psychological Association, Weiguo Pang writes about idea generation in “Promoting Creativity in the Classroom: A Generative View.” Referring to idea generation as “the creation of new potentially useful ideas,” he insists that if teachers expect to produce creative problem-solvers from their students, they must provide opportunities for their students to respond to challenges or questions by generating their own content. According to Pang, “research has

⁶ Chou, 126.

⁷ Chou, 138.

demonstrated that the constraints of required curricula, unsupportive school climates, teachers' misconceptions about creativity and creative students, and teachers' ignoring students' creative questions account for the lack of creativity in the contemporary classroom."⁸

In order for educators to achieve the level of creativity that accompanies their goals of student engagement and active learning, they must study and implement elements in the realm of Empowerment and Creativity.

Core Drive 4: Ownership & Possession

The fourth Core Drive, in Chou's words, "represents the motivation that is driven by our feelings of owning something, and consequently the desire to improve, protect, and obtain more of it." He relates this drive to the accumulation of wealth, the psychology of hoarding, and our love for virtual pets, arguing that each item we possess is connected to an investment of our time and resources. Ownership causes the owner to alter his behavior as the value of the object is elevated.

In a 2009 study with Carnegie Mellon University, Dr. Carey K. Morewedge and company released a journal entry entitled "Bad riddance or good rubbish? Ownership and not loss aversion causes the endowment effect."⁹ In it, they involved students in an experiment with coffee mugs to conclude that the mere possession of a good itself is enough to drive up the perceived universal value of an item. "We found that ownership and not loss aversion determined the price at which the person traded," he writes. "In other words, the main effect of endowment in our studies was to enhance the appeal of

⁸ Pang, 123.

⁹ Morewedge, 948.

the goods participants owned.”¹⁰ Dr. Bertram Gawronski affirmed this in his 2007 journal entry “I like it, because I like myself: associative self-anchoring and post-decisional change of implicit evaluations.” In it, he writes that “By virtue of this association, implicit evaluations of the self tend to transfer to the chosen object... Importantly, this mechanism can lead to ownership-related changes in implicit evaluations even in the absence of cognitive dissonance.”¹¹

The act of owning an item, object, or privilege has been shown to increase the owner’s care for that good, even in instances where he or she did not originally care to receive it. This research suggests that educators who find opportunities to grant their students ownership over critical elements in their learning will discover greater care and engagement from those students.

Core Drive 5: Social Influence & Relatedness

The fifth Core Drive corresponds with the feeling of belonging and affirmation we receive from others. It includes, according to Chou, many themes such as “mentorship, competition, envy, group quests, social treasure and companionship.”¹² He relates this drive to several sociological phenomena that pervade both real and virtual environments, indicating how much norms and ingroup loyalty affect our self-perception and behavior.

In their book entitled *Peer Leadership in Higher Education*, Jaime Shook and Jennifer Keup summarize the research of several educators to conclude that “students’

¹⁰ Morewedge, 950.

¹¹ Gawronski, 221.

¹² Chou, 197.

interactions with their peers...have a strong influence on many aspect of change during college, [including] intellectual development and orientation; political, social, and religious value; academic and social self-concept; intellectual orientation; interpersonal skills; moral development; general maturity and personal development.”¹³ In their research, building sustainable models of self-governance and academic excellence was most-dependent on the existence of peer leaders and role-based social models for interaction.

Students in higher education share a particular interest in meeting social standards in a variety of environments. Shaping the social norms in a manner beneficial to development and learning would optimize the use of the fifth Core Drive for the sake of engagement.

Core Drive 6: Scarcity and Impatience

The sixth Core Drive relies on the inescapable human urge to want something that we can't have. In Chou's words, “Here we see that, when there is a *perceived abundance*, motivation starts to dwindle. The odd thing is, our perception is often influenced by relative changes instead of absolute values.”¹⁴ He relates this Core Drive to the value of diamonds, collectible trading cards, VIP sections, and premium pricing models. Across decision-making, people will attach an added value based on something's uniqueness or scarcity.

In their Motivation and Emotion journal entry entitled “Scarcity, engagement, and value,” Sehnert, Franks, Yap, and Higgins studied the intensifying effect of scarcity on

¹³ Keup, 5.

¹⁴ Chou, 242.

prolonged attention and voluntary engagement. After evaluating participants' selections between consumer objects of positive or negative value, the study concluded that an object's scarcity could not only drive greater engagement in focus, but also intensify the positive or negative emotion associated with it.¹⁵ As they write, "We interpret the findings of our studies in terms of the sustained attention involved in engagement that is strengthened by opposing the interference from the situation of scarcity."¹⁶

When compared to their students, educators possess a monopoly on grade distribution as well as authoritative control of the learning protocol in a classroom. Utilizing scarcity in the reward mechanisms and resource management of a class can help drive greater attention from students for greater overall engagement.

Core Drive 7: Unpredictability and Curiosity

The seventh Core Drive involves a natural fascination with the mysterious, the uncertain, and events that involve chance. As Chou writes, we frequently take advantage of our subconscious deficiencies in recognizing probability and entertain ourselves using devices whose mechanics exploit this Core Drive. Chou relates this to the famous Skinner Box study, in which rodents and levers were more like to pull a lever if it provided them an award at irregular intervals. Based on the suspense entertainment value produced by an idea, we are willing to more-thoroughly engage with the subject, and feel more satisfaction if it triggers a positive result.

