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Understanding the Student Perspective of Art History Survey Course Outcomes Through Game Development

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Cover Page Footnote

This article, included in a special issue of this journal, demonstrates one of a variety of research methodologies appropriate to the Scholarship of Teaching and Learning in Art History. It is accompanied by a brief introduction by the authors addressing the goals and motivations for their choice of research methods.

Understanding the Student Perspective of Art History Survey Course Outcomes Through Game Development

Method: Design-Based Research (DBR) and Heuristic Inquiry
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SoTL Mentor's Introduction

Choosing a methodology for educational research weighs many factors including the research questions, the subjects being researched, and the problem being addressed, the audience that will eventually respond to the study, and researcher strengths, among other theoretical framework considerations. For this study, we began with the problem of whether games could be designed for an art history survey course. This led us to literature describing project-based research, team-based research, design-based research, among other areas of educational research to discover possible methodologies that would tackle this initial question. Given the population that we wished to study, students who had already completed the art history survey course, we were further interested in not only producing possible educational game products that could be implemented into the course, but also learning the students' perspectives of the course.

As such, we utilized a design-based research (DBR) methodology following heuristic inquiry methods. DBR essentially follows the problem of designing a product. The research process requires that the researcher collect as much data as possible, highlighting the decisions that are made throughout the process in order to reflect and develop insight into the design process and results. The data collection thus included surveys, observation, and analysis of the resulting design products. We further applied the framework of heuristic inquiry which answers the fundamental question, "What is my experience of this phenomenon and the essential experience of others who experience this phenomenon intensely?"[1] As both researchers are intently aware of and experienced with the art history survey course and scholarship of teaching and learning (SoTL) research focused on the discipline, this shared experience was an important element in the analysis of the data, and the students of the course were, in part, co-researchers whose project-based experience provided insight into the research questions that we proposed. The combination of these methods allowed us to construct our understanding of games in art history as well as the student perspective of the course, and informed the possibility of future teaching strategies as a result.

[1] M. Patton, *Qualitative research & evaluation methods*, 3rd edition (Thousand Oaks: Sage, 2004), 107.

Understanding the Student Perspective of Art History Survey Course Outcomes Through Game Development

Joshua Yavelberg, *ArtHistorySurvey.com*
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A recent dissertation by Joshua Yavelberg, "Discovering the Pedagogical Paradigm Inherent in Introductory Art History Survey Courses, a Delphi Study," provided insight on the perceived outcomes and pedagogical methods of the art history survey course derived from a panel of experts.[1] These experts highlighted and ranked varying course outcomes and teaching strategies for reaching these outcomes, settling on a fairly traditional preference for a Socratic seminar to engage learners toward higher-level skills according to Bloom's Taxonomy. The data Yavelberg uncovered also highlighted outlying suggestions of what were considered more radical transformations of teaching, such as flipped classroom models, role playing, transmedia and multimodal engagement, and game-based learning. The study also suggested that further research on these emerging teaching strategies is necessary along with the student perception of the art history survey course to aid in finding a middle ground between expert opinion and the current higher education audience of learners.

To complement that work, the purpose of this study was to form an understanding of student perspective of the issues and learning objectives of the art history survey course from students in an art and design program capstone seminar through game design. This heuristic, design-based research study relied on the interactions of the researchers with a class of capstone students to focus on the delivery of a creative product that may be implemented in future research.[2] The goal of the study was to answer the following questions:

- What is the student experience of the art history survey course and the student's perception of the role of this course within their programs of study?
- What are the learning objectives for an introductory art history survey course as identified by students who have successfully completed the course?
- How, according to these students, might the suggested learning objectives of an art history survey course be obtained through game play, and for what audiences?
- What do art and design students learn about art history from the game design process?

[1] Joshua Yavelberg, "Discovering the Pedagogical Paradigm Inherent in Introductory Art History Survey Courses, a Delphi Study," (PhD diss., George Mason University, 2016).
[2] On heuristic research, see Michael Quinn Patton, *Qualitative Research & Evaluation Methods*, 3rd ed. (Thousand Oaks: Sage, 2004), 107-110. On design-based research, see The Design-Based Research Collective, "Design-Based Research: An Emerging Paradigm for Educational Inquiry," *Educational Researcher* 32 (January-February 2003): 5–8; and William A. Sandoval and Philip Bell, "Design-Based Research Methods for Studying Learning in Context: Introduction," *Educational Psychologist* 39 (2004): 199–201.

