

DESIGNING AN INTEREST-BASED INTEGRATED CURRICULUM AROUND ESPORTS

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A crisis of literacy has emerged among high school students in the United States. In order to encourage students' engagement with literacy education, there is a need for an integrated curriculum of English Language Arts (ELA). An integrated language arts curriculum would allow students to learn literacy and reading skills while engaging with a motivating context. Meanwhile, esports has grown as a worldwide culture, expanding to more than just players and spectators to include a whole ecosystem of stakeholders. As esports grow in popularity and acceptance, educators have looked to connect the skills developed in esports with academic and career opportunities. We found esports to be a viable content area for the integrated curriculum because esports is favored among many students and involves reading activity as an essential part of participation.

In this paper, we present the development of the first high school integrated curriculum that uses esports as its main content. Over two years, we developed the first high school curriculum that integrated esports as its main content. Spanning four years, the curriculum melds ELA standards, Science, Technology, Engineering and Mathematics (STEM) practices, career-technical education (CTE), and social-emotional learning (SEL) under the umbrella of esports. For each step, we present the rationale in the design process, and challenges have arisen during the curriculum design process. We detail how the curriculum ties each set of standards together and report on first implementation efforts. Additionally, we present how teacher feedback and student workshops led to the design of club toolkits, supplemental material for teachers and school clubs.

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INTRODUCTION

There is a literacy crisis in the United States among teenage boys. Kleinfeld (2009) shows that boys fall behind girls in both reading and writing across all grades (4th, 8th, and 12th). The gap widens as they proceed: from 4th grade to 12th grade, the percentage difference of boys and girls who are below basic increases from 10% to 15% in writing, and from 6% to 11% in reading. Boys also regularly score below girls on basic literacy and reading tests across the ages (Snyder & Dillow, 2011). Boys, in particular, are more likely to be diagnosed with a learning disability or ADHD (Visser et al., 2010), and less likely to be on their high school honor roll or participate in any extracurriculars (Kleinfeld, 2009).

Reading, however, is an essential part of participation and playing in video game culture (Steinkuehler, 2012). 36% of gamers regularly read game-related texts such as game reviews, strategy websites, fan fiction, and forum discussions as part of their gameplay, and 59% of massively multiplayer online (MMO) players engage in reading related to the game (Lenhart et al., 2008). Reading activities involved in and around gameplay can potentially engage students in more academic forms of reading; these reading practices may be effective for students diagnosed as struggling in school because they are interest-driven, rather than required by schools and teachers (Steinkuehler, 2012).

The latest dominant worldwide trend in gaming among youth culture is esports. The World Championship of *League of Legends*, the most popular multiplayer online battle arena (MOBA) genre esports title, showed a steep increase in unique viewership from 27 million viewers in 2014 to 57.6 million viewers in 2017 (Goslin, 2017). Successful esports titles have already surpassed traditional sports in terms of viewership and player salary. In 2016, the NBA final match was viewed by 31 million people, while the League of Legends world finals had 36 million unique viewers. The salary of esports players varies by teams and leagues. Still, Faker, the best and most widely known professional League of Legends player, earns \$2.5 million a year as basic salary, \$1.1 million from prize pools, and even more from streaming on Twitch with more than 1.5 million followers (Newell, 2018). Esports is no longer a cult-like phenomenon; it is a contemporary consumer culture among youth (Seo & Jung, 2016).

As this culture grows, colleges and high schools across the United States have begun to develop esports programs for their students. The first scholarship esports team in the U.S. was announced at Robert Morris University in 2014 (Tyson, 2014). According to ESPN, there are 125 institutions of higher education with varsity esports programs in North America as of February 2019 (Morrison, 2019). These varsity esports programs are similar to the varsity programs of traditional sports in several ways: Many of these collegiate programs offer scholarships to students, the same way they may for their

traditional sports programs (Reitman et al., 2019). Scholarship players are expected to train and practice routinely with their regular teammates and to play for their team in the collegiate leagues as traditional sports players do (Seo & Jung, 2016). The collegiate championships are broadcast live from the same studio as professional matches, giving students and players a stage to aspire to and an understanding of the number of people and professions necessary to produce a high caliber tournament (Reitman et al., 2019a). The remarkable growth of esports as a school-based activity in the U.S. is noteworthy, indicating a slow but sure decline of the stigma of video games and their rise as an alternative leisure activity. This wide and solid base of competitive esports players cultivates a richer environment across all tiers of esports competitions.

Besides the expansion of varsity esports programs in the last several years (Bauer-Wolf, 2019), high school leagues are developing rapidly in the U.S. (Schwartz, 2018). High school clubs have now emerged across the U.S. and abroad, hosting nationwide high school leagues for different esports titles. While diverse questions, opportunities, and challenges are presented by esports' presence in a high school context, so far little research has been done on the scope, structure, rationale, and potential benefits and drawbacks of the presence of esports in the high school environment (Reitman et al., 2019). Yet, given its popularity and interest among teenagers, esports may be a solution to the problems of students' literacy and a viable context topic for an integrated curriculum.

The Integrated Curriculum model is a curricular framework that encourages students to delve deeply into a content area, build an understanding of how concepts relate across fields of study and engage in a problem-based learning experience (VanTassel-Baska & Wood, 2010). An integrated language arts curriculum would allow students to learn literacy and reading skills while engaging with an intrinsically motivating context. In this paper, we present the development of the first high school integrated curriculum that uses esports as its main content. In the first section of the paper, we explore why esports is a good vehicle for high school education: we briefly scan the status quo of esports-related activity in high schools and explain the rationale of an esports' approach to bridging students' interest and engagement in learning. In the second section, we illustrate the collaborative curriculum development process, challenges, and the result of the curriculum design, along with the first implementation in a high school class. The third section of the paper describes the production of club toolkits, additional resource materials, and lesson inspirations designed for teachers and school clubs. We provide the context of the production, design process, design results, and the challenges arisen during the production.

DESIGN RATIONALE

High School Esports

Various stakeholders in education, including administrators and parents, may doubt the value of video game play in a school setting; bad press surrounding toxic play and behavior in “gamer” culture may be their only reference point, despite past research suggesting pro-social benefits in cooperative game play (Kovess-Masfety et al., 2016; Velez et al., 2016; Steinkuehler & King, 2009). But beyond that, incorporation of esports into high school brings specific challenges and opportunities, such as student and parent engagement, extracurricular activities, and interest-driven learning. In recent research on high school esports, Reitman et al. (2019a) present current approaches to esports implementation in high schools, summarize common themes among them and make recommendations on this emerging field. Commonly described benefits of esports in high school include increased student engagement, academic and professional skill development, interest-driven learning, and social and emotional learning. Barriers for esports in high schools include convincing parents, teachers, and school administrators of the value of esports for interested students, and maintaining the professionalism of the program itself. Recommendations for esports programs in educational institutions (Reitman et al., 2019a) include the following:

- Combine strong engagement at the local level with a stable central organizing body for schools to interface with
- Engage and educate parents, teachers, and school administrators
- Organize so that teachers and administrators offer a broad range of support to students
- Remain an interest-driven space
- Build close relationships between high schools and colleges across the nation
- Consider the educational aspects of selected games
- Encourage student engagement in school and community
- Foster skill learning for professional and academic development
- Emphasize the development of social and emotional learning.

The rationale of our high school esports curriculum reflects, in large part, just these recommendations. The topic of esports fits well with the students’ interests and provides an interest-driven learning environment for students. This interest is connected to the development of academic and professional skills, especially by fostering STEM skills. The social aspects of team play in esports emphasize social and emotional learning among students. The creation,

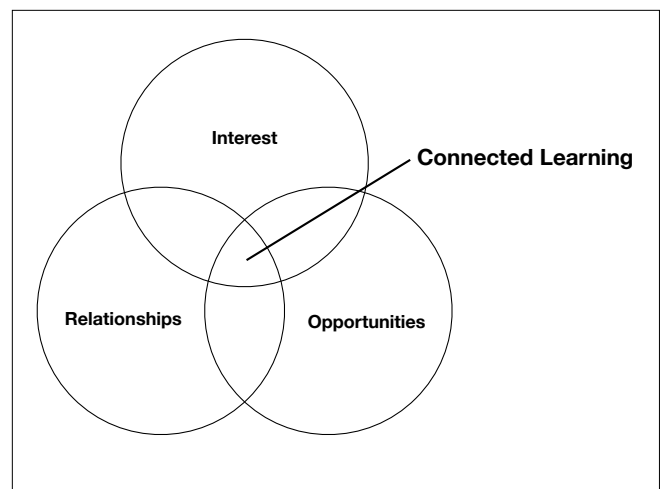


FIGURE 1. Concept of Connected Learning (Ito et al., 2013, p. 63).

publication, and implementation of the esports curriculum fill a gap between students’ interests and the school and community.

