

Leagues of Learning
The Rising Tide of Esports in Education



Table of Contents

Introduction	3	Selecting a Coach or an Advisor	23
What Are Esports?	4	Implementing an Esports Team	23
Introduction to Esports	4	Establishing a Space to Play	24
What Are the Types of Esports?	5	Assembling the Team	24
How is Competition Organized?	7	Joining a League	24
Who’s Involved in Esports?	9	Managing the Team	25
A Growing Trend in K-12	10	Funding	25
The Impact of Esports in K-12 Education	10	Esports Hardware and Innovation Spaces	26
Esports Benefits	11	Hardware Options	27
Esports and Career-Ready Skills	11	Computers	27
Equity and Inclusion	12	Monitors	28
STEM Readiness	13	Networking	28
Integrating Esports into the Curriculum	15	Input-Output Devices	28
A Pathway to College and Career	16	Esports Spaces	29
Health and Wellness	16	Chairs and Desks	29
Starting an Esports Program	18	Meeting Areas	29
Establishing a Shared Definition of Esports	19	Arena or Competition Spaces	29
Addressing Common Concerns	20	Additional Resources	30



Introduction

Video games, as with all gaming, have almost always included a competitive element, even in the earliest video games such as Pong.* However, it wasn't until the early 2000s that technological innovations provided the environment for esports to thrive. Broadband Internet allowed gamers to join multiplayer competitions, first through local-area network connections (a LAN party) and later through wireless ones. Gaming consoles like Xbox,* PlayStation,* and Nintendo* created their own online networks to keep pace. Streaming services like Twitch* and YouTube* popularized watching others play video games. Additionally, a host of new games, such as StarCraft,* FIFA,* and Counter-Strike,* and game types, including first-person shooter and multiplayer online battle arena, capitalized on the vastly improved power, performance, and graphics of modern computing. While still rapidly evolving, the esports industry is now mature enough to include niches for almost anyone with any affinity toward gaming, no matter their age, interest, or level of enthusiasm.

With this rise in popularity has also come a rise in the professionalization of gaming. Professional esports competitors routinely earn thousands of dollars, and the largest competitions can have purses totaling in the millions of dollars. And, it is estimated that in 2019, nearly half a billion people will watch esports online or at a competition, which is more than just about any other professional sport.

It's no surprise, then, that this popularity has trickled down first to colleges and universities, and now to K-12 schools. Many high schools adopt a gradual approach to implementing an esports program. They might start by providing a space for students to bring in their own gaming consoles and compete against one another after school. As their esports programs become more competitive, however, the natural next step is moving to PC-based gaming, which allows for more powerful cross-platform competition.

Purchasing for esports programs is different than for other education technology. With esports, system performance can often correlate directly to a player's performance in a game. As a result, purchasing tends to be more modular. Instead of purchasing all new devices, a school may begin with a powerful Intel® Core™ i5, i7, or i9 device, and then upgrade the graphics card or add more memory over time.

This paper will help educators and leaders begin to understand the esports movement and how they can leverage the excitement and engagement that have fueled the growth of this industry over the past few years. It will do this by reviewing four areas: (1) what esports are (2) what the benefits of esports are for K-12 education (3) how to start an esports program, and (4) what type of hardware is required for an esports program.



Introduction to Esports

Types of Video Games



Multiplayer: In the early years of competitive gaming, individuals played games like Space Invaders* to see who could get the highest score. Today, players compete against others in real time.



Online: An Internet connection allows players to compete against opponents in the same room or on the other side of the globe. The Internet also allows esports competitions to be streamed through services like Twitch for live online viewing.



Competitive: Esports is the competitive arm of the gaming industry. As opposed to the casual gamer who plays for fun, esports players compete. At the professional level, gamers compete for large cash prizes and global rankings, while at the high school level, players record wins for their schools.



Team-based: Esports players compete as part of a team. While players may compete as individuals, they are doing so on behalf of their team.

Esports are multiplayer, online video games played competitively as part of a team.

What Are Esports?

The first step to considering the role of esports in education is a definition that works for schools and students: *Esports are multiplayer, online video games played competitively as part of a team.*

Although some esports are console-based (e.g., Xbox or PlayStation), the majority of K-12 schools are using laptops and desktops in a computer lab or lab-like setting. As a result, most of the games and leagues discussed in this paper can be played on a Microsoft* Windows*-based PCs. This also allows schools to invest in equipment that can be used for other purposes, such as a computer lab during the day, and dictates what games can and cannot be played as part of the school's team. For example, if Xbox or Nintendo Switch* is the only gaming console that will host a game, the school will likely not take part in the game. If the game is cross-console, however, it is eligible for PC play.

There is also the argument that esports are not true sports. This argument is similar to the debate over which sports should and should not be included in the Olympic Games. For example, is cheerleading a sport? Is dance a sport? Is the World Series of Poker a "sporting event"?

To be clear, esports do not necessarily require the physical exertion of many traditional sports. However, esports do require competitors to perfect their game. Similar to other quintessential high school extracurricular activities, such as debate or Model UN, esports require dedication, practice and, in many cases, a certain innate skill. Esports also include the same team requirements as traditional sports. Being part of a strong team requires effective planning,

communication, and decision-making skills. Most importantly, esports, like traditional sports, are competitive, allowing the best gamers to rise to the top.

And although some may still hesitate to consider esports a true sport, it's impossible to ignore esports' meteoric rise in popularity around the globe. In 2019, an estimated 453.8 million viewers will tune in to esports competitions, up 15% from 2018. And where there are viewers, there is money. Revenue from sponsorships (media, advertising, and more) will total 1.1 billion in 2019. If this pace continues, by 2022, esports will be a 1.8 billion dollar market!¹ The mainstream sports industry is beginning to take notice as well. ESPN now maintains an esports page filled with the latest news and league results.² And, organizers of the Olympic Games have even considered including esports as a demonstration sport at the 2024 Paris Games.³

¹ Source: <https://newzoo.com/insights/articles/newzoo-global-esports-economy-will-top-1-billion-for-the-first-time-in-2019/>

² Source: <https://www.espn.com/esports/>

³ Source: <https://www.bbc.com/sport/olympics/46495396>

Esport Revenue Predictions from Media and Advertising Sponsorships

In 2019, an estimated 453.8 million viewers will tune in to esports competitions, up 15% from 2018. And where there are viewers, there is money.

1.1 Billion
Dollar Market
in 2019



1.8 Billion
Dollar Market
by 2022



What Are the Types of Esports?

A search for ball sports on Wikipedia yields a long list, from baseball to tennis. Similarly, esports encompasses a wide variety of competitive games.

Sports Games

Sports video games parallel their real-world alternatives. Games like FIFA let gamers take on the roles of their favorite soccer players in their favorite clubs. Another sports game popular with many high school esports teams is Rocket League,* a fantastical game that crosses cars and soccer. The team-based element and generally tame content make sports games ideal for new high school clubs and teams.



Released in 2015 by Psyonix, this popular video game crosses cars and soccer in 3 versus 3 competition. Many high schools choose *Rocket League* for their game of choice, because it captures the interest of their students and the content is rated E for Everyone.

Fighting Games

In this type of esports, a limited number of players (frequently two) fight in a contained space. Different characters have different strengths and different abilities. Like a boxing match, the game takes place over a period of rounds until time expires or one player is defeated. Many fighting games, including *Street Fighter** and *Mortal Kombat*,* have found a role in esports. Some consider these two games to be too violent for the high school environment. More appropriate games, like *Super Smash Bros.*,* are only available on gaming consoles, however, not PCs.

Real-Time Strategy (RTS) Games

Real-time strategy games are not turn-based; players compete simultaneously and games progress in real time. Players often build, position, and maintain structures and characters, called units. Players gather resources, build bases, and develop technology with the goal of taking over or destroying their opponents' units. RTS games popular with esports leagues include *StarCraft II** and *Age of Empires*.*

First-Person Shooter (FPS) Games

First-person shooter games are weapon-based games that place the player inside the body of a character. The player, seeing the world through the eyes of a character, tries to eliminate an enemy. First popularized with games like *Doom** and *Halo**, multiplayer versions of FPS games have become popular in esports. While the realistic violence in games like *Call of Duty** and *Counter Strike: Global Offensive** make many FPS games inaccessible to high school esports teams, other games like *Overwatch** (see below) are finding a niche in high school and collegiate esports environments. It's important to note that other game types, like *Battle Royale* and multiplayer Online Arena (both discussed below), may have first-person shooter elements.



In *Overwatch*, an FPS game from Blizzard Entertainment, players work together in teams of six to secure and control their territory and transport a “payload” to another part of the map. Players can choose from 31 different characters, each with unique abilities. Released in 2016, *Overwatch* currently has over 40 million players worldwide.⁴ Blizzard operates *Overwatch League*, a competitive league of 20 professional teams, from an esports arena in Los Angeles. The communication and teamwork involved, as well as the relatively obscured violence, make *Overwatch* a popular high school esports game as well.

⁴ Source: <https://www.pcgamer.com/overwatch-has-more-than-40-million-players/>

Multiplayer Online Battle Arena (MOBA) Games

Multiplayer online battle arena games are a subgenre of RTS games. Teams try to destroy the opposing team's structure or base and eliminate their adversaries, whether other player- or computer-controlled. *League of Legends**, *Dota 2**, and *Smite** are currently three of the most popular MOBA games. *League of Legends*, from the developer Riot Games, is one of the most-watched games on streaming services like Twitch and is finding a role in high school esports programs.



League of Legends, commonly referred to as *LoL*, is one of the more popular MOBA games, with an estimated 100 million monthly players worldwide.⁵ In the game, players compete in squads of five to capture the opposing team's base structure, called a Nexus. Each character has different strengths and roles, and teamwork and communication are key to becoming a winning squad. Riot Games, the developer of *LoL*, organizes the Championship Series, during which ten professional teams located in Los Angeles and Berlin compete for prizes in the millions of dollars.

Battle Royale Games

In Battle Royale games, players gather resources and compete to be the last player (or group of players) remaining. Unlike in MOBA games, the map in Battle Royale games gradually gets smaller, meaning players are forced to interact with each other as the number of living players dwindles. Currently, *Fortnite** is the most talked-about Battle Royale (and is also an FPS game). Although the violence is cartoonish, many parents object to the amount of violence, the sexualized depiction of female characters, as well as the addictiveness of the game and its freemium model. *Fortnite's* role in the esports scene can not be ignored,

⁵ Source: <https://www.forbes.com/sites/insertcoin/2016/09/13/riot-games-reveals-league-of-legends-has-100-million-monthly-players/#1fc035a15aa8>

but many high school esports teams are choosing not to use it as a competitive platform due to its negative stigma.

How is Competition Organized?

At the professional level, gamers compete in leagues and tournaments all over the world. The competitions, mostly organized by the game developers themselves, are broadcast to global audiences via Twitch* and other streaming services. Teams compete for lucrative prize money and sponsorships.

To date, the National Collegiate Athletic Association (NCAA) has been reticent to recognize esports, citing concerns about violence and misogynistic themes.⁶ However, noticing the interest of their students as well as the potential for future careers, more and more colleges and universities are forming esports clubs and teams on their own. Starting from just one program at Robert Morris University Illinois in 2014, collegiate esports programs now number in the hundreds. Many are actively recruiting athletes and offering millions of dollars in scholarship money, and some are even creating degrees in esports.⁷ Over 90% of collegiate esports programs have joined the National Association of Collegiate Esports (NACE). However, other leagues, like Collegiate Starleague (CSL), Tespa, and Electronic Gaming Federation (EGF) are also competing in the space. Even game developers are jumping into the mix. Riot Games launched its own governing body, the Riot Scholastic Association of America (RSAA) in May 2019.⁸ Because esports at the college level remains largely unregulated, teams frequently join more than one league.

Early adopters are forming high school esports clubs and teams across the country. Similar to the collegiate landscape, high schools have a plethora of options when it comes to selecting a league. Most leagues promote themselves as turnkey solutions, and not

⁶ Source: <https://www.apnews.com/1cd02c47b7004823a8a41f84090465f0>

⁷ Source: <https://www.insidehighered.com/news/2019/02/12/new-frontier-college-athletics-video-games>

⁸ Source: <https://esportsinsider.com/2019/05/riot-games-announces-governing-body-for-collegiate-lol/>

only organize the leagues and tournaments, but also provide solutions and consulting to help high schools get their programs up and running. Below is a short list of the most popular esports league options for high schools.



High School Esports League (HSEL)

HSEL touts itself as “the largest and longest-running competitive gaming organization” for afterschool activities.⁹ In addition to offering resources including Getting Started guides and one-on-one consultation to help schools navigate the process of organizing a team, HSEL organizes a fall and winter league for its over 1,500 schools. HSEL’s mission promotes the academic benefits of esports in high schools and offers an in-school curriculum. HSEL also partners with gaming hardware manufacturer to sell “equipment bundles” of esports gaming stations..



PlayVS

In the summer of 2018, the National Federation of State High School Associations (NFHS), the organization that sets the official rules for many high school sports, officially sanctioned esports as a high school sport.¹⁰ NFHS formed a partnership with PlayVS, and at least 15 separate states have signed on. After schools sign up and pay the \$17 annual fee per student, PlayVS helps teams get started and organizes league play.

⁹ Source: <https://www.highschoolsportsleague.com/>

¹⁰ Source: <https://www.nfhs.org/sports-resource-content/esports/>



North American Scholastic Esports Federation (NASEF)

Unlike many of its competitors, NASEF is a nonprofit organization. Partnering with the flourishing UC Irvine collegiate program, NASEF is particularly popular in California school districts like Orange County. Their mission focuses on equity and the career skills of esports: “To provide opportunities for ALL students to use esports as a platform to acquire critical communication, collaboration, and problem-solving skills needed to thrive in work and in life.” To support their mission, NASEF provides a free English Language Arts (ELA) and Career Technical Education (CTE) curriculum.



Electronic Gaming Federation (EGF)

EGF is focused on organizing interscholastic varsity esports leagues at both the collegiate and high school levels. It also offers media production services to help “showcase leagues to a global audience through the production of live match broadcasts, original content, and event production.”¹¹

¹¹ Source: <http://egfederation.com/media/>



Legacy Esports

Legacy Esports is another option that targets athletic associations as opposed to individual schools. It partners with athletic associations “to create custom league and tournament plans that focus on engaging, inclusive and community-oriented gameplay.”¹²

Similar to the collegiate landscape, there is no single league high schools should join. High schools have to decide whether they will join a national organization like HSEL or NASEF or follow the league adopted by their local athletic association. The good news is, in this decentralized landscape, schools are free to choose the league (or leagues) that work best for their program goals.

¹² Source: <https://legaciesports.com/legacy-esports-faq/>

National High School Esports Championship

June 12, 2020

EGF recently partnered with Disney to launch the first-ever national high school esports championship. The event, which features the most competitive high school teams, will be held at the ESPN Wide World of Sports Complex at Walt Disney World Resort. This site also hosts other high-profile championships, including Amateur Athletic Union (AAU) championships in basketball, volleyball, and gymnastics.

“We share the core belief with Disney that well-organized and managed esports competitions can have a positive and beneficial impact on students, parents and schools. The opportunity to work with Disney, a global leader, known for its responsible approach in everything it does, is not only in line with our values, but represents a unique opportunity for the increased growth of esports.”

—Tyler Schrod, CEO of EGF

Who’s Involved in Esports?

Think about a traditional sport like basketball. Obviously, the players on the court are key, but many more people are involved, including the coaches and extra players on the bench, as well as the spectators in the stands. There are also video crews and producers, announcers, and even more fans watching at home. Like these traditional sports, esports also support a large ecosystem of involved citizens. For high schools, this is an exciting way to form a new community, and is opening a door to a wide variety of new career opportunities for students who enjoy esports.

Figure 1¹³ shows the maturity of the ecosystem at the professional level and highlights just some of the possible career paths for high school students preparing for a future economy. Esports fosters careers that include journalists, shoutcasters (esports announcers), game developers, streamers, advertisers, social media managers, coaches, analysts, and more.



Figure 1: The esports ecosystem and learning opportunities for students

¹³ Source: adapted from Anderson, Tsasas, Reitman, Lee, Wu, Steele, Turner & Steinkuehler



The Impact of Esports in Education



Figure 2: HSEL reports over 1,500 schools participating in their league as of summer 2019.¹⁴

¹⁴ Source: <https://highschoolsportsleague.com>

A Growing Trend in K-12

Esports in high school is undeniably a big business and growing trend worldwide. This new popularity suggests that esports may soon become as mainstream as high school football or baseball, since competitive gaming is now a varsity sport in high schools across the United States. As of June 2019, NASEF reported 260 clubs in 27 US states and three Canadian provinces, with more than 3,000 students participating.

Outside the United States and Canada, high school competitions in Taiwan, Hong Kong, Singapore, Malaysia, and China are generally run independent of collegiate tournaments.¹⁵ Students in the Philippines, Indonesia, Vietnam, and Taiwan have created their own high school tournaments. In New Zealand, the organization Let's Play Live has partnered with multiple high schools to host a varsity competitive program for the whole nation. Another organization, Riot Games, has launched a portal for students in Australia and New Zealand to create and locate after-school clubs for their schools.

Furthermore, in Europe and Asia, there is support for esports being taught in classes. Students can elect to supplement their physical education classes with *League of Legends*, *Dota 2*, or *Counter-Strike*. In Bergen, Norway, Garnes Vidaregåande Skule introduced an esports elective into the 2016 curriculum, where students were evaluated "based partly on theoretical knowledge and partly on gaming skills, ability to cooperate, ability to communicate, mastery of tactics, mastery of strategy, and so forth."¹⁶

¹⁵ Source: <http://tnl.media/esportsnews/2017/4/17/highschoolsportsasiaeurope>

¹⁶ Source: <https://dotablast.com/first-public-high-school-in-norway-include-esports-core-curriculum>

Esports Benefits

There's little argument about the benefits of extracurricular activities for high school students. Studies have shown that students who are involved in extracurricular activities are more successful in a number of ways,¹⁷ including:

- Higher graduation rates and higher attendance
- Improved scores in math and reading
- More students aspiring to higher education
- Higher focus in class
- Higher self-esteem, with fewer engagements of smoking and drinking

Apart from tangible benefits such as these, students who engage in extracurricular activities (athletic, artistic, scholarly, or otherwise) experience an essential sense of belonging. They must learn to negotiate the dynamics of a team; they must attend meetings and practices regularly; and they are held accountable for a summative performance of some kind (a debate,

¹⁷ Source: <https://nces.ed.gov/pubs95/web/95741.asp>

playoff, theatrical performance, spelling bee). Esports represent a unique opportunity to capitalize on an after-school activity that is already occurring and to formalize the gathering by creating a school-sponsored, constructive activity.

Esports and Career-Ready Skills

Esports can also help students develop the soft skills required in higher education and careers, ones that may not develop through involvement with traditional sports. According to Gregory Rothwell and Michael Shaffer in their paper, *ESports in K-12 and Post-Secondary Schools*, "Soft skills are defined as intra- and interpersonal skills essential for human development, social participation, and success in the workplace, such as communication, teamwork, and solving problems under pressure." Esports require an additional set of soft skills relating to preparedness, technical skills, tactics, and mental preparedness. See figures below for more information.¹⁸

¹⁸ Source: <https://www.mdpi.com/2227-7102/9/2/105/pdf>

Table 1: Physical and Mental Preparation

Activity	Description of Activity
Physical conditioning	Rest, relaxation, and balanced state of mind.
Technical preparation	Fast reaction time aids decision-making and deductive reasoning.
Tactical preparation	Mastering nuances of the games for strategy purposes.
Goals	The players should be cognizant of the goals.
Values	The team establishes a set of values.
Motivation	What drives the team?
Sensing/Concentration	The team is aware of what causes loss of concentration and intervenes where needed.
Emotions	Improving in team member reactions to certain situations.
Thoughts	Maintain control of our thoughts and not allowing them to hinder our progress.
Knowing the self	Balancing the ego, allowing self-awareness.

Table 2: Skills Developed by Esports

Skill	Description of Skill
Communication	Students develop communication skills b participation in esports because of the dependent nature of team members to achieve certain tasks within the game.
Teamwork	Esports games have goals and objectives which can only be achieved by the team.
High-pressure problem solving	Because of the competitive nature of the game, team members have to make quick decisions and plan strategies.

Equity and Inclusion

In traditional sports, players are often segregated by gender, age, weight, and able-bodiedness. They are confined to a team that, in many ways, looks like them. And, depending on the region where the team is located, they are playing against opponents who also look like them. In esports, gender assignments and their restrictions fall away: the best player may be the youngest; a player in a wheelchair is just as competitive; and opponents may not speak the same language. An esports team is a transcendent one; opponents are truly global.

Still, much work remains when it comes to gender equity in esports. Based on research conducted by Dr. Anesa Hosein, girls considered “heavy video game players” were three times more likely to major in a STEM undergraduate degree than nongamers. Despite the fact that 45% of US video gamers are female,¹⁹ the number of girls participating in esports is significantly lower than their male gaming counterparts. According to Mark Deppe, Acting Director of esports at the University of California Irvine, this may be because:

- Boys are generally pushed toward playing more competitive games at an early age.
- The online gaming community can be hostile. In-game communications and chats can be “misogynistic and hurtful.”

¹⁹ Source: <https://www.apnews.com/6762c27de8f1434fb5a8e14649d2a50b>

- Women report feeling marginalized within the gaming community and being routinely subject to nasty comments about their abilities, knowledge, appearance, and tone of voice.

Because this is a real issue in the gaming community, K-12 esports curriculum can help shift the tide with the next generation of gamers. Instead of learning toxic behavior in an isolated gaming environment, esports teams can model inclusive behavior, hold gamers accountable for their online and in-person conduct, and provide experiences where male and female players collaborate. As discussed previously, esports provide a unique opportunity for traditional gender restrictions to fall away.

Many schools are also looking to all-girls esports teams in an effort to attract more female players:

- Ladies of League at Troy High School in Fullerton, California, may be the first all-female high school esports team that is part of NASEF. The team focuses on *League of Legends*, and female students play alongside male students on *Overwatch* teams.
- Fountain Valley High School in Fountain Valley, CA has an all-female *Overwatch* team in its esports club.

On the other hand, although creating a safe, all-female environment for female players offers many benefits, it also perpetuates a gender binary that esports can uniquely afford to break down. Furthermore, the lack of mention of nonbinary individuals in esports studies

is apparent. With the increasing awareness of LGBTQI students taking part in traditional sports, esports offers an arena where dissenting arguments, such as weight/strength factors in contact sports, no longer apply. As esports popularity continues to rise, it will be worth watching how much the trajectory follows traditional sporting gender binaries versus how much it transcends them.

“Competitive video gaming is enjoyed by players around the world, and our goal with this pilot tournament is to challenge biases and break down barriers while providing fun experiences for all players.”

— Phil Spencer, Executive Vice President of Gaming for Microsoft

Fortunately, another binary breaks down in the face of esports: abled versus disabled. The 2018 Special Olympics USA Games, hosted by Special Olympics and Microsoft, included esports for the first time. The Xbox Gaming Tournament included eight teams playing *Forza Motorsport*.^{*} Phil Spencer, Executive Vice President of Gaming for Microsoft, said about the Special Olympics tournament that “competitive video gaming is enjoyed by players around the world, and our goal with this pilot tournament is to challenge biases and break down barriers while providing fun experiences for all players.”²⁰ As schools implement their own teams, tryouts, rankings, and tournaments, the composition of teams will depend more on players’ gaming acumen than on their physical attributes.

²⁰ Source: <https://frntofficesport.com/microsoft-esports-special-olympics/>

STEM Readiness

Offering esports is a smart way for high schools to encourage students to pursue careers in STEM fields. Students who are drawn to gaming are often equally interested in technology in general. In 2018, Riot Games’ director of collegiate esports said that nearly two-thirds of their *League of Legends* players were majoring in STEM fields. “Although we don’t think there is one type of student that makes up top League of Legends talent, 62% of our participants are from STEM majors.” This number compares to the national average of 36% of undergraduates who are in STEM majors.²¹

²¹ Source: <https://www.sporttechie.com/stem-esports-league-of-legends-columbia-college-oregon-syracuse/>

In 2018 **nearly 2/3** of League of Legends players were majoring in STEM fields.

That’s **about 62%** of participants from STEM majors.

Compared to the **national average of 36%** of undergraduates who are STEM majors.

Co-founder and CEO of HSEL, Mason Mullenieux, believes STEM majors connect on a deeper level than simply an interest in computer science, and likens their success in esports to their science/math problem-solving orientation. Naturally, students who major in STEM are drawn to STEM careers, which, according to the US Bureau of Labor Statistics, have higher wages than the national average. Computer-related occupations are the largest projected category of new jobs between now and 2024.

When students take part in esports in school, coaches can nurture a passion for STEM and guide students to explore a STEM future in college. By correlation, colleges with a strong esports culture tend to offer robust STEM curriculum for such students. Shawnee State University in Portsmouth, Ohio, for example, is a **pioneering leader in game design and esports competition**. The university offers a BS in Gaming Programming through the Engineering Department as well as a BA in Game Art through the Fine Arts Department. The school also offers a minor in Game Design.

The field of esports can offer students the academic and technical skills necessary to succeed in STEM- and nonSTEM-related learning opportunities and careers. NASEF is developing a CTE curriculum that involves a multiyear sequence of courses for students in grades 8-12 that will integrate core academic and technical knowledge with 25 courses organized around the four major esports sectors:²²

- Strategists
- Organizers
- Content Creators
- Entrepreneurs

The curriculum will provide pathways to at least 15 careers, including:

- Event Planner
- Analyst
- Fandom Art
- Marketing
- Theory Crafter
- Shoutcaster
- Streamer
- Journalist
- Web Developer

When teachers incorporate esports or gaming into their curriculum, they help students learn to use technology appropriately. Students who might not otherwise have access to sophisticated technology can now use high-performance computers and learn to use gaming platforms to compete and collaborate. Hard skills like maintaining equipment and troubleshooting software are a part of the curriculum, as are soft skills like appropriate online interaction and safe digital practices.

²² Source: <https://www.esportsfed.org/learning/curriculum/cte/>

Integrating Esports into the Curriculum

Esports integration into the K-12 education environment represents a low-risk, high-yield opportunity, since these students will continue to play esports whether their school is involved or not. Schools must simply decide whether it's worth the effort to positively influence a narrative already in place. The University of California Irvine developed high school English courses that build ELA skills while students develop specific skills for an esports career.²³ The courses and descriptions include:

²³ Source: <https://www.esportsfed.org