Why Game-Based Learning?

There has been a surge in interest in game-based learning (GBL) for education, mainly centered on areas of skill-building and engagement.[3] GBL has been associated with increased engagement, the building of teamwork skills, and other cognitive and affective endeavors. GBL has the much-needed potential to re-engage learners with the content of the art history survey course if game designs can be identified that meet the target audience and context, including learning outcomes. This teaching strategy has also been investigated from a design standpoint, allowing the students to engage with designing games to help them come to terms with course content.[4] By inviting students who have already taken the art history survey course to develop games, we intended to have them think deeply about the learning outcomes for the course and, through team-based discussion, deliver creative, game-based solutions to implement in future survey courses.

Methodology

This research utilized a heuristic, design-based research methodology. This methodology allows the researchers to become a part of the research and help guide the discovery process through iterative stages toward the completion of a final creative product. For the students, this meant being guided through the process of game creation while grappling with their previous experiences of the art history survey course and their perception of the course learning outcomes. Students were encouraged to produce games that would have a realistic possibility of implementation in future courses with the intention of motivating students toward the real-world applications of their designs. For the researchers, this meant gathering data through observation, surveys, discussions with students, and through analysis of these creative projects and applying personal experience with the course to inform a creative synthesis of the data, informing the overall understanding of the expectations of art history survey courses.

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[3] See for example Azita Iliya Abdul Jabbar and Patrick Felicia, "Gameplay Engagement and Learning in Game-Based Learning: A Systematic Review," *Review of Educational Research* 85, no. 4 (2015): 740–779; Sharon Boller and Karl M. Kapp, *Play to Learn: Everything You Need to Know About Designing Effective Learning Games* (Alexandria, VA: ATD Press, 2017); James Paul Gee, *Good Video Games + Good Learning: Collected Essays on Video Games, Learning, and Literacy* (New York: P. Lang, 2007); Karl Kapp, *The Gamification of Learning and Instruction: Game-Based Methods and Strategies for Training and Education* (San Francisco: Pfeiffer; Alexandria, VA: ASTD Press, 2012); Fengfeng Ke, Kui Xie, and Ying Xie, "Game-Based Learning Engagement: A Theory- and Data-Driven Exploration," *British Journal of Educational Technology* 47, no. 6 (2016): 1183–1201; Marc Prensky, *Digital Game-Based Learning* (New York: McGraw-Hill, 2001); Lee Sheldon, *The Multiplayer Classroom: Designing Coursework as a Game* (New York: Cengage, 2011); and Kurt Squire, *Video Games and Learning: Teaching and Participatory Culture in the Digital Age* (New York: Teachers College Press, 2011).

[4] Neda Khalili, Kimberly Sheridan, Asia Williams, Kevin Clark, and Melanie Stegman, "Students Designing Video Games about Immunology: Insights for Science Learning," *Computers in the Schools* 28, no. 3 (2011): 228–240.

The researchers chose to implement this research in the capstone course for an interdisciplinary art and design degree within a large, public university art program as the students enrolled in this course had completed the art history survey course, and, at the end of their course of studies, would have had reasonable distance from the course material to have applied concepts from the course throughout their studies. The capstone course for the interdisciplinary art and design degree students maintains the expectation that students put into practice all knowledge and skills developed in the major and build additional skills that will help the students transition into the workforce. Therefore, it is expected that students from this course leave understanding how to productively and collaboratively work in teams, employ project management skills, recognize the unique perspectives they each bring to a project, and develop résumés and learn how to effectively self-promote as arts professionals for life after college. For the purpose of this research, the two sections studied added a learning outcome of producing working art history games that had been developed, prototyped, play-tested, and assessed.

The researchers interpreted their roles as facilitators, guiding the students to understand the essential parts of the project and the general goals of the survey course. They allowed the students to come to their own terms with their perceptions of the art history survey course and how they believed their creative game designs could improve on the commonly employed teaching strategies. Following institutional review board approval and signed consent from the participants, students were provided a demographic survey and were asked to complete several surveys throughout the course coinciding with the various stages of their project development. The reading material along with an introduction to the challenges faced by instructors and learners in the art history survey were provided to inform the initial direction of the project. The facilitation was coupled with a discussion of the responses to the various surveys with the students to help guide and inform their own understanding of what constitutes a learning outcome and to further understand their perspectives. As the course progressed, the researchers moved more into the role of "clients" for whom the projects were being created, offering the students an instructor's perspective as they worked on the games. From these varying vantage points, the researchers were able to collect data through observation, anonymous surveys, and the researchers' analysis of the final products produced by the student groups.