Connected Learning Model

Our rationale for integrating esports with curriculum design builds on the Connected Learning approach (See Figure 1). Connected learning combines interest-driven learning, supportive social relationships, and educational, economic, or political opportunities (Ito et al., 2013). In an age of abundant access to information and social connection, connected learning involves building more diverse entry points and pathways to opportunity by leveraging the affordances of new media (Ito et al., 2013). Esports provides a great opportunity for education from this perspective: esports is a peer culture of great popularity, and new types of literacy (ELA) around esports can engage student (Interest) that entails cooperative activity and socio-emotional learning (Relationships) with promising authentic connections to academic opportunities in STEM and ELA, and potential career opportunities in CTE (Opportunities).

Context of Design

The North America Scholastic Esports Federation (NASEF) is the governing and organizing body whose mission is to bridge esports with student college and career readiness. Founded in January of 2018, NASEF is a collective partnership between the University of California at Irvine (UCI) Department of Informatics, Connected Learning Lab (CLL), Orange County Department of Education (OCDE), Orange County STEM Initiative, and Samuelli Foundation. Each contributing organization leverages its assets and specialties to take aim at NASEF’s mission.

In its infancy, NASEF brought the novel concept of an esports league to high schools. Students with the passion for playing League of Legends and other game titles could

now do so under the banner of and with the approval of their schools. Research on aspects of science, technology, engineering, and math (STEM) conceptualization, along with social-emotional learning, could be conducted through league play. However, the goal of NASEF was to more directly marry esports with learning and not simply through play. Aware or not, student esports participants navigated real-world applications of various skills with positive career implications. For instance, students creating logos for their esports team utilized digital media arts. Recognizing the opportunities for more explicit learning in a more inclusive esports structure, NASEF veered away from advocating for the team-only structure.

Instead, NASEF purposely highlighted a “club” structure. Preliminary research (Anderson, et al., 2018) on the professional and collegiate esports scene revealed a more diverse and complex ecosystem than just competing teams. Figure 2 illustrates the five role categories that comprise the esports community. As detailed in Lee & Steinkuehler (2019), Content Creators are artists, streamers, and journalists across diverse platforms and a variety of media (visual, audio, written, and video) with demonstrated expertise across academic domains, skill sets, and tools. Entrepreneurs extend the boundaries of esports practice, supporting innovation, and creating new products, deliverables, services, and opportunities. Strategists include coaches and analysts, whose primary focus is on gameplay data analysis for direct improvement of a specific team, and community contributors (theory-crafters), who maintain the game knowledge base or “meta.” Organizers handle the administrative details of the team’s roster and finances, the online/offline competitions and marketing events, and the technical infrastructure needed for live competition and spectating. The NASEF esports club was thus designed to reflect this broad ecosystem, including not only competitive teams but just as crucially, key leadership roles for students with various interests beyond the game itself. The positive opportunities for the actual application of student passions nested within the esports club grew exponentially as social media managers, website creators, shoutcasters, coaches, and analysts all found a home within the esports ecosphere.

RELEVANT WORK

The study across the first year of the league conducted by our research group (Cho et al., 2019) was primarily exploratory in nature, investigating the existing and potential alignments of students’ naturally occurring activity with core standards in STEM, English Language Arts (ELA), Career Technical Education (CTE), and Social-Emotional Learning (SEL). It also investigated important patterned changes to students’ affiliation with a school, peers, and adults. Only the researcher part of the curriculum design team could directly interact with the target students, and the result of this study

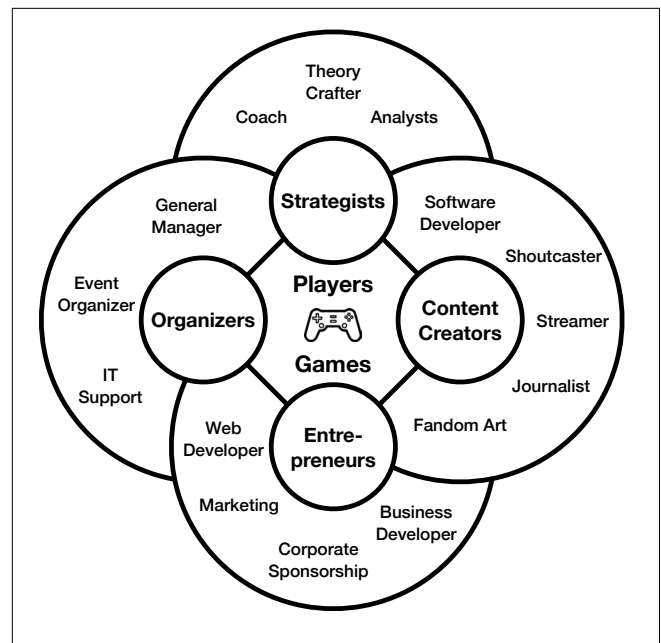


FIGURE 2. The esports ecosystem (Anderson et al., 2018; Lee & Steinkuehler, 2019).

provided the rationale of the curriculum design for the rest of the team.

To understand the impacts of NASEF in the first year, we collected field observations (20 hours of fieldnotes) and focus group interview data with student club members (n=39), teachers serving as on-site General Managers (n=11), online virtual near-peer coaches (n=5), and parents (n=10). NASEF aims to support equity and diversity at its core value (NASEF, 2020). The selected schools were representative of maximum variation of geographic (equally split between North and South county), economic (from under 15% of students qualifying for free or reduced lunch to over 70%), and racial/ethnic diversity (involving schools where the largest populations were Hispanic, White, or Asian) across the Orange County area of California (Cho et al., 2019). This diverse nature of the target student population allowed our design to be more flexible across contexts of different schools in other regions when it is broadly deployed.

Students’ spontaneous activities within the first-year clubs included game data analysis, writing expository and persuasive text, computer setup, individual and team communication and relationship work, and increased affiliation with the school. These first-year activities served as embryonic units and activities that we then chose to cultivate and amplify as the basis of our curricular designs. We took students’ organic practices related to the league and used them as the basis for more structured and formal (standards-aligned) units, building on their existing esports interests to better engage them in topically-relevant and context-sensitive scholarship.

Based on these findings, we designed a credentialed esports-based integrated ELA curriculum and online curricular materials in the form of digital toolkits that could be used as enrichment materials by clubs nationwide. In what follows, we detail our design process for each, the challenges we faced during the process, and examples of the results. First, we detail our design process for creating the credentialed curriculum, from the initial three-day workshop to revision and final credentials. Next, we present the resulting design by describing two units, in particular, selected for their representativeness, and discuss first implementations of the curriculum at a participating school site. We then turn toward the design process for the creation of the Club Toolkits, supplemental materials incorporating more activity-based lessons. The toolkit design process took place alongside curriculum development, with many toolkits developed from initial weekend workshops offered on campus for high schoolers for free. Finally, we discuss teacher feedback on the materials and how their requests led to the development of additional and better materials for both classrooms and clubs at school.

DESIGN PROCESS OF THE CURRICULUM

Design Timeline

Figure 3 illustrates our curriculum and toolkit design process which was iterative but proceeded along with the following steps: draft-writing by teachers (January 2018), student workshop (February ~ March 2018), teacher workshop for instruction materials (June 2018), student summer camp (July 2018), and toolkit production for high school esports clubs (August 2018). Throughout each part of the design and development, researchers, teachers, district administrations, and club student leaders were in constant conversation with each other to design materials and artifacts that would help the best leverage each stakeholder to support students and players. As development continued, materials built previously would be repurposed and adjusted to inform future materials.

Following the creation of the first draft, a selection of activities was fleshed out for deployment as weekend workshops through the UCI Esports Arena. These weekend workshops were parts of the preliminary curriculum first piloted as standalone activities with high school students. Alongside these lessons were topics that were interesting and natural points of discussion in esports learning but did not meld very easily into an ELA curriculum, such as building a PC or analyzing game statistics. Activities featuring esports skills such as shoutcasting or streaming were initially covered in the curriculum but were later pulled out and redeveloped as standalone practitioner workshops.

Even when the curriculum was approved and ready, we found that districts were hesitant to fully buy into a 4-year alternate curriculum. At a teacher workshop for creating instruction materials, teachers requested more reference materials, particularly resources to support ELA teachers unfamiliar with esports terminology or specific game communities. In response, we developed such materials as well as smaller “toolkits” to support teachers who wanted small, teachable segments to “taste” with their students. Such toolkits consisted of a host of esports resources, information about areas of the esports ecosystem, and sample activity ideas based on the weekend workshops.

Design Team

The curriculum design team was constructed to balance teacher practitioners, researchers, and professional viewpoints and resources within the overall design. The balanced composition of the team made us collaboratively, iteratively, and systematically engage with the creation and continuous improvement of curriculum design.

