The Pennsylvania State University
The Graduate School
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School of Visual Arts

GAMIFICATION STRATEGIES IN STUDIO ART CLASSROOMS:
CAN THEY IMPACT STUDENT MINDSETS IN ARTISTIC COMMUNITY,
ENGAGEMENT, ARTISTIC GROWTH, AND EXPLORATION?

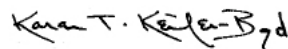An Action Research Project in
Art Education
by
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Master of Professional Studies

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ABSTRACT

This action research on gamification in studio art settings was inspired by observations in my own high school studio art classrooms. From those observations, I generated four categories that I wished to address: students' potentially superficial engagement in the arts as well as their own work, weak student involvement in and understanding of the artistic community, lack of recognition and/or stagnation of student artistic growth, and an avoidance of exploration and risk-taking. These problem areas lead me to investigate a new avenue through which I could try teaching my studio art students: gamification.

Gamification could be one prospective solution to strengthening students' sense of artistic community, increasing engagement, inspiring artistic growth, and encouraging exploration. Gamification offers potential for customization that could not only be designed based on an educator's curriculum goals, but designed to engage students' interests as well. Games can help make learning new material and facing various challenges fun and playful while also stimulating explorative experiences

While games have existed for thousands of years, gamification in education is still relatively new in terms of studies and research. However, gamification has gained momentum as teachers explore its possibilities in classroom settings (Hanus & Fox, 2014). There are some studies and examples of gamification in studio art classrooms, however, information is vague and shows a need for further exploration in art classrooms. I tried to design and implement some common gamification elements and strategies in three of my high school ceramic studio classes to obtain initial feedback on how

gamification could potentially be applied in order to positively impact students' sense of art community, engagement, artistic growth, and exploration in a studio art setting. I relied on The Eight Studio Habits of Mind and The New National Core Arts Standards to help guide the shaping of my gamification model into one that not only addressed my personal goals for students, but also worked in tandem to support the core fundamentals of visual arts education. I focused on answering my key research question: How might classroom gamification strategies positively impact student engagement, sense of community, and willingness to challenge themselves to grow to new levels of artistic growth and explore beyond course requirements and assignment expectations? Also taken into consideration were: (a) What are effective intrinsic and extrinsic motivators for high school studio art students; (b) Can an element of playfulness, such as a game, positively impact a student's classroom learning experience; and (c) What might the gamification of a high school ceramics studio look like, in terms of practicality and effectiveness?

While gamification elements generally did appear to increase student engagement in the course, their own work, and the sense of classroom community, the impact on students' sense of an art community, their artistic growth, and interest in exploration were more difficult to discern. The positive observations supporting gamification cannot definitively be isolated from the ways students could have reacted under typical, non-gamified classroom settings. Overall, the majority of students reacted positively to their gamification experiences, but it cannot ultimately be stated that gamification had direct and only positive impacts on the key areas of the study. However, experiences and observations during the gamification study have led to discovering areas of gamification in a high school studio art classroom as potential directions for further research.

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I would like to express my gratitude to my advisor and committee chair, Dr. Karen Keifer-Boyd, for her on-going support and guidance throughout this research and study process. Her understanding, patience, and wealth of knowledge helped me to successfully navigate through the variety of challenges posed by my first-time experience of going through this process.

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Chapter 1

INTRODUCTION

In this empirical study, I used a qualitative action research methodology in three high school ceramic studio art courses over the course of four months. I wanted to learn if and how various game mechanics could be designed and implemented in ways that support both the National Core Arts Standards and the Eight Studio Habits of Mind,[1] which were both chosen as guides to reinforce art education framework within the game model. I closely observed and documented student artworks, engagement, responses, explorations, achievements, and progress to evaluate if and how gamified strategies could be used to help strengthen students' sense of artistic community, engagement, artistic growth, and exploration. I used the observations to evaluate how classroom gamification strategies could positively impact student engagement, mindsets, and willingness to challenge themselves and their artworks to grow to new levels and explore things beyond course requirements and assignment expectations.

Statement of Problem

Gamification strategies in studio art classrooms have a relatively unknown impact on student engagement, sense of community, artistic growth, and exploration. In

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[1] See Appendix A for IRB Exemption Approval for Study and Appendix B for Principal Letter of Approval for Study.

observations of students in my own studio art courses, I have noticed that students do not always have the powerful and meaningful art experiences that art educators hope to achieve. This may be due to students' lack of personal engagement and motivation, but also to a reluctance to challenge themselves and take the necessary risks inherently involved with exploring new things (De Castella, Bryne, and Covington, 2013). It may prove beneficial to students for art educators to begin exploring alternative approaches to teaching studio art classes as well as help alleviate the stigma of student failure.

The key question guiding this study was: *How might classroom gamification strategies positively impact student engagement, sense of community, and willingness to challenge themselves to new levels of artistic growth and explore beyond course requirements and assignment expectations?* The sub-questions that helped guide the study were (a): *What are effective intrinsic and extrinsic motivators for high school studio art students?; (b) Can an element of playfulness, such as a game, positively impact a student's classroom learning experiences and outcomes?; and (c) What might the gamification of a high school ceramics studio look like, in terms of practicality and effectiveness?*

In this section is the context of the problem and background of the problem. This section continues with the operating definitions of key constructs used in this study.

Context of Problem: Students Disengaged, Uninvolved, and Unmotivated in School

Student engagement, motivation, and artistic growth have been key issues in art education. According to Jon Douglas Willms (2003), meeting the needs of youths who

have become disaffected from school is perhaps the biggest challenge facing teachers and school administrators today. Students who are disengaged, uninvolved, and not motivated to challenge themselves, try new things, or explore, tend to struggle with achieving success in those courses. That lack of student engagement, motivation, interest, and artistic growth results in less meaningful learning and educational experiences. Willms' (2003) study on student engagement in schools around the world found that schools have higher levels of student engagement when there was a strong disciplinary climate, good student-teacher relations, and high expectations for student success. The study further found student engagement has more to do with the culture of the school, and that teachers can play a strong role is creating a positive culture where students feel comfortable interacting not only with the course material, but also with each other. If a classroom teacher could help create such an environment, students could become more engaged in their learning and be less afraid to challenge themselves and take risks while exploring. This could, in turn, lead to more meaningful and confident student growth, understanding, and success.

Background of Problem

Time has changed many things, but some of the lingering stagnancies rest in education. Researcher Matera (2015) suggests that "The educational structures built on the needs and desires of our great grandparents' generation are fundamentally different from those of students of today," and today's world requires us to adapt by creating "more dynamic learning environments and methods of teaching" (pp. 25-26). According

to Matera, the old world of teaching still emphasizes producing followers, controlling students, plotting paths, fostering quiet compliance, creating automatons of knowledge, constructing lessons, restricting students as passive receivers of content, and using traditional, fossilized ways of teaching. The residual structures of that old-world teaching contribute to students' struggles in studio art courses, particularly due to a less-structured learning environment. The majority of educational experiences often put the highest emphasis on being right and wrong, or having only one correct answer, solution, or process. In studio art classes, the familiar structure of success and achievement does not necessarily transfer, and students shut down or restrict their potential, engagement, exploration, and artistic and confidence growth in fear of failure. According to De Castella, Bryne, and Covington (2013), a student's worth is largely measured by his or her ability to achieve, and self-perceptions of incompetence can trigger feelings of shame and humiliation. Students who find themselves outside of their traditional comfort zones in a studio art class may try to disguise their true efforts in order to preserve their self-worth.

> All students, even the seemingly unmotivated, care about being seen as competent and able in the eyes of others. And yet, despite the undeniable benefits of trying hard, effort puts students at risk. Success without trying can indicate one has talent, but failure following effort is often viewed as compelling evidence that one lacks ability. (De Castella et al., 2013, p. 861)

In high school, this fear of failure is also fueled by graduation requirements. Students place particular importance on simply passing to earn credits required to graduate, as well as earning the highest possible grades to boost their grade point average (GPA) for post-secondary goals. Students' natural curiosities and interests are stifled by the institutionalized educational mindset; they are trained to be overly dependent on receiving instruction based on what can be prescribed as right and wrong. Standardized testing further emphasizes the seriousness and heaviness of academic performance. There are stigmas and negative associations with being wrong and failing all throughout a student's educational process. Students in studio art courses often have trouble thinking and acting on their own accord or curiosity because that often involves taking personal and academic risks. Students retreat to their comfort zones, distancing themselves from the content, trying to do work exactly as is assigned, and performing how they believe will reward them with the best (or easiest) grade.

Key Terms and Definitions

This section provides the definitions of the key terms used throughout the study, including the generalized definition of gamification. The focal areas of the study (student engagement, art community, exploration, and growth) are defined according to their specific art education contexts addressed, applied, and explored throughout the study. Hetland, Winner, Veneema, and Sheridan's texts on The Eight Studio Habits of Mind were used to help guide these working definitions.

- **Gamification**: the application of "the most motivational techniques of games to non-game settings, like classrooms" and includes "elements of game theory, design thinking, and informational literacy" (Matera, 2015, pp. 8-9).

- **Student Engagement**: the active participation in embracing problems of relevance within the art world and/or creatively or artistically pursuing areas of personal importance (Hetland, Winner, Veenema, & Sheridan, 2007).

- **Art Community**: learning to engage oneself in the arts by interacting as an artist with other artists, which may be in classrooms, in local arts organizations, across the art field, as well as within the broader society; the ability to make connections with artists, art history, artworks, processes, etc. (Hetland et al., 2007).

- **Exploration**: learning how to explore playfully without prior experience or preconceived plans; taking creative and personal risks that are not guaranteed to bring success (Hetland et al., 2007).

- **Growth**: learning to reach and stretch beyond one's capacities; pushing personal limits and embracing opportunities to learn from mistakes (Hetland et al., 2007).

Purpose of Study

In an article on games and art education, Ryan M. Patton (2014) discussed Laura Chapman's 1965 research and perspective that "teachers should look at game theory strategies to manage their classrooms, primarily as a way to motivate students, diffuse conflict, and optimize classroom performance" (p. 245). Chapman's classroom game theory model allowed for students to play freely within the boundaries of their assignments, yet experience some failure within their tasks (Patton, 2014). Chapman's idea of experiencing some failure while playing freely within the boundaries of classroom assignments connects directly with the idea of growing comfort with risk-taking and failure involved with student exploration.

While gamification is not a new concept, there are few studies on gamification. "Although gamification is popular, the effectiveness of various gamification elements have [sic] not been sufficiently tested," therefore more studies are needed to contribute to a more robust evaluation of the methodology of gamification in education (Hanus & Fox, 2014, p. 152). Student engagement, sense of artistic community, motivation, exploration, and growth are key mindsets, behaviors, and attitudes that I have explored in this study through the process of gamification. Gamification is the application of "the most motivational techniques of games to non-game settings, like classrooms" and includes "elements of game theory, design thinking, and informational literacy" (Matera, 2015, pp. 8-9). Gamification embraces the "organic nature of learning" and the "power of play brings back the natural yearning that exists inside all of us to learn" (Matera, 2015, p. 29). According to Hsaio-Cheng Han (2015), a "good game connects the players' previous

experiences and establishes newer experiences in a game while playing. With these new experiences, players are able to advance themselves and pursue high achievement" (p. 259). With the application of game-like elements into classroom settings, students may engage in more playful game attitudes and behaviors that help relieve the educational institutional pressures of reward for correct uncritical responses and punishment for incorrect answers.

Jane McGonigal (2010) believes that games bring out the best part of ourselves, the part of us that is

> most likely to help at a moment's notice, the most likely to stick with a problem as long as it takes, to get up after failure and try again. And in real life, when we face failure, we feel anxious, maybe depressed, frustrated, or cynical. We never have those feelings when we're playing games. (03:46-04:15)

These are many of the effects that this study explored within the context of a studio art classroom. Various gamification strategies were incorporated into current course curricula in order to see if such strategies could impact student artistic experiences and performance. The teacher-researcher documented and recorded observations regarding the impacts of different gamification strategies by analyzing student involvement in the arts communities, student responses, artworks, engagement, growth, and exploration.

Significance of Study

Gamification studies in classrooms, specifically in studio art classrooms, are limited. "Results from the few empirical studies on various elements of gamification

conducted in educational settings are mixed," so researchers trying to gather information on the topic have limited resources and applications from which to investigate and analyze, especially in regards to high school studio art settings (Hanus & Fox, 2014, p. 152). The purpose of this study is to help contribute in determining whether gamification elements in a studio art classroom can potentially contribute to a positive impact on student engagement, artistic community, growth, and exploration. In Chapter 5, I present positive, neutral, and negative aspects and results. Han's (2015) research suggests that continued exploration of gamification strategies is worth pursuing in high school studio art settings, and this study exposes studio art-specific challenges that should be addressed or redesigned in future gamification design and development. This study contributes a framework for a studio art gamification system that could be adapted, modified, and strengthened to better produce positive impacts on student artistic experiences and performances in high school art courses.

Chapter 2

LITERATURE REVIEW

In this study, I researched and analyzed literature that presented theories of gamification as a vehicle for engagement and motivation. I focused on gamification elements and mechanics often employed throughout gamification systems, and the different methods those elements and mechanics could be implemented in various settings and circumstances. I explored how gamified pedagogy could be applied in classroom environments, and how those gamification mechanics could be designed around a high school studio art classroom by aligning game play with the Eight Studio Habits of Mind and New National Core Arts Standards. The literature included generalized gamification sources as well as those specified for educational and visual arts environments, and provided arguments both for and against gamified strategies. Resources were pulled from books, research, journals, videos, game systems, articles, blogs, and websites in order to provide a wide spectrum of theories, perspectives, experiences, advocacies, and criticisms. Considerations from all sources were taken into account during the planning and execution of this gamification study.[2]

Games and Gamification

Games have been an important part of human society for thousands of years. Greek historian and writer Herodotus told a story of a king from 3000 years ago, whose

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[2] See Appendix C for a bibliography of all sources used in this study.

kingdom struggled under an 18-year famine. To help distract the starving people from their hunger, he invented an ancient dice game fabricated out of sheep's knuckles that would engage his citizens. To help ration out food, they would alternate game days with food days. The days they played games, they could not eat. The days they ate, they could not play games. The citizens enjoyed the game so much that they looked forward to the days of playing and not eating. That particular game became an adaptive means of survival that provided a sense of structure and enjoyment in an otherwise negative environment (McGonigal, 2011). McGonigal (2011) goes on to point out that today, we find ourselves in a similar situation: we may not be hungering for food, but instead, ways to use the immersive powers of play to satisfy our hunger for satisfying work, a sense of community, and a more engaging and meaningful life in general. Games help keep us engaged through providing us with a stronger sense of purpose, accomplishment, and sense of belonging.

Traditionally, games are viewed as simply playful ways to spend time individually or with others. More recently, researchers in many arenas (such as health care, entertainment, business, marketing, education, recruitment, human resources, sales, product development, customer service, and training) have begun to see the growing potential behind games and game design. Games are now being created for purposes beyond play. Gamification was originally termed in 2002 by Nick Pelling, a British consultant who viewed gamification as a hardware interface (Burke, 2014). However, the definition of gamification has evolved alongside its ever-changing uses, and has come to describe the application of "the most motivational techniques of games to non-game settings" and includes "elements of game theory, design thinking, and informational

literacy" (Matera, 2015, pp. 8-9) to engage and motivate people to achieve their goals (Burke, 2014).

When many people hear the term gamification, they think about playfulness and fun. However, Brian Burke (2014) rebukes the assumption that gamification is about fun and is instead centered on the science of motivation. Today, gamification elements are being used by businesses to motivate employee training and performance, by marketers trying to attract customers and motivate spending (e.g., loyalty cards earning points, McDonald's Monopoly game), by health care systems to encourage tracking exercise, body responses, and medications (e.g., health monitoring apps, FitBits®, etc.), and also by educators to help engage and motivate students (e.g., Khan Academy®, Classcraft®).

Gamification Impacts on Community, Engagement, Growth, and Exploration

Gamification has been shown to have positive impacts on community, engagement, growth, and exploration (McGonigal, 2011). Games are about understanding the many types of human behaviors, learning, and motivations, and using those understandings to help move toward desired outcomes. Successful games are ones that are thoughtfully designed with an understanding of how to motivate learning.

When people play games, they are interacting with each other or sharing an environment. They agree to play along and follow the same set of rules, whether with (collaboratively) or against (competitively) each other. Interactions with other players add a social element to game experiences and help build stronger social bonds; the more interaction time is spent, the more likely the chance of generating positive subsets of

emotions and the stronger the sense of creating a global community with a shared purpose (McGonigal, 2011). Players learn about their own as well as each others' strengths and weaknesses, as well as how to rely on themselves and each other in different times of need. They make connections based on shared experiences, and learn about how everyone plays a unique role in overcoming challenges and achieving the goals of the game.

People readily participate in games voluntarily because somehow, the game engages them and keeps them coming back and striving to move forward. Good games have specials ways of structuring experience with positive emotions to inspire participation and motivate hard work that result in a strong sense of pride after triumphs over adversities (McGonigal, 2011). There is a flow towards a goal that reduces boredom by carefully balancing challenges, failures, victories, and pride. Games engage players by regulating the flow: energizing them before they burn out due to frustration, and challenging them before they tune out from too-easy achievements. Engagement is born out of personal interest, challenge, and happiness, and as long as players are immersed in self-rewarding hard work, they are likely to continue playing (McGonigal, 2011). While extrinsic rewards can initially motivate a player to become engaged, the integration of intrinsic rewards helps maintain engagement (Farber, 2015). Games are more productive and engaging when intrinsic levels of motivation are stronger than extrinsic.

Continuous learning and growth are common byproducts in games. Gamification and learning are a natural fit because we all have innate desires to improve and mastery is a strong motivator (Burke, 2014). Gamification is about helping people find the way to their goals by breaking things down into smaller, more manageable steps so that every

step stretches the players' abilities but is never out of reach (Burke, 2014). Games also provide more instant recognition and feedback, making it easier for players to see their progress and drive them to try harder and succeed at even more difficult challenges; they help us improve and help us set our sights and expectations higher (McGonigal, 2011).

Gamification is also used a tool to help inspire exploration and innovation. Games can be designed so that players are free to innovate within the space by generating new ideas, developing existing ideas, and/or contributing to the process (Burke, 2014). That freedom to innovate or keep trying comes from freeing players from the fear of failure. According to McGonigal's (2011) studies, gamers spend 80% of their game time failing, yet continue to keep playing. Finnish researchers have discovered that "fun failure" (combining positive feelings with failures) helps players develop exceptional mental toughness, and the more we fail, the more eager we are to do better because it keeps us engaged and more optimistic about odds of success (McGonigal, 2011). Games "don't punish failure" (Chatfield, 2010, 09:38); they present failures as learning experiences and allow players to go back and try again. Players who embrace failure are more likely to take more personal risks and try new things.

Game Mechanics

According to McGonigal (2011), games have four defining traits: goals, rules, feedback systems, and voluntary participation. To help those traits operate, one needs game mechanics. Game and gamification mechanics refers to the different elements that make up the game. Game mechanics pertain to the actions of game play that help set play

in motion (Farber, 2015). Game mechanics can take on many shapes and forms according to the desired game experience and design. Michael Matera (2015) points out that not every player will be motivated by every game mechanic since each person is motivated in different ways; it the game designer's responsibility to design a game that includes something for every type of player. For the purposes of this study, gamification mechanics research focused on: (a) storylines and narratives; (b) badges, quests and challenges; (c) achievements and leveling-up; and (d) points and incentive systems (economy).

Storylines and Narratives

A storyline or narrative helps to introduce the context and the goals of the game, providing players with their sense of purpose. The goal helps define the specific outcome that players will work to achieve; it "focuses their attention and continually orients their participation through the game," and a "compelling story makes the goal more enticing" (McGonigal, 2011, p. 21). Elaborate storylines help create realistic experiences that immerse players in that game and immerse them into the role they play in the game (Burke, 2014). Strong storylines need to take into thoughtful consideration the theme, setting, characters, and actions (Matera, 2015) that will best appeal to the interests of target audience of players. Storylines can be realistic and reflect real-life situations, or they can be designed around fantasy elements.