The 15-week semesters were structured to have immersion in the essential issues of game design and the art history survey course over the first half. The first half of the course began with student discussions of their art history survey experiences. Following these discussions, students were directed to engage with the concept of an art history survey course and student learning outcomes. These concepts were demonstrated to students through course discussion guided by chapters from *Discovering the Pedagogical Paradigm Inherent in Introductory Art History Survey Courses, a Delphi Study* and reviewing syllabi from different institutions.

To become familiar with concepts of game design and game-based learning, students were assigned readings from *Play to Learn* by Karl Kapp and Sharon Boller.[5] The students also played and discussed an array of game types based on general and art history content. Their play included a commercially-available, role-playing game, *ARTé: Mecenas* by Triseum, designed for

[5] As in note 3.

art history students to develop a sense of how learning outcomes and games can be integrated in a discipline-specific context.[6] At this stage, students were teamed up based on diverse skill sets as demonstrated by their resumes and their courses of study. The goal of the first half of this course was to identify the intended learning outcomes that the group wished to address through the design of a game and to examine games in the learning context.

The second half of the semester was dedicated to team-based design of game prototypes addressing the team's chosen learning outcomes. Students were given the option of creating a stand-alone game that complemented but otherwise preserved the traditional content delivery models common to the discipline—lecture, flipped, or active methods—or altering the structure of typical art history course delivery using a gamified approach. Course fees were used to purchase supplies as needed to produce working prototypes of the developed games.

To develop their games, student teams identified the problem or need for the game they were to design, identified the instructional goal that defined the desired end state of learner performance, crafted a player persona to understand their intended audience, and defined the constraints associated with this player and the art history survey course context. To keep students on track as teams for this second half of the semester, project management principles were discussed along with selected reading. At this stage, the teams produced Gantt Charts complete with schedules to guide their progress for the remainder of the semester. Following the principles of team-based learning, the in-class time for the second half of the semester consisted largely of "work sessions" to avoid student scheduling conflicts outside of the classroom, allowing them to progress on the team-based components.[7] The semester culminated in final group presentations where each student team produced their product in front of the class and the researchers as "clients."

Participants

Participants for this research included 45 students from two semesters of a capstone course for an interdisciplinary art and design undergraduate degree, all of whom had taken the art history survey course as a part of their core program requirements. In the initial survey, students indicated that they were familiar with playing traditional games, with the majority having familiarity with board games, card games, and console games with a mixture of different types of foci such as strategy, puzzle, and adventure games. There was only one individual that claimed any preference for educational games; however, the majority (75.6%) of the students responded that they felt games have a place in classroom instruction. Most students (84%) responded that they learn best in small classes between two and twenty-four students.

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[6] Triseum, *ARTé: Mecenas*, last modified 2017, https://triseum.com/arte-mecenas/.

[7] See L. Dee Fink, "Beyond Small Groups: Harnessing the Extraordinary Power of Learning Teams," in *Team-Based Learning: A Transformative Use of Small Groups*, ed. Larry K. Michaelsen, Arletta Bauman Knight, and L. Dee Fink (Westport, Conn.: Praeger, 2002), 3–26; Sharon Lightner, Marcie J. Barber, and Caroline Willi, "Team-Based Activities to Promote Engaged Learning," *College Teaching* 55, no. 1 (2007), 5–18; Jennifer Ball and Lauren Kilroy-Ewbank, "Team-Based Learning for Art Historians," *Art History Teaching Resources* (April 7, 2014), http://www.arthistoryteachingresourses.org/2014/04/team-based-learning-for-art-historians/.