We recruited 15 high school teachers from Orange County who were interested in writing a new esports based curriculum as the writing team and divided them into four groups to write each grade’s curriculum (9th-12th). Each team included 2-3 ELA teachers and 1-2 CTE teachers/experts. ELA teachers had a good understanding of ELA standards that the new curriculum should follow, and provided literature

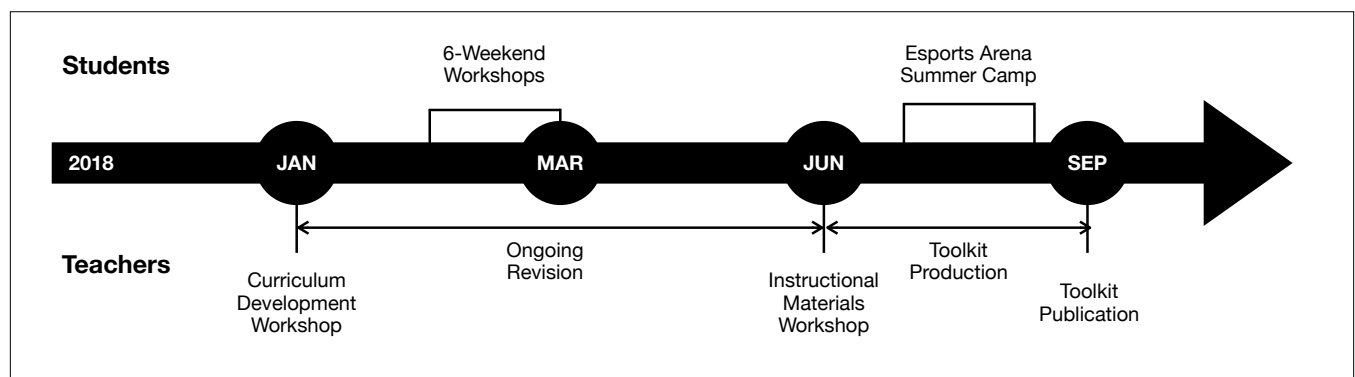


FIGURE 3. Timeline of curriculum development.

canons and readings that were used in each grade level. CTE teachers were recruited through OCDE; each of them had experience in the industry (e.g., in marketing, entrepreneurship, or hospitality) relevant to the CTE standards of each grade. CTE teachers could clarify the valued ELA skills (writing and speaking) from their domain and explored the possibility of esports as a new topic of CTE. Joint discussion of ELA and CTE teachers generated relevant unit exercises for students' ELA skills such as writing business reports or giving a pitch according to the CTE topic of each grade.

While teachers took the main role of the curriculum writing, two curriculum specialists from the University of California Curriculum Integration, 3 STEM, 2 CTE, and 1 ELA experts from Orange County Department of Education participated as consultants and roamed around different groups, providing guidance as needed. Specifically, STEM curriculum specialists provided resources for integrating STEM practices into existing activities and helped teachers shape understandings of what constituted STEM practice.

Additionally, six doctoral/postdoctoral researchers from Connected Learning Lab and 5 UC Irvine League of Legends scholarship team players were invited as guest consultants to provide deeper knowledge for teachers who lacked knowledge about esports or games. The researchers provided academic and practical resources related to esports, which emphasized the social and academic impact of esports and video games on students. 1-2 researchers stayed with each group during the writing sessions, providing relevant resources and logistical assistance. Later, the researchers acted as the primary writers for workshops and club toolkits. The scholarship team players won the 2018 national college championship and could present knowledge of the game to teachers who were not familiar with the game or esports scene. They also provided their experience as a semi-pro student player, which could be a possible career path for students, and introduced other possible careers in esports for CTE topics. A couple of players were former professional players who played in the North America League of Legends Championship Series, the highest tier of all leagues. With their knowledge, researchers and players helped ensure that esports was used and represented faithfully. The equal parts research and teacher practitioner teams ensured that teachers could drive the development of the curriculum but have enough support from experts to create a curriculum that genuinely engaged in CTE and STEM practices.

Design Workshop

Zero draft workshop.

The zero draft workshop was organized as a 3-day session to write a draft of the curriculum. The workshop was hosted at the University of California, Irvine, from January 18th to 20th,

Grade 10: Esports and Entrepreneurship	
Unit 1: What is Esports Entrepreneurship?	Unit 4: Key Assignments 1. Market Research Essay: What kind of companies are out there? 2. Career Research Essay: Who are the players in esports entrepreneurship? 3. Group project: Write a Business Plan - Choose your field and fill in roles. 4. Group project: Pitch your business model
Unit 2: Business models of Sports in General	
Unit 3: Games Entrepreneurship and Esports Entrepreneurship	
Unit 4: Different Roles in Esports Entrepreneurship	
Unit 5: Esports Entrepreneurship and Society: Social Norms, Ethics, and Law	

TABLE 1. Preliminary sample assignment for teachers' reference.

2018. Before the first workshop, the researchers and specialists set the agenda for each of four different grades. Grade 9: Esports and Game Design, Grade 10: Esports and Game Entrepreneurship, Grade 11: Esports and Game Marketing, and Grade 12: Esports and Game Hospitality/Recreation. Before starting to write drafts, researchers and teachers reviewed a previously approved English 9 and Game Design curriculum as a sample to inform the requirements and structure of Orange County school curricula. Researchers prepared suggested topics for each grade to give teachers ideas for potential connections between esports games and learning. Each grade consists of 4 or 5 units, and each unit consists of 4-5 key assignments. Table 1 presents sample key assignments for one of these units. Please note that this is not the final curriculum: this is a sample key assignment created for teachers' reference.

For each grade level, researchers provided lists of academic materials such as books, papers, and online resources to help establish a theoretical background for the curriculum. For teachers who were less familiar with video games and concurrent cultural practices around video games, researchers also provided materials that helped explain the game itself and other surrounding cultures such as streaming and esports spectating. In our case, League of Legends was chosen as the target game because of its wide fan base and overall longevity; we provided supplemental materials such as Riot Games' official guide for playing League of Legends, videos of well-known League of Legends game streamers, and play videos from official World Championship events.

Workshop process

The format of the main 3-day design workshop was 'write, share, and revise'. The first day of the workshop started with a debrief of the context and purpose of the curriculum, followed by a training session to properly integrate the

standard components into the curriculum. Then 15 teachers and 6 researchers were grouped into 4 different grade levels as described earlier in the Design Team chapter: each group had 2-3 ELA teachers, 1-2 CTE teachers, and 1-2 researchers, while curriculum specialists and subject experts checked in with each group occasionally.

The first day of the group-writing was mostly about understanding the concept of esports and brainstorming how to integrate it into the curriculum. Many teachers had a little knowledge about esports and the surrounding culture, so esports researchers and scholarship players were available as resources. They watched videos of famous esports matches, visited the campus esports arena to play esports games, and experienced the team-play nature of esports. This learning experience for teachers continued in the next two days as well. While learning esports and surrounding culture, ELA and CTE teachers came up with relevant ideas about how to organize units, readings, and exercises. The 3-day period was not long enough to immerse them into the whole esports culture, but it was a chance for teachers to start engaging themselves in the new youth culture.

In the group-writing session, the writing team first did an open brainstorm on esports topics related to the assigned ELA and CTE standards, then identified the top ideas that seemed workable. At this stage, no one acted as a discussion leader because no one was an expert on all of the topics: ELA, CTE, STEM, high school curriculum, and esports. Instead, teachers and researchers tried to approach the curriculum from each domain to see if they could get a legitimate fix across all disciplines.

Teachers spent the whole first day building the structure of units. They referred to the sample structure and standards, but starting from scratch was difficult for every member of the team. Among them, CTE teachers were able to list out the topics to be possibly included because CTE topics are more tangible and concrete than ELA topics. In the team for entrepreneurship (grade 10), CTE teachers suggested esports market research, business plan, marketing, and hospitality as possible topics. Esports experts then added their thoughts on the status quo of the esports industry, career paths in the esports ecosystem, and existing businesses related to esports. They also suggested several resources for students to watch and experience esports. CTE teachers took the idea of an esports team manager and event organizer to link the esports topics to the related CTE topics (business plan and hospitality). ELA teachers linked the career of shoutcasters (esports casters) to the ELA activity of public speaking and picked TL Taylor's *Raising the Stakes* as a possible reading resource for students to understand the esports. Later, STEM experts joined the discussion, and esports researchers added their thoughts on the possibility of statistical analysis of esports players. CTE teachers suggested bringing *Moneyball: The Art of Winning an Unfair Game* by Michael Lewis as a

reading material because it is a story about using financial and statistical information in running a successful business in sports management. ELA teachers confirmed that this is appropriate material for the ELA curriculum. STEM specialists cast an idea of adding a STEM-related activity, and the CTE teachers figured out an activity integrating CTE, STEM, and esports: Starting a new esports team business and filling out the form of "Calculate Your Startup Costs". To finish this assignment, students would need to do their research on the esports industry, including the salary of esports players, the ticket price of esports events, fundings from the sponsorship, etc. This was an example of how three different domains (ELA, CTE, STEM) weaved their disciplinary demands using esports as their topic interest.