Skinner's results, published in his famous and pivotal work *Science and Human Behavior*, defines this type of behavior (and the one his rodents had the hardest time

¹⁵ Sehnert, 828.

¹⁶ Sehnert, 829.

resisting) is referred to as variable ratio reinforcement. ¹⁷ Operant conditioning, or the practice of systematically driving behavior using reinforcement theory and applied mechanisms for reinforcers and punishers, can be very successful in animals as well as people. If instructors are able to tap into this model for their classrooms, then they will achieve greater results in their students' level of excitement and engagement.

Core Drive 8: Loss & Avoidance

The eighth Core Drive motivates players through the fear of losing something they value, or facing some undesirable outcome. In Chou's words, "this aversion to loss is obviously not limited to games. There are many situations in the real world where we act based on fear of losing something that represents our investment of time, effort, money, or other resources." ¹⁸ He relates this to chip-chasing in poker, Farmville crops' death cycle, and the use of zombie effects to incentivize runners. Players who are actively aware of the lose-condition of their activities are more likely to be engaged and care about it.

In their behavioral economic study "When Do Losses Loom Larger than Gains?", Ariely, Huber, and Wertenbroch examine the statistical inconsistency with which people illogically weigh losses as more influential than equivalent gains. Focusing on both "emotional attachment" and "changes in cognitive perspective," they argue that a combination of very human qualities makes the threat of loss much more salient to the participant than the promise of gain. ¹⁹

¹⁷ Skinner, 102.

¹⁸ Chou, 312.

¹⁹ Ariely 135.

In the educational system, the threat of punitive discipline, emotional distress, social harm, or course failure all operate as concerns within the students' Avoidance & Loss Core Drive. However, there are additional creative ways with which avoidance can be used for driving engagement.

Eight Powers, Infinite Possibilities

The strength of the eight Core Drives is not in their individual effects, but in their unique combinations. By mixing-and-matching Core Drives to utilize their strategic factors of influence, the educator can produce a wide variety of engagement devices designed specifically to aid his or her audience. However, these devices are most impactful when developed using an understanding of the game designer's frameworks of construction. The next chapter focuses on outlining these frameworks.

Critical Claim Revisited

The Octalysis Framework creates new strategic perspectives for reinventing student engagement.

CHAPTER THREE

Constructing New Frameworks

Critical Claim

Gamification has frameworks to effectively reach a breadth of students while providing a depth of influence.

The Educator's Dilemma

Most educators, especially at the level of higher education, carry in their personal mission statement a desire to equip students with the knowledge, skills, and passions to succeed in life. This profound and inspiring aspect of educators, however, may cause them to resist the implementation of gamification techniques due to the focus it draws away from self-driven learning and natural student engagement. Today's students, they argue, do not need to be given a trail of cookie crumbs in order to profit from learning. They may say that authentic engagement should come from the student's initiated desire to learn, and that students who do not engage should be allowed to stand by while the other students receive the best education.

Consider again the Engagement Continuum outlined in Chapter One. The concept of student engagement grows in five stages from Attention to Interest, Engagement, Pursuit, and Passion, simultaneously modeling a shift from physical behavior to cognitive engagement and internalized valuation.

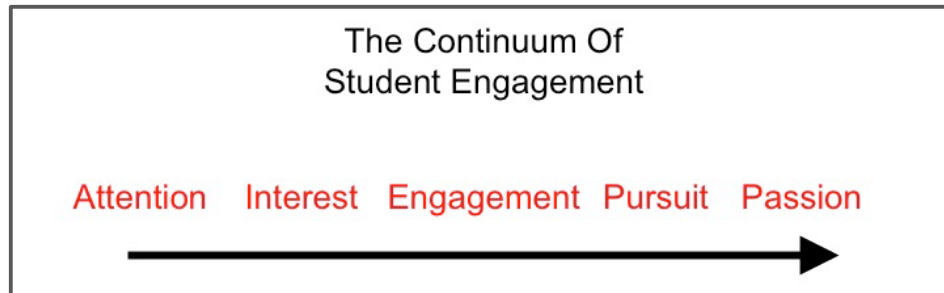


Figure 2: The Engagement Continuum

Imagine that game designers – men and women who create entertainment in the form of video games, board games, or recreational activities – stand at the far left side of the continuum under the point labeled Attention. Their specific skills in narrative development, sound effects, concept design, and game mechanics make them keen at capturing the attention of their audience and holding it for as long as possible.

Now imagine that educators – men and women who equip students with the skills for success while provoking a passion through discussion and instruction – stand at the far right side of the continuum under the point labeled Passion. They are uniquely-qualified to derive this level of engagements out of their students; that is, the ones that are ready to be inspired by their teaching.

The educator's dilemma states that in attempting to reach over towards the left side of the continuum and appeal to the larger majority of students who need to achieve levels of Attention or Interest, he is necessarily watering-down the learning experience using superficial gimmicks while reducing student-initiated learning. On the other hand, if he chooses to remain towards the right side of the continuum and appeal to the minority of students at the Pursuit and Passion levels, he is abandoning the apathetic or disinterested in his class for the sake of a greater depth of discussion. The dilemma is

two-fold – choose a shallow breadth of engagement or choose a narrow depth of engagement.