Students were also asked various questions in the initial poll about their perception of the art history survey course. While students were neutral regarding their desire to take the course and the ease of the outcomes, the majority believed that the art history survey course should be required for more students. Their course experience required either Gardner and Kleiner's *Gardner's Art Through the Ages* or Stokstad and Cothren's *Art History*, but were ambivalent about the textbook requirement.[8] When asked to reflect on their perception of the art history survey course outcomes, students reported that they believed they mostly learned visual analysis, visual literacy, and cultural awareness while covering art historical information such as names, dates, and vocabulary along with historical thematic and contextual information and the ability to research and write about art. This perception parallels the actual course outcomes of a typical art history survey. Because of the writing component, these students favored the idea of an introduction to research and writing course as a prerequisite to the survey, a view that was expressed on several occasions in the open-ended reflections.

Students reported in the survey no preference between a linear or thematic approach to the art history survey course's focus and structure but strongly approved of a global perspective to the content. They stated that instructors mostly relied on single artwork analyses, comparison essays, and multiple-choice exams with a strong necessity for good note taking to pass the course. Fewer students described experiences in the course with other types of course projects or activities, such as research of unknown artifacts, writing journals, group projects, or more outlying teaching strategies. The students felt they made progress on the outcomes that they believed the course covered. The open-ended reflections largely expressed a distaste for large class sizes and the quantity of information covered, however, which they reported required memorization rather than critical thinking.

Researcher Expectations

The researchers expected that the students' perceptions of the art history survey course would be generally negative, and that art and design students would demonstrate limited appreciation for the course's purpose within their programs of study. This expectation was based on the researchers' anecdotal evidence from over thirty years combined teaching art and design students. In light of this perceived sentiment, the researchers expected that the participants would be eager to transform the art history survey class and use their games to radically upend if not replace traditional pedagogies. That is, the researchers expected that students who appeared unsatisfied by the essential experience of the course would seek to remedy this. Corollary to this, we expected that students would select learning outcomes that differed from the familiar outcomes studied by Yavelberg.[9] In light of the sample game played, the researchers furthermore anticipated that the students' games would be similar to popular video games, with complex scenarios and rewards, role play, direct competition, and an immersive experience, even if the

[8] Helen Gardner and Fred S. Kleiner, *Gardner's Art through the Ages: The Western Perspective* (Boston: Wadsworth/Cengage Learning, 2010); Marilyn Stokstad and Michael W. Cothren, *Art History*, 5th ed. (Boston: Pearson, 2016).

[9] These are identified in Yavelberg, "Discovering the Pedagogical Paradigm," 88-118.

students' technological skills and the tight game production schedule did not allow full development. Finally, the researchers anticipated that students who were educated in an era of high stakes assessment based on learning outcomes assessed with rubrics would have sufficient facility with these concepts to be able to develop this aspect of their games with limited instruction.

Results

Instructor observation at the outset of each semester revealed students were enthusiastic about tackling the survey course as a project. They liked the history of art as an area of study and, as art and design students, felt attached to it. They perceived it as relevant to their own practice and reported arriving at their first art history survey courses with an optimistic attitude. Students suggested that their enthusiasm for the art history survey course waned as they spent time in the course, and many of the participating students reported having strong negative feelings about the art history survey course by the time they had completed it. Their answers to the researchers' survey questions clarified these feelings, as students described the art history course as dry, boring, mundane, unmotivating, and unengaging. As one student stated, "Art History courses are super dry, boring, rote [learning experiences] that need to be kicked up a notch so that they are more memorable and have more energy and dynamism. Sitting in rows falling asleep to slides is not a great way to learn." The majority of the students believed that the art history survey course was not fun and agreed that fun made for a good class experience.

Discussions with the students and their anonymous survey responses revealed that most students disliked the art history survey's emphasis on what they called "memorization." They described the assessments for their courses as a main contributing factor to this perception in that these assessments mainly required recalling title, artist, date, and other salient facts surrounding an artwork. Those who had completed lecture-based art history survey courses also referred to the method of delivery as encouraging memorization due to the nature of the lectures. These lectures tended to run through slides with little opportunity for deeper explorations of the artworks displayed before them. Students who had taken an online survey course at the same institution, which never asked recall questions and was instead entirely based on applying information and skills, nevertheless also seemed to concur with this perception of art history learning as principally recall. The exception was a student who had taken a "flipped" art history survey class, who noted that the class applied what students learned in the readings.