ELA teachers had a good understanding of the ELA curriculum structure and relevant standards. As the team organized the unit structures and fleshed out exercises, ELA teachers naturally took a decision-making role, deciding what to include and what to exclude. As with the CTE teachers, STEM specialists and esports experts brainstormed ideas about possible content, and ELA teachers organized them into ELA units with compatible reading content and writing/speaking activities.

There were several conflicting issues within teams about the choice of content in terms of the appropriateness for students and uses in schools. Some esports games are R-rated because of their violence, and language from some video footage of live esports events were not appropriate for students. All members of the team were aware of the potential problems related to this, so the team gave particular scrutiny to inspecting the content used in the curriculum.

At the end of the day, all 4-grade teams gathered to share progress for the day. While the group writing sessions were designed for in-group discussion and collective writing, the debrief session of all teams were designed to encourage between-group discussion and negotiation. Each team referred to what other teams had done in the day and exchanged feedback with other teams during the debrief session. We also found that there are several overlapping topics across the grades. For example, the Grade 10 team included marketing as its topic because it is one of the essential parts of entrepreneurship. But the topic of marketing was already covered by Grade 11, so the Grade 10 team had to adjust the inclusion of the marketing topic. The Grade 10 team decided to exclude the topic of marketing in general, and instead emphasized the marketing activity of new entrepreneurs.

This workshop structure of 'write-share-revise' proceeded for three days, but the writing could not be finished only within three days. The curriculum team continued writing after the on-site workshop until it was reviewed and approved by the University of California, Office of the President (UCOP).

Challenges

The first challenge emerged from the relationship of the curriculum to data science and ELA standards. The initial curriculum goal was to make explicit the natural connections of esports and STEM skills. While there was ample opportunity to bring in science and data science practices, there was less data science incorporated than expected. A curriculum addressing these data science would not combine into a cohesive equivalent of a college-prep STEM course. Further, other math or analytical skills would be needed to build up separately - in order to do some of the analytics, and other statistical skills need to be understood. Ultimately, we chose to build the STEM and data science-heavy connections into separate, standalone workshops. These could be easily integrated into a course for a few days, but not require an entire class to experience. As we examined the roles of the esports ecosystem, we found more positions that dealt with communication than data analytics. This led to the turn towards an ELA-rooted course.

Despite the shared goals of esports and ELA practices, ELA teachers were not our natural allies. College-prep level language arts has an extensive and existing canon of material. The curriculum developers were ELA instructors from a variety of schools, some of which afforded their teachers more or less leeway to deviate from this literary canon. The reconciliation to these tensions seems to be reading books in the literary canon for themes that connect to the esports experience. Some of the teachers expressed great interest in using other forms of literature such as poetry, graphic novels, or film to supplement readings and help emphasize the cross-platform nature of the themes. Therefore, the curriculum was written to include suggestions or options that teachers might explore to satisfy the expectations of their school sites.

As mentioned earlier, teachers knew little about esports, so we needed to design the curriculum-building workshops and curriculum itself accordingly. We invited a pool of professional-level esports players and esports researchers to fulfill the needs of teachers and ensure the validity of the content. By structuring the development sessions this way, we hoped to allow experts to share content expertise and ideas. While this generated interesting connections, we did notice that different professionals had different vocabularies and little esports vocabulary.

Finally, as the authors participated in the curriculum development, we found that we were constantly balancing the corporatization of play critically without endorsing one company or another. That is, esports is a very corporatized space, and a discussion of the products cannot be distinguished from a discussion of the companies associated: teams are sponsored by companies, specific hardware pieces are developed by companies, and even games themselves are products of game companies. The curriculum is

game-agnostic in order to allow the classes to adjust in relation to students' interests, but in some instances, it was hard to create a unit assignment that did not presume some team or competitive structure. In addition, as partially mentioned in the design process, the selection of appropriate content for students' use often arose because the writing teams were well aware of the wide-spread social stigma of video games among parents and teachers, such as toxic communication and violence.

Standards Alignment and Credentialing

As a result of the design workshop, teachers and staff had a fully drafted curriculum for grades 9 to 12. The researchers and curriculum specialists in OCDE reviewed the curriculum to meet the standards for the California Common Core; English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects (CA CCSS for ELA/Literacy); Career Technical Education (CTE); International Society for Technology in Education (ISTE); California Next Generation Science (CA NGSS); and Collaborative for Academic, Social, and Emotional Learning (CASEL). Table 2 (next page) is the sample of the unit created at the end of the draft workshop and the list of corresponding standards reviewed by researchers. Please note that this was still not the final version of the curriculum.

In order to give gravitas and legitimacy to the curriculum, the design team determined it was vital the curriculum be certified by the governing body in California. The University of California, Office of the President (UCOP) reviews and approves curriculum that qualify high school students as having met the prerequisites to apply and attend the University of California or California State University schools throughout the state. Labeled A-G courses (A - history/social science, B - English, C - math, etc.), this system has become the gold standard for California high school students and an important metric for college and career data. In order to have serious relevance on a high-school campus, a course - particularly an ELA course - must be A-G approved.

The UCOP certifying staff did not initially know what esports was or understand how esports could be successfully embedded in standards-based content. Similar to how messaging assured parents, teachers, and administrators of the potential for using esports for learning purposes, the UCOP was convinced of the learning potential of an esports-centered curriculum. Over a three-month communication, The UCOP and OCDE fine-tuned each course. For example, UCOP requested more poetry to be added to one of the courses, additional novels to another. Different assessment options were also requested and added. Because each of the four ELA courses was completed at different times, they were submitted for A-G approval with UCOP on a rolling basis.

As we found connections between esports and CTE, STEM practices and ELA content, school affiliation, and SEL

Grade 9 - Unit 1: History of Gaming (Grandpa's Games)

In this unit students will study the fundamental elements that define the concept of games and learn about the progression of games from its simple origins to its current expression in the modern industry of esports. Through reflective reading and close examination of informational texts such as The Game Designers Reader, “Ten Things Every Game Needs”, and “The Rhetoric of GamePlay” students develop a deeper understanding of these elements. Drawing on knowledge gained from their readings, students write a personal narrative essay that demands effective technique, well-chosen details, and well-structured event sequences. Students will research the origins of gaming from the ancient world to the present day. They will then develop an infographic that examines the role of game play in human culture and evaluate the complex interaction between games and players. Students will synthesize their personal reflections and findings in a multimedia presentation that illustrates the long term trends within a selected game genre and its community’s experience. Students then create a digital portfolio (or wiki) that will serve as the location to house selected assignments created throughout the course.

Key Assignment 1: Personal Narrative: My Experience with Games - Students will draft a 2-3 page personal narrative of their history with games (both traditional and electronic) reflecting on their favorite games throughout their childhood, and what specific elements of those games they connected with and why. They will use elements of plot structure to develop their narratives, and will be sharing these with their peers in Key Assignment 3.

Key Assignment 2: Infographic: Esports Evolution - Students will research the historical evolution of games over the centuries, from simple non-electronic forms to the current multibillion dollar industry it is today, tracing connections between technology, play, and society. They will design an infographic that illustrates changes in the gaming industry in terms of player engagement, skill development and audience across various genres of games, such as video games, board games, puzzle games, card games and sports, and show which societal factors influenced and were influenced by this development.

Key Assignment 3: Group Presentation: Esports Analysis - To continue building a foundation of how and why people play esports, students will be exposed to a variety of games in the classroom, and will compare and contrast different games and identify common criteria that all games meet. As a result of synthesizing their research findings, and reflecting on Key Assignments 1 and 2, groups of 3-5 students will collaboratively introduce and develop claims addressing genres, criteria of games, and some of the key similarities and differences between major game forms in order to create a 3-5 minute multimedia presentation using: Keynote, PowerPoint, Google Slides, Prezi, etc.