Badges, Achievements, and Leveling-Up

Badges, achievements, and leveling-up are common and basic forms of feedback systems that help track the players' progress towards their goals. This type of "real-time feedback serves as a promise to the players that the goal is definitely achievable, and it provides motivation to keep playing" because they "multiply the opportunities for experiencing success" (McGonigal, 2011, p. 21). Brian Burke (2014) suggests placing easily achievable badges early in the game to help encourage players to start participating but increase the challenge levels so that the higher badges are much more difficult to achieve.

According to Matera (2015), levels indicate a player's position or current stage in the game, while achievements are things unlocked through game play, such as badges, access, or items. Badges can be designed under categories and offer experience and achievement status to those who earn them. Once badges or achievements are earned on a base level, players can level-up by taking those achievements to a higher and more difficult level. *Leveling-up* can take the form of a badge with higher expectations, or the form of earning enough achievement points to reach a higher tier of accomplishment.

Quests and Challenges

McGonigal (2011) uses late philosopher Bernard Suite's definition of playing a game as a voluntary attempt to overcome unnecessary obstacles, and while a game itself is an obstacle, quests and challenges present many of the smaller obstacles encompassed within a game. They are challenging, customizable missions and tasks that fulfill needs

for better, more satisfying hard work that are enjoyed and chosen to prime minds with happiness (McGonigal, 2011). Quests are missions with an objective (Matera, 2015), and there are seven types of work that quests and challenges can entail: high-stakes work, busywork, mental work, physical work, discovery work, teamwork, and creative work (McGonigal, 2011). These types of works must be presented throughout the player's journey through the game as a series of action or engagement loops the player must master in order to reach or achieve a short-term and/or over-arching solution goal (Burke, 2014).

Points and Incentive Systems (Economy)

Points or incentive systems can be used to establish a form of economy in games. These systems are intended to help engage players on a transactional level by compensating them or rewarding them with some form of points or currency for achieving goals (Burke, 2014). The points or currency can then be used in exchange for a benefit (Matera, 2015), which may include items, privileges, or access that the player may need or find personally desirable throughout the play of the game. These rewards must be creatively designed and planned in ways that are both challenging to achieve and highly valued by the players (Burke, 2014).

Gamification in Educational Settings

Games have always been a part of education and learning in one form or another. "Humans have been using games and stories to teach for thousands of years … games provide a social construct and structure to deliver meaning to activities" (Farber, 2015, p. 9). However, in the past few decades, organized gamification has increasingly found its way into educational institutions and classrooms from around the world. Intentional gamification is a perfect vessel to augment many pedagogical tools with the power to amplify what happens in the classroom (Matera, 2015). Many of the skills honed in game play work hand-in-hand with the skills that educators wish to impart on their students. Classroom gamification takes most positive, result-producing aspects of games to make the most of experiential learning and playful planning, while providing rigorous tasks that elicit the honing of vital skills, such as critical thinking, design thinking, intuition, and communication (Matera, 2015).

Gamification also helps address some of the common challenges teachers face. "By applying gamification to the classroom, students could be motivated in new ways or enjoy otherwise tedious tasks" (Hanus & Fox, 2014, p. 152). "Games also typically allow the players to restart or play again, which makes mistakes recoverable" and helps alleviate the fear of mistakes or trying new things (Hanus & Fox, 2014, p. 153). The constraints of grading often experienced by teachers limit student feedback and take time, however, gamification offers potentially more frequent and immediate feedback (Hanus & Fox, 2014). Gamification often lends itself well to scaffolding instruction because students often need to achieve certain levels or mastery before moving forward.

Educators not only have to research gamification strategies and their content area, but also research their students. Classroom gamification needs to be built on the foundation of students' interests and motivators. Appealing to the target student audience is key to attract and maintain student participation. Awareness of students by the teacher as curriculum designer is vital to the success of a classroom gamification system. Both Farber and Matera (2015) outline Richard Bartle's types of gamers and students as achievers, socializers, explorers, and killers (griefers). Student should develop gaming identities that appeal to them and help engage them in a game. Understanding the students can help teachers design or modify gamification elements that appeal most to their particular classroom audience.

Gamification in classrooms not only helps increase student engagement, but inspires students to be more and do more by encouraging them to take risks and giving them the space to explore the content and strengthen their confidence (Matera, 2015). Gamification pedagogy helps remove the paralyzing fear of being wrong and lack of confidence created by the educational system and its command-and-control environment; it challenges students with their newfound freedom to explore and try new things (Matera, 2015). Along with confidence, game-based learning in classrooms helps students grow with creativity, enthusiasm, effort, focus, resilience, initiative, curiosity, dependability, and empathy (Matera, 2015). By integrating many modalities of fun, pride, relief from frustration, and social interactions where students fail but quickly recover, cooperative group learning is supported (Farber, 2015).

Game-based learning can be used to address the needs and interests of students, using the power of play in the classroom to activate their human spirit and lead to greater

content acquisition and self-motivation by maximizing what the teacher already teaches (Matera, 2015). No matter what subject is being taught; gamification can lend itself well to any subject area as long as the game creator is creative, thoughtful, and intentional with their game design. Farber (2015) states that teachers should borrow mechanics and match them with their desired learning objects. Matera (2015) writes that successful game-inspired course design works in tandem with curriculum standards while offering ways for students to push beyond the basics; he directs educators to start with the content that meets their required standards, then explore how to layer gamification over the top.

Literature about games in art education began appearing in the 1970s, and "rationales for incorporating games in art education were often directly connected to contemporary issues in the field of art education or student interests within the cultural climate," however, these were built around teaching art content using "pre-established game constructs like scavenger hunts, matching games, and quiz shows" (Patton, 2014, p. 248). However, more recently there has been more art education literature showing more inventive ways that games are being applied within art education contexts (Patton, 2014). Patton (2014) discusses how art teachers have synthesized art content with games, using player feedback as a form of critique and making connections to the similarities between game-making and art-making processes. Game theory also became accepted as a tool for structuring classroom management and learning in the field of art education, both as a creative art form and as a model for structured play (Patton, 2014). Game play and art experiences were typically undervalued as learning experiences, but now both are being recognized for their value and potential not only separately, but together.

While there are notably fewer studies on gamification in art education than other

areas, several researchers have undertaken gamification in art education classrooms. Hsiao-Cheng (Sandrine) Han (2015) concluded that studio art courses are suitable for gamification applications and lead to more self-motivated learners interested in learning more from course content and from each other. Han also stipulated that successful gamification design in art education should include seven elements: (a) the teacher should use a spiral curriculum; (b) the teacher and students should set clear short-term and long-term goals; (c) the students should have the chance to resubmit their projects; (d) the students should be able to learn at their own pace; (e) the teacher should provide a safety net for students to practice without embarrassment; (f) the teacher should provide a space for students to establish a learning community; and (g) the teacher should provide a showcase for students to exhibit their own selected works (2015, p. 265).

Gamification in education is not met without criticism. Hanus and Fox (2014) point out that "results from the few empirical studies on various elements of gamification conducted in educational settings are mixed" (p. 153). While the majority of studies found some positive aspects of gamification, such as increased engagement and enjoyment, those outcomes were often dependent on the context of the gamified system and the player (Hanus & Fox, 2014). There is limited long-term research and data on specific gamification mechanics and applications, and the novelty effect of games is another factor to consider when discussing short-term gamification studies. Hanus and Fox (2014) also mention how gamification might also hold the power to negatively impact student's internal motivation and learning if rewards for tasks become understood as necessary in order to complete learning tasks, and it is "important to examine potential drawbacks as it may hamper the motivation educators are trying to cultivate" (p. 153).

Art Education Connections

To ensure that the game in this study supported an authentic and contemporary art education learning experience, I designed game play and game mechanics by applying two reputable art education structures: the National Core Arts Standards (NCAS) in the Visual Arts (National Coalition for Core Arts Standards, 2014) and the Eight Studio Habits of Mind (Hetland et al., 2006). By using these as foundational structures, game design and implementation could better align with any curricula within the visual arts.

The New National Core Arts Standards

The National Visual Arts Standards are part of the most recent generation of the National Core Standards. Adopted in 2014, the National Visual Arts Standards are voluntary standards designed for K-12 schools in the United States to help guide schools and visual arts educators towards a unified and high-quality arts education (National Coalition for Core Arts Standards, 2014).

The National Core Arts Standards are divided into four anchor standards: creating, performing/presenting/producing, responding, and connecting. The anchor standards are organized by grade level from kindergarten through eighth grade, until students reach high school. Once in high school, rather than by grade level, the standards are defined by visual arts course levels: High School Proficient, High School Accomplished, and High School Advanced. Since this study involved high school visual arts programs, I concentrated solely on the National Core Arts Standards for the three

high school levels. From there, I identified the key concepts, terms, and phrases throughout each level and each anchor standard to apply to game play and game design.

The Eight Studio Habits of Mind

The Eight Studio Habits of Mind were developed as part of a research study at Harvard University. Researchers observed and analyzed how the arts were taught and what students learned from their art education experiences. The researchers wanted to identify kinds of thinking dispositions that are included as students studied art and art techniques (Hetland et al., 2006). The studied dispositions were later identified as eight specific habits of mind that students exercised within art studio classroom: (a) understanding the art world; (b) developing craft; (c) engaging and persisting; (d) envisioning; (e) expressing; (f) observing; (g) reflecting; and (h) stretching and exploring. These habits became known as the Eight Studio Habits of Mind.

The Eight Studio Habits of Mind (Hetland et al., 2006) were not simply coded thinking dispositions that are taught in the arts; they are thinking dispositions of which art educators should be cognizant while developing their curricula and lessons and actively aware when teaching students. The studio habits that lend themselves best to this study are: engage and persist, stretch and explore, and understanding the art world.

It is the teacher's responsibility to design lessons and artworks that will engage students, but also to guide them to find and/or create personal purpose and meaning in their work. It is about helping students maintain their focus and discourage quitting by motivating them not to give up and instead work through frustration (Hetland et al.,

2006). Attention to these thinking skills will strengthen the Engage and Persist studio habit (Hetland et al., 2006).

Risk-taking and breaking outside of one's experiences and comfort zones are the premises behind the Stretch and Explore studio habit. Students are encouraged to experiment, seek alternatives, extend beyond what they have done before, and adopt exploratory risk-taking attitudes (Hetland et al, 2006). The idea of maintaining confidence leading up to and following mistakes, and making the most out of unintended results, help create the playful and determined attitudes behind stretching and exploring.

Hetland et al. (2006) break down the Understanding Art World into two components: Domain and Communities. For this study, emphasis was placed on the community aspect of the art world in order to support student engagement. Student engagement is supported in understanding art communities because students must be taught to think about the art community in relation to themselves, and to consider the different ways they might fit into and become a part of this community (Hetland et al., 2006). Students learn about and make personal connections to the community of artists, art fields, and institutions. Understanding Art World also includes the community of the classroom studio, where students must work collaboratively as a team and learn from others' works (Hetland et al., 2006).

Along with the National Core Arts Standards, the Eight Studio Habits of Mind identified by Hetland et al. both played important roles throughout the design of my action research study. Those core art education fundamentals served as strong foundations to the structure of the study's methodology, helping shape the game

planning, design, and implementation and well as provide a structured basis for study

observations and analysis.

Chapter 3

ACTION RESEARCH METHODOLOGY

This qualitative action research study was based on the information gathered from researching the literature discussed in the literature review. The information from that literature aided in the process of designing and planning the methodology of the gamification study. It led to the final implementation and observation of gamification strategies in high school studio art classes.

This chapter will discuss the suitability of the site and the researcher's role throughout the study. It will continue to discuss the study through its purposeful sampling strategies, data collection strategies, and its limitations of design.

Suitability of Site

The site of the study was at a suburban public high school in south-central Pennsylvania. It took place in the ceramics studio during two functional pottery courses, one sculpture course, and three individual independent study courses. The courses met once per school day for an approximate time period of 45 minutes.

The school scheduling also included a 25-minute end-of-the-day Flex period, which allowed students to travel to teachers' classrooms to catch up on work and/or apply additional time to their assignments. As the teacher, I also provided open studio opportunities for students, and for an average of three to four days a week, students could

stay for an extra hour after school for studio time. The site matched the study focus of high school art students in an art studio classroom environment under typical public school course scheduling.

Researcher's Role

The researcher's role was primarily as a participant-observer and action researcher, whose study roles also included:

- gamification resource collection and review

- adaptation and design of gamification strategies for studio art classroom
    application

- design and production of gamification artifacts and materials

- organization of gamification artifacts and materials

- introduction of gamification narrative and game elements to students

- implementation of gamification strategies throughout each of the four courses

- observation and documentation with field notes (including student behaviors,
    artwork examples, attitudes, engagement, growth, participation in art
    communities, experimentation, etc.)

- documentation and tracking of student achievements

- analysis and evaluation of gamification strategies

- gamification strategy modifications and adaptations

- re-implementation of re-designed strategies

- student feedback survey and survey analysis

- analysis and evaluation of gamification strategies at conclusion of study

Purposeful Sampling Strategies

The study's participants were students enrolled in studio art ceramics courses under normal classroom procedures. They were all high school students ranging from grades 9 through 12, aged 14-19 years old, with more female than male students based on the course enrollment rosters. Research participants are not identified in the research and no personal information, identifying information, or private information is part of the study. Students had voluntarily participated in the gamification elements of the course and were free to leave or join of their own will; there were no connections between their participation or performance in the game and their course grade. The study was approved by the Institutional Review Board (see Appendix A) as exempt from the need for consent forms.

Data Collection Strategies

The research took place over a course of a semester (eighteen weeks), with a four-month focus. The courses met during the school week, once a day, for a period of approximately 45 minutes per day, with several regular-schedule interruptions due to weather with school cancellations, delays, and early dismissals. Data was primarily collected through field notes and written documentation of observations. Data included photographs of gamification artifacts, implementation, student artwork, and examples of student responses yet I did not take or include photographs of students. Classroom documents tracking student success and achievements in terms of badges and leveling-up were also used, as well as actual gamification documents and materials distributed to

participants or incorporated throughout the process. Upon the completion of the game, students completed an end-of-game survey reflecting upon their classroom gamification experiences from a student perspective.[3]

No identifying information was used outside of typical classroom use for any of the data collected. Materials were kept and managed by the researcher simply as personal tools for future gamification implementation improvements and modifications, but no participant's personal or private information was needed for or became a part of this study.

Field notes were taken in a small, pocket-sized sketchbook that allowed easy portability and access for notable observations while teaching or working.[4] The sketchbook pages were organized by topics, and the corresponding observations, thoughts, results, and feedback were noted in various colors of ink. Notes were not taken in list format in order to avoid the hierarchy of importance that lists naturally seem to imply. Different colors of ink were used to help different observations stand out at different times; this colorful and non-list oriented formatting promotes equal importance to the notes.

Inductive Data Analysis

Research data focusing on artistic community, engagement, growth, and exploration (as previously defined) was analyzed and coded according to the following categories:

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[3] See Appendix D for Student End-of-Game Survey document.
[4] See Appendix E for Field Notes Pages from sketchbook.

CC = Classroom Challenges and/or Problems

CC(T) = Teacher's Perspective

CC(S) = Student's Perspective

GS = Gamification Strategies

GC = Gamification Challenges and/or Problems

GC(P) = Design, Planning, and Preparation

GC(I) = Implementation in Classroom

GA = Gamification Adaptations or Modifications

GA(P) = Design, Planning, and Preparation

GA(I) = Implementation in Classroom

R = Responses (Students)

R+ = Positive Student Response

R0 = Neutral Student Response

R- = Negative Student Response

Using the above categories and coding systems, I collected and analyzed data to help determine if there were any developing patterns or combinations that led to positive, neutral, or negative student responses to the gamification strategies in regards to artistic community, engagement, growth, and exploration. Appendix E provides examples of the written data that I collected and used to help evaluate the effectiveness of various strategies (both before and after any modifications) and to identify areas of strength and weakness. This written data also aided in helping to determine if those strengths and

weaknesses were involved in the designing, planning, and preparation stages of gamification or within the actual classroom implementation. The results and observed patterns also assisted in identifying additional areas where modifications or adaptations could be made to possibly improve future results.

Limitations of Design

The scope of study was limited because the focus was on students in my own studio art classrooms in a single location. It was a short-term study that took place over four months, and the study itself was implementing gamification strategies for the first time, which provided limited time to make modifications and changes in design and implementation.

This study was not able to test long-term effects from extended student participation. The students only had the course once a school day, for a time frame of approximately 45 minutes per day. This afforded a limited time frame for implementation of the game alongside the regular course curriculum work. The length of class periods and time frames of classes were also shortened due to inclement winter weather. Some gamification elements, therefore, needed to be abbreviated to better fit the semester's modified academic schedule.

A further limitation of the study was the relatively low number of participants (33 students). This represents a small sample size which decreases the power of the results and the ability to detect any reliable and consistent effects. Due to the qualitative methodology of the study, the study was based mostly on observation with only

descriptive numerical analysis applied to acquiring badges or achieving new levels in the gamification pedagogy. While there were many examples of research on gamification and classroom gamification, there was notably more limited research on studio art settings. Therefore, the groundwork for design, preparation, and implementation in a studio art classroom had not been explored or discussed as thoroughly as other areas through educational lenses. Such limited background research provided little information for me to build upon in my studio art environment. As a result, there were inevitably many mistakes during this trial-and-error approach in a high school studio art setting.

Another limitation of design was the lack of a simultaneous control group or a collection of specific data from prior non-gamification classes with which to compare with the gamification group. It can not be determined which positive impacts were a result of the game implementation as opposed to the result of other reasons for fluctuations in students' sense of community, engagement, growth, and exploration that occur depending on individual and collective personalities and learning styles of the particular group of students involved in the study.

Participating students were encouraged to voluntarily complete an end-of-game survey upon the conclusion of the game, a copy of which can be found in Appendix D. Students were not required to complete it, nor were they required to answer all of the questions. Out of the 30 students who participated in the game, only 18 successfully submitted the survey results by the deadline. While survey results still represented the majority of participants (60%), there is a considerable gap of information that was not collected from 40% of participants. This factor may limit the potential accuracy and

reliability of the data results taken from the survey, and an additional 40% of participant

feedback may yield completely different results and feedback.

Chapter 4

ANALYSIS

This study utilized on-going, daily analyses that were employed to help direct and re-direct classroom gamification elements throughout the process of the study in order to better address its intended goals. These perpetual and often daily analyses resulted in many new insights and gamification modifications over the four months of the study, and new analyses continue to evolve even following the conclusion of the study of four months of action research cycles of problem identifying, planning, implementing, reflecting.

This chapter discusses gamified pedagogy through a studio art perspective. It continues with application procedures of gamification mechanics in a studio art classroom, focusing on: storylines and narratives; badges, achievements, and leveling-up; quests and challenges; points and reward systems (economy). Each of these gamification mechanics used in the study are discussed in further detail and accompanied with example images directly from the study.

Gamified Pedagogy Through A Studio Art Perspective

This study layered gamified pedagogy over high school ceramics studio art curricula objectives. Han's (2015) suggestion for a spiral-curriculum, which allows students to learn and practice basic skills in order to master more advanced tasks, was

taken into consideration along with a game's patterns of increasing levels of difficulty. Students, in general, are more attracted to and more motivated by the quicker attainability of short-term goals than long-term goals. Therefore, leveling-up and increasing difficulty as the art students' experiences, skills, techniques, and knowledge build is a comfortable progression to higher-level tasks.

Gamification also works well through a studio art perspective since games typically have no deadline or cut-off dates. Consequently, student players are more comfortable going at their own pace and redoing the same tasks until they become more proficient at them (Han, 2015). In addition, games provide a means of competition without pressure or embarrassment, and students can play alone until they feel comfortable enough that they choose to compete with others. Han (2015) also suggests that students should "have the right to choose when to show their works to their peers and what kind of content or skills they would like to master" (p. 261).

Another key gamification element in a studio art setting is the idea of community support, whereby players learn from each other and help each other to become more successful. Community support helps enforce the idea that "players are not alone; they discuss their progress, adventures and difficulties" (Han, 2015, p. 261). Players help each other develop creative thinking skills as they work both independently and together to solve problems, constructively criticize each other's works, and develop improved or alternative solutions. They learn to rely on themselves and their art community as they share their gaming experiences.