Re-examining the Engagement Continuum, we find that game designers and educators share either end of a dynamic equation with infinite approaches and no clear solution. However, the addition of a third player may provide a bridge between the game designer and the educator that could benefit all parties involved:

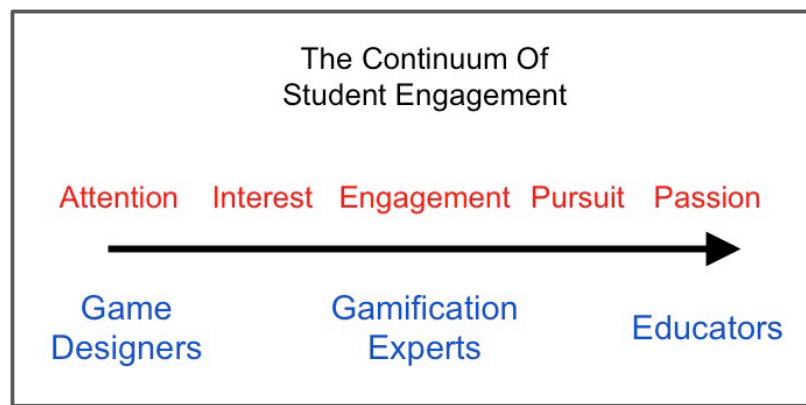


Figure 3: The Engagement Continuum Bridged

Gamification experts abstract the eight Core Drives developed by game designers and create the practical and flexible applications for the educator's use. They research and test the validity of their hypotheses and techniques with quantified study, and produce devices which administrators, professors, tutors, and students can apply as resources in their specific fields of study. In short, gamification experts help make learning more meaningful and fun by using the techniques mastered by game designers.

However, in order to develop this innovative framework, the gamification expert must understand the flexibility he carries in combining the Core Drives to produce varying degrees of engagement breadth and depth. These frameworks define the next level of the Octalysis Framework.

White Hat vs Black Hat Gamification (Breadth)

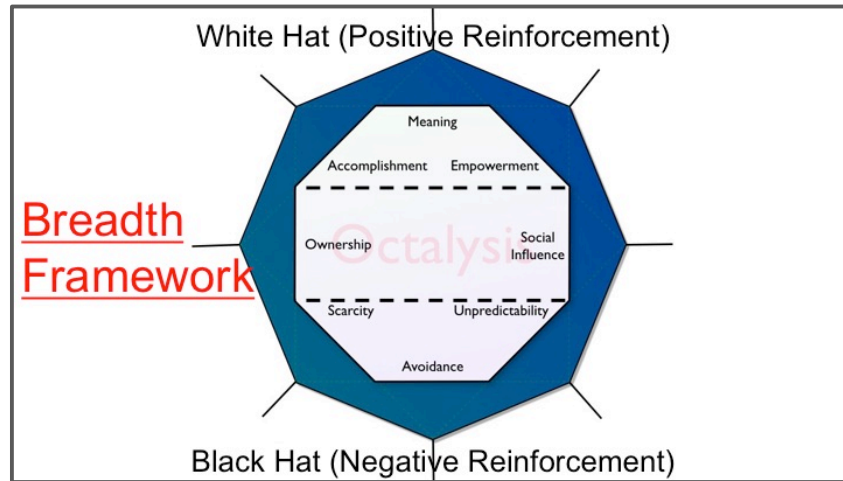


Figure 4: White Hat vs Black Hat Framework

The White Hat vs Black Hat gamification framework indicates the six Core Drives (three at the top, three at the bottom) that highlight diverse approaches to garnering widespread attention and immediate engagement. However, as indicated by their titles, White Hat and Black Hat principles go about it in different ways.

White Hat Gamification

White Hat Gamification represents the use of positive reinforcements to produce engagement. In the words of Chou, “[these] are motivation elements that makes us feel powerful, fulfilled, and satisfied. They makes us feel in control of our own lives and actions.”¹ In short, they are the carrot in the motivation equation. White Hat gamification requires an understanding of student motives, sources of meaning, and reward conditions in order to successfully drive engagement. The Core Drives associated with White Hat Gamification are Meaning (#1), Accomplishment (#2), and Empowerment (#3).

¹ Chou 380.

In his article entitled “Rewarded by Punishment: Reflections on the Disuse of Positive Reinforcement in Schools,” John Maag summarizes over 60 years of data to conclude that, while effective in removing misbehaving children from the classroom, negative reinforcement and punishments do little to improve social behavior. He attempts to capture the cultural influences surrounding a general skepticism towards positive reinforcement as he writes:

This misunderstanding may be grounded in a basic cultural ethos: The perception of living in a society in which individuals are free to do as they wish...without coercion. In this context, coercion is simply the absence of external pressure—being internally motivated to behave well. This societal value contributes to the widespread acceptance of a punishment mentality that ignores data indicating the effectiveness of techniques based on positive reinforcement.²

When Maag mentions the “data” affirming positive reinforcement, he is referencing studies from over 15 educational psychologists who each concluded that positive reinforcement resulted in higher engagement and lower instances of misbehavior amongst young students. He argues that when positive reinforcement is paired with discipline that it is most effective and provides the highest potential for growth.³

Black Hat Gamification

Black Hat Gamification represents the use of negative reinforcements to produce engagement. Chou describes them by writing that “[they] make us feel obsessed, anxious, and addicted. While they are very strong in motivating our behaviors, in the long run they often leave a bad taste in our mouths because we feel we’ve lost control of

² Maag 175.