CA English-Language Arts Standards	CA CTE Pathway Standards	STEM Components (CANGSS & ISTE Standards)	Social-Emotional Learning Components
<p>Reading Key Ideas and Details Craft and Structure Integration of Knowledge and Ideas Range of Reading and Level of Text Complexity</p> <p>Writing Text Types and Purposes Production and Distribution of Writing Research to Build and Present Knowledge Range of Writing</p> <p>Speaking and Listening Comprehension and Collaboration Presentation of Knowledge and Ideas</p> <p>Language Conventions of Standard English Knowledge of Language Vocabulary Acquisition and Use</p>	<p>D 1.0 Demonstrate understanding of current trends and the historical significance of both electronic and non-electronic games. Students will analyze different game systems and identify how these systems have influenced consumer technology.</p> <p>D 2.0 Analyze the core tasks and challenges of video game design and explore the methods used to create and sustain player immersion.</p> <p>D 3.0 Acquire and apply appropriate game programming concepts and skills to develop a playable video game.</p>	<p>CANGSS SEP: Obtaining, Evaluating & Communicating Information - Compare, integrate, and evaluate sources of information presented in different media formats as well as in words in order to address a question or solve a problem.</p> <p>CANGSS CCC: Systems and System Models - Students investigate or analyze a system by defining its boundaries and initial conditions, as well as its inputs and outputs.</p> <p>CANGSS CCC: Stability and Change - Stability and change are ways of describing how a system functions. Whether studying ecosystems or engineered systems, the question is often to determine how the system is changing over time and which factors are causing the system to become unstable. (appendix G pg 89)</p> <p>ISTE-S 1b: Create original works as a means of personal or group expression.</p> <p>ISTE-S 1d: Identify trends and forecast possibilities.</p> <p>ISTE-S 2b: Communicate information and ideas effectively to multiple audiences using a variety of media and formats.</p>	<p>Self Awareness Accurate self-perception</p> <p>Social Awareness Perspective-taking Appreciating diversity Respect for others</p> <p>Responsible Decision-Making Identifying problems Analyzing situations Solving problems Evaluating Reflecting Ethical responsibility</p> <p>Self-Management Self-discipline Self-motivation Goal setting Organizational skills</p> <p>Relationship Skills: Communication Social Engagement Relationship building Teamwork</p>

TABLE 2. Sample unit of Grade 9, Unit 1 with corresponding standards.

opportunities, more sets of standards became layered onto the curriculum. While this meant the curriculum was rich with opportunity and experience, tracking and addressing many different sets of standards all at once led to perhaps too many standards to meet and too much going on. Certain standards were more applicable or easier to work within the context of this curriculum. In terms of pedagogy, it would be ideal to have time to explicitly state and discuss the overlapping goals of each lesson (Durlak et al., 2011). With so many overlapping standards, though, addressing these would eat into the time and essential focus of the course.

DESIGN PROCESS OF THE DIGITAL TOOLKITS

Weekend Design Charrettes

Based on the initial outlines from the first teacher workshop, researchers and the UCI Esports program hosted six weekend workshops from February to March 2018. Workshops were designed and implemented by researchers and UCI Esports Arena personnel and content experts (e.g., professional streamers or collegiate shoutcasters). Student participants joined from high schools in Orange County, California, and many of them were participating in esports club activity in their own schools. The number of participants varied each week (Min: 13, Max: 20), but the size of the workshop was appropriate for hands-on activities and group presentations.

For each workshop, a local high school teacher joined to lead the session to simulate the activities in a classroom-like environment. Additional experts were invited according to the topic and helped develop content and lead the session with detailed information. For example, 'Get Started with Your Build' workshop was planned and led together with iBuypower, a well-known company that sells customizable gaming PCs, and coaches and players from the UCI collegiate team joined as guest lecturers for the 'Analyzing the Game' workshop. Each workshop lasted for 3 hours and was followed by an optional hour of free gaming in the UCI esports arena.

Topics of the workshops were selected from the units and assignments of the curriculum draft. The research team also added details to the topics under the themes of STEM, social-emotional learning, and healthy gaming. Activities that encourage scientific thinking or mathematical analysis were designed for STEM-related content, and activities that include consideration of social relationships and emotional regulation were designed for social-emotional learning (SEL) content. Each workshop included hands-on activities followed by a group discussion to encourage active learning. Table 3 presents a brief list of content for each week.

By running the workshop, the research team could foster a semi-formal environment for addressing targeted educational content outside the experimental lab setting. One of the invited teachers commented that "it was a good start for core

Workshop Title	STEM	SEL	Activity	Other
Get started with your build	Hardware / Building a PC	Code of Conduct	Meet the players	Self introductions
Analyzing the game	Analyzing and presenting characters by numbers	Group presentations	Laning	Healthy Gaming
Improving your game	Analyzing your game play & mindset	Reflecting on self	Reflecting on self	
Casting your game	Technical setup	Professional Communication	Cast Reviews	Biomechanics of gaming
Streaming your game	Computer networking; define a persona	Responding to trolls	Set up a stream	
Tournament organization	Human Design & Rules	Organization & Teams	Outline a tournament	Next Level Nutrition

TABLE 3. Esports workshop plans by content focus and activity

subjects," and "individual [teachers] should review this core curriculum each year and adjust specifics."

Instructional Plan Workshop

In June 2018, a group of teachers assembled to develop lesson plans and materials for the upcoming school year. These teachers from Samueli Academy would be in the vanguard of the curriculum implementation process, fleshing out the initial curriculum into individual lesson plans and activities. In the process, they also generated a list of standalone lesson subjects and identified areas in the esports ecosystem where they may need more support. For example, even teachers already familiar with games and game communities identified how a glossary of esports terminology would prove useful as a resource for educators. During this process, the teachers were mindful of shielding this curriculum of criticism from existing ELA departments and schools, so the lessons were written embracing Common Core standards in a breadth of reading and writing genres. They were also strategic in selecting poems, novels, and nonfiction that teachers could find online, making the implementation of this curriculum possible and free for any teacher with access. With notes and a list of useful subjects, we were able to develop a series of "toolkits" and teacher resources that could not only support an interested teacher in onboarding the curriculum but also provide standalone lesson activities to work into existing schedules or lesson plans.

CURRICULUM DESIGN RESULTS

The curriculum was designed to span four years of ELA education. Using esports as a specific space and context, the curriculum connects ELA standards with career-technical

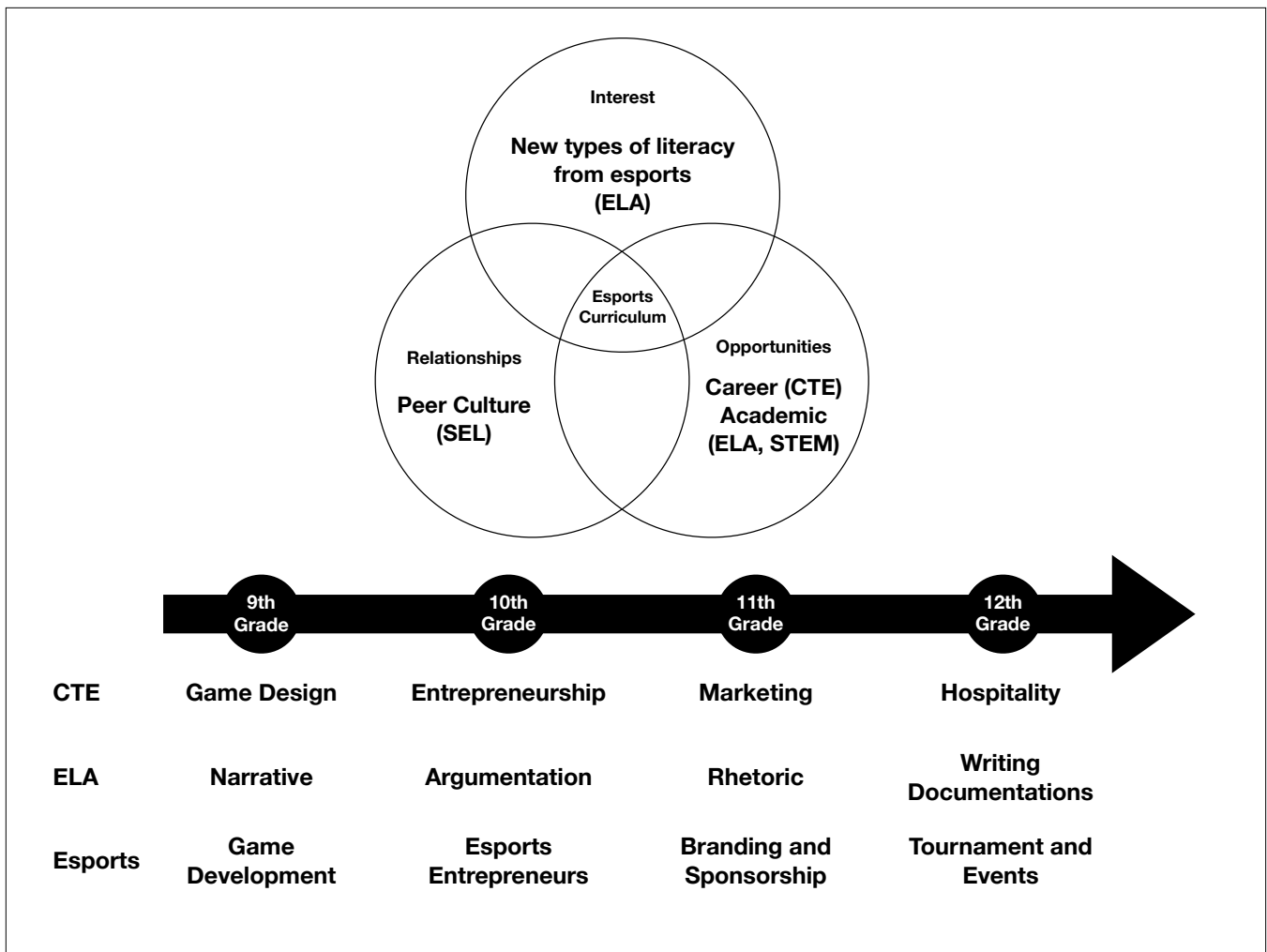


FIGURE 4. Structure of the 4-year esports curriculum.