The revelation that to the participating students all assessments that require students to demonstrate and apply knowledge are "memorization" goes far toward explaining how the students understood the games they planned and subsequently made. In the second, third, and fourth study surveys and in-class discussions, students overwhelmingly called their games "study helpers" or "study aids." That is, since all learning was for students memorization to be displayed on assessments, students coalesced the entire learning process and knowledge acquisition into the discrete, usually time-bound act of studying for an assessment. They found it difficult to conceptualize their games as teaching instruments, opportunities for application of learned information in new contexts or to new works, or learning resources. They narrowly saw

the games only as support for the one thing they understood students as doing during the course of a class: studying.

The nature of games as aids to memorization was further expressed throughout the survey responses and the nature of the games the students created. All but one of the games were played outside the instructional context, with play time at the end of a course period, for example, or outside of class. More significantly, many of the games were based around flash cards: they required the acquisition of content cards received through a trivia-like response to either collect points towards a goal or to proceed down a path determined on a board. The focus on trivia in these card-based games required that students already have foundational knowledge from the course in order to be successful, or to play the game multiple times, thus memorizing responses in order to progress toward the goal of winning the game. The games made this task fun. As one student wrote, the game "fixes a 'problem' by ensuring students will be able to retain the art history period styles knowledge they've been taught throughout the course. The game is engaging and entertaining and makes the whole process of studying more enjoyable for the students." Another student explained that the game allowed players to focus "on remembering what you learned in A[rt] H[istory] S[urvey] will make grades higher and study sessions more fun."

Student perception of the predominance of memorization over higher levels of learning in the art history survey and educational games uncovered another, deeper issue that affected game design: the students seemed to understand differently from instructors the purpose or function of semester-long college classes in general. They understood that a class delivers content (or facilitates its acquisition) that students are required to know for each assessment: quiz, test, or paper. Yet neither group of students was able to independently describe the structure of a semester-long class in general: the curated units within the course, the organization of the content, the skills that are taught and modeled, the chunks of teaching and learning that happen, or the purpose of written assignments or in-class activities (if any) to further learning. Students in both groups were unable to describe the art history survey class specifically as composed of the curated presentations of period-style-based modules (the Egypt unit, the Mesopotamian unit, and so on) that faculty use to organize a great deal of information. To them, students in the art history survey classes were essentially receiving an avalanche of information, which parallels the experts studied by Yavelberg who found the course to cover a great deal of information in a short window.[10]

While students expressed throughout their anonymous responses and discussions with the researchers that their games would tackle the issue of content overload and lack of class time, their designs compounded these issues. Some looked to expand on the content delivered in class by focusing on supplemental non-Western content while others focused deeply on one content area, expressing that the game could also be used with other areas if more trivia-based cards were produced to cover that content. As a result, students in the present study were even more overwhelmed by the volume of content than the faculty who described the art history survey class for Yavelberg. This issue of content overload was further described in the students' final

[10] See, for example, Yavelberg, "Discovering the Pedagogical Paradigm," 191 and 217.

reflections, as many were surprised by the number of trivia-based content cards necessary to provide a challenging game experience, and many expressed that they would still need to make even more cards to complete their games.

Because the students in this research study understood the art history survey only through its content, not as a class and learning experience shaped by the instructor, it was hard for them to conceptualize how a game could contribute to the course as more than just be a way to test content knowledge. Even the very simple concept of the chronological division of the survey courses into period styles posed a challenge, with the result that two of the final games from the first group of participants were unplayable within a semester. This also made it impossible for the first group to get beyond lower level outcomes and critical thinking skills: employing terms, listing simple formal period style characteristics, explaining the overt meaning of a work of art, and matching a work of art to its era.

As a result of this observation, the second semester included additional instruction focusing on identifying a problem or core concept in art history as a discipline that the game was to solve. The students spent time exploring the broad underlying concepts associated with the teaching (and practice) of art history: art has form and content and was produced within a specific context; forms, content, and contexts change over time and differ between cultures. The student groups then addressed how the structure of the chronological art history survey course parallels these concepts, with units or modules addressing form, content, and context within discrete historical periods and in specific cultures. Observation revealed that once this framework was made transparent, students found it familiar and rapidly associated it with their previous courses as art and design students. Finally, working from these common art historical concepts and the typical structure of an art history course, the students arrived at standard learning outcomes, which were confirmed by subsequently reading Yavelberg's 2016 study. These came relatively easily to the students, although writing measurable outcomes proved just as vexing for the participants as it is for many seasoned educators. A final adjustment for the second semester of students was to insist on constant attention to the alignment of the game with the core art history concept and selected learning outcome at each stage of game creation.