³ Maag 178.

our own behaviors.”⁴ In short, they are represented by the stick in the carrot-and-stick analogy. The Core Drives associated with Black Hat Gamification are Scarcity (#6), Unpredictability (#7), and Avoidance (#8).

While Maag’s research and analysis would seem to suggest the impossibility for beneficial Black Hat Gamification in education, it is important to avoid confusing punishment (such as detention or paddling) with negative reinforcement. For example, instructors practice Scarcity (#6) when they provide limited prizes for well-behaving or actively-engaged students. In addition, professors increase their student’s study rates when they introduce the possibility for a pop quiz, utilizing Unpredictability (#7) to drive predictable behavior. Negative reinforcement produces a sense of urgency in students’ minds, bringing a greater perceived value to the topic of interest.

Both White Hat and Black Hat Gamification provide a variety of approaches for capturing the attention or interest of the general population. With an emphasis on simple, low-risk engagement devices, this framework provides the ideal starting point for driving engagement by maximizing the number of students who can be impacted by the educator.

⁴ Chou, 381

Left Brain vs Right Brain Gamification (Depth)

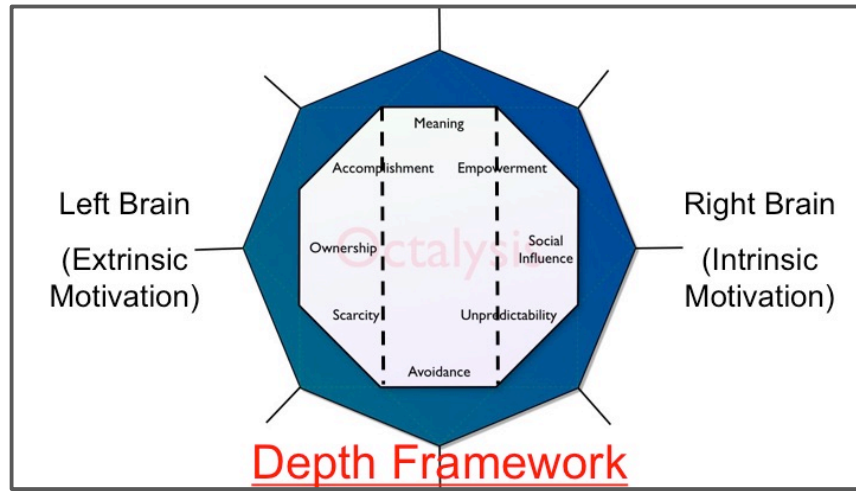


Figure 5: Left Brain vs Right Brain Framework

Following the path of the Engagement Continuum, the Left Brain and Right Brain Core Drives are designed to move students from a position of superficial extrinsic motivation (Left Brain) to a position of internalized passion and intrinsic motivation (Right Brain). Since this reflects the movement from Attention to Passion desired by educators and gamification experts alike, this depth framework will be useful in developing engagement devices.

Left Brain Gamification

It is important to begin with the Left Brain Core Drives because they concern themselves with controllable elements and predictable (albeit shallow) results. According to Chou, “[these] involve tendencies related, to logic, ownership, and analytical thought.”⁵ In addition, he writes of extrinsic motivation as “that [which] is

⁵ Chou, 347.

derived from a goal, purpose or reward. The task itself is not necessarily interesting or appealing, but because of the goal or reward, people become driven and motivated to complete the task.”⁶ The Core Drives associated with Left Brain Gamification are Accomplishment (#2), Ownership (#4), and Scarcity (#6).

In Chris Priest and Robert Jones’ 2015 article entitled “The Use of Games as Extrinsic Motivation in Education,” they conclude that the traditional use of external motivators through a literal gaming experience can produce higher engagement. “in certain deployable environments, games used as extrinsic motivators...can have a positive impact on educational performance,” they write, emphasizing that their game’s low-cost implementation suggests that it can be re-created in other classrooms. ⁷

Traditional game-like mechanics such as points, prizes, and competitions can drive certain behavioral changes in students, garnering Attention and Interest. However, Left Brain Core Drives should always seek to transition into their deeper and less-predictable counterparts.

Right Brain Gamification

Right Brain Gamification captures intrinsic motivation and is marked by “creativity, sociality, and curiosity.” According to Chou, “Intrinsic motivation, on the other hand, is simply the motivation you get by inherently enjoying the task itself...you don’t need a physical reward.”⁸ The Core Drives associated with Right Brain Gamification are Creativity (#3), Social Influence (#5), and Unpredictability (#7).

⁶ Chou, 348.

⁷ Priest 3738.

⁸ Chou 349.