education (CTE) subjects while integrating STEM skills or social-emotional learning (SEL). Each grade level focuses on a different esports and CTE intersection while remaining within the scope of the ELA standards for that level. As stated earlier, the design of the curriculum contains interest, relationships, and opportunities, following the theory of connected learning (See Figure 4). In 9th grade, students focus on understanding narrative through an exploration of the game design process, 10th-grade highlights argumentation in entrepreneurship, 11th grade examines rhetoric through marketing, and 12th-grade practices writing as documentation as used in hospitality. Table 4 (next page) shows all units from the Grade 10 to show the example of how ELA, CTE, and STEM portions were integrated into the curriculum. While the curriculum is designed to serve all four years of ELA requirements, it is not necessary to take all four years: each course is self-contained, and students can jump in or out of the esports-ELA track throughout their high school years.

As these courses have had a soft implementation during 2018-2019 at the Samuelli Academy, they have been

reexamined, revised, and refined by a small group of teachers from different schools. This group was comprised of two Samuelli teachers with a year of experience teaching these courses and four educators who anticipate teaching the curriculum in the fall of 2019. All aspects of these courses are reviewed by this team throughout the year to ensure the curriculum is serving the students well. It is likely that the curriculum will be continually refined as ELA Esports teachers gain more experience. In what follows, we detail two units from grades 10 and 12, respectively.

Grade 10: Blue Sky Beginnings: Understanding the Exile of Entrepreneurship

In sophomore year, students use fiction and nonfiction readings to explore themes in entrepreneurship, ultimately building a business pitch within the esports space. The first half of the curriculum explores the concept of entrepreneurship in esports, including the ecosystem of characters involved, characteristics of entrepreneurs, and issues in esports. The second half then scaffolds a student-driven pitch

and business plan, allowing students to put themselves into these shoes and stretch their own entrepreneurial muscles.

In the second unit of grade 10, students identify and analyze the motivations and traits of entrepreneurs, with a focus on the esports business. By reading such works as *Norse Mythology* by Neil Gaiman and *Frankenstein* (graphic novel),

students have an opportunity to analyze motivation and the traits necessary to achieve a self-selected goal. Students use critical thinking to discover what motivates them in their world and what traits they have to help them achieve their goals. Students then research the personal traits of successful entrepreneurs, remaining mindful that “success” is not always measured by positive traits. Students discuss how the knowledge about their respective entrepreneurs changes their focus beyond the product/brand/marketing aspect and seeks to understand the person responsible for the change. Students use critical thinking skills in order to discuss the ethics of an entrepreneur who creates a business. Subsequently, students discuss the risks involved with esports and gaming to determine what considerations they need to make regarding their esports businesses. Finally, students summarize and evaluate their strengths and weaknesses in order to compare their readiness to create something from nothing as a real-world entrepreneur. STEM thinking within this unit includes developing a conceptual model for how entrepreneurs identify and address problems and using principles of effective oral communication to share their model of entrepreneurial leadership with peers.

This unit sets the foundation for a working conceptual model of what entrepreneurship is and what esports constitutes. Mirroring the STEM practices of building and iterating on conceptual models, students are building an expansive understanding of what constitutes esports entrepreneurship throughout the curriculum. Character analyses in ELA texts are included not only to provide a deeper engagement of the texts but also to examine the entrepreneurial condition. With each assignment, students are asked to read, annotate, analyze, and write. This unit highlights the Self-Awareness core competency of CASEL’s Self-regulation framework by engaging with emotions explicitly, but it also explores themes of self-management—motivation, self-discipline, and goal setting, in both the personal and entrepreneurial experiences. Table 5 (next page) shows key assignments for Unit 2 of the Esports and Entrepreneurship Curriculum (Grade 10)

Grade 10: Esports and Entrepreneurship			
Unit Title	ELA	CTE	STEM
Who is an entrepreneur?	Argument writing, character analysis, creative and expository writing	Introducing the concept of entrepreneur	Obtaining, evaluating, and communicating information effectively.
What makes an entrepreneur do the things they do?	Reading <i>Norse Mythology</i> and <i>Frankenstein</i> . Analyze characters.	Evaluate strengths and weaknesses in order to compare their readiness	Developing a conceptual model for how entrepreneurs identify and address problems
The entrepreneur and the game	Listening to and making journal entries about Seth Godin’s Top 10 Rules for Success.	Investigate rules and apply them as they prepare to promote their esports products and services	
The art of winning - the entrepreneur and funding	Reading <i>Moneyball: The Art of winning an Unfair Game</i> by Michael Lewis	Understanding the importance of financial position, and the need to use statistics and analytics to run a successful business.	Obtaining reliable data, analyzing the data, and engaging in argument from evidence
Culminating unit: the true business for you	Writing a logically sequenced executive summary following the conventions of the English language	Synthesize components of the esports business Plan and finalize the executive summary	Present the final models by using a multimedia presentation and evidence-based claims.

TABLE 4. Esports and Entrepreneurship Curriculum, Grade 10.

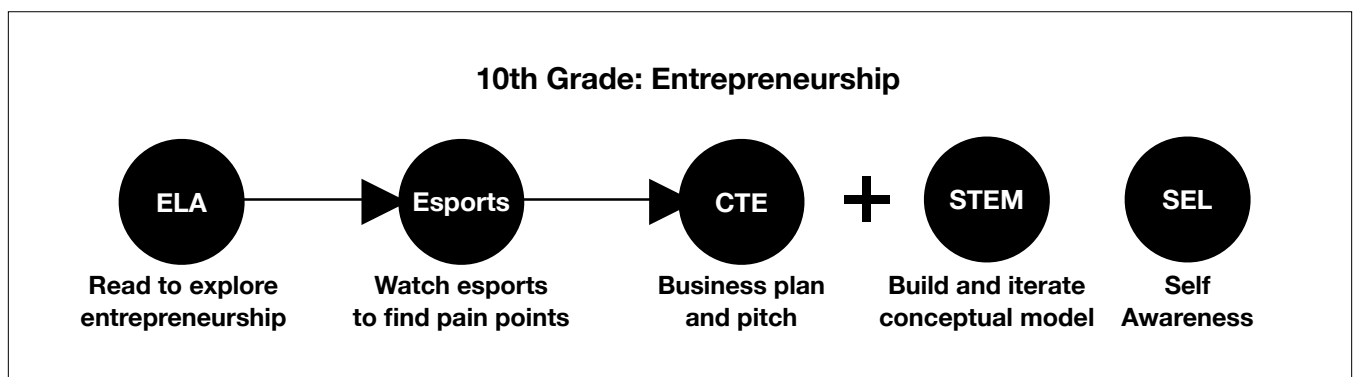


FIGURE 5. Design structure of 10th grade curriculum (entrepreneurship).

Assignments of Unit 2, Grade 10: What Makes an Entrepreneur Do the Things They Do?

1. Way up norse!

1. Read Norse Mythology by Neil Gaiman—decisions made by the gods. Mythological characters often make decisions that prove to result in some pretty extreme complications. Students choose one of the stories from Norse Mythology and rewrite the story by having the characters make different choices.

2. In continuing their examination of decision making as related to entrepreneurs, students read article "why are so many video game developers going Norse in 2015" – In a framed, formal discussion, students answer What decisions were made and why?

Students read THE HOBBIT and decide which characters are based on Norse mythology. In class discussion, students answer the following:

- Why do you think Tolkien chose Norse mythology?
- What does Norse mythology add to the story?

Students then write a character analysis, in which they discuss the decisions made by the characters. To help guide their analysis, students may use the Decision Quality requirements and the percentages of the "Frame and Values" found in the materials from Decision Quality Education Foundation.