Application Procedures of Gamification Mechanics in a Studio Art Classroom

Four key gamification mechanics were applied in this study: (a) storylines and narratives; (b) badges, quests and challenges; (c) achievements and leveling-up; and (d) points and incentive systems (economy). Each mechanic was designed by layering the 2014 National Core Visual Arts Standards and the Eight Studio Habits of Mind with the current ceramics studio art course curricula.

Each of the aforementioned gamification mechanics are discussed in further detail in the sections below. Explanations behind each mechanic's initial design rationale, example artifact images, and procedures of implementation are included under the respective sections. End-of-Game Survey (see Appendix D) results regarding each mechanic are also included.

Storylines and Narratives

The storyline that was developed for this study transformed the studio art classroom into a working artist studio, and each of the students became a working artist in that studio. The dilemma in the narrative is that the studio is facing difficult times and is on the verge of being shut down. The studio artists and the studio owners have struck a deal and have agreed to a probation period of four months (the length of the students' semester). If the studio's skill acquisitions, production levels, production quality, and studio income do not meet the studio owner's high expectations, the studio must be shut down and all of the artists will be forced to leave. However, if the studio does not go bankrupt before the end of the probation period, secures enough savings to support itself

for another three months, maintains a steady income on an upward trend, and increases the skills and production quality of the artists, the studio owner will keep the studio open.

The final evaluation will take place following the studio's grand gallery opening (i.e., the course's required end-of-semester portfolio show). At this gallery, representatives from high-profile galleries and collectors will be scouting for potential artwork purchases and artist candidates for much-coveted artist-in-residency opportunities. Artists must work hard both on their own and as a team member alongside their studio artist peers in order to keep their much-loved studio alive.

The storyline was not clearly established at the initial introduction of the game. The storyline was vague to allow for future modifications and clarifications based upon observations and feedback. While the story did develop further over time, it may have missed the initial 'hook' and clarity required to attract students from the beginning. Students mentioned that the storyline was not always clear and one mentioned that a storyline made it seem more childish. However, other students seemed to buy into the storyline quite readily, and became leading voices in encouraging others to stay on task, help out the studio, and do their part to help the studio succeed. A more dedicated approach to developing a solid storyline prior to the introduction to the game would likely improve reception of the game.

While 22.2% of students who completed the End-of-Game Survey indicated that the storyline helped them feel more engaged or involved in the course, the storyline's strongest impact was under the art community category, where 33.3% of surveyed participants claimed that the storyline contributed to helping them feel a better sense of community within the classroom and/or greater art community. According to the student

survey, the storyline did not seem to contribute strongly to student growth (5.9%) or experimentation (10.5%).

Badges, Achievements, and Leveling-Up

The eight badge categories were inspired and organized by the Eight Studio Habits of Mind: (a) understanding the art world; (b) developing craft; (c) engaging and persisting; (d) envisioning; (e) expressing; (f) observing; (g) reflecting; and (h) stretching and exploring.[5] Figure 4-1 shows examples of badges from each category.

Figure **4-1**: Example badges from each of the eight badge categories, organized and inspired by the Eight Studio Habits of Mind.

Each category offered opportunities to complete different tasks in order to earn a particular badge. Some of the badges were more entry-level and experience-based, designed to help engage student participation around tasks that were completed alongside course requirements. However, most of the badges were designed as optional extensions

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[5] See Appendix F for Current List of Available Badges under each badge category.

of course requirements that required additional effort, challenge, risk, and/or exploration on the part of the student.[6] (See Figure 4-2 for examples of badges.)

Figure **4-2**: Sample badges from the categories designed most to help increase students' sense of art community, engagement, and exploration.

Available badges were displayed publically in the classroom for review (see Figure 4-3), as well as digitally on the course's webpage. Sometimes badges were introduced, and sometimes they were handed out to students with their achievements announced as a way to advertise the availability of that badge.

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[6] See Appendix G for Badge Template Example.

Figure **4-3**: All of the badges available for students were backed with magnets, organized by category, and posted on the classroom's metal heating and cooling unit. The front and back of the badges were displayed side-by-side so students could see both the front and the description and requirements for each badge.

The initial earning of any particular badge indicated experience and/or success on the provided criteria; however, badges were also connected to a system of leveling-up and higher achievements. A "Ceramics Passport" (see Figure 4-4) was designed, printed, and distributed to students.[7] Each available badge was listed within the passport. The four levels were positioned alongside each available badge, and levels were stamped and initialed by the teacher whenever a badge was first achieved ("Starving Artist" level), and then for each level-up achieved. This allowed for an on-going, physical documentation of student experiences, growth, and progress.

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[7] See Appendix H for Ceramics Passport Template Example.

Figure **4-4**: A photo of a "Ceramics Passport" booklet, which contained all of the badge categories and their current available badges. Copies were printed and distributed to students.

Figure **4-5**: Example of inside of Ceramics Passport.

This passport was designed to track student growth and progress not only through their current course, but also throughout their high school ceramics career as they continued taking other courses. The passport would be labeled with their name and graduation year, turned in at the completion of the course, and returned to the student if they continued in a new course. With each additional course, different experiences and opportunities would be available for students to earn new badges, level-up, and track their long-term growth. Within the passport were pages filled with all of the currently available badges under each category, plus room for new additions. The inside cover displayed the four levels of achievement for each badge:

1. *Starving Artist: Stage of initial learning and experience; minimal and basic range. Starting level!*
2. *Emerging Artist: Stage of improved quality and increased confidence; increasing range of abilities and experiences. Many can reach this level after practice!*
3. *Established Artist: Stage of consistently high-quality execution; confident and widening range of ability and application. A select few will reach this level if they are truly dedicated!*
4. *Master Artist: Stage of expert achievement; flawless execution, confident experimentation, and broad range. Many aspire to reach this level, but only a rare and select few are able to do so!*

In addition to earning badges, the students could level-up on their badges as their skills grew and improved throughout the semester. Students could choose which skills, techniques, processes, and topics that they were most interested in pursuing and developing, and would submit their passport marking the badges and levels that they felt they had earned. Their passport would be reviewed, and any earned achievements would be recorded with a 'passport stamp.' (See Figure 4-5.) If a student did not submit their passport, they would not be eligible for those badges or achievement levels. First-level

badges were accompanied by a printed version of the badge for students to keep and/or

display on their shelf; any leveling-up following that initial achievement was recorded in

the passport. Figure 4-6 shows a temporary solution for organizing student game artifacts

for distribution. Mini-files were made of recycled cardstock paper and color coded by

class. Each student in every class was assigned a number so files could be re-used in the

future. Files of students who did not want to be included in the game were closed with a

paperclip to indicate non-participation.

Figure **4-6**: Photo of the rudimentary filing system created out of an empty tissue box to
distribute weekly wages, new badges, badge and level earnings, and stamped passports.

For some students, badges appeared to be a physical acknowledgement of pride

and accomplishment. Students would seek out available badges and attempt to earn them

or set up competitions amongst themselves regarding which badges they could or could

not earn. Some students were amused by the names and/or imagery on the badges, and

would announce or show their badges to others, which created a friendly competition for

other students to earn that same badge. Sometimes, students were not even aware that

their actions merited a badge until one was presented to them. For some students, badges

or increased levels were not actively sought after; they seemed to do their work as if

badges and levels did not exist. For those students, classwork appeared to be uninfluenced by badges or levels. However, some students actively tracked their progress by marking their passports with new achievements and requesting badges or asking which new badge they could try with their next artwork.

On multiple occasions, I noticed several different students spreading out their badges on their tables and admiring their achievements. They would compare badges earned with others or learn about new badges based on what others were showing them. Some badges held a certain impossible allure, such as the "Throwing Blind" badge. A student known to struggle with throwing (even with his eyes open) decided to attempt that badge with the rest of the class as witnesses. To everyone's surprise he threw his best piece while playing around and earning that badge. When awarded with his badge, he proceeded to shout and parade around the room with the badge over his head before taping his badge to the front of his shelf for everyone to see (Figure 4-7). He was only one of two students who earned that badge (the other was in a different class).

Figure **4-7**: Image of student's publicly displayed "Throwing Blind" badge taped to the front of his ceramics shelf; showing off the badge he was most proud of achieving.

At the end of the course, when everyone was turning in their badges, he turned in all of his other badges but held on to that particular badge for last, asking if he had to return that badge, too. When I told him he could keep that one badge, he got very excited and proudly put it in his wallet. For him, it seemed to be his most personally validating achievement in the course. He may not have been able to compete with his classmates in other areas, but he accomplished something that none of his other classmates even dared to attempt, and that badge served as his trophy.

Figure **4-8**: A recycled computer box and color-coded index cards were used as a starter filing system to help organize all of the printed badges available and to make for easier distribution to students.

Tracking badges and levels on my own for every student was a challenge. Towards the end, I only awarded badges and levels to students who cared to submit their passports and artwork for new badge and leveling-up verification. Under those conditions, a total of 942 badges were earned by the 30 participants, with an average of 31.4 badges per student. An additional 453 levels of two or higher were earned, with an

average of 15.1 levels-up per student. The Develop Craft and Envision badge categories were the only ones in which a majority of the badges were aligned with regular course expectations; the remainder of the badges required additional effort or expectations from the students. The tables below (Figure 4-9 and Figure 4-10) outline the badge and leveling-up results of the game for the students actively participating in the submission of their passports.

Badge Category	Number of Category Badges Available	Number of Badges Earned by Students	Total Number of Levels Earned (1-4)	Level 1 (Starving Artist)	Level 2 (Emerging Artist)	Level 3 (Established Artist)	Level 4 (Master Artist)	Percentage of Level 2+
Envision	6	102	173	102	57	14	0	41%
Develop Craft	23	308	498	308	159	31	1	38%
Engage & Persist	8	133	216	133	64	16	3	38%
Stretch & Explore	33	177	224	177	43	4	0	21%
Observe	6	46	77	46	23	8	0	40%
Express	6	40	44	40	4	0	0	1%
Art Community	17	97	111	97	12	2	0	13%
Reflect	5	39	52	39	12	1	0	25%
TOTALS	104	942	1395	942	374	76	4	27%

Figure **4-9**: Table presenting the data of the number of badges and levels earned under each badge category by the 30 participants (includes only those who turned in their Ceramics Passports in order to earn levels-up).

Badge Category	Number of Different Badges Available	Average Percentage of Available Badges Earned Per Student	Average Percentage Earning Level 1 (Starving Artist)	Average Percentage Earning Level 2 (Emerging Artist)	Average Percentage Earning Level 3 (Established Artist)	Average Percentage Earning Level 4 (Master Artist)
Envision	6	57%	57%	32%	8%	0%
Develop Craft	23	45%	45%	23%	5%	>1%
Engage & Persist	8	55%	55%	27%	7%	1%
Stretch & Explore	33	18%	18%	4%	>1%	0%
Observe	6	26%	26%	13%	4%	0%
Express	6	22%	22%	>1%	0%	0%
Art Community	17	19%	19%	2%	>1%	0%
Reflect	5	26%	26%	8%	>1%	0%
TOTALS	**104**	**34%**	**34%**	**16%**	**5%**	**0%**

Figure **4-10**: Table presenting the data of the percentage of available badges and levels earned by the 30 participants (includes only those who turned in their Ceramics Passports in order to earn levels-up).

According to the student survey, badges were tied at the top (alongside the class economy system) for being the gamification element that made them feel more willing to explore and experiment with new things, with 52.6% of students selecting that as one of the most influential elements. The badges and leveling-up system also tied at the top in terms of inspiring them to strive for improvement, with 47.1% voting on that element. In terms of engagement, 44.4% acknowledged that the badges helped them feel more engaged and involved in the course. The badges and leveling-up system did not seem to affect their sense of art community (16.7%). While I intentionally avoided badge and

level-up public displays to help prevent unfriendly or intimidating competition, many students suggested a public display of their badges so everyone could see what they did and how far they had leveled-up on things.

Badges were posted in the classroom for students to browse, and digital copies were shared with them in their digital course work. Some badges were mentioned on the side during class, however, there was not an official presentation or explanation of each of the 104 badges available due to time constraints. Student feedback included "daily badge features" that gradually introduced available badges that might interest them at the time. Students also suggested that the achievement of certain badges and levels could result in "unlocking" certain tools or materials, which would grant them access to items (such as limited glazes, slip applicators, foam-topped working surfaces, etc.) that would otherwise be off-limits.

Quests and Challenges

Quests and challenges took form as "Studio Battles." These were unannounced challenges that students were required to complete in a single class period or less. Students would be presented with the challenge and had to meet that challenging by producing works with little to no preconceived ideas or planning (see Figure 4-11 for Studio Battle Badges). These Studio Battles originated from the competition, or "battling," between different class periods to work together to "win the battle of artworks" against opposing class periods. The challenges could be process-based, topic-based, media-based, or concept-based. They could be competitions between different

studios (class periods) or within a single studio. They could be individual competitions or collective collaborations. Guest judges would be brought in to evaluate and vote on works and categories of achievement; scores were averaged out according to the number of students in each studio. Winning studios and/or individual artists could earn bonuses, recognitions, and/or game advantages.
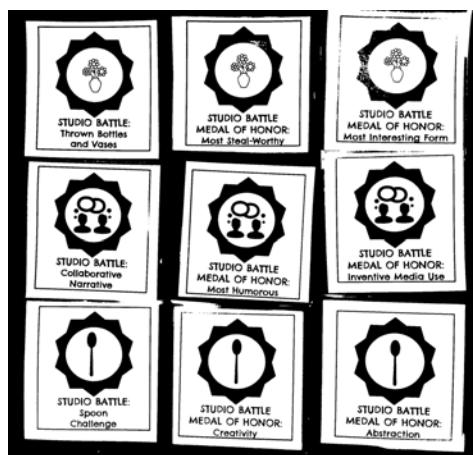
Figure **4-11**: Examples of Studio Battle Badges and Medals of Honor Badges that students could earn while competing in Studio Battles.

New limitations and challenges could also be imposed upon students during these events, encouraging students to develop creative solutions or problem-solving skills that they may not typically encounter. These were used as a means to provide fresh experiences and challenges with a playful twist, which helped reduce the students' fears of failure and increase their confidence and willingness to explore by doing things they had never before attempted. Such challenges and limitations could include: working blindfolded, incorporating a new technique or process, using only one hand, trading artworks with classmates, incorporating an unexpected tool or media, balancing a book on their head while working, working with a partner but only using one hand per person,

etc. Similar "Artistic Challenges" were also offered for regular projects, where students would complete a small game or challenge that provided them with specific suggestions (media, technique, topic, color, function, artist, cultures, etc.) that they could choose to creatively incorporate into their artwork for additional studio bonuses.

Studio Battles seemed to be a fun way to interrupt the day-to-day monotony of predictability of the studio and present a new challenge or technique without being tied to a formal lesson or demonstration. There was a spontaneity, freedom, and urgency behind Studio Battles that allowed students to explore without risk to a grade because Studio Battles were evaluated simply on participation and completion (see Figure 4-12).

Figure **4-12**: Example Studio Battle: Collaborative Narrative artwork, which required students to collaborate with a random partner to create a narrative sculpture responding to the challenge prompt (in this case, an image of a broken leg in a cast). Works were identified only by a number and a brief statement explaining their narrative, which was then presented to "judges" for evaluations.

Students became responsible for researching information that would help them tackle the challenge rather than being taught what to do. Studio Battles were often designed to include things not previously covered in classes or they were paired with new, previously-unexplored challenges. While competing as individuals and as a group,

students were encouraging of each other for the greater good of the studio, but still focused on competing for their own "Medal of Honor." Students looked forward to other classes, students, and/or teachers judging their anonymous works (final works were only marked by numbers, to prevent judging biases) and finding out which artists won a Medal of Honor and which studios won the competition overall.

The Artistic Challenges were not present throughout the whole gamification process, but were tested during the final projects as a way to help encourage students to come up with creative solutions to a variety of pre-selected factors. It seemed that some students had trouble with the initial decision-making processes with simply picking a direction or technique to try, and that their lack of decision-making often resulted in them giving up on picking something new and instead relying on what they had always done. It wasn't a matter of being afraid of exploration or experimentation; it was a matter of just not being able to decide on how to proceed. To help direct their exploration and add a playful element to their artwork (rather than feel dictated or assigned), I took a color wheel as the foundation of a dart board design, with different colors and areas representing different exploration and artistic challenge suggestions. Instead of darts, students tossed color-backed magnets against the metal-backed color wheel. The landing place of their magnets indicated the challenges they received. (See Figure 4-13.)

Figure **4-13**: The "Artistic Challenge Dart Board" prototype: color wheel on paper, covering sheet of metal, elevated on an easel, with colored foam backing on magnets which stuck to the metal behind the paper. Students received three magnets of the same color, giving them three chances. Their Artistic Challenge options would be determined by where their three magnets landed.

Prior to the Artistic Challenge, students participated in filling out slips of paper with new suggestions for each of the categories to add to the ones I had already created, so students played a role in the ideas that they and their classmates might receive. When they pulled their challenges, they had the option to discard one but keep the rest. Bonus points would be award to those who were able to find a creative solution to incorporate one or more of their challenges into their current artwork. Students appeared to enjoy this, cheering on each other and teasing each other as they tossed their magnets, providing suggestions for each other as they pulled their challenges from the bins,

swapping challenges that gave them ideas, and re-working artworks to new levels in order to incorporate those challenges. The most surprising aspect of this side game was that each one of my non-game participants asked if they could also throw magnets at the color wheel dart board and get challenges for their own work, even if they weren't playing the actual game like the rest of the students. Every single one of my non-game participants accepted their own Artistic Challenges from the game and tried new things in all of their artworks, which was an unexpected side effect that contributed to artistic growth and exploration (see Figure 4-14).

Figure **4-14**: Artworks from non-game participants who wanted to participate in the Artistic Challenge activity and incorporate their challenges to their current project plans. The artwork on the left applied hand-made stencil imagery used during glazing (instead of flat glazing), and the artwork on the right applied mixed media of glass/mirror (instead of using a flat gray underglaze).

According to the student survey, the Artistic Challenges had more impact on making them more willing to explore and experiment with new materials (47.4%) than the actual Studio Battles (21.1%). Artistic Challenges and Studio Battles each had equal influence (33.3%) on helping students feel more engaged or involved in the course. More individualized by design, only 16.7% of students felt that Artistic Challenges improved

their sense of art community, while the more collaboratively-designed Studio Battles influenced 50% of students in terms of art community. Artistic Challenges helped 23.5% of students strive to grow and improve. However, only 5.9% of students felt that Studio Battles had the same influence.

Points and Reward Systems (Economy)

One of the personal challenges I have had as an educator is a limited availability of resources, tools, and materials. As much as I'd love to be able to provide every single student with unlimited access to anything and everything, that unfortunately isn't possible. I also didn't find it fair for the teacher to personally choose which students do and do not have access to particular materials (that weren't a matter of safety or responsibility). This was one of my unofficial side-goals as a game designer for a studio art classroom: How might gamification address the challenges of distributing limited materials? One of the best ways I found to help solve that problem was by establishing a points and rewards system centered around a classroom economy of studio dollars.