Deci, Koestner and Ryan investigated the effects of varying motivation models in their article “Extrinsic Rewards and Intrinsic Motivation in Education: Reconsidered Once Again.” In it, they conclude that while extrinsic rewards have the capacity to reduce intrinsic motivation in students, only intrinsic motivation can increase overall engagement. “If a task is dull and boring,” they write, “the issue is not whether the rewards will lead people to find the task intrinsically interesting because rewards do not add interest value to the task itself. Rather, the issue is how to facilitate people's understanding the importance of the activity to themselves and thus internalizing its regulation so they will be self-motivated to perform it.”⁹ Chou makes a point of describing the Right Brain Core Drives as the most difficult and rewarding to implement in any field (especially Creativity (#3), which is both a White Hat and Right Brain Core Drive).

An Aside From Chou

At this point in his work, Chou stops to make his first direct observation about the educational system, commenting that “the negative shift from Intrinsic Motivation to Extrinsic Motivation is a big issue with our educational systems.”¹⁰ He then addresses the primary concern of this thesis in an aside:

I hold a firm belief that we as a species are endowed with an innate desire to learn...however, when it comes to school and training, that intrinsic motivation to learn quickly shifts into the extrinsic desire to obtain good grades, appease parents and teachers, gain respect from classmates, and secure prestigious, career-requisite diplomas.

Because of this, students often stop caring about the learning itself and do the minimum amount of work to achieve those extrinsic results (which sometimes

⁹ Deci 13.

¹⁰ Chou 354.

involves copying each others' home work or cheating on tests). They may even forget why they are learning the material in the first place.¹¹

The rallying mission of the gamification expert is to use the frameworks he has mastered to drive students away from this trap and toward the fulfilling lifestyle of intrinsic growth and discovery. To do this, he must understand the Octalysis Framework well enough to apply the Breadth Framework of White Hat and Black Hat principles to maximize the *number* of students he can reach, and then apply the Depth Framework of Left and Right Brain principles to maximize the *progression* of students from a state of extrinsic motivation to that of intrinsic motivation. This is the point where the educator will find a room full of passionate students. However, in order to use these frameworks, the gamification expert must now create practical weapons for putting them to use. This highlights the final chapter of this work.

Critical Claim Revisited

Gamification has frameworks to effectively reach a breadth of students while providing a depth of influence.

¹¹ Chou 355.

CHAPTER FOUR

Creating Weapons of Engagement

Critical Claim

Gamification experts can create actionable tools to help educators increase the satisfaction and engagement of their students.

The Endgame

Throughout the development and implementation of any successful system, it is important to designate and focus on distinct steps with unique goals and resources. In game design these are referred quite simply as “levels”. However, in the world of business or education you can expect these to take roots as developmental phases in a system’s implementation. Yu-Kai Chou provides an evolution of the Octalysis Framework with what he calls the Player’s Journey.

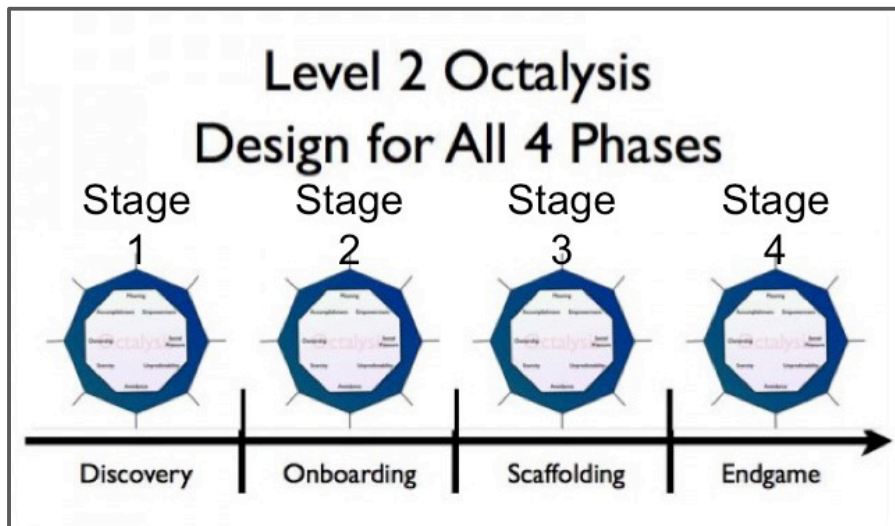


Figure 6: Level 2 Octalysis (The Player’s Journey)

This four-step process includes four distinctive steps for the student, each of which requires a unique mixture of Core Drives to achieve the desired result. The four phases are:

1. Discovery – An introduction to the world of the subject. Players learn the rules, resources, and win/lose conditions of their journey.
2. Onboarding – Training within the world of the subject. Players acquire skills, create allies, and become acquainted with the mechanics of the game.
3. Scaffolding – Creativity within the world of the subject. Players develop their own strategies, evaluate their own success using feedback, and plan their future.
4. Endgame – Actualization within the world of the subject. Players identify their personal cause, find satisfaction, experience defeat, realize their victories, and train others to fight for their cause.¹

An understanding of the Player’s Journey is important because it provides a clear and actionable context for participants to move from novice explorers to capable leaders. It is also important to understand because it characterized the development of this thesis up to this very point – except instead of being the educator, the reader has been serving as the player the entire time.

¹ Chou 40.