2. Frankenstein: Entrepreneur or Monster?

1. Students will read a graphic novel version of Mary Shelley's Frankenstein and write a literary analysis essay in which they explore the notion that Dr. Frankenstein shares the same motivations and traits as many entrepreneurs.

2. Using a graphic visual, students synthesize the information found in the following articles and present their understanding of the ethical tipping point between "successful entrepreneurs" and "monsters."

- Revisit the research that shows entrepreneurs often exhibit signs of loneliness (Read: Being an entrepreneur can get lonely. Here's how to overcome it.
- Research also shows that entrepreneurs often operate from fear: "The 7 Fears that all Entrepreneurs Must Conquer"

In making the visual, students will also consider the following:

- Entrepreneurs often succeed at the cost of great personal sacrifice (families, hobbies, health, etc.)
- How far is too far when it comes to being successful? Example: In Frankenstein, who is the monster and who is the victim?
- Entrepreneurs are known for being adrenaline junkies

3. The Fears

After class discussion about the extrapolation found in the genre of science fiction, students write an analysis to the following prompt:

Ultimately, Frankenstein, at the end of the novel, speaks about himself with the same woeful, self-condemning language the monster applies to himself. Has Frankenstein become the monster? How might this evolution (or devolution of Frankenstein) reflect the fears Shelley may have had for society? Use your text analysis and your understanding of science fiction to explain.

4. Fears of Society concerning Esports—the Play

Students create a scenario where esports may go wrong. They write a script and present their skits using multimedia, props, and creative costumes. In writing the script, students should consider the traits of a successful entrepreneur and the steps for overcoming, or not overcoming obstacles. The play should clearly show the dangers of an entrepreneur in the esports ecosystem and the perceptions of the audience, both intended and unintended.

TABLE 5. Key Assignments for Unit 2, Grade 10 of the Esports and Entrepreneurship Curriculum.

Grade 12: There Be Dragons Here!: Grit in the Hero's Journey

By their senior year, students are encouraged to take charge of organizing a school-wide esports tournament and festival—the units of the year scaffold the different roles of the tournament (such as players, shoutcasters, streamers) and highlight how to plan successful and welcoming events. Working in groups, students develop, brand, and plan for the tournament, finally bringing their tournament to life at the end of the year.

About halfway through the year is the “There be Dragons Here!” unit, situated so that students can build familiarity with their tournament plan while developing an appreciation of the grit involved in drafting and executing a tournament plan. For example, there are three key assignments within the unit: for “The Nitty Gritty,” students dive into the details of planning their tournament by compiling a Tournament Project Managers’ Book of Knowledge (PMBOK) Binder. Divided into teams such as marketing and publicity, shout-casting, catering, or facilities managers, students work to flesh out a small part of the tournament and then combine it with other teams to establish a coherent tournament plan. “The Hero’s Journey” assignment supplements this process with readings about Angela Duckworth’s psychological construct of grit and viewings of a film where the characters undergo the classical literary vehicle of a hero’s journey, demonstrating grit and persistence in the face of setbacks. Finally, the assignment “Fire and Fury” challenges students to confront potential setbacks to their developing tournament plan: as students devise suggestions and practices for dealing with the unexpected, they develop and refine contingency plans which are added to the Tournament Binder.

From CTE and STEM practice standpoints, this unit is about breaking down a plan or model system into smaller, interacting component systems. Students are working together, using collaborative technologies, to build towards a common, real-world goal. On the ELA side, students write and document their tournament plan. They also analyze the role of grit in the hero’s journey, then apply this to overcoming

obstacles and setbacks directed at their own plans. These skills in overcoming obstacles and last-minute setbacks were identified as essential in hospitality work; they are also directly mentioned in the Self Management SEL core competency. Through constant iteration of their tournament plans, students in their team roles are identifying problems, analyzing situations, evaluating possible paths of action, reflecting on their decisions, and finally communicating their suggestions with other teams. In addition to familiarizing students with their plans, this iterative process gives students the opportunity to build upon the Relationship Skills and Responsible Decision-Making core competencies. All of this is encapsulated within a single unit where students are building an appreciation and understanding of grit while practicing with their own projects.

While taken from separate curriculums, both example units illustrate how the curriculum weaves together five sets of content. STEM practices such as model building and systems thinking underlie the curriculum. ELA skills, such as communicating analyses and writing skills, comprise the core skills that each unit develops in a new format. CTE themes guide the ELA activity and provide a link between classical literature texts and concerns in the 21st Century world of work. Disciplines such as entrepreneurship and the many forms of hospitality and customer service are represented throughout the curriculum. Each unit of activities encourages SEL competencies not only through group cooperation and communication but also by providing time for individual reflection. Finally, esports is the context for all these activities, serving as the space framing the learning. By looking at the living esports ecosystem around them, students can find concrete examples. The 10th and 12th-grade examples were taken from the beginning and middle of the year, respectively, but both structure assignments to connect themes in literature, such as character isolation or persistence in the hero’s journey, to a theme in the esports ecosystem, such as esports entrepreneurship or event planning. While individual assignments may not capture all five content areas, other assignments in the unit provide an inclusive context. Table 6 (next page) is key assignments for Unit 5 of the Esports and Hospitality Curriculum (Grade 12).

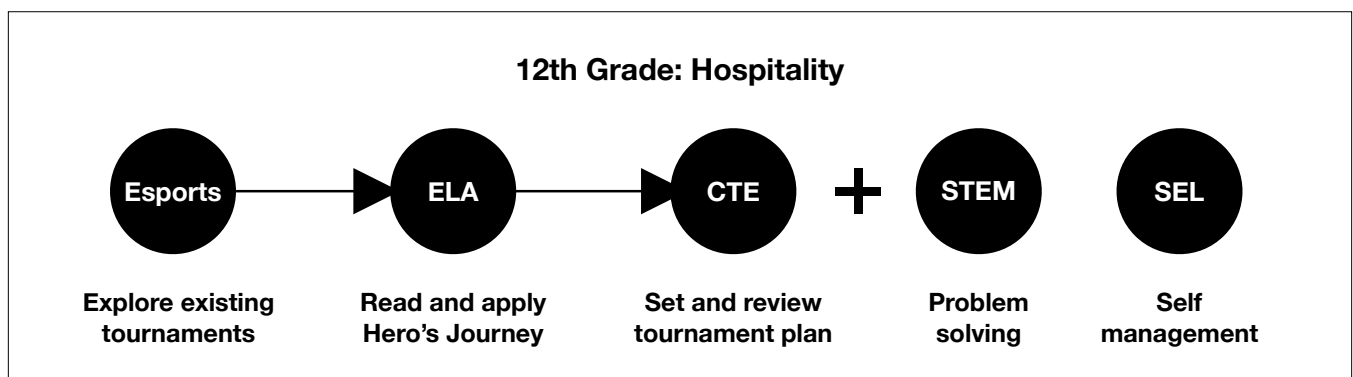


FIGURE 6. Design structure of 12th grade curriculum (hospitality).

Assignments of Unit 5, Grade 12: There Be Dragons Here!

1. The Nitty Gritty

Students should regroup based on the careers they were hired for in the interviews during Unit 1 and organize by “division” within the whole class company. Suggested divisions include marketing/social media/publicity, accounting, technology, facilities managers, community relations, shoutcasters, etc. Students should begin to discuss and work on the details of the tournament and start to compile documents and plans in a Tournament Binder. This can be an actual binder that stays in the classroom, or a digital one using a site like LiveBinder if technology allows. Either way, the final Tournament Binder will be published in the teams’ individual PMBOKs.

- Each division should submit a document to the binder outlining a prioritized needs vs. wants list, as well as a pre-planning to-do list and a “day of event” to-do list
- Students in manager roles (maybe each division has a manager or there are 2-4 students who serve as whole class managers) should review these documents for each group and set up meetings to discuss things that were not addressed as well as to create cohesion between groups. Managers are in charge of providing “performance evaluations” for individuals or divisions throughout the planning process as a way to provide feedback/assess students. The format, norms, and forms for these should be established by the managers before the meetings and with advice from the instructor and/or a community expert.

2. The Hero’s Journey

1. In hospitality, one key skill is being able to persevere through setbacks and realize that, just because things aren’t going as planned, it doesn’t mean you quit. Students will study the Hero’s Journey archetype in literature to understand the prevalence of this trait as a theme throughout notable literary works and other media, as well as the relevant connection to esports through lore and backstory about the different champions available for play in games like League of Legends. After reading the journal article titled “Grit: Perseverance and Passion for Long Term Goals” from The Journal of Personality and Social Psychology by Angela Duckworth et al., students will view two films that show main characters who go through the hero’s journey: Star Wars: A New Hope and Spirited Away by Hayao Miyazaki. Students should write an analysis of the hero’s journey for each film. This analysis should include an explanation as to how each stage of the journey is executed in the films.