Trying to keep in line with the working studio narrative, I decided that a currency system would be the best option. I designed the studio money around standard American currency, in one-dollar, five-dollar, and ten-dollar denominations.[8] To better support the art education and studio art course objectives, the bills were designed using the photos (or portraits) of prominent historical and contemporary artists that were studied or discussed throughout my ceramics courses (see Figure 4-15). The artist's name and a small image

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[8] See Appendix I for Currency Template Examples.

of their artwork were also included to help the bills serve duals purposes of currency and artistic references. Multiple artists were used for each denomination to provide a variety of artist spotlights. Approximately sixty different sculptural and functional artists and their works were featured throughout the bills. Details were modified to reflect imagery and references encountered in a studio art classroom. Color wheels replaced traditional American government seals and notable art museums replaced American government buildings.[9]
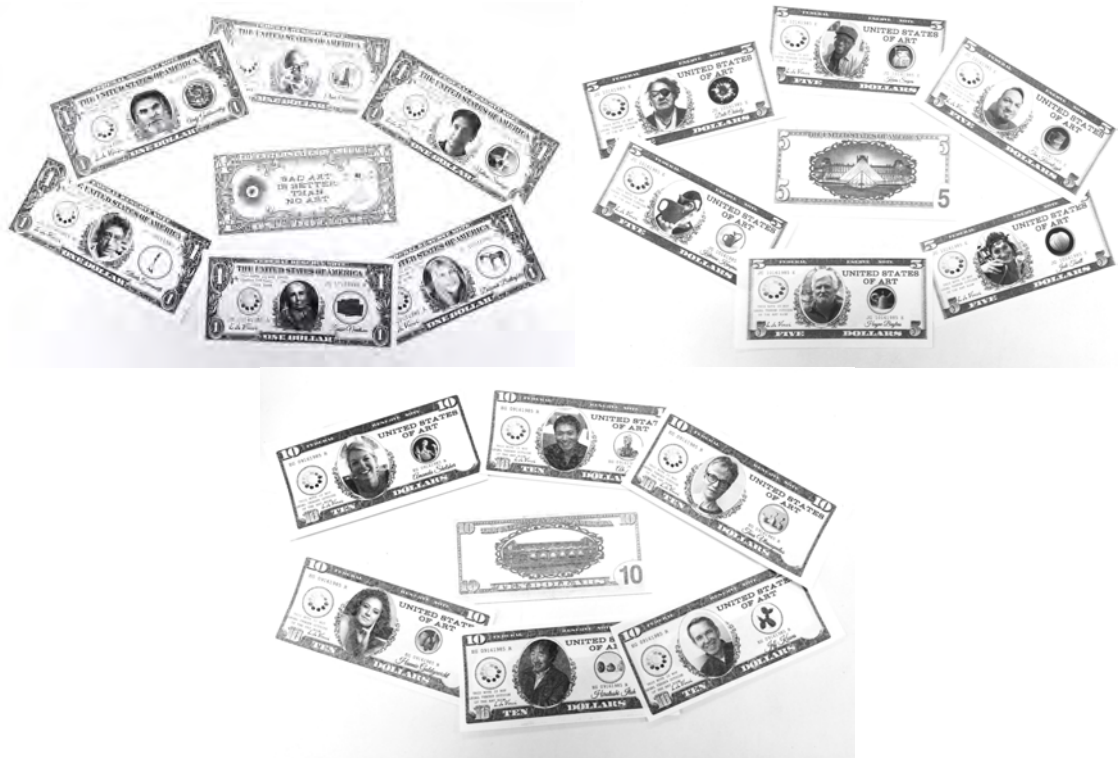
Figure **4-15**: Examples of the Studio Dollars used as game currency.

Students could earn and lose studio money in several ways. Students would be paid wages (one dollar per day) based on their weekly attendance. Students would earn a

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[9] See Appendix J for Currency Artistic Reference List.

small bonus whenever they submitted completed projects on time, as well as when their entire studio completed a major project on time. Later in the game, the studio became a separate entity whose earnings and losses matched the students' productivity, similar to a working business' connections to their employee productivity levels (or lack thereof). Whenever students earned a badge or achieved a higher level, they would earn a dollar. If a student violated a studio policy by neglecting responsibilities (such as cleaning up, submitting work with their name, arriving to class on time, caring for tools/materials properly, etc.), he or she would be issued a studio violation fine, which must be paid into a "Studio Fines and Violations Jar." (See Figure 4-16.)
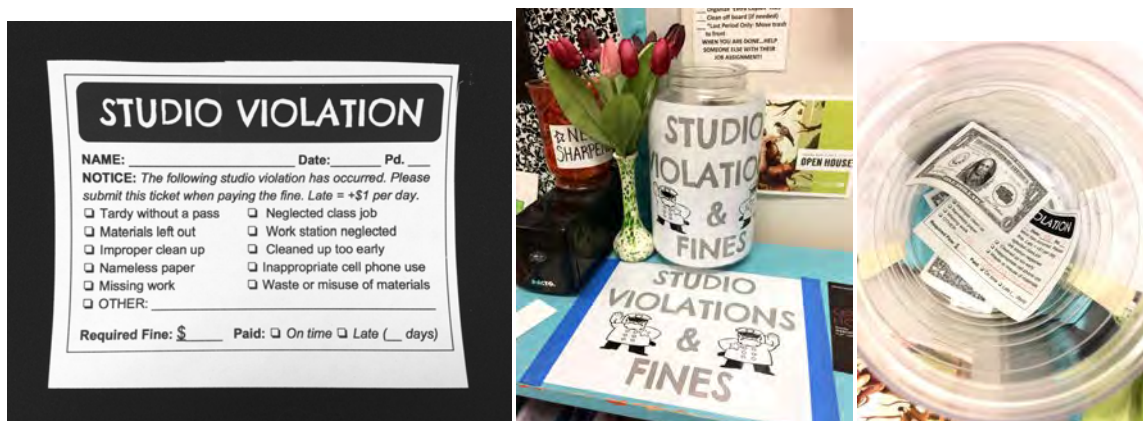
Figure **4-16**: Studio Violation tickets and the bin where students would submit their tickets and fines (as well as Studio Chance Card penalties), which would later be divided up and used as lottery drawing prize money eligible to any student who did not commit a studio violation in that term.

"Studio Chance Cards" were cards that were pulled by random, about once per week for each studio. The Studio Chance Card would present a realistic studio-based scenario that resulted in some or all of the students in the studio earning or losing money

(lost money was placed into the jar).[10] Scenarios might include: high-profile

commissions, losses from kiln misfirings, increased online sales, workshop hosting

bonuses, losses from artwork that was broken during shipping, etc. (See Figure 4-17.)
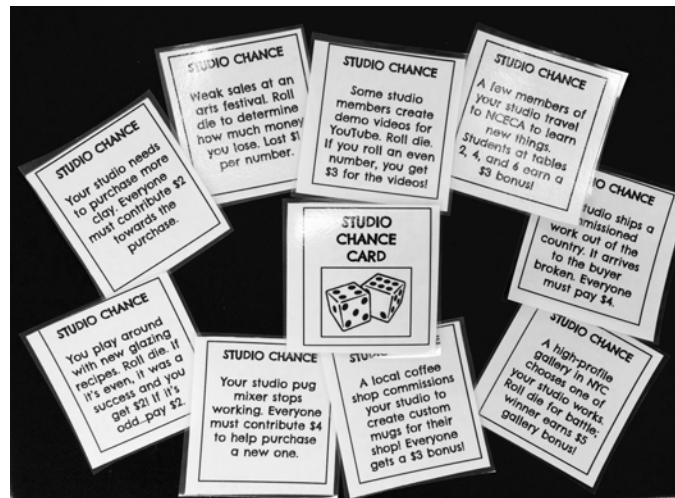
Figure 4-17: Examples of some of the weekly Studio Chance Cards that reflected studio and artist life scenarios that would determine if the studio artists would earn or lose money.

Every few weeks, the money collected in the "Studio Fines and Violations" jar

(which also included Studio Chance penalties) would be divided up evenly into the

number of studios. An artist in each studio, who had not committed any studio violations

during that time period, would be selected at random. That artist would win that studio's

portion of the pot. Artists who won this bonus could choose to save that money or spend

it in the studio shop.

The studio shop (see Figure 4-18) was a place in the classroom where students

could exchange their studio dollars for special items, materials, rentals, privileges, or

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[10] See Appendix K for Studio Chance Card Template Example.

access. The studio shop is where I would place things of limited quantity or availability, and access would be offered to the students who were most interested and willing to pay the associated fee from their earnings. Most of the studio shop included items that could be used during the creation of their artwork or provide them with additional means to enhance their artwork. When possible, an image or actual product was displayed alongside the description and prices. Most of the items were designed to benefit student artworks, but some other motivating rewards were also included. The studio shop is also where I included rewards that might work as incentives for the students who might initially need more extrinsic motivators to encourage the earning of new badges and new levels.

Figure **4-18**: Photo of the temporary "Studio Shop Corner" set up, which included all of the items currently available for students to purchase in exchange of their studio dollars.

Studio shop rewards included, but weren't limited to: white clay, porcelain, red clay, speckled clay, additional shelf space rental (see Figure 4-19), replacement

rubrics/paper (if lost), rubric modification passes (offering students the potential to personalize or adjust their assignment requirements), cork-topped lotion/soap pumps, magnets, underglaze crayons/pencils, atomizers, passes to listen to headphones, raffle entries, silicone coffee cup lids, bamboo teapot handles, portfolio show/display props (fake flowers, candles, fabric), underglaze print transfers, bamboo glaze brushes, seat-swap, limited-quantity glaze access, bathroom passes, cell phone/Chromebook charging time, hair ties, small snacks, and professional tools.

Figure **4-19**: There is very limited shelf space for students in my classroom, so any available shelves were advertised with a "For Rent" sign, which would then be flipped over once a student paid to use the space.

Students seemed to appreciate this monetary economy within the classroom. While there were students who seemed indifferent to the money that they earned, many students developed their own money strategies and budgets. These students would set personal savings goals or eye particular items in the shop. When classes got busy and I missed a payday, students were very quick to remind me that they had not yet received their week's wages or earnings from badges and levels. During particularly profitable weeks, some students would flaunt their new badges and high earnings. Students who had

not completed their work or set out to earn any badges would still earn their weekly wages, but weekly wages did not add up as quickly as earning badges and leveling-up. I noticed several of the "wealthier" game players making side deals with other students, setting up loan agreements (even including interest!) so that students who were lacking the funds could pay for something they wanted from the shop. I also noticed some students betting their studio dollars that another student would or would not earn a particular badge within an established time frame. While gambling had not been an anticipated issue, I could see how administrators may frown upon it even in a game scenario. While I may have to develop a policy on how to handle "gamification gambling," as an observer, it was interesting to see how engaged the students were in earning new or difficult badges in order to win and "beat the odds" against them. Students also held conversations about how classmates were "wise" or "unwise" with their studio money management. Sometimes students would spend money on extrinsic rewards that did not directly benefit their artwork (e.g., snacks, teacher's rolling chair to sit on, headphone use, seat swaps, bathroom passes, etc). Other students would chastise them and try to convince the frivolously spending students to save for "better things," such as different clay bodies, fancy glazes, or professional tools that would make their artwork stand apart from what they had already done.

While students enjoyed earning studio money, they had mixed responses in terms of losing studio money. Although this affected very few students, students did not enjoy the fact that they had to pay Studio Fines for violations. Typically, non-offenders and single offenders felt it was a fair system. Those with multiple offenses (who were chronically leaving without cleaning up, leaving trash behind, not returning materials,

etc.) did not enjoy this penalty system. These students viewed it as an unfair way to lose money they would rather spend on other things. It was intended to be a deterrent, and while it seemed to work with single offenders, the students who constantly neglected their tools, material, and studio space were only mildly deterred. The chronic offenders did become more aware of what they left behind and the threat of a fine occasionally made them double-check before leaving, but not consistently. Their fellow students would also try to help warn them and help save them from violations and fines. Along those lines, students also did not like when later in the game, the studio itself lost money due to student violations. The non-studio violating students were not happy with the idea that their studio was being punished for a violation that they personally did not commit.

Studio Chance Cards also fell into that mix. Students embraced the possibility of getting surprise bonus money, but they were very critical of having to lose money if the card posed a negative situation. Much like missed pay days, some students were quick to remind me if I missed the Studio Chance Card day of the week. Sometimes students wanted to be the one who selected the week's Studio Chance Card, but sometimes they avoided the responsibility of being the student who pulled a penalty card for their entire class. However, students did enjoy the partial control of their wins and losses with the rolling of dice. They would get into the dice rolling battles and cheer on their studio mates or engage in friendly teasing and competition as everyone vied for the rewards or fought to avoid the penalties.

The studio shop seemed to be the biggest incentive for earning studio dollars. Some students would strategically plan, earn, and save studio dollars for purchases. The

most popular items were the porcelains and colored clays (see Figure 4-20), which work

made of the special clays became a sort of symbol of achievement in the classroom.

Figure **4-20**: Photograph of a student artwork using the white porcelain purchased in the studio store. She also used the new white surface to experiment with decorative inlay using multiple underglazes.

Students would see that a student was using different clays or materials and they

would congratulate each other on their purchases, discussing their "big plans" for that

new clay body. I had not expected such a strong sense of pride and accomplishment

whenever they used something from the shop. However, purchasing something from the

shop meant the student had worked to earn the money that enabled them to pay for that

particular item. There was a much stronger sense of ownership, care, and protection over

those purchased supplies than I had anticipated. To better protect their growing collection

of works (and in some cases, works growing in size!), students would often rent

additional shelving space to store their artwork. Sometimes, students would team up and

rent a shelf for a week and split the space. I observed some creative solutions to handling

studio money and materials in the classroom.

The studio survival party at the end of the game allowed the students not only to use the pieces they had created in class (bowls, plates, cups, pitches, butter trays, utensil holders, sugar dishes, etc.), but also allowed them to "spend" their remaining money on food, drinks, and snacks of their choice. The studio survival party received a lot of positive feedback. Students loved that pieces they had made were specially chosen to serve everyone's food. Since there were not any more artworks to spend their remaining funds on, all remaining money could be spent at the studio survival party in one way or another. Non-graduating students asked if any of the money they had remaining could be saved for future classes, so they could start off with money to spend from the beginning. Taking that idea into consideration, I agreed that students could roll over half of their remaining earnings (with a cap at fifty dollars) to their next ceramics class.

Figure **4-21**: Image of the raffle bin filled to the top with student ticket entries for a chance to win the artist's thrown pottery mug.

For the past two years, students have been involved in my personal artwork purchases. These purchases enable students to see and hold original works by the artists

that we discuss in class. The ceramic art, to my surprise, has become a wonderful

teaching tool. Students can see processes, techniques, and styles up close in ways that

photographs and videos can not capture. At the studio survival party, students could also

purchase extra credit points (limit of 10) or raffle entries towards a thrown pottery mug

(see Figure 4-21) purchased from a professional ceramics artist who many students

admired. Due to those ongoing purchases and their second-hand experiences of owning

authentic works, students were very eager to win that mug. Many students had been

hoarding almost all of their studio dollars simply to purchase as many raffle ticket entries

as possible to increase their odds of winning that artwork in the end!

The classroom economy system had the most positive student reception. In the

student survey, it tied for first place (alongside badges) at 52.6% of students feeling that

the studio dollars and shop system inspired them to be more willing to explore and to

experiment. It was also the leading gamification element for making students feel more

engaged in the classroom, with 50% of students marking it as a leading factor. Another

44.4% of students felt that the classroom economy system played a leading role in

helping instill a better sense of art community, while only 23.5% of students felt that the

economy system helped them to grow and improve. Nearly all students announced

"earning money" as one of their favorite aspects of the gamification experience. Many

students noted that they enjoyed being able to earn studio money based on their

accomplishments, exchange their earnings to improve their artworks in manners of their

choice, and have a variety of options in how to spend their earnings. A few students even

stated that although they were broke in real life, it was nice having studio money they

could earn and spend in the game. Just like badges, the studio dollars seemed to be another system of validation for the students' hard work.

Chapter 5

FINDINGS, IMPLICATIONS, FURTHER RESEARCH

In Chapter 5, I discuss the most significant observations and findings regarding gamification as a potential means to increase students' sense of art community, engagement, artistic growth, and exploration in a studio art classroom. Implications of these findings are presented, as well as suggested areas for further research on gamification in studio art settings.

The study findings are organized to address the study's key question regarding the impacts of gamification on student's artistic community, engagement, artistic growth, and exploration. Each area has its own subsection that reviews the applicable gamification mechanics, results, and student survey results. Student end-of-game survey results are also included. Following the key question findings, the sub-questions are discussed in the areas of intrinsic and extrinsic motivators, the impacts of playfulness, and the practicality and effectiveness of a gamification system in a studio art classroom. The implications of the study continue to reflect upon the study's findings before leading into suggestions for further research in the areas of students' artistic community, engagement, artistic growth, and exploration.

Findings Regarding Community, Engagement, Growth, and Exploration

How might classroom gamification strategies positively impact student engagement, sense of community, and willingness to challenge themselves and their artworks to new levels of artistic growth and explore beyond course requirements and

assignment expectations?[11] Taking into account my observations and student participant survey feedback, in this action research study, I found indications that gamification strategies do hold potential for positively impacting student engagement, sense of community, and willingness to grow and explore beyond course requirements and expectations. However, given the short timeframe of a four-month study, the small scale of 30 student participants, and numerous uncontrollable variables, I am uncertain if the students would have reacted to the course and the course work as they did, regardless of the use of gamification strategies.

In this section, I summarize the findings regarding the study's key question on the impacts of gamification in the areas of artistic community, engagement, artistic growth, and exploration in my classroom. I briefly reflect upon these findings and include data from the End-of-Game Survey (see Appendix D) for each studied area. The topics of the study's sub-questions are also addressed in sections about extrinsic and intrinsic motivators, the impacts of playfulness, and the practicality and effectiveness of gamification in a studio art classroom. Each of the sub-question topics and discussions revolve around supporting study's initial focus on positively affecting students in the areas of artistic community, engagement, artistic growth, and exploration.

Artistic Community

In regards to increasing artistic community, the individualized performances linked with the collaborative teamwork of Studio Battles helped create the strongest sense

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[11] See Appendix L for Gamification Participant Artwork Examples.

of artistic community within the classroom. The use of the class economy also contributed to the sense of classroom community, serving as a common topic of conversation and means to encourage each other's progress. Studio Chance Cards served as a moment in time when they all had to anticipate and respond to a situation from a card, which may have resulted in a collective response or a small competition within the studio.

The storyline also contributed to the unification of the class as a working studio. The largest positive impact on artistic community seemed to revolve around the classroom community. In terms of badges, students reached beyond the classroom environment to engage in the wider art community primarily in the areas of following favorite artists on Instagram. Nearly all of the students became followers of the classroom Instagram page and actively liked and commented on their classmates' works. According to the student survey, 63.2% of the participants felt that gamification elements did help them feel a significantly greater sense of art community within the classroom and/or greater art community.

Student Engagement

In terms of student engagement, observations and student feedback strongly indicate that the use of a class economy and badges most strongly impacted student engagement. The badges and levels helped direct students along the path towards certain goals, with the benefit of instant feedback and ongoing and visible proof of their achievements and artistic growth. The ability for students to earn studio dollars alongside

their progress served as validation for their hard work and also gave them a sense of control over the future of their work, thanks to access to tools and materials, which were in limited supply.

While some students seemed bitter that they had to pay for tools or materials that I may have just given them upon request in the past, there was a visibly stronger sense of pride and ownership when a student chose to earn the use of a tool or material rather than simply being given them. Students would protect, care for, and show off their artwork much more when those items were earned. This was a surprising and unexpectedly positive effect of the gamification system that was not directly intended. Students greatly enjoyed the sense of power and choice that the economy system provided. Survey results showed that 73.7% of participants felt that gamification elements significantly helped them feel more engaged in both the course and their own artwork.

Artistic Growth

Badges and leveling-up were the gamification elements that most impacted student growth and improvement. Students were able to gain experience in new areas and then build upon what they had learned in order to level-up. The receiving of a badge was acknowledgement of an accomplishment, and the stamps in passports created a visible trail tracking progress. Sometimes students would try to level-up on a badge, but their current work did not merit the next level. In many situations, students would try the same technique on a new artwork until their effort signified that they could indeed level-up. Students were not told which badges they needed to earn or which levels they should

achieve; it was completely up to them to pursue the routes of their choice. The game focused on the process and journey of growth over traditional gaming expectations of winners and losers. With leveling-up, students were given more freedom and ownership over their own pursuits of personal growth. In the survey, 68.4% of participants believed that gamification elements significantly helped them strive for improvement and to try to do things better than they had ever done before.

Student exploration was most positively impacted by the use of badges, the class economy, and Artistic Challenges. For the students who benefit most from suggestions when trying to think of new ideas for their ceramic creations, the badges offered them a variety of ideas. Badges also encouraged more exploration because students tried to earn as many badges as possible. While a level-up resulted in a stamp in their passport, achieving a new badge meant they got a physical and potentially public badge to add to their collection of achievements. Since badges were tied to the class economy, an increase in exploration meant an increase in studio dollars. Some students seemed more motivated by physical tracking and evidence of personal growth and rarely visited the studio shop. However, there were other students who were motivated to try new things in order to earn money that they could later exchange for shop items.