The final learning outcomes selected by the teams in the first semester reflected the standard outcomes in art history survey classes: employing the terms and performing visual (formal and iconographic) and contextual analysis. Yet, in light of the students' perception of learning as solely memorization, many of the resulting games ended up assessing little more than terminology, slide identification, and fact recall. For example, a game question asked, "Who is considered the founding father of Cubism along with Pablo Picasso?" The second semester students chose similar outcomes, but with the additional attention to concepts added by the researchers with these second semester students, the teams did a stronger job of reaching higher order thinking. For example, a race-to-the-finish game required the players collect works and curate an exhibition on a particular theme, providing a verbal justification for the works selected. This verbal justification encouraged healthy debate that influenced judgement by those playing as to whether the work fit the exhibition's objective. When the other game players debated how well (or not) the proposed exhibition reflected the theme, they not only recalled learned information but analyzed works, evaluated arguments, and made critical judgements based on

evidence. Two members of the group of four articulated this level of critical thinking in their game description, writing, "Students learn how to bring art history into their conversations and discuss it. [T]hey also learn visual analysis skills by analyzing the images of the paintings and making connections to their themes based on what they see….Students are able to analyze paintings and identify themes from the art history survey. [By playing the game,] students should be able to explain their decisions."

Classroom observation and the research surveys revealed the benefits of immersion in art history content that the game design process created. While the researchers did not aim to study the acquisition of art history knowledge via game design, it was clear that students gained a new understanding of how big the history of art is. Responding to a question on Survey #3—"What constraints or challenges have you faced in developing this game prototype?" —several students noted how much content there was to deal with. A student whose game focused only on ancient Greece and Rome wrote, "The sheer amount of content. We didn't realize it would take so long to compile everything." Others similarly noted all of the effort required to write the content portion of their teams' games. Responding to a question asking what the students would do differently if they had unlimited resources, one student whose team's game focused on the nineteenth century wished that the group had "studied the content a lot more," and another would do "more research for content."

The students' stated perception of educational games as making education "fun" highlighted another theme that was expressed in Yavelberg's 2016 study. Many of the students in the first survey and in classroom discussions stated that the problem with art history survey courses is that they are not fun or engaging; these students indicated that their desired outcome was to make the course more engaging as a result of playing their game. This sentiment mirrors the perception of faculty in Yavelberg's study, where discussions regarding using games as a teaching strategy resulted in the perception of games as "edutainment" or simply watering down the learning process. Much of this perception also stems from the types of games that were produced by students, highlighting the lack of understanding of the complexity that game mechanics can bring to problem solving and critical thinking. By defaulting to quiz-style games, and relying on a chance to win, many projects simply mirrored popular game mechanics found in such titles as Trivial Pursuit, Monopoly, Clue, or Taboo.

A few games did explore role-playing and as a way to address challenges faced in the art market. The issues of value, theft, curation, auction houses, and other concepts were incorporated into several games, which provided opportunity for dialogue and debate that extended beyond the quiz-like nature of the cards. What helped these game concepts to dig deeper was often the introduction of a strong theme or story that forced players, and in one case the instructor, to take on roles. For instance, students would become art collectors creating an art exhibit while the instructor (or another student) would play the role of the auction house. As these games developed and were play-tested, students voiced that they were having difficulty building in more complex game mechanics, scoring methods, or the possibilities of chance beyond the randomness of the card deck or a dice roll that kept players on a linear path.

Given that this was a capstone course for art and design students, the students became heavily involved in the aesthetic qualities of their games. This was a danger that was expressed in Boller and Kapp's *Play to Learn*, and despite the assigned readings and guidance to focus on solving the problem through the game, students wanted to have an attractive, saleable product by the end of the semester. The desire to spend additional time on the aesthetic quality, and the tight schedule of a semester in which to produce the games, may have also contributed to the lack of depth that many of the games provided. Throughout the survey responses the students indicated that with more time and resources, they could produce digital versions of these games that would be easier to implement.

Implications

While no single game that was produced from these two classes could be effectively introduced in a subsequent semester, many elements that these games grappled with highlighted opportunities for future art history survey game designs to improve student engagement. The experience also highlighted how the introduction of game design itself as a project could be both a challenging and a rewarding experience in art history courses. Through game design, students were able to grapple with critical thinking, research, problem solving, and team-based learning. Through the process of design, testing, and redesign, students became more comfortable with an iterative process to problem solving. Students also claimed strong ownership over their games, demonstrating how rewarding the experience was for them personally.