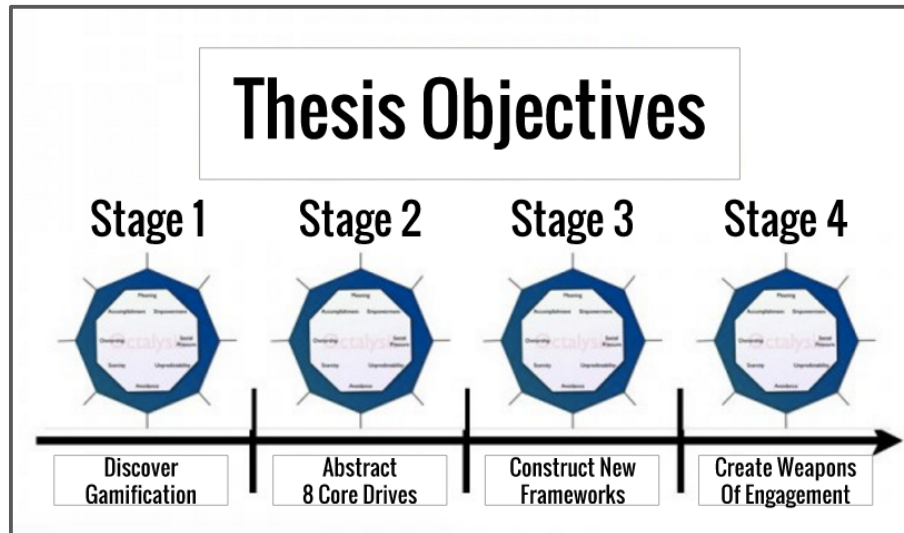


Figure 7: Thesis Reading As A Player’s Journey (4 Phases)

The critical claims made at the beginning and end of each chapter signified the succeeding thresholds of both comprehension and belief required for the player to move through the four levels of gameplay, from a position of total inexperience to that of positive action. In review, these four steps are:

1. Discovery – Discovering Gamification. An introduction to the world of gamification. Readers learn the terms, resources, and stakes of its role in student engagement.
2. Onboarding – Abstracting the Eight Core Drives. Training within the world of the gamification. Readers learn the eight Core Drives, gather supporting research from other fields, and become acquainted with the theory of the framework.
3. Scaffolding – Constructing New Frameworks. Creativity within the world of the gamification. Readers develop their own strategies, evaluate success of different tactics, and plan their personal applications.

4. Endgame – Actualization within the world of the gamification. Readers identify their personal cause, find satisfaction, experience defeat, realize their victories, and train others to fight for their cause.

The astute reader might notice that the title of this chapter (“Create Weapons of Engagement”) has not been included in the 4-Phase Player’s Journey. This has been done because, as stated in the Endgame description itself, the role of the reader who has achieved this level in their journey is to identify their personal cause. It is possible for the reader at this moment to put down this thesis, take their new knowledge and strategies, and apply them to fight another battle in their lives. However, I am challenging each of the players who have progressed this far in the gamification training process to consider joining arms with me in a brand-new collaborative effort.

The EDGEducators: Warriors Of Student Engagement

In reality, the main players in the world of gamification are in Phase 3 of their Endgame, as they are developing strategies for utilizing concepts in game design for real-world applications. When it comes to the unexplored bridge between gamification and education, this thesis represents Phase 2 of gamified education’s Endgame – it seeks to create allies and acquire the skills it needs to make an impact.

The intent of this work is to inspire educators to join me in the development of a new collaborative network of gamified engagement, as we innovate, implement, study, discuss, and refine practical tools in gamification to increase student engagement around the world. The Endgame is to produce a vast, free, and evolving database of actionable practices which can be used by educators across all disciplines and learning environments. These practical tools shall be called Engagement Devices of Gamified

Education, or EDGEs for short. They will respond to goals in education spanning from classroom control and academic integrity to suicide prevention and multicultural discourse, and will have at their heart a desire to make students feel more engaged, connected, challenged, and satisfied at their institutions of learning. Instructors, administrators, counselors, lecturers, tutors, parents, and students themselves will be empowered to test and refine these devices in their own work, contributing to a growing community of knowledge on this newly-emerging field.

Each EDGE will involve an understanding of the Core Drives which influence behavior, and can oftentimes be associated within their Breadth and Depth frameworks. To this effect, entries in the EDGE database will be recorded using both their primarily-utilized Drives and their intended audience within the Engagement Continuum. Finally, they will encourage behavioral economists and educational psychologists to research and critique their claims by providing forums for the contribution of scientific literature on each device. These contributors to the global database – scientists, psychologists, educators, and students – shall be called EDGEucators in their united effort to reverse the declining trends in student engagement. This database shall serve as their resource for making a dramatic impact on the world of education using gamification as the bridge between two previously-unallied fields.

Such a database does not exist – and in a passionate pursuit of this Endgame, it must be the initiative of this thesis to begin it. Below is the start of the EDGE Database, intended to serve as a sample of contributions to come and a guideline for how others may utilize it. I have selected five diverse EDGEs from hundreds observed to illustrate the potential for this concept.

Five Introductory EDGEs

EDGE #43 – Counter-Absence Reward Ratio.

Environment. Classroom, Lecture, Meetings

Level Of Engagement. Attention.

Measurable Goal. Increased Attendance.

Device Example. An English instructor informs his students at a semester's start that, should attendance for any class session dip below a certain percentage of enrolled students, all students in attendance will immediately receive extra credit on that week's assignment.

Core Drives. Scarcity (#6), Unpredictability (#7).