Exploration

Artistic Challenges were a last-minute gamification addition, but the strategy had a significant impact on student exploration. For students who struggle with the decision-making process of exploration, the Artistic Challenges provided students with pre-

selected choices that narrowed down their options. Students also seemed to enjoy the challenge of developing a creative solution in order to incorporate their challenge suggestion(s) in interesting ways.

The challenge suggestions inspired thought and reflection on the part of the students and resulted in explorations that many students may not have discovered on their own. Student survey results showed that 63.1% of participants felt that gamification elements significantly helped them feel more willing to try and experiment with new things or explore alternative solutions.

Effective Intrinsic and Extrinsic Motivators for High School Art Students

Based on observations and feedback from this study, badges and classroom economy were the most motivating gamification elements for my students. However, within those gamification strategies were additional layers of motivators. Clearly, the studio shop provided a variety of extrinsic forms of motivation, as students were interested in acquiring various items and materials. However, most of the items sought after were extrinsic motivators within intrinsic designs. For example, students wanted to purchase items in order to apply them towards an artwork they were creating. The purchases were made to better fulfill the student's vision of his or her artwork and take the work to a higher or previously unreached level. Most items in the shop were purchased with the intrinsic motivation of doing one's best or trying new things. The most popular intrinsically-driven items that students most regularly purchased or rented were: additional shelf space, new clay bodies (porcelain, red clay, white clay, speckled

clay), professional rubber-tipped tools, underglaze pencils, underglaze crayons, slip

trailers, additional media (glass, wire, wood, etc.) atomizers, professional ribbon tools,

presentation materials for the art show, and seeds and soil (to plant in their completed

artworks).

Not all of the items in the shop were meant to satisfy students' artistic motivators.

Some of the items were specifically chosen to reach out to the students who may

originally need some external motivators to help increase their initial interest in the game.

This was done under the hope that these extrinsically-motivated students would then

develop more intrinsic motivation by beginning to explore new badges and levels in order

to earn the points they needed for the items that motivated them most. These were

thoughtfully selected according to my knowledge and understanding of my high school

students. I tried to provide the things that would most likely appeal to their teenage wants

and needs. The extrinsic motivators that my students purchased most regularly were:

personal headphone use, small snacks, pencils (for when they were unprepared), device

charging time, use of the teacher's swivel chair, extra bathroom passes, replacement

papers and rubrics (having to pay for replacements dramatically cut back on lost papers!),

and seat-swap passes.

While the raffle entries and the raffle process presented an extrinsic motivator (a

wheel-thrown mug), there were intrinsic motivators also present in the sense that students

had grown to appreciate the artist and the processes used. The raffled mug itself was not

the only attractive quality of the raffle; the possibility of winning an artwork that they

appreciated as an art form (as a potential start of their own artwork collection), also

served as an intrinsic motivator.

The "studio survival party" was used as an extrinsic reward for studios who beat the goals of the game, using the allure of a class period of food and drinks to motivate students. However, once again, that extrinsically-designed motivator was also accompanied by an intrinsic motivator, that is, the possibility of personally using and showing off their artworks they had worked hard on all semester. Students were able to select a bowl, plate, and cup that they created to use while eating and drinking. Sculpture students arranged their sculptures as centerpieces surrounded by the plants and flowers that were placed and grown in thrown pots. Students who stretched and explored by creating functional pieces beyond traditional dinnerware had the honor of having their pieces be invited for use during the studio survival party. These various serving dishes, butter trays, syrup pitchers, juice pitchers, cream pitchers, sugar bowls, utensil holders, spoon rests, topping dishes, coffee stirrers, hot chocolate holders, etc., became much-needed pieces that the creators and their fellow students would use throughout the day. Each student's work was announced and acknowledged before use in the studio survival party, and all students were happy to let their pieces stay an extra day to be used by other classes.

The most powerful intrinsic motivators for my students seemed to be the desire to use their hard work and achievements to take more pride and ownership in their materials and processes. While many students did partake in competition with other students, trying to see who could earn certain badges before someone else, who could own the most badges, or who could level-up in certain areas, it wasn't simply outside competition that motivated them.

Many students seemed to participate with intrinsic motivation. Students competed in order to earn the things they valued most. There were a few who grumbled at having to "earn money" and "pay" for things, knowing they were given everything they wanted in prior classes as long as they asked for it, and there were no overt consequences if they abused or wasted the materials. There was an initial sense of unfairness that I was "making it harder on them" or "preventing them" from getting things they wanted. However, after realizing that they had plenty of opportunities to earn the money needed to pay for the things they wanted and that prices were not there to restrict them from using higher-end materials but to provide them with fairer access to them, the complaints quieted. When items were purchased, there wasn't a sense of entitlement to that material or a sense of disconnect to its value that there had been before. There was a new sense of pride and ownership from earning it through their own work. There was a certain allure to using something that was not just handed out to anyone and everyone; the student became someone with a special, seemingly limited access. It was an intrinsic motivator that I could have only hoped to stumble upon somehow along the way, and I was very glad to observe signs that this became one of the strongest intrinsic motivators of all!

The Impacts of Playfulness in a High School Studio Art Classroom

Can an element of playfulness, such as a game, positively impact a student's classroom learning experiences and outcomes? In this study, it is difficult not only to determine whether or not a student's classroom experiences and outcomes were positively impacted, but even more difficult to trace or identify the initial sources of such

outcomes. While I feel that I cannot fairly speak for the impacts of an element of playfulness on the artworks, I can state with confidence that the playfulness of the game did seem to positively impact the classroom environment and the interactions of the students with each other and myself. I cannot speak for the endurance of that effect, because it could simply be the novelty of something new to experience in a classroom rather than the game and playfulness itself, but from my observations, I did find that an element of playfulness has more positive impacts than negative impacts. Play is voluntary, and games are voluntarily play to overcome challenges and obstacles. As Farber said, "it's the hope of achieving success that engages players…fun quickly turns into boredom once a game – or a lesson – is mastered" (2015, p. 56). Games provide opportunities for sustaining challenges as well as ongoing playfulness. There was more cheering and friendly teasing, more awareness and interest in each other's struggles and successes, more intrigue and support in each other's works, and more sharing of ideas and techniques to help their peers. In the beginning, I was afraid that the playfulness could become negatively impacted by competitiveness, and I intentionally avoided leader boards and overly-public displays of badges and levels. However, students seemed to respect the game aspect and did not take things too seriously to produce negative impacts of playfulness.

When students reflected upon their experiences in the studio course itself, many of the most memorable moments and favorite parts of the class were directly connected to their gamification experiences. Students recalled their on-going struggles and the triumphs of earning badges they worked hard towards achieving. Students mentioned the incredulity of the class's reaction when a student "wasted" his hard-earned money on

renting the teacher's rolling chair. Students remembered how intense some of the Studio

Chance Card's dice-rolling battles got, and how they enjoyed "judging" artworks from

other classes and voting on "Medal of Honor Winners." In the gamification survey,

participants had to rate their experiences with their trial run of a gamified studio art

classroom on a scale of one to five (five being the best). In that survey, 73.6% of students

rated their experience as a four or higher, with zero students who completed the survey

selecting ones or twos. When asked if they felt that the idea of gamification was worth

continuing to explore for future classes, only one participant selected no, while the

remaining participants selected yes (the majority with 63.2%) or maybe (with 31.6%).

These results suggest that an overall positive impact was made, but a student's comment

regarding games as being childish and pointless does provide another perspective to the

element of playfulness. The belief that games are childish and pointless may perhaps

indicate that a bit more emphasis on the real-world connections and applications within

the game's playful design might help better connect with high school students who are

not attracted to the more playful aspects of games.

Gamification in a Ceramics Studio: Practicality and Effectiveness

What might the gamification of a high school ceramics studio look like, in terms

of practicality and effectiveness? Based off of my limited and short-term experiences thus

far, I only know that I definitely do not have any perfect solutions or answers yet.

However, my window of experience still provided ample time for me to make a lot of

mistakes that could easily be avoided by those attempting this for the first time

themselves. My mistakes led to much re-designing and starting over in hopes of improving and developing better solutions.

An important point to remember is that teachers do not need to redesign any of their lessons or curriculum; gamification can be designed around what is already in place, so no one needs to start entirely from scratch. My most helpful, more specific observations and findings will be briefly discussed according to the categories below: Badges; Ceramic Passports; Managing Payouts; Storyline and Game Ending; Currency and Economy; Studio Violations, Chance Cards, Bonuses, and Penalties; Studio Shop, Rewards, Access.

Badges

Physical badges have a more tactile sense of achievement, especially considering the types of students in a hands-on environment. The Studio Habits of Mind work perfectly as badge categories, although there will be badge categories with significantly more badge options. The "Develop Craft" and "Stretch and Explore" badge categories offer ample opportunities for different badge ideas. However, the "Reflect," "Observe," and "Envision" badge categories may seem more restrictive because badge qualifications may be more challenging to clearly define. Students were much more attracted to badges with imaginative names and/or imagery rather than uninspired presentations. My "Simply Ir-Resist-Ible" and "Licensed Stalker" badges got a lot more attention than my boring "Slab Construction" and "Trimmed Footrings" badges. The creative names and imagery were significantly more effective. Laminate badges for repeated use and to withstand

inevitable wear-and-tear in studio art room; teachers do not want to print hundreds of badges for every student in every course every year! Print a copy of each available badge with its front and back side-by-side for easy reference; laminate and stick a magnet on the back to make use of metal (and for easy re-arranging as new badges are added). Tracking students and their badges digitally on a spreadsheet is less practical in a studio art classroom where hands are often messy and teachers are rarely at their computers. If digital documenting is something that must be done, I recommend creating a spreadsheet template similar to the one in Figure 5-1, with student names in a column on the left, with the badges running across the top and divided into four colored sections representing each available level. The sheet was formatted to automatically calculate the total badges and levels earned under that category, so I was able to run and document totals for individual students, levels, badges, and classes.

#	Name	Dig Deep				Disaster Relief				Emerging from a Battle Victoriously				Energizer Bunny				Screen-Worthy Meme				Studio Rat				Team Player				Time for an Upgrade				TOTAL				
		6	1	0	0	2	0	0	0	6	3	2	0	7	6	2	0	0	0	0	0	4	3	1	1	4	1	0	0	2	1	0	0	52	31	15	5	1
1	Last, First									1				1	1																			3				
2	Last, First	1				1								1								1				1	1							6				
3	Last, First	1	1			1	1			1	1			1	1	1						1	1			1								12				
4	Last, First									1				1								1	1											4				
5	Last, First	1								1																1								3				
6	Last, First	1	1			1	1			1	1			1	1	1						1	1											11				
7	Last, First	1	1			1				1				1	1	1	1					1	1											10				
8	Last, First	1								1				1	1							1	1			1								7				
9	Non-Participant																																	0				
10	Last, First	1				1				1				1	1											1								6				
11	Last, First	1												1	1	1																		4				
12	Last, First	1	1			1				1				1	1	1						1	1			1								10				
13	Last, First	1				1	1			1	1			1	1	1						1				1								10				
14	Last, First	1				1	1			1				1	1	1						1				1	1							10				
		11	4	0	0	8	4	0	0	11	3	0	0	12	10	7	1	0	0	0	0	9	6	0	0	8	2	0	0	0	0	0	0	96	59	29	7	1

Figure **5-1**: Screenshot close up of one of the Google Sheets pages for the current "Engage and Persist" badges.

If the teacher wishes to include levels with the badges, include those levels in the spreadsheet from the beginning design, and color code levels to make for easier reference. Include sum formulas to instantly track student badges, levels, and class totals if the teacher requires running totals. This could also help create a leader board if that is a desired direction. Students very much wanted to publicly display their badges; if the teacher has space to show everyone's badges in one spot, it should be used. If the teacher has limited space, consider using student storage shelves as showcases where they can tape or hang badges to their shelves or around their spaces. Other considerations depending on the size of the badges might be baseball card sleeves or repurposed slide organizer sleeves. If a student levels-up on a badge, consider having a colored paper that can clip or slide behind it (acting as a colored frame) to represent each level achieved.

Avoid different earnings for the badges if possible; equal-value badges make calculating "pay earned" much more streamlined. Organize badges through a filing system; color code tabs to match the categories and then arrange them in alphabetical order by badge name to make them quick and easy to access. To avoid a pile of badges to sort, have students return badges to their proper slots or at least have them organize their return by badge category.

Ceramics Passports

Use some sort of booklet to track badges and leveling-up for a visible documentation of progress and growth. Include the available badges and organize by category and then alphabetical order by name. Avoid the need to constantly re-print by

leaving blank spaces for students to add any new badges that may end up being created after printing. Create levels and provide spaces for stamps. The first level earned is a stamp accompanied by a badge; anything after that is only marked by a stamp.

Encourage students to keep passports near them as they work for easy access if a new badge or level is earned during class. Have students label fronts of the booklet with their first and last name, as well as their graduation year. This will help if the teacher wishes to keep and reuse passports to track long-term progress in other classes (recycle or return graduating students' passports at the end of each year). The teacher can require students to advocate for themselves by highlighting or marking badges they want to earn or feel that they have earned; it makes flipping through the passports and finding the new badges and levels so much easier. It is also more practical than trying to review each badge and level on every page, trying to determine which ones each student may have earned.

Managing Payouts

I created a makeshift filing system using the student's roster number in each class (numbers can be reused forever; names would have to be re-done for every course). The mini-files served as a place to store students' weekly pay, badges earned, money earned, or passports if the student was not present in class or if earnings were calculated and allocated by the teacher outside of regular class time. This system made for a quick and easy distribution in classes at a later time.

I would also need to constantly refer to my grade sheets to see when students completed projects for completion bonuses, and calculate if their grade was high enough to earn a quality bonus in addition to their attendance pay. However, it was very time consuming. I began to run a tally on my attendance rosters; if a student submitted an artwork that day, I would mark how much they earned directly on the sheet, and then add up the totals across my roster only on their paydays. This technique saved a lot of time. Suggested modifications might be running bi-weekly paydays for students (cuts work in half), or having a student take over the task of distributing the money to the files and/or students once the teacher provides the totals. Have students document studio goal progress or running totals if the teacher does not wish to spend time doing those tasks.

Storyline and Game Ending

A different storyline for each course would help avoid monotony for students who take multiple classes. I personally chose a more practical storyline due to typical high school students' desires to have real-world applications in their courses. However, creative and fantasy storylines could appeal as well. Storylines unifying the class as team worked well when reaching the same end goal or when competing against other studios.

Badges and levels earned by a class as a whole could unlock different parts of the storyline, or different opportunities for students. If the teacher has uneven class sizes, adjust quantities and amounts of things necessary to maintain fairness (perhaps an average per participating student). Consider options of storylines where students could choose an artist or artwork to serve as an avatar or character within the story. Consider

arts-related jobs or business responsibilities for students to fulfill within the narrative (e.g., photographer, studio manager, directors, promotions, accountant, curator, sales, installation officer, bounty hunter/enforcer, inventory, marketing, archivist, public relations, social media, clay recycler, kiln assistant, conservators, technicians, education, equipment manager, restoration, shopkeeper, quality control, operations, etc.). My game ended with a monetary goal that the studio (operating outside individual students) needed to reach in order to remain open, but monetary goals could also be linked towards narrative studio/museum purchases (e.g., kilns, studio space, clay, mixers, gallery space, artworks, etc.). A particular type and/or quantity of badges and levels-up could be selected as game goals. Another avenue that I have not yet attempted to pursue is an explorative game linked to solving a problem, where student achievements and experiences throughout the course unlock new clues, challenges, or information pertinent to solving the larger problem designed to be connected to the arts. This would take a lot of planning and preparation, but it has the potential to be yet another interesting approach that could engage students.

Currency and Economy

There are much less design-intensive currency or points options that would save time if desired, but I wanted to customize my currency. Once points or currency are designed, they are done and only need reprinting. I created a template for each bill design, so adding new artists to circulation would be a quick and painless process. I initially considered using cardstock or laminating bills for more long-term use, but that

would be more time intensive and costly. It is very quick and easy to print and cut the bills as needed on regular copy paper, and they held up surprisingly well. Worn out bills can be recycled as needed, but based on this semester's experience, none of the bills needed to be recycled. Lower denominations are circulated much more quickly and more often than larger ones, so print many more of those and encourage students to exchange smaller bills for larger ones as the game progresses.

Before starting, the teacher should develop a rough idea at what will be used as earning opportunities for students and how much could be earned for each opportunity. Based on the teacher's knowledge of the students, estimate which badges and/or levels are most likely to be earned and an approximate timeframe. Be careful not to overinflate or under-inflate the economy system; make sure there are earning opportunities and spending opportunities available early in the game to keep students involved. Do not have set prices on shop items, violations, etc., so that prices can be adjusted as needed; compare it to an actual economy based on supply and demand. If students find they need something they currently can't afford, consider loans with interest as options, as to not restrict their artistic visions based on limited funds early on in the game.

Studio Violations, Chance Cards, Bonuses, and Penalties

Not many students received studio violations in my classroom, but those who did were often repeat offenders. The teacher should link studio violations to classroom expectations or behaviors targeted for improvement (e.g., nameless work, neglected work stations, leaving out materials, wasting materials, neglecting to clean the glaze off the

bottoms of pieces, cell phone use, etc.) and issue violation citations to students with fines addressing those behaviors. A single violation was enough to make students double check in the future because it required more than just being told; it came with consequence and a follow-up action on their part. However, some repeat offenders seemed unfazed.

Repeat offenders were not happy to get the fines, yet they continued to receive them. Perhaps escalating fines for repeat offenses, a pay freeze, shop restrictions, clean up duty, or some other meaningful or creative penalty might add to the effectiveness. Also, distributing and following up on violations and Studio Chance Card penalties are not always a practical use of teacher time (though pairing them on paydays helped simplify money flow), so assigning a student to be an "officer," "enforcer," or "bounty hunter" who takes charge of violations and weekly Studio Chance Cards could relieve the teacher of those tasks.

Consider bonuses. They are not necessary but could be connected to the teacher's personal goals for students. Bonuses were earned when students completed works early or on time, achieved a quality score above a set baseline, and/or when the entire class successfully completed all of their work on time. Likewise, penalties were paid for late, incomplete, or missing works. Deadlines for bonuses could match due dates or be modified as needed.

Studio Shop, Rewards, Access

Use the Studio Shop as a place to access materials that are supplemental to typical classroom tools and materials. Set prices according to whether the item is consumable

material or not and take into consideration its actual cost or value as well as supply and demand. This might allow the teacher to order and offer special materials that may not have been provided in the past, but those materials could be used as an incentive through the game.

Keep prices on separate papers from the item description to allow for quick and inevitable price changes as classroom economy systems must be adjusted. If the teacher is short on space, perhaps post a "menu" of options rather than physically shelving the actual items. However, a peg-board worked nicely to hang rentable tools and materials so students could pay and access them immediately rather than me needing to dig out materials from another location. Magnets also help for quick changes.

If the teacher does not wish to deal with taking and sorting money throughout classes, it may be more practical to have a student act as the shopkeeper who deals with purchases or place an honor-system box for students to place their money in for the item(s) they are purchasing. Another suggestion from students was to consider earning some sort of "unlocked access" to certain tools and materials throughout the classroom (in and outside of the shop) either instead of or in addition to purchasing. The earned "unlocked access" might be for different types of glazes, tools, materials, or privileges and could be dependent on payment, earned badges, leveling-up, attendance, performance, lack of violations, etc.

Implications of the Study

The initial set up for any classroom gamification system is intensely time consuming, especially studio art classes where there is such a wide range of greatly differing topics, skills, and experiences to cover within the game design. There are costs associated with producing and acquiring artifacts, items, and displays, but those can be minimized and designed to fit the teacher's own personal budget. If customization is not of the highest importance, using gamification artifacts, templates, or design ideas from pre-existing ones will help save time and energy. Save templates of all things created and clearly note within the document how that particular document needs to be printed (front and back, color, long end versus short end, etc.). Figure out ways to keep, protect, and reuse as many things as possible to limit re-printing, re-cutting, re-laminating, and re-organizing.