2. Choice Writing Assignment - Students choose one writing assignment from such prompts as:

- Narrative - Go back to your character created in Unit 3: Lore Building and now write a narrative that takes the character through key elements of the hero’s journey
- Argument - Choose a character from one of the films in this unit and argue in what ways “grit” was essential for achieving the journey
- Compare and Contrast - Compare and Contrast the hero’s journey in the two films. What role, if any, does gender play in achieving success? What about role assignment (Luke is a farmer become Jedi trainee/warrior; Chihiro/Sen is a third-grader become healer to the gods)?
- Analysis - Analyze the trope of the hero’s journey and what it means for us as a society.

3. Fire and Fury

After understanding the role of “grit” and the fact that all heroes have to overcome obstacles in the course of their journeys, students will be asked to apply these skills and deal with how to handle real life situations. For this assignment, the teacher will present real life scenarios that might happen during the tournament and students will have to create a handbook of suggestions for how to deal with the situations in their division that is to be added to the Tournament Binder (which is included in the PMBOK). These situations might be, but are not limited to: the headline speaker cancels at the last minute, power outage, a team of players cancels, a player has a medical emergency during tournament play, players break out into a fist fight during the event, technical failure with computer software, a roof leak, the caterer doesn’t show up, signage not ready/delivered by the printer, etc. Handbook entries should include analysis of the issue, possible solutions, suggested solution, and reasoning. Peer review and teacher approval will choose the best representation to be placed in a chapter of the team’s PMBOK. (Optional: this handbook and/or the parts of the binder are included on the website for the tournament.)

TABLE 6. Key Assignments for Unit 5, Grade 12 of the Esports and Entrepreneurship Curriculum.

First Implementations

The curriculum was first implemented at the Samueli Academy, a public charter school for under-served communities with no tuition fees. While offering an opportunity for underprivileged communities, it was selected as the top 4% high school in the nation, with a 96% college attendance rate, 21 to 1 student-teacher ratio, and 1 to 1 student-laptop ratio (Samueli Academy, 2020). These special characteristics of the school provided the best educational environment to implement the curriculum for the first time.

However, being on the frontlines of any new programmatic implementation in the K-12 world is often fraught with staggering pitfalls. These include concerns among teachers, parents, and administrators. Notice that the group not mentioned is students: From the first breath that esports took as a high school English course, students received it with nodding approval. In fact, when one of the primary course writers visited a pilot classroom, students actually applauded her for the work.

Teacher buy-in to the concept was necessary for the courses to be created and was equally required for its implementation. The curriculum often replaced a cozily familiar program of study that a teacher massaged and perfected over many years in a classroom. To bring in something radically different that challenged and stretched a teacher's comfort zone meant it needed to provide great interest to students and value to the educator. In the end, that is what happened.

Students blindly enrolled in the courses, having only gotten a spotlight overview the previous spring during an assembly. Incoming freshmen blindly signed up to take the course based on the wording of a flyer they received while still 8th graders. When asked why they took a chance on this version of ELA, responses generally revolved around boredom with "traditional" English courses and expressing great interest in video games.

As for the teachers who first implemented the curriculum, they often described the process as "building the plane while flying it." This was unpacked in midyear and ongoing dialogues as their having sufficient knowledge of the course content, the itinerant activities and the learning objectives (as the teachers in question had all participated in the original drafting and reworking of said content prior to inaugural use in 2018), but still felt unsure and, in some instances, bewildered by how to actually execute activities that had been theoretical premises only months earlier.

After the first year of implementation at Samueli Academy, a host of other private and public schools are piloting the program for their districts, and new levels of curriculum are being developed by a small team under the OCDE for junior high ELA. Some sites are diving in with the 9th-grade class, whereas others are squeezing the odd section into its

existing master schedule. For example, one site is starting its 11th Esports ELA course as that is the most fitting spot in that site's course offerings. However, the intention for many sites is to create Esports pathways to capitalize on student interest, thereby creating a competitive edge with neighboring schools in an era of declining enrollment.

DIGITAL TOOLKIT DESIGN RESULTS

After a series of weekend workshops, the research team and NASEF published esports toolkits for starting high school esports clubs. These toolkits serve as guidelines for managers to start and run a new esports club, and for members to pursue specific interests during club activities. Also, teachers or club managers who wanted to pilot an activity but could not commit to the entire curriculum can take advantage of the supporting toolkits, as they consist of diverse hands-on activities we piloted from our previous student workshops. The toolkits also include additional interesting and important ideas and resources that did not map easily onto the formal curriculum.

Club management toolkits were published by NASEF as a fundamental resource to review by club managers. These toolkits contain essential information to create (i.e., Create a club, Recruit club members), operate (Produce a stream, Hold a tournament), and maintain a club as a sustainable organization (Draft and approve a club charter, Hold a club fundraiser).

Supporting toolkits are designed for non-player club members who participate in the club. Based on the esports framework, this series of toolkits provides diverse activities which students can experience in an esports club setting while searching for potential career paths as they engage in club activities. This series of toolkits is more activity-driven compared to the club management toolkits. The toolkits suggest a few different expert, such as shoutcaster (Shoutcasting your game), event organizer (Planning a Tournament), journalist (Esports Journalism), or marketer (Marketing your team).

Toolkits were arranged to be helpful for people in different positions, with a wide spectrum of esports knowledge. Managers or teachers who are relatively new to the world of esports can benefit from "Esports 101", which provides information about the culture of esports, general statistics about esports around the world, common mechanics of games played widely, and guides to understand esports players and fans. Table 7 shows the structure of club management toolkits and supporting toolkits.

Challenges

During the workshops, we brought in content experts and professionals, but not all of these knew how to effectively engage and interact with students. For example, personnel

Club management toolkits	Supporting toolkits	
<ul style="list-style-type: none"> • Create a Club (or make your club stronger) • Recruit club members • Develop team website(s) • Hold a club fundraiser • Hold a stream • Hold a club meeting • Hold a club event • Hold an info night for parents • Hold or attend a tournament 	Basics	<ul style="list-style-type: none"> • Esports 101 • Clubs & Teams 101 • Being a Successful Esports Athlete
	Strategies	<ul style="list-style-type: none"> • Teamwork & Conflict Resolution • Using Data to Improve Your Game
	Content Creation	<ul style="list-style-type: none"> • Shoutcasting Your Game • Streaming Your Game • Fan Art: World-building and Storytelling
	Organizing	<ul style="list-style-type: none"> • Building a Gaming PC. • Planning a Tournament • Esports Journalism
	Entrepreneurship	<ul style="list-style-type: none"> • Fundraising for Team • Marketing Your Team • How to Make a Team Video • Making a Website

TABLE 7. Structure of esports club management toolkits and supporting toolkits.

from the computing gear company were not trained to draw engagement from students. Also, despite the in-house rule of the esports arena, some of the invited esports players and coaches used toxic language during the team play session. The research team and the esports program staff prepared to prevent the potential problems that could arise during the interaction with students, but those problems were something we did not expect.

On the other hand, teachers knew little about the esports space, even when they had other experiences with games. Thus, toolkits built from the curriculum or tangential ideas were written with minimal prior knowledge expected of the teachers and even included an Esports 101 toolkit. Much of the toolkit activities revolve around a constructionist pedagogy, asking students to build their learning via personally relevant projects. While this puts the onus of esports knowledge on the students, a teacher with minimal knowledge of esports can still help point students in different directions.

CONCLUSION

In this paper, we present the development process of the first high school ELA curriculum that incorporates esports, in cooperation with teachers and experts of the Orange County

Department of Education. The process includes the entire process of the curriculum publication from the teacher's design workshops to the credentialing final approval process by the University of California, Office of the President (UCOP). We also introduce the highlight of the curriculum, which embraces ELA standards and CTE subjects for each grade under the topic of esports. The incorporation of esports under an official ELA curriculum emphasizes school and parent's engagement in students' interest-driven learning toward the opportunities of academic and career education. Also, cooperative nature of esports play fosters socio-emotional learning, and the implementation of this new digital media as a gateway to learning involves STEM education opportunities. The entire design of the curriculum reflects the theoretical background of connected learning (Ito et al., 2013).

Besides curriculum for high school classes, we also developed activity-based toolkits for starting esports clubs after a series of workshops with high school students and teachers. Club activity enhances the engagement of students with the school and peers, and esports can be leveraged as a great entry point for them to retain social connections.

In our past research (Reitman et al., 2019), we have found concerns from parents and teachers on esports being incorporated as an activity at high schools. The anxiety comes from the imperfect and negative understanding of 'gamer cultures' that are nascent to the older generation. The development of an integrated curriculum bridges the gap between parents' and teachers' understanding to the students' interest with the formalized incorporation of esports into schools.

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