Notes. Professors report that this boosts the morale of class sessions with low attendance because the students feel appreciated for their demonstrated loyalty and diligence.

EDGE #64 – Structured Debate.

Environment. Classroom.

Level Of Engagement. Engagement.

Measurable Goal. Increased Comprehension.

Device Example. A teacher instructs her class to break into teams of two in preparation for a future class on ancient cultures. After each team is assigned a culture and given preparation time, they will compete in a structured debate in which they must answer the question, “Which ancient culture had the most significant impact on modern society?” A winner may or may not be chosen, and this may or may not entail a prize.

Core Drives. Empowerment (#3), Ownership (#4), Social Influence (#5).

Notes. Instructors indicate that using open-ended debate topics can facilitate greater creativity, critical thinking, and equitable outcomes amongst teams and students.

EDGE #87 – Bucket Grading (Point Accumulation)

Environment. Classroom, Lab, Project

Level Of Engagement. Attention.

Measurable Goal. Increased Grades.

Device Example. An engineering professor outlines his syllabus by instructing students that they do not have a grade average in his class – they start with 0 points and complete assignments to earn up to 1000 points by the semester’s end. Homework assignments are worth 10 points, quizzes are worth 20 points, exams are worth 100 points, and the final exam is worth 200 points. There are 50 extra credit points available to participating students. Students who achieve 700 points receive a C in the course, followed by 800 points for a B and 900 points for an A. The professor also

communicates that he reserves the right to add points to any student's total for exceptional work or classroom participation.

Core Drives. Accomplishment (#6), Ownership (#7), Scarcity (#8).

Notes. Behavioral economists refer to this as “positive framing” because it reinforces the idea that each quiz or exam is a positive opportunity for earning points rather than a negative opportunity for failing or losing a certain maintained average. It also increases the saliency of assignments by removing weighting calculations and indicating to students exactly how much they earn with each of their tasks. Finally, it provides the professor a simple and easily-communicable method of rewarding good behavior in the class through a direct and controllable resource.

EDGE #95 – Absentee Critical Review

Environment. Classroom.

Level Of Engagement. Attention.

Measurable Goal. Increased Attendance, Increased Preparation.

Device Example. A political science professor informs his students that, should they ever miss his class for an excused or unexcused reason, their names will be added to a drawing at the start of next class. If they are selected, then they will give a 1-minute critical summary of the previous lesson using whatever notes they've prepared. Following the review, the class will spend 1-2 minutes critiquing the summary or adding any missing information.

Core Drives. Social Influence (#5), Unpredictability (#7), Avoidance (#8).

Notes. Instructors indicate that using absentee review motivates absent students to request notes and explanations from their classmates in preparation from class, reducing their potential to fall-behind in the course. In addition, it provides a convenient forum for the instructor to summarize and review content from the previous class. Finally, instructors indicate that students are more likely to participate in a review if they feel they are critiquing and adding to the content of another student than to the instructor himself.

EDGE #106 – Checkpoint Tokens

Environment. Classroom

Level Of Engagement. Interest.

Measurable Goal. Increased Reports of Satisfaction.

Device Example. A professor of biology breaks her syllabus into distinct units, each with an exam. She expresses to her students that as a sign of their progress and a celebration of each completed exam, she will bring one bobblehead from her personal collection and place them in a row along the front of her desk. She indicates each time she brings a new bobblehead to class, and informs the class that once the ninth bobblehead has been collected, they will earn a movie-watching day of class.

Core Drives. Meaning (#1), Accomplishment (#2).

Notes. Tokens can take the form of three-dimensional objects, posters on the wall, or the cumulative addition of short to the start of each class. Visibility of the tokens is key. Instructors note that using tokens representative of each unit can be convenient to classroom lecturing, as they will sometimes point to their tokens to reference content taught previously in the class.

The Future Of The EDGE Database

There are several practical reasons for designing a virtual forum for educators to collaborate in making and testing engagement devices, but the most important reason comes from Chou's description of Meaning (#1) in a section about the allure of Wikipedia. "It's not about what you want as an individual nor about what makes you feel good," he writes. "Individuals participate in the system and take action not because it necessarily benefits them, but because they can see themselves as heroes of a grander story. It's about playing your part for the greater good."² With an accessible online interface, forum for open discussion, and specific focus on gathering scientific data on its EDGEds, the EDGE Database has the potential to function as an organic and highly-adaptable resource within an unlimited number of careers and learning environments. Finally, the goal of the EDGE Database will be clear – to help students feel more engaged, connected, challenged, and satisfied at their institutions of learning. It is the position of this thesis that our allies in education will rally behind this cause and unite in a collaborative effort to change the face of student engagement.

² Chou 69.

The Return To Reality: Simple Steps In The Right Direction

The holy grail of game design is to make a game where the challenges are never ending, the skills required are varied, and the difficulty curve is perfect and adjusts itself to exactly our skill level. Someone already did this already, though, and it's not always fun. It's a game called "life." Maybe you've played it. (Koster 128).

The game of life involves endless-decision making, an infinite range of options, development of skill sets, unique specialization, and an immersive experience that, to the average game designer, would seem to mark it as the most successful game of all time. However, life is very difficult and unsatisfying at times, producing fear, boredom, bitterness, and shame. It has unqualified goals, unreliable resources, confusing feedback mechanisms, and irregular incentives and rewards. In short, the game of life has the potential to be the greatest experience engineered by mankind. However, when compared to the satisfying world of games, reality is broken – and education suffers as a part of it.