It is important to keep gamification designs loose enough so that modifications will not require the teacher to redesign the entire game or classroom system. I am a strong advocate for individualized or segmented gamification artifacts (prices, descriptions, badges) and magnets. For example, instead of posting all available badges or prices on one long document, cut up the pieces to allow for shifting displays. This makes room for additions or modifications, rather than reprinting every sheet or item each time. Individualized artifacts and magnets allow for quick rearrangements without re-printing or writing updated lists or signs. Some badges and rules are best left vague and open for situational interpretation. In this way, more specific badges for every topic does not need to be made. The more thought put into the practicality of the designs, the

less time consuming it will be to implement. There will inevitably be many modifications throughout the process, so design to enable changes.

While the most difficult part of classroom gamification in a studio art classroom is game design and set up, game maintenance is also a big time, resource, and energy consumer. One must be observant and take many notes about how the gamification process is experienced to develop new ideas and solutions to problems as encountered. There are so many facets and variables in classroom gamification systems. Having a dedicated space to maintain notes and reflect upon experiences will prove to be one of the most valuable practices for improving the effectiveness and practicality of a personalized gamification system in a studio art classroom. Every teacher's gamification design must adapt to fit his or her own personality, course work, classroom environment, and students. Each teacher will become his or her own best resource for designing and streamlining their own gamification system.

Even after all of the work put into the design and set up of a game, there is no solid data or proof guaranteeing that gamification alone is responsible for increasing student engagement, sense of art community, artistic growth, or exploration. One could easily argue that any of those areas could just as easily be addressed by various other means in a classroom and without the presence of gamified pedagogy. Effective art educators should be able to address each of those areas within their course design and teaching. Even well-designed gamification systems could have a novelty effect that may seem to produce desired results at first but have those fade over time.

There are also risks involved with gamified pedagogy; poor game design and implementation could just as easily negatively impact student engagement, sense of art

community, artistic growth, or exploration. Students may be turned off by games in general and therefore shut down to any level of engagement that could be connected to the game rather than engagement for the sake of art or the course. Students may rely too heavily on badges to guide them and decrease their self-motivated exploration of other idea sources. Poor sportsmanship on the part of one or more players could impede or ruin the tone of the game for the rest of the players. The game could be too complicated to manage and/or maintain student interest; students could abandon the game and/or give up on trying. Along with being too complicated, a game could be too easy where it fails to challenge students and just serves as a valueless distraction. Gamification does require class time; it could gradually consume precious, limited studio time that might be better spent on other tasks.

In the end, the decision to try or to continue with gamification depends on the teacher's own visions, experiences, and results with the system. What may work wonders for one teacher may not work for another, and what produces inspiring results in one class of students might fall flat with another group of students, even under the same teacher and gamification system. However, what gamification in studio arts classrooms lacks in data and certainty, it does makes up for in possibility.

Further Research

The application of gamification in high school studio art classrooms remains a relatively unexplored process. Gamified pedagogy has played a role in many areas of education over the years, making learning more engaging and effective for students who

struggle and more appealing for students who seek personal and new challenges. It has the potential to reach a broad spectrum of learners, interests, and abilities. However, this study exploring gamification pedagogy within the art education world has presented several new questions. Researchers who wish to pursue the topic of gamified pedagogy within high school studio art settings may wish to consider the following questions:

(1) What effects of continued or on-going gamification (sustained through two or more courses) might there be for students in high school studio art courses?

(2) What long-term effects of gamification experiences might there be for students in high school studio art courses?

(3) What are the most effective ways to incorporate transferable real-world skills, knowledge, and experiences into a gamified high school studio art classroom?

(4) What other potential gamification frameworks might lend themselves well to high school studio art classrooms?

(5) What advantages or disadvantages might a virtual or digitalized gamification system offer compared to a physical gamification system within a high school studio art classroom?

(6) How might gamification address other artistic and educational goals in high school studio arts settings?

(7) Could the removal of grades in a high school studio art classroom impact students' willingness to pursue more meaningful growth, progress, and exploration on their own?

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EXEMPTION DETERMINATION

Date: April 19, 2018

From: Stephanie Krout, IRB Program Coordinator

To: Jacqueline Geiple

Type of Submission:	Initial Study
Title of Study:	Gamification Strategies in Studio Art Classrooms: Can They Impact Artistic Community, Student Engagement, Growth, and Exploration?
Principal Investigator:	Jacqueline Geiple
Study ID:	STUDY00009486
Submission ID:	STUDY00009486
Funding:	Not Applicable
Documents Approved:	• GEIPLE.DataObservationChecklist.docx (0.01), Category: Data Collection Instrument • GEIPLE.EndOfCourseSurvey.docx (0.01), Category: Data Collection Instrument • Jacqueline Geiple HRP-591 (Updated 4.18.18) (0.03), Category: IRB Protocol

The Office for Research Protections determined that the proposed activity, as described in the above-referenced submission, does not require formal IRB review because the research met the criteria for exempt research according to the policies of this institution and the provisions of applicable federal regulations.

Continuing Progress Reports are **not** required for exempt research. Record of this research determined to be exempt will be maintained for five years from the date of this notification. If your research will continue beyond five years, please contact the Office for Research Protections closer to the determination end date.

Changes to exempt research only need to be submitted to the Office for Research Protections in limited circumstances described in the below-referenced Investigator Manual. If changes are being considered and there are questions about whether IRB review is needed, please contact the Office for Research Protections.

Penn State researchers are required to follow the requirements listed in the Investigator Manual (HRP-103), which can be found by navigating to the IRB Library within CATS IRB (http://irb.psu.edu).

We would like to know how the IRB Program can better serve you.
Please fill out our survey; it should take about a minute: https://www.research.psu.edu/irb/feedback.
1037

Appendix B: Principal Approval of Study

York Suburban
SCHOOL DISTRICT
A Community of Encouragement, A Culture of Excellence.

Larry R. Redding
Acting Superintendent

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Brian E. Ellis, Ed.D.
Principal
Christopher J. Adams, Ed.D.
Assistant Principal
Scott R. Shirey
Assistant Principal

Jackie Geiple
York Suburban High School
1800 Hollywood Drive
York, PA 17403

April 18, 2018

Dear Jackie:

I have reviewed your request regarding using gamification. I am granting permission as an administrator of the district for you to use gamification strategies in your classroom and to include observations from the implementation in your research.

I have noted and appreciate your comments regarding the structure of the study:

"Students are not required to participate and nothing is imposed upon them; there is no connection to study or game participation with their grades. It is an observational and qualitative study; I am not using any identifiable, personal, private, confidential, or medical information of any students, nor will I be documenting any students through videos or photos. Students and parents must consent to study participation."

We expect that you will observe these structures and guidelines throughout your study.

Should you have any questions please do not hesitate to contact me. Good luck with your study.

Sincerely,

Brian E. Ellis
HS Principal
bellis@yssd.org
(717) 885-1270

A Community of Encouragement. A Culture of Excellence.
A 2016 National Blue Ribbon School

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Appendix D: Student End-of-Game Survey

Classroom Gamification End of Game Survey 2018

Reflect upon your game experiences as you read through. Please read each question carefully and answer each question thoughtfully and honestly. You are NOT required to answer anything you do not feel comfortable answering, but your responses will be GREATLY appreciated! You do NOT need to respond with complete sentences.

Do you feel that any of the gamification elements used helped you feel more willing to try and experiment with new things or explore alternative solutions you may not have before?

(Not at All)   1   2   3   4   5   (Definitely)

Which of the following gamification elements do you feel helped you feel more willing to try and experiment with new things or explore alternative solutions you may not have before? Select any that apply.

__ Badges
__ Leveling-Up/Achievements
__ Class Economy (Money to Earn and Trade)
__ Game Storyline (Studio and artists on "probation," must prove worth to
       survive and stay open)
__ Studio Chance Cards (Artist and art studio scenarios to gain/lose money)
__ Studio Fines/Violations

__ Artistic Challenges (Games to add bonus challenges to your artwork;
       technique, colors, topic, etc.)

__ Studio Battles
__ None of these.
__ Other: _____

Do you feel that any of the gamification elements used helped you feel more engaged or involved in this course and/or your work?

(Not at All)   1   2   3   4   5   (Definitely)

Which of the following gamification elements do you feel helped you feel more engaged or involved in this course and/or artwork? Select any that apply.
__ Badges
__ Badges
__ Leveling-Up/Achievements
__ Class Economy (Money to Earn and Trade)
__ Game Storyline (Studio and artists on "probation," must prove worth to
       survive and stay open)
__ Studio Chance Cards (Artist and art studio scenarios to gain/lose money)
__ Studio Fines/Violations

    __ Artistic Challenges (Games to add bonus challenges to your artwork;
                 technique, colors, topic, etc.)

    __ Studio Battles
    __ None of these.
    __ Other: _____

Do you feel that any of the gamification elements used helped you feel a closer sense of community within the classroom and/or greater art community? (Includes fellow classmates, local art, social media art community, artists, etc.)

                   (Not at All)   1   2   3   4   5   (Definitely)

Which of the following gamification elements do you feel helped helped you feel a better sense of community within the classroom and/or greater art community? (Includes fellow classmates, local art, social media art community, artists, etc.) Select any that apply.
    __ Badges
    __ Leveling-Up/Achievements
    __ Class Economy (Money to Earn and Trade)
    __ Game Storyline (Studio and artists on "probation," must prove worth to
                 survive and stay open)
    __ Studio Chance Cards (Artist and art studio scenarios to gain/lose money)
    __ Studio Fines/Violations

    __ Artistic Challenges (Games to add bonus challenges to your artwork;
                 technique, colors, topic, etc.)

    __ Studio Battles
    __ None of these.
    __ Other: _____

Do you feel that any of the gamification elements used helped you want to do things better than you had before and strive for improvement?
                   (Not at All)   1   2   3   4   5   (Definitely)

Which of the following gamification elements do you feel helped you to do things better than you had before and strive for improvement? Select any that apply.
    __ Badges
    __ Leveling-Up/Achievements
    __ Class Economy (Money to Earn and Trade)
    __ Game Storyline (Studio and artists on "probation," must prove worth to
                 survive and stay open)
    __ Studio Chance Cards (Artist and art studio scenarios to gain/lose money)
    __ Studio Fines/Violations

    __ Artistic Challenges (Games to add bonus challenges to your artwork;
                 technique, colors, topic, etc.)

    __ Studio Battles
    __ None of these.
    __ Other: _____

What were your **favorite** aspects of your gamification experience so far and why?

> Your answer:

What were your **least favorite aspects** of your gamification experience so far and why?

> Your answer:

How would you rate your overall experience with this experimental test-run of gamification in a studio art classroom?

> (Awful!)   1   2   3   4   5   (Great!)

Taking into consideration that you were part of an experimental pilot system of gamification that is still under development, do you feel that this idea is at least worth continuing to explore and improve for future classes?

> __ Not at all.   __ Maybe.   __Yes.

From a student perspective, what ideas or suggestions do **YOU** have that might help improve a gamification model in a studio art class? What would you do differently or take into consideration if you were in charge?

> Your answer:

How awesome are you for not only being a guinea pig for test-run of so many gamification element ideas...and mistakes...and changes...but for also being so understanding, thoughtful, and kind throughout the process? ;)

> __ I only acted understanding, thoughtful, and kind on the outside...but I acknowledge my awesomeness for restraining my less-than-noble reactions ;)
> __ I know I am quite awesome, but I am super humble and would never admit it out loud.
> __ Pshh...I have no problem acknowledging my awesomeness to you or those around me.
> __ You will totally need to restrain me to keep me from shouting my own awesome'ness and praises from the rooftop.

SUBMIT
Never submit passwords through Google Forms.

Appendix E: Field Notes Pages

Classroom Challenges &/or Problems (Teacher Perspective)

- Interrupted schedules w/ snow days, testing, etc. delays
- limited budget & availability of some tools/materials
- fixed student mindset vs. growth
- recognizing student for non-graded things
- lack of desire or motivation
- always defending relevance of art education
- grading art & grading processes
- "get it done" out of the way student mentality
- lack of strong sense of community
- Need more spontaneity
- Students afraid to step out of comfort zone, take risks
- teaching itself can feel too serious/pressured
- teacher/class can be viewed as too serious or too fun
- limited space & needs "more fun"
- limited materials & student works til portfolio show
- for materials & student
- balance of choice & structure?
- Students avoid new things & personal exploration
- Students not cleaning up or maintaining studio
- real-life meanings & connections
- meeting all art standards throughout courses
- lack of student engagement
- Students want to "stop out" of content

Classroom Challenges &/or Problems (Student Perspective)

- sense of "right answer" needing vs. creative solution
- STRESS from life & art on backburner
- want to socialize &/or listen to music
- tired, exhausted, burnt out
- Lack of engagement & interest
- Frustration, giving up
- No homework or outside-of-class time or effort wanted
- not wanting to hurt GPA
- No notes or limited notes
- lack of recognition
- Boring, no fun
- fixed vs growth mindset
- No sense of community or belonging; disconnected
- grades for art & not being "artistic"
- want quick & easy successes
- lack of desire/motivation
- Not easy to see growth/progress
- how is this relevant to real life?
- structure of art makes them uneasy vs. other class structures
- fear of failure & grade embarrassment
- more time to make art
- Difficult, not easy or immediately gratifying
- not enough free choice
- no sense of control or mastery
- lack of pride

Gamification Strategies

- epic wins?
- feedback
- digital/video game platforms vs. cards?
- rewards intrinsic & extrinsic
- rules
- qualifications (disqualifications)
- fines
- leader boards
- stores or purchases
- pathways
- explorations
- badges
- adaptation/incorporation
- real-world connections
- achievements
- social competition or comparison
- strategies
- moments of chance (+, 0, -)
- penalties
- re-do studio resubmit/side quests
- riddles
- puzzles
- avatars/characters
- personal competition
- random'ness
- trade between players
- unpredictability
- teams vs individuals
- voluntary
- voting/judging
- pay
- battles
- point systems or currency
- side games
- Jobs or individ. responsibilities?
- Leveling Up
- how to "win"?
- online communities
- narrative/story line
- sabotage
- collaborative efforts
- choices
- mysteries
- boxes to unlock
- challenges

Gamification Challenges &/or Problems (Design, Plan, Prep...)

- fine vs violation... one a pay check vs. fine?
- costs of extra materials
- real-world applications & connections
- Time!
- tear proof (durable)
- Solid & engaging narrative
- re-usable!
- blending game design into coursework
- water proof
- predicting/anticipating how many of each item to make
- How to "win" vs. lose individually? collectively? (studies)
- Formatting documents for ease & re-use
- Organization of materials, students, teacher
- Student availability & access to info/materials
- Technical (print project pages, cut, laminate, cut)
- Alignment w/ Studio Habits of Mind &/or new art standards
- Not enticing all students to participate
- balancing intrinsic vs. extrinsic? intrinsic
- not repeat same story lines
- availability of badges open? or limit #s? time slots?
- Storage! Good use of space?
- ease of play & not too confusing
- establishing a workable economy

Gamification Challenges &/or Problems (Implement in Class)

- loose enough for ongoing modifications? Changes hard to make?
- run out of badges
- Presenting game in a way that sells it & keeps people interested
- Tracking game economy for store prices, penalties, etc. vs student invoices
- show badges publicly?
- Having students freely volunteer to participate others?
- Sculpture vs. Functional Studio earning equivalents?
- sticking to schedule/time line (Frequency of events & challenges...)
- Blending game design into coursework
- Having students take ownership of progress & badges/level up
- Not having time in beginning to use & supplies & early projects
- organization & space!
- time to squeeze in for best use of time?
- repeat violation offenders
- turn in & to pay, how to ground, not where?
- Badge Wall eye-level, not too ground not easy
- Keeping & progress to see
- How to address different types of gamers vs. achievers
- overwhelming info, simplify or consolidate?
- keeping up w/ options & availability
- Maintain levels from prior courses? Continue or start over? Keep record book for ongoing progress
- build upon prior works?
- lack of awareness of badges
- Student Jobs?

Gamification Adaptations &/or Modifications (Design, Plan, Prep)

- mini games to create "adaptation" creative problem solving challenges
- Pull in elements for types of gamers in addition to achievers
- laminate to make more durable & reusable
- students sheet protector for badges
- out-of-class battles? Deadline for entries, quests/side quests?
- color code levels in digital spreadsheet
- students & envelope for wallet
- Non-game participants as well
- carry over & to next level class? 50%? up to & at a set max?
- filing system for badges
- match w/ badge & level & display?
- Record printing specifics w/in document (long vs. short edge, double side color, b/w)
- badge board w/magnets easy to re-organize
- print prices
- Separate from items, allow for easy switch/change (tape? magnets?)
- Adapt passport for continued use in other course & Badge Mastery Checklist
- establish days for events
- keep
- w/ blanks to add new badges

Gamification Adaptations &/or Modifications (Implement in Class)

Student Responses
+ (Positive)
0 (Neutral)
– (Negative)

"Creative Adaptations or Artwork Twists"
- function
- process(es)
- media
- tools
- color(s) or color scheme
- location/venue
- style
- accasion
- topic/theme
- physical limitation
- limitations
- tools
- technique(s)
- culture
- time period

Narratives & Story Lines

Shop Rewards & Redemption Items

Things Students Care About (Motivators)

Appendix F: Current List of Available Badges

ART COMMUNITY — Novice Stalker: Actively following at least five different working 3D artists, studios, museums, groups, galleries, etc. (ART COMMUNITY: Novice Stalker)	**ART COMMUNITY** — Student Teacher: Taking the time to personally teach another student how to do something new. (ART COMMUNITY: Student Teacher)
ART COMMUNITY — Licensed Stalker: Actively following more than ten different working 3D artists, studios, museums, groups, galleries, etc. (ART COMMUNITY: Licensed Stalker)	**ART COMMUNITY** — First Friday: Attending First Friday in Downtown York; actively engaging in galleries and exhibition artwork. (ART COMMUNITY: First Friday!)
ART COMMUNITY — Louvre Lover: Actively visit and engage in a large art museum. (ART COMMUNITY: Louvre Lover)	**ART COMMUNITY** — #yshs_art: Actively following and participating on yshs_art on Instagram (likes, comments, tagging, etc.). (ART COMMUNITY: #yshs_art)
ART COMMUNITY — Artist Communication: Reaching out and contacting a practicing artist you admire to ask questions. (ART COMMUNITY: Artist Communication)	**ART COMMUNITY** — Giving Back for Art's Sake: Nobly volunteering your time (and/or artistic skills) for art-based event(s). (ART COMMUNITY: Giving Back for Art's Sake)
ART COMMUNITY — Exhibiting Artist: Displaying your original artwork in a gallery or exhibition outside of the school building. (ART COMMUNITY: Exhibiting Artist)	**ART COMMUNITY** — Portfolio Contributor: Personally researching and putting together artist portfolio page reference. (ART COMMUNITY: Portfolio Contributor)
ART COMMUNITY — Artistic Competitor: Submitting your original artwork into an artwork competition. (ART COMMUNITY: Artistic Competitor)	**ART COMMUNITY** — Active NAHS Member: Qualifies for and maintains active membership in National Art Honor Society. (ART COMMUNITY: Active NAHS Member)

	ART COMMUNITY		ART COMMUNITY
ART COMMUNITY: Who's Who	**Who's Who:** Able to properly identify all studio classmates; takes time to get to know names and individuals.	ART COMMUNITY: #MugShotMonday	**#MugShotMonday** Post a photo of one of your completed mugs on social media on Monday using #MugShotMonday.
ART COMMUNITY: Artwork Selfie	**Artwork Selfie** Photographs self with favorite artist artworks; shares on social media promoting & tagging artist.	ART COMMUNITY: Artist's Accolades	**Artist's Accolades:** One of your artworks catches attention of a professional artist; honored by their "like" or comment!
ART COMMUNITY: Trend Setter	**Trend Setter:** Tries something new or different that sparks other students' interests; sets trends that others now follow.		