With regard to the art history survey course, this experience unexpectedly illustrated that art history survey faculty can be more transparent about what the courses achieve and how they are helping students. While instructors may intend to deliver their art history survey course with strategies that reach beyond the lowest level of Bloom's Taxonomy, it is not enough to list the learning outcomes on the syllabus. Instructors need to keep returning to these learning outcomes throughout the course and design experiences that emphasize the interconnection of learning outcomes to these designed strategies. For example, many art history survey courses implement a formal analysis paper as a teaching strategy. Not only is this analysis, but this assignment also applies learned information to a new object, requiring students to evaluate the work to argue for its inclusion within a period style. In what ways might an instructor introduce and provide feedback on such an assignment that will create an authentic experience for the student? Similarly, assignments that ask students to find a work in the museum and explain its style and content require students to select an object that reflects information the student is comfortable with, develop a bibliography of relevant sources, relate the work to its context, and develop other critical thinking and research skills. If instructors are to increase the agency of students with regard to their educational experiences, being more transparent on the connection of assignments to higher-level learning outcomes and student motivations will be helpful.

While specific learning with regard to content covered in the art history survey was not directly measured, future designs might introduce a pre- and post-test design for content areas that were focused on by student groups could test these groups' growth in retaining foundational knowledge through the game development process. Similar tests could also be implemented with

individuals who play these games to understand the effectiveness of games to reinforce the internalization of factual information.

As students described, many of these games would benefit from a digital version. With contemporary game design engines, the development of digital quiz games can be created by faculty and students with relatively little effort or resources. By involving students in digital game development, headway may be made in appropriate contexts as a means of interdisciplinary instruction supporting science, technology, engineering, arts, and math (STEAM) education as noted by Khalili et al.[11] Faculty may also implement such digital games in manners suggested by students in this research as a means of studying for exams or perhaps even in place of standard exams, allowing more class time to focus on developing higher-level learning outcomes.

Students in this research demonstrated the power of themes or stories to engage with course content. While the learning that took place in most of the games that were suggested can be mapped to the concepts of memorization, the themes provided an element of role play and in some games the opportunity for informed debate. The story is a key element in game design that instructors can take more advantage of as good stories can not only transport a learner, they also have been proven to be linked to constructivist learning principles.[12] Other game mechanics—such as integrating chance, challenges, non-player characters, collecting, and competition—also proved to be elements that students found added engagement to the course content.

Future Research

It is still the intent to extend on this study by developing game-based strategies that may be practically implemented and studied within art history survey courses. It will be important to study the effectiveness of such teaching strategies against traditional lecture-based art history survey courses. The researchers intend to develop a few games from these findings that may be more easily integrated into these traditional survey classes and explore their effectiveness.

Also, more research needs to be conducted with regard to learning outcomes for the art history survey course and the connections of such outcomes to teaching strategies and content. The students in this study demonstrated a lack of understanding of the interconnectedness of the content, delivery, and assessments within the art history survey courses that they had completed. These students reported that they were "studying for the test" and then forgetting about the content once they had completed the course. This lack of understanding led to a lack of agency that students felt with regard to the content that was being delivered throughout the course and their education.

[11] Khalili, Sheridan, Williams, Clark, and Stegman, "Students Designing," 234.
[12] These are discussed in Jerome Bruner, *Actual Minds, Possible Worlds* (Cambridge, MA: Harvard University Press, 1986).

Finally, more research needs to take place to identify the audience of the art history survey course in varying contexts. It is not enough for instructors to rely on their personal experience with the content in order to deliver this material to the audience. Instructors and researchers can learn a lot from a common game and marketing design analysis strategy: crafting player personas, as described by Boller and Kapp.[13] Player personas are an effective tool to maximize the effectiveness of a design, whether it be a game design or a learning design, by crafting a vivid picture of who will be interacting with the final product. This process also creates a high level of empathy in the creative process that improves the connection between design and audience. Research that can result in "player personas" relative to the art history survey student audience in various contexts will provide instructors with more empathy for their audience when crafting their lessons.

[13] Boller and Kapp, *Play to Learn*, "Part Two: Crafting Player Personas."

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