After waging the fight for student engagement for thousands of years, educators now find a new ally entering the fray with the expertise and proven success to offer an effective perspective on the system. After defining student engagement, chapter one navigated the work of economists, businessmen, and educators to discover gamification as education's next great ally. Moreover, it concluded that the striking parallels in the elements of game design and education make student engagement an ideal target for the strengths of a human-focused design.

In chapter two, Yu-Kai Chou's Octalysis Framework was examined under the lens of educational psychology. As the eight Core Drives were outlined and demonstrated within an educational context, the work of behavioral economists and

scientists provided support for their application to schooling and student engagement. As a result, the newly-emerging field of gamification demonstrated that it carried new opportunities for reinventing student engagement.

In chapter three, we addressed the Educator's Dilemma using the Engagement Continuum, illustrating how educators should look to gamification to expand the breadth and depth of their influence on their students' engagement. By positioning gamification as the bridge between Attention and Passion, we were able to examine the White Hat vs Black Hat and Left Brain vs Right Brain frameworks for creating strategies in gamified education. With such frameworks, gamification can effectively reach a breadth of students while providing a depth of influence.

Finally, in chapter four we examined the 4-Phase Player's Journey to create an Endgame for gamification experts and the reader as a whole, painting a picture of a future in which the collaborative efforts of gamification experts can revolutionize the field of student engagement for the benefit of students worldwide. With a goal of producing actionable tools or EDGEs for testing and refining by educators in all walks of life, this thesis prepares to initiate a new motion in higher education which calls upon the collaborative efforts of all interested readers in order to begin its operation.

The reader stands at a crossroads in education in which a great and increasing need for student engagement reform is being met with a unique and unexpected opportunity in the form of gamification. Whether he or she chooses to accept this challenge and become an EDGEucator is up to their discretion, but it is the position of this thesis that the strategy outlined by the Octalysis Framework and the EDGE Database will ensure that all who participate will find meaning and impact on the world of learning

around them. All that said, there is nothing that cannot be done with small, simple steps in the right direction.

The first step new EDGEucators can take is to actively observe the world around them. Take note of activities, trends, techniques, or environments that resonate well and create value for students, employees, or participating members. Why do these people engage with their content? What practical devices move participants down the Engagement Continuum, and how can those be re-created in a learning environment? Attempt to dissect these devices by highlighting the Core Drives that they appeal to – this will help expand the creativity of the gamification process and help with the implementation of similar EDGEs in learning environments.

The second step for new EDGEucators is to join networks in gamification ideas to read relevant content from emerging experts in the field. Since the sub-field of gamified education is extremely young, EDGEucators can learn a great deal from the few years of work and research done by business professionals, management executives, and marketing directors who have used gamification successfully in their practices. Online forums such as those on LinkedIn and Facebook provide access to discuss ideas and share solutions to contemporary issues in engagement, making them an excellent location to build a knowledge base for future impact.

However, there is no current outlet for the creation and sharing of direct, actionable devices for engagement in learning environments. The third step for interested EDGEucators is to help support and populate the EDGE Database as it is developed and released. This includes reaching out to the developing team and offering professional

experience, research, or innovative ideas in the field as we begin to grow a new system of practical support.

Finally, the fourth and final step for the EDGEucator is ensuring that the maximum number of educators is aware of these engagement devices and how they can learn from and contribute to that body of information. Introducing teachers, administrators, and instructors to the science of gamified learning can help spread the potential for lasting change in the educational system, and a new look at helping students succeed in their schooling.

Conclusion

Student engagement in higher education is declining at an accelerating rate, having devastating effects on the economy, universities, and the students themselves. Engagement can be defined as a continuum moving from superficial Attention to internalized Passion, and it is the desire of the educator to move the maximum number of students the maximum distance along this continuum. Game designers represent a new resource to educators due to their proven ability to engage their audiences. Gamification experts bridge the gap between game design and education by abstracting the Core Drives and Frameworks discovered by game designers and applying them to learning environments. These eight Core Drives include Meaning (#1), Accomplishment (#2), Empowerment (#3), Ownership (#4), Social Influence (#5), Scarcity (#6), Unpredictability (#7), and Avoidance (#8), and are typically mixed or juxtaposed to create systems of motivation for students. Gamification experts can maximize the breadth and depth of their influence by using White Hat vs Black Hat and Left Brain vs Right Brain Frameworks respectively, with the ultimate intent of replacing extrinsic

motivation with intrinsic motivation with regard to the student. There are four phases to the Player's Journey, indicating that successful missions have periods of unique focus towards an eventual Endgame. Finally, the EDGE concept hopes to create simple, practical tools for increasing engagement across a variety of platforms, and seeks to develop a collaborative network for designing and researching the effects of these devices.

The board is now set with the pieces of a great game about to be played. The opponents of student passion loom large in modern society – apathy, laziness, confusion, and pride seek to steal away any hope for a fulfilling education and learning experience for the capable student. With the work of gamification as a new ally to a greater cause, educators are prepared to fight back and discover victory in new ways.

Let the games begin.

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