	OBSERVE		OBSERVE
OBSERVE: I've Got Your Six!	**I've Got Your Six:** Notices classmate's potentially disastrous problem or mistake; saves!	OBSERVE: Attention to Detail	**Attention to Detail:** Consistent close & careful attention to observing and refining even small details in artwork.
OBSERVE: Microscope	**Microscope:** Intense observation of reference detail; noticing details very few people will see!	OBSERVE: Manual Decoder	**Manual Decoder:** Closely observes & analyzes visual manual instructions and independently executes process.
OBSERVE: Gotcha!	**Gotcha!:** Catching significant teacher error or mistake and is able to correct it.	OBSERVE: Creative Copycat	**Creative Copycat:** Inspired by observing another student doing something new; non-class or teacher taught.

ENGAGE & PERSIST

Disaster Relief: Impressively recovering from apparent artwork disaster.

ENGAGE & PERSIST: Disaster Relief

ENGAGE & PERSIST

Team Player: Stepping up to help out other students.

ENGAGE & PERSIST: Team Player

ENGAGE & PERSIST

Screen-Worthy Meme: Creating a new and original course-related meme worthy of screen projection.

ENGAGE & PERSIST: Screen-Worthy Meme

ENGAGE & PERSIST

Dig Deep: Digging deep into self and finding creative way to infuse personal meaning and relevance into art.

ENGAGE & PERSIST: Dig Deep

ENGAGE & PERSIST

Energizer Bunny: Consistently focused and on-task; makes

ENGAGE & PERSIST

Emerging from Battle Victoriously: Experience deep personal struggle

ENGAGE & PERSIST

Studio Rat: Consistently works in studio outside of class (Flex, Study Hall, Open Studio) to improve & complete work.

ENGAGE & PERSIST: Studio Rat

ENGAGE & PERSIST

Time for an Upgrade: Submits artwork, but then improves or re-makes it to replace with a better artwork.

UPGRADE

ENGAGE & PERSIST: Time for An Upgrade

REFLECT

Break It Down: Analyzing an artwork closely and breaking down the artistic process in order to apply.

REFLECT: Personal Critic

REFLECT

Artist Statements: Consistent ability to communicate ideas, processes, and intent behind artwork in written artist statements.

REFLECT: Artist Statements

REFLECT

Personal Critic: Confident and consistent ability to critically and thoughtfully reflect upon personal work.

REFLECT: Break It Down

REFLECT

Talent Scout: Solid ability to review, analyze, and evaluate artworks; able to fairly critique and judge results.

REFLECT: Talent Scout

REFLECT

Visual Literacy: Confident and consistent ability to view and "read" artworks to interpret meaning and intent.

REFLECT: Visual Literacy

STRETCH & EXPLORE

Daredevil: Taking high personal risks in an artwork by form, surface, and/or concept.

STRETCH & EXPLORE: Daredevil

STRETCH & EXPLORE

Spontaneous Creations: Create high-quality art without preconceived plan.

STRETCH & EXPLORE: Spontaneous Creations

STRETCH & EXPLORE

Rolling with the Punches: Adapting to or improvising with a setback in a creative way.

STRETCH & EXPLORE: Rolling with The Punches

STRETCH & EXPLORE

Media Mixer: Exploring variety of media and developing creative ways to combine them.

STRETCH & EXPLORE: Media Mixer

STRETCH & EXPLORE

Pave the Way: Developing a new idea, tool, technique, process, or modification.

STRETCH & EXPLORE: Pave the Way!

STRETCH & EXPLORE

Intense Research & Investigation: Going above and beyond in researching; intense discovery.

STRETCH & EXPLORE: Intense Research & Investigation

STRETCH & EXPLORE: Abstraction	**STRETCH & EXPLORE** **Abstraction:** Successfully takes an idea or subject and abstracts it into visually interesting art.
STRETCH & EXPLORE: Non-Objective	**STRETCH & EXPLORE** **Non-Objective:** Successful and visually-interesting artwork with non-objective form.
STRETCH & EXPLORE: Uncharted Territory	**STRETCH & EXPLORE** **Uncharted Territory:** Taking the risk to explore process or technique that was not taught.
STRETCH & EXPLORE: Surreal for Real?	**STRETCH & EXPLORE** **Surreal for Real?** Ability to develop realistic artwork with dream-like, bizarre, unnatural qualities.
STRETCH & EXPLORE: On the Move	**STRETCH & EXPLORE** **On the Move:** Developing an artwork that depends on movement for its effect.
STRETCH & EXPLORE: Tea Time!	**STRETCH & EXPLORE** **Tea Time:** Successfully tackled challenge of functional teapot with handle, lid, spout.
STRETCH & EXPLORE: It's a Bust!	**STRETCH & EXPLORE** **It's a Bust:** Successfully tackled challenge of sculptural bust, including head, neck, & shoulders.
STRETCH & EXPLORE: Off the Hump	**STRETCH & EXPLORE** **Off the Hump:** Successfully tackled challenge of throwing off the hump on the pottery wheel.
STRETCH & EXPLORE: Anatomical Investigation	**STRETCH & EXPLORE** **Anatomical Investigation:** Successfully tackled challenge of anatomical studies for art.
STRETCH & EXPLORE: Throwing Blind	**STRETCH & EXPLORE** **Throwing Blind:** Successfully tackled challenge centering and throwing a form with eyes covered.
STRETCH & EXPLORE: Thrown Spout	**STRETCH & EXPLORE** **Thrown Spout:** Successfully tackled challenge of throwing and attaching a functional spout.
STRETCH & EXPLORE: That's a Wrap!	**STRETCH & EXPLORE** **That's a Wrap:** Wrapping a textured surface around pot to throw & remove for texture.

	STRETCH & EXPLORE **Water Etching:** Successfully uses water etching surface technique to decorate artwork surface.		STRETCH & EXPLORE **Slip Trailing:** Successfully uses slip trailing surface technique to decorate artwork surface.
STRETCH & EXPLORE: Water Etching		STRETCH & EXPLORE: Slip Trailing	

STRETCH & EXPLORE: Water Etching

STRETCH & EXPLORE **Water Etching:** Successfully uses water etching surface technique to decorate artwork surface.

STRETCH & EXPLORE: Slip Trailing

STRETCH & EXPLORE **Slip Trailing:** Successfully uses slip trailing surface technique to decorate artwork surface.

STRETCH & EXPLORE: Simply Ir-Resist-ible!

STRETCH & EXPLORE **Simply Ir-Resist-ible:** Successful use of resist (wax, tape, paper, glue, etc.) on surface.

STRETCH & EXPLORE: Mocha Diffusion

STRETCH & EXPLORE **Mocha Diffusion:** Successfully uses mocha diffusion surface technique for surface of artwork.

STRETCH & EXPLORE: Clay Printer

STRETCH & EXPLORE **Clay Printer** Successful printing transfer of image onto clay surface; slip, underglaze, photo transfer.

STRETCH & EXPLORE: Faceting

STRETCH & EXPLORE **Faceting:** Using wires and tools to slice sides of a clay form to create a faceted surface.

STRETCH & EXPLORE: Bubble, Bubble, Toil and Trouble!

STRETCH & EXPLORE **Bubble, Bubble, Toil & Trouble!** Successfully uses bubble glazing technique to decorate surface.

STRETCH & EXPLORE: Production Line

STRETCH & EXPLORE **Production Line:** Successfully produces a series of matching forms: controlled size, shape, proportion.

STRETCH & EXPLORE: Knick, Knack, Paddle Whack?

STRETCH & EXPLORE **Knick, Knack, Paddle Whack?** Successfully uses bubble glazing technique to decorate surface.

STRETCH & EXPLORE: Heavyweight Champ!

STRETCH & EXPLORE **Heavyweight Champ!** Successfully throws form on wheel using 3 ½ lbs of clay or more!

STRETCH & EXPLORE: Fancy Footwork!

STRETCH & EXPLORE **Fancy Footwork!** Successfully trims and/or creates a functional but decorative foot on base of artwork.

STRETCH & EXPLORE: Banding Designs

STRETCH & EXPLORE **Banding Designs:** Successfully decorates surface of artwork using banding wheel techniques.

	STRETCH & EXPLORE
STRETCH & EXPLORE: Spouted Pitcher	**Spouted Pitcher:** Successfully extends a spout and trims the top of the form for effective pouring.
STRETCH & EXPLORE: Growth Spurt	**STRETCH & EXPLORE** **Growth Spurt:** Successfully throwing a piece over 8" tall, with appropriate walls and technique.
STRETCH & EXPLORE: They See Me Rollin'...	**STRETCH & EXPLORE** **They See Me Rollin'...:** Successfully throwing a rolled rim around the top of a pot.

	EXPRESS		EXPRESS
EXPRESS: Win the Vote	**Win the Vote:** Intentionally and successfully tackling or making a political statement through an artwork.	EXPRESS: Mirror, Mirror	**Mirror, Mirror:** Looking deep at self to successfully express a feeling or emotion from a personal experience.
EXPRESS: Funny Bone	**EXPRESS** **Funny Bone:** Creating an intentional and successfully humorous artwork (satire, pun, etc.).	EXPRESS: Tell Us How You REALLY Feel	**EXPRESS** **Tell Us How You REALLY Feel:** Manipulating elements to successfully communicate a feeling/emotion.
EXPRESS: Once Upon a Time...	**EXPRESS** **Once Upon a Time...:** Intentionally and successfully communicating a narrative through an artwork.	EXPRESS: Social Commentary	**EXPRESS** **Social Commentary:** Intentionally and successfully communicating a thoughtful stance on social issue.

DEVELOP CRAFT

Gotta Handle It: Confident and consistent foundation for quality and ergonomic pulled handles.

DEVELOP CRAFT: Gotta Handle It!

DEVELOP CRAFT

Coil Construction: Confident and consistent foundation for quality coil construction techniques.

DEVELOP CRAFT: Coil Construction

DEVELOP CRAFT

Slab Construction: Confident and consistent foundation for quality coil construction techniques.

DEVELOP CRAFT: Slab Construction

DEVELOP CRAFT

Surface Texture: Confident and consistent foundation for quality & creative surface texture techniques.

DEVELOP CRAFT: Surface Texture

DEVELOP CRAFT

What a Relief: Confident and consistent foundation for quality relief carving techniques.

DEVELOP CRAFT: What a Relief!

DEVELOP CRAFT

In a Pinch: Confident and consistent foundation for quality pinched form techniques.

DEVELOP CRAFT: In a Pinch

DEVELOP CRAFT

Thrown Cylinders: Confident and consistent foundation for quality thrown cylinders.

DEVELOP CRAFT: Thrown Cylinders

DEVELOP CRAFT

Hand Modeling: Confident and consistent foundation for quality hand modeling techniques.

DEVELOP CRAFT: Hand-Modeling

DEVELOP CRAFT

Trimmed Foot Rings: Confident and consistent foundation for quality trimmed foot rings.

DEVELOP CRAFT: Trimmed Foot Rings

DEVELOP CRAFT

Bowling for Bowls: Confident and consistent foundation for throwing well-formed bowls.

DEVELOP CRAFT: Bowling for Bowls

DEVELOP CRAFT

Glaze Wizard: Confident and consistent high quality glazing results using a variety of glazing techniques.

DEVELOP CRAFT: Glaze Wizard

DEVELOP CRAFT

Plates and Platters: Confident and consistent foundation for throwing well-formed plates and platters.

DEVELOP CRAFT: Plates and Platters

| | DEVELOP CRAFT
Elementary, My Dear Watson: Confident and creative grasp on the following element of art:
_____ | | DEVELOP CRAFT
As a Matter of Principle
Confident and creative grasp on the following principle of art:
_____ |
| DEVELOP CRAFT:
Elementary,
My Dear Watson | | DEVELOP CRAFT:
As a Matter
Of Principle | |

ELEMENTS OF ART TO EXPLORE FOR BADGES:		PRINCIPLES OF ART TO EXPLORE FOR BADGES:	
- Line	- Color	- Balance	- Contrast
- Shape	- Form	- Scale	- Proportion
- Value/Light	- Texture	- Repetition	- Rhythm
- Space (Negative)		- Pattern	- Movement
		- Unity/Variety	- Emphasis

| | DEVELOP CRAFT
Put a Lid On It!: Successfully throwing and trimming a functional and securely fitted lid with handle. | | DEVELOP CRAFT
Thrown Bottles and Vases: Successfully thrown bottles and vases with clear body, neck, shoulder, and rim. |
| DEVELOP CRAFT:
Put a Lid
on It! | | DEVELOP CRAFT:
Thrown Bottles and Vases | |

| | DEVELOP CRAFT
Salvage Yard: Understanding and solid experience of clay storage, recycling, and pugger mixing process. | | DEVELOP CRAFT
Centering: Successful and consistent centering maintained throughout throwing process. |
| DEVELOP CRAFT:
Salvage
Yard | | DEVELOP CRAFT:
Centering
Clay | |

| | DEVELOP CRAFT
On the Wire: Confident and creative grasp on sculptural manipulation of wire to create forms & structures. | | DEVELOP CRAFT
Sgraffito Guru: Consistent control in using sgraffito techniques on surfaces; crisp and clean work and carving. |
| DEVELOP CRAFT:
On the
Wire | | DEVELOP CRAFT:
Sgraffito
Guru | |

| | DEVELOP CRAFT
Casting Call: Successful and visually-interesting artwork formed through process of casting from a mold. | | DEVELOP CRAFT
Inlay: Consistent control in using inlay techniques on surfaces; crisp and clean work and carving. |
| DEVELOP CRAFT:
Casting
Call | | DEVELOP CRAFT:
Inlay | |

DEVELOP CRAFT

DEVELOP CRAFT:
I'll Toast
To That!

I'll Toast to That!:
Successfully
creates drinkware
with thoughtful
ergonomic designs
applied
throughout.

ENVISION

ENVISION:
Explosive
Sketchbook

Explosive Sketchbook:
Highly-active
sketchbook use;
full of ongoing
inspiration and
developing ideas.

ENVISION

ENVISION:
Visionary

Visionary:
Breaks down
process-intense
ideas into logical,
realistic steps to
achieve consistent,
successful results.

ENVISION

ENVISION:
Unleashing Hidden
Potential

Unleashing Hidden Potential:
Redefining
conventional roles;
recognizing new
possibilities in
variety of things.

ENVISION

ENVISION:
X Marks
the Spot

X Marks the Spot:
Ability to see a
location and
envision
thoughtful
installation art
possibilities.

ENVISION

ENVISION:
Artwork Development
And Planning

Artwork Development & Planning:
Exceptionally
thoughtful,
detailed, and
in-depth process.

ENVISION

ENVISION:
Creative
Visionary

Creative Visionary:
Exceptional idea
generation; very
creative & original
approaches;
avoids overused &
trite cliches in art..

ENVISION

ENVISION:
Pre-Existing
Conditions

Pre-Existing
Conditions:
Able to take a
pre-existing
artwork or form
and transform it
into a new work.
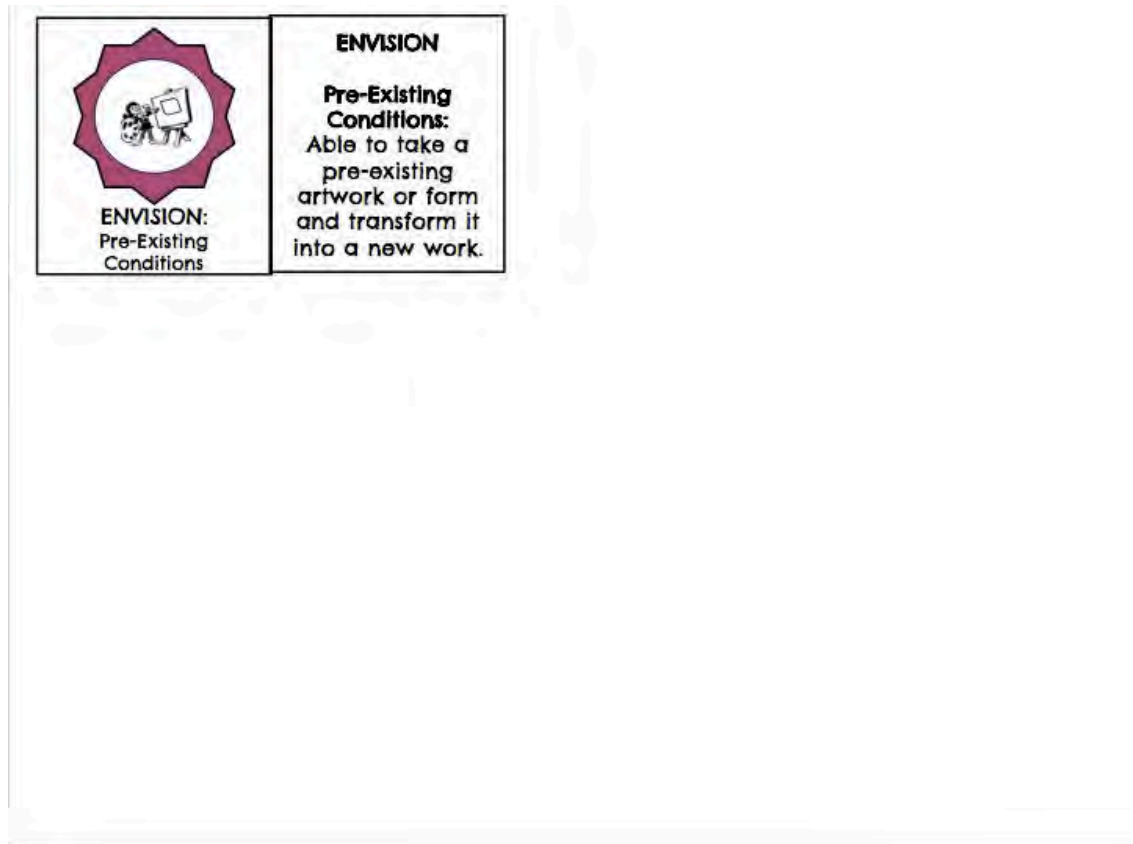
Appendix G: Badge Template Example

ABOVE: Front of Badge; Front of Sheet.
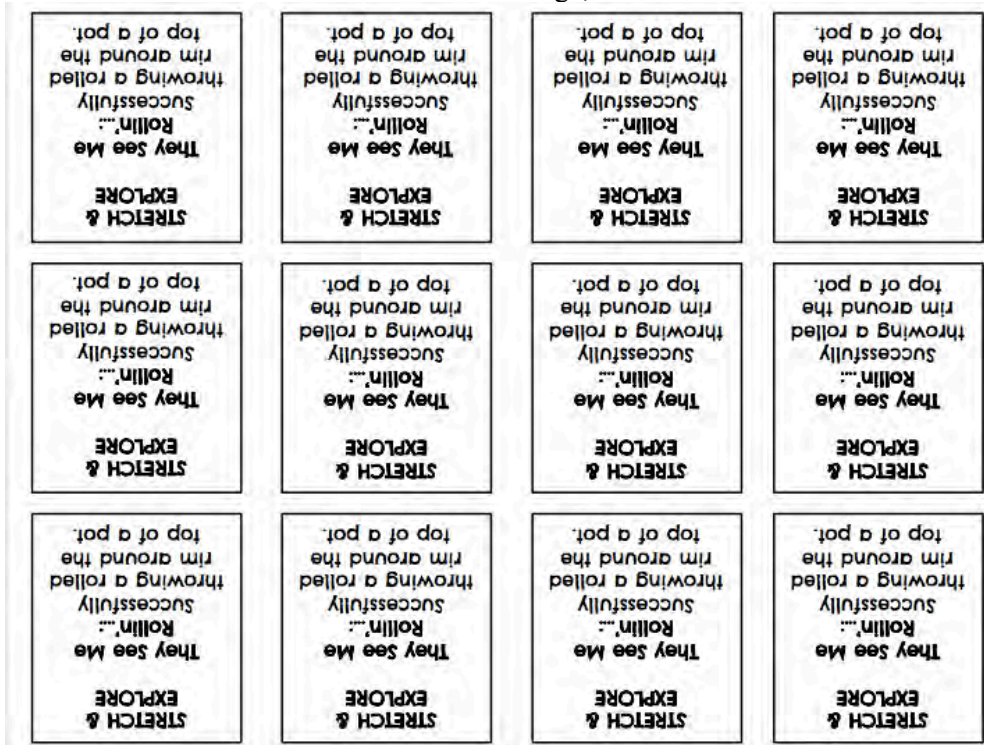
ABOVE: Back of Badge; Back of Sheet.

Appendix H: Ceramics Passport Template Example

CERAMICS PASSPORT:

CERAMICS PASSPORT:

NEW BADGE	Starving	Emerging	Established	Master

NEW BADGE	Starving	Emerging	Established	Master

ACHIEVEMENT LEVELS

1 - **Starving Artist:** Stage of initial learning & experience; minimal & basic range. Starting badge level!

2 - **Emerging Artist:** Stage of improved quality & increased confidence; increasing range of abilities. Many may reach this level after practice!

3 - **Established Artist:** Stage of consistently high-quality execution; confident & widening range of ability & applications. A select few reach this level if they are truly dedicated!

4 - **Master Artist:** Stage of expert achievement; flawless execution, confident experimentation, and broad range. Many aspire to reach this level, but only a rare & select few are able to do so!

ACHIEVEMENT LEVELS

1 - **Starving Artist:** Stage of initial learning & experience; minimal & basic range. Starting badge level!

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ENVISION	Starving	Emerging	Established	Master
Artwork Development & Planning				
Creative Visionary				
Explosive Sketchbook				
Pre-Existing Condition				
Process Visionary				
Unleashing Hidden Potential				
X Marks the Spot				

ENVISION	Starving	Emerging	Established	Master
Artwork Development & Planning				
Creative Visionary				
Explosive Sketchbook				
Pre-Existing Condition				
Process Visionary				
Unleashing Hidden Potential				
X Marks the Spot				

NEW BADGE	Starving	Emerging	Established	Master

NEW BADGE	Starving	Emerging	Established	Master

ART COMMUNITY	Starving	Emerging	Established	Master
Student Teacher				
Trend Setter				
Who's Who				

ART COMMUNITY	Starving	Emerging	Established	Master
Student Teacher				
Trend Setter				
Who's Who				

DEVELOP CRAFT	Starving	Emerging	Established	Master
Hand Modeling				
I'll Toast to That				
In a Pinch				
Inlay				
It's a Matter of Principle				
On the Wire				
Plates & Platters				

DEVELOP CRAFT	Starving	Emerging	Established	Master
Hand Modeling				
I'll Toast to That				
In a Pinch				
Inlay				
It's a Matter of Principle				
On the Wire				
Plates & Platters				

DEVELOP CRAFT	Starving	Emerging	Established	Master
Bowling for Bowls				
Casting Call				
Centering				
Coil				
Elementary, My Dear Watson				
Glaze Wizard				
Gotta Handle It				

DEVELOP CRAFT	Starving	Emerging	Established	Master
Bowling for Bowls				
Casting Call				
Centering				
Coil				
Elementary, My Dear Watson				
Glaze Wizard				
Gotta Handle It				

REFLECT	Starving	Emerging	Established	Master
Artist Statement				
Break It Down				
Personal Critic				
Talent Scout				
Visual Literacy				

REFLECT	Starving	Emerging	Established	Master
Artist Statement				
Break It Down				
Personal Critic				
Talent Scout				
Visual Literacy				

ART COMMUNITY	Starving	Emerging	Established	Master
#MugShot Monday				
#yshs_art				
Active NAHS Member				
Artist Communication				
Artist's Accolades				
Artistic Competitor				
Artwork Selfie				

ART COMMUNITY	Starving	Emerging	Established	Master
#MugShot Monday				
#yshs_art				
Active NAHS Member				
Artist Communication				
Artist's Accolades				
Artistic Competitor				
Artwork Selfie				

DEVELOP CRAFT	Starving	Emerging	Established	Master
Trimmed Foot Rings				
What a Relief				

DEVELOP CRAFT	Starving	Emerging	Established	Master
Trimmed Foot Rings				
What a Relief				

DEVELOP CRAFT	Starving	Emerging	Established	Master
Put a Lid on It				
Salvage Yard				
Sgraffito				
Slab				
Surface Texture				
Thrown Bottles & Vases				
Thrown Cylinders				

DEVELOP CRAFT	Starving	Emerging	Established	Master
Put a Lid on It				
Salvage Yard				
Sgraffito				
Slab				
Surface Texture				
Thrown Bottles & Vases				
Thrown Cylinders				

ART COMMUNITY	Starving	Emerging	Established	Master
Exhibiting Artist				
First Friday				
Giving Back for Art's Sake				
Licensed Stalker				
Louvre Lover				
Novice Stalker				
Portfolio Contributor				

ART COMMUNITY	Starving	Emerging	Established	Master
Exhibiting Artist				
First Friday				
Giving Back for Art's Sake				
Licensed Stalker				
Louvre Lover				
Novice Stalker				
Portfolio Contributor				

OBSERVE	Starving	Emerging	Established	Master
Attention to Detail				
Creative Copycat				
Gotcha!				
I've Got Your Six				
Manual Decoder				
Microscope				

OBSERVE	Starving	Emerging	Established	Master
Attention to Detail				
Creative Copycat				
Gotcha!				
I've Got Your Six				
Manual Decoder				
Microscope				

STRETCH & EXPLORE	Starving	Emerging	Established	Master
Fancy Footwork				
Growth Spurt				
Heavyweight Champ				
Intense Research and Investigation				
It's a Bust				
Knick, Knack, Paddle Whack				
Media Mixer				

STRETCH & EXPLORE	Starving	Emerging	Established	Master
Fancy Footwork				
Growth Spurt				
Heavyweight Champ				
Intense Research and Investigation				
It's a Bust				
Knick, Knack, Paddle Whack				
Media Mixer				

STRETCH & EXPLORE	Starving	Emerging	Established	Master
Abstraction				
Anatomical Exploration				
Banding Designs				
Bubble, Bubble				
Clay Printer				
Daredevil				
Faceting				

STRETCH & EXPLORE	Starving	Emerging	Established	Master
Abstraction				
Anatomical Exploration				
Banding Designs				
Bubble, Bubble				
Clay Printer				
Daredevil				
Faceting				

EXPRESS	Starving	Emerging	Established	Master
Funny Bone				
Mirror, Mirror				
Once Upon a Time...				
Social Commentary				
Tell Us How You REALLY Feel...				
Win the Vote				

EXPRESS	Starving	Emerging	Established	Master
Funny Bone				
Mirror, Mirror				
Once Upon a Time...				
Social Commentary				
Tell Us How You REALLY Feel...				
Win the Vote				

ENGAGE & PERSIST	Starving	Emerging	Established	Master
Dig Deep				
Disaster Relief				
Emerging from a Battle Victoriously				
Energizer Bunny				
Screen-Worthy Meme				
Studio Rat				
Team Player				

ENGAGE & PERSIST	Starving	Emerging	Established	Master
Dig Deep				
Disaster Relief				
Emerging from a Battle Victoriously				
Energizer Bunny				
Screen-Worthy Meme				
Studio Rat				
Team Player				

STRETCH & EXPLORE	Starving	Emerging	Established	Master
Simply Ir-Resist-ible				
Slip Trailing				
Spontaneous Creations				
Spouted Pitcher				
Surreal for Real?				
Tea Time				
That's a Wrap				

STRETCH & EXPLORE	Starving	Emerging	Established	Master
Simply Ir-Resist-ible				
Slip Trailing				
Spontaneous Creations				
Spouted Pitcher				
Surreal for Real?				
Tea Time				
That's a Wrap				

STRETCH & EXPLORE	Starving	Emerging	Established	Master
They See Me Rollin'				
Throwing Blind				
Thrown Spout				
Uncharted Territory				
Water Etching				

STRETCH & EXPLORE	Starving	Emerging	Established	Master
They See Me Rollin'				
Throwing Blind				
Thrown Spout				
Uncharted Territory				
Water Etching				

STRETCH & EXPLORE	Starving	Emerging	Established	Master

STRETCH & EXPLORE	Starving	Emerging	Established	Master

Print short edge

Appendix J: Currency Artistic Reference List

in no particular order; currency updated regularly with new artists according to coursework artist features and student interest

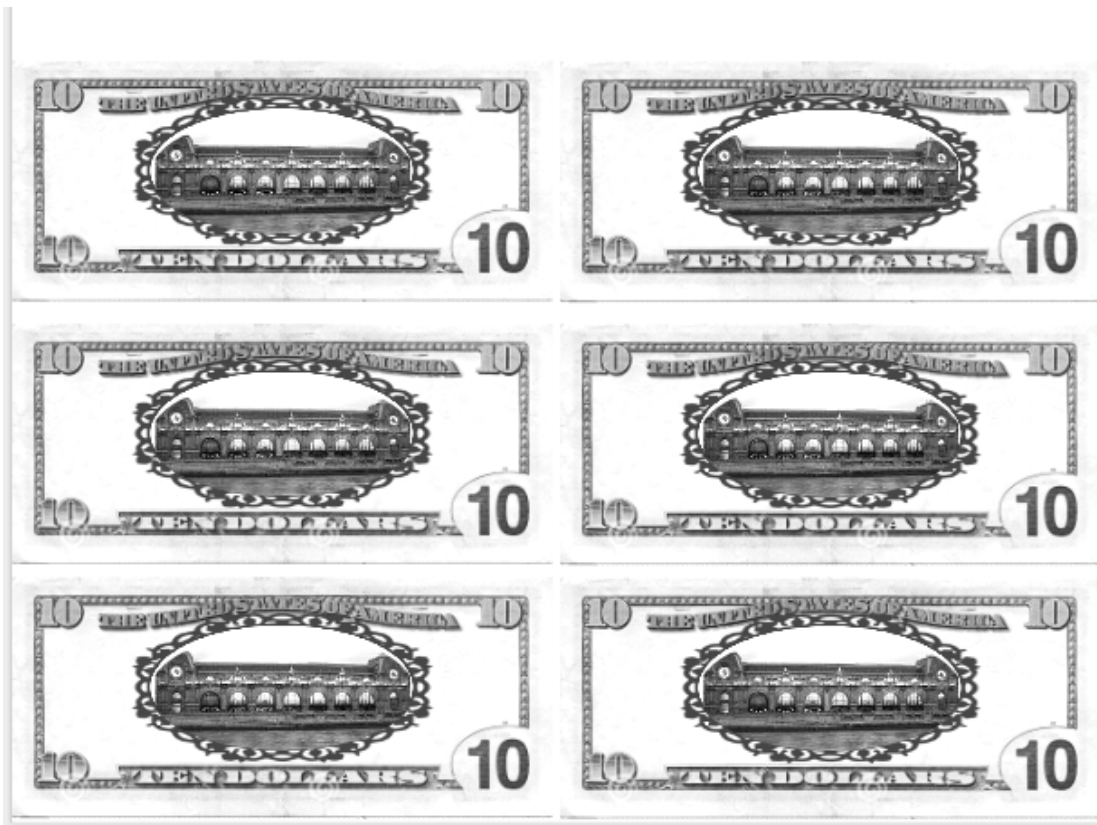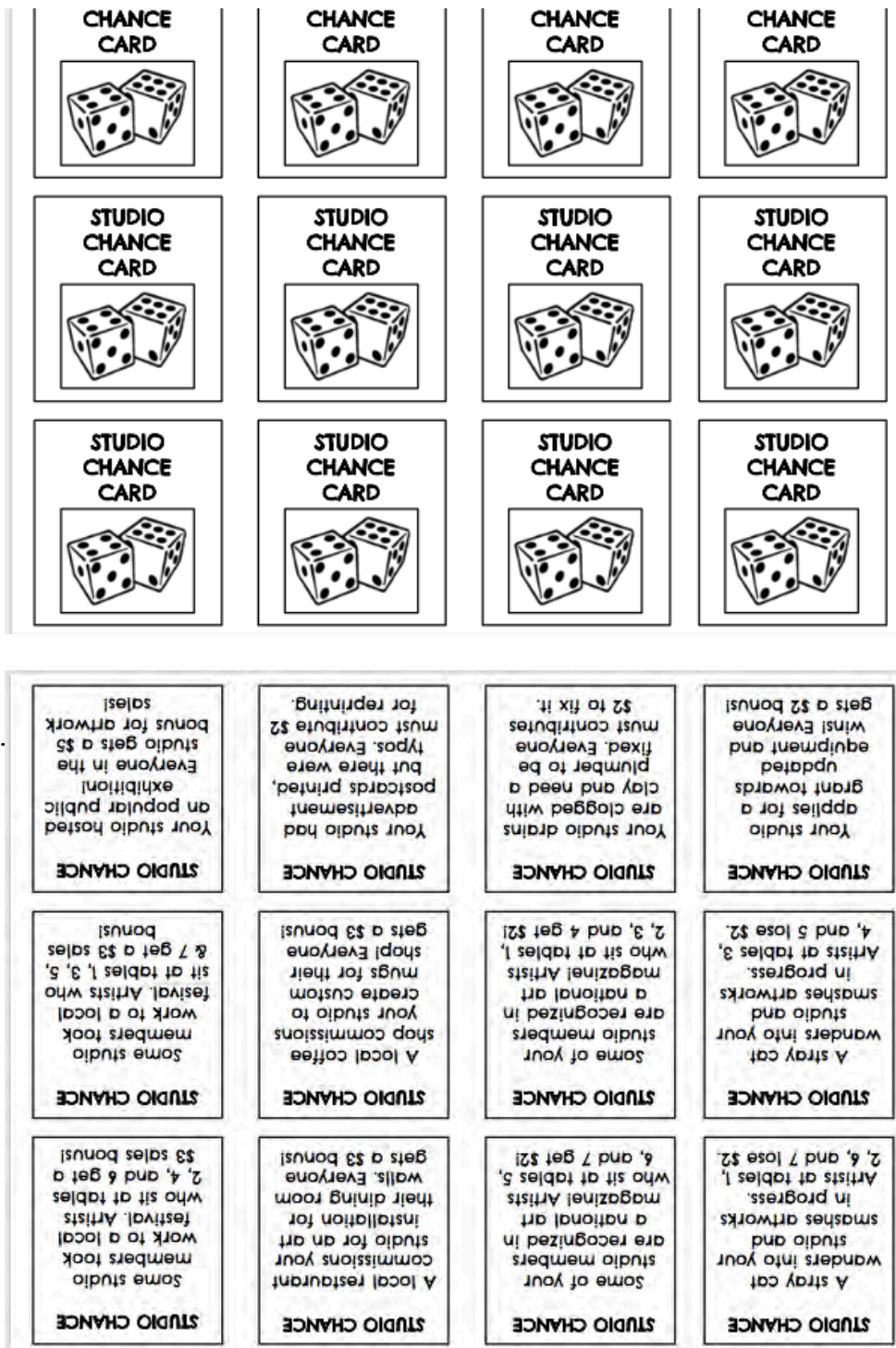| FEATURED ARTISTS	FEATURED ARTISTS (Continued)	FEATURED ARTISTS (Continued)	FEATURED ARTISTS (Continued)
Leonardo da Vinci	Simon Leach	Sally MacDonell	Catie Miller
Rafael	Ellen Jewett	Kate MacDowell	Juliette Clovis
Donatello	Jessica Wertz	Sam Scott	Peter Frasier Beard
Auguste Rodin	Ruby Pilven	Kevin Snipes	Andrea Denniston
Michelangelo	Tim Kowalczyk	Jason de Caires Taylor	Léo Caillard
Deborah Butterfield	Hayne Bayless	Ah Xian	Tina Vlassopulos
Andy Goldsworthy	Jennifer Allen	Johnson Tsang	
Alberto Giacometti	Vesna Gusman	Amanda Shelsher	**OTHER ARTISTIC REFERENCES**
Louise Nevelson	Judi Tavill	Clare Wakefield	Museé Louvre
Henry Moore	Dale Chihuly	Keizo Ushio	Color Wheel
Alexander Calder	Diana Fayt	Ron Mueck	Da Vinci's Vitruvian Man
Pablo Picasso	Kristen Kieffer	Kathy King	Paint Palette
Claes Oldenburg	Molly Hatch	Hannie Goldgewicht	Musée d'Orsay
Nathan Sawaya	Roberto Lugo	Jeff Koons	Da Vinci Signature
Mitchell Grafton	Katarina Kamprani	Hirotoshi Itoh	Artists' Artworks
Vik Muniz	Renee LoPresti	Morgan Gochnauer	

CHANCE CARD

CHANCE CARD

CHANCE CARD

CHANCE CARD

STUDIO CHANCE CARD

STUDIO CHANCE CARD

STUDIO CHANCE CARD

STUDIO CHANCE CARD

STUDIO CHANCE CARD

STUDIO CHANCE CARD

STUDIO CHANCE CARD

STUDIO CHANCE CARD

STUDIO CHANCE
Your studio hosted an popular public exhibition! Everyone in the studio gets a $5 bonus for artwork sales!

STUDIO CHANCE
Your studio had advertisement postcards printed, but there were typos. Everyone must contribute $2 for reprinting.

STUDIO CHANCE
Your studio drains are clogged with clay and need a plumber to be fixed. Everyone must contributes $2 to fix it.

STUDIO CHANCE
Your studio applies for a grant towards updated equipment and wins! Everyone gets a $2 bonus!

STUDIO CHANCE
Some studio members took work to a local festival. Artists who sit at tables 1, 3, 5, & 7 get a $3 sales bonus!

STUDIO CHANCE
A local coffee shop commissions your studio to create custom mugs for their shop! Everyone gets a $3 bonus!

STUDIO CHANCE
Some of your studio members are recognized in a national art magazine! Artists who sit at tables 1, 2, 3, and 4 get $2!

STUDIO CHANCE
A stray cat wanders into your studio and smashes artworks in progress. Artists at tables 3, 4, and 5 lose $2.

STUDIO CHANCE
Some studio members took work to a local festival. Artists who sit at tables 2, 4, and 6 get a $3 sales bonus!

STUDIO CHANCE
A local restaurant commissions your studio for an art installation for their dining room walls. Everyone gets a $3 bonus!

STUDIO CHANCE
Some of your studio members are recognized in a national art magazine! Artists who sit at tables 5, 6, and 7 get $2!

STUDIO CHANCE
A stray cat wanders into your studio and smashes artworks in progress. Artists at tables 1, 2, 6, and 7 lose $2.

Appendix L: Gamification Participant Artwork Examples

Embracing mistakes: A piece that collapsed while throwing, but the student exploring unintended potential behind her mistakes.

Stretching capabilities: Exploring a new clay body with porcelain and working with heavier weights of clay to produce the tallest thrown form she had ever made (a foot tall).

Exploring stamp making: A student hand-modeled a stamp out of clay, which was then fired and applied to surfaces of her pieces.

Studio Battle Artwork Product: Challenge of trying thrown bottles or vases for the first time; then experimenting with layers of high fire glazes.

Exploring slip trailing: A student trying

Exploring tape resist: Using a variety of

slip trailing and slip dots for the first time to achieve a surface texture.	different tape resist layering to create a surface design.
Exploring faceting: Trying a variation of faceting to add interest to the base of a set of tumblers.	Exploring then stretching printmaking: Process of student's clay printmaking exploration after noticing a printmaking badge, and bringing in old ink screenprint screens to test with glazes and clay surfaces.
Exploring bubble print glazing: Student's exploration with blowing and layering bubbles with glazes as a surface technique.	Embracing mistakes: Another student seeing the artistic potential behind a throwing mistake.
Exploring slip transfers: Student renting	Investigating and engaging with artwork: This student chose to pursue an issue that was personally meaningful to her through an artwork series. Investigation of various ecosystems that are being

slip trailers to experiment with slip transfers.	threated and the impacts of humans on the environment.
Stretching and exploring: Taking the traditional sgraffito technique to a new level by layering glazes and strategically carving only one layer.	Stretching and exploring: Another student taking sgraffito to a different level by layering multiple underglazes and applying a modified scratching technique to reveal the layering.
Stretching and exploring: A student experimenting with non-traditional glaze printing techniques using a scrap piece of burlap.	Investigating and stretching: Taking surfaces and textures to a new level in a series exploring a non-objective interpretation of the manifestation of anxiety.

Exploration of texture and mixed media: A large-scale apple sculpture applying faux fur to create a surreal sculpture.

Stretching and exploring: A student inspired by the rolled-rim badge to try something new that was not required for the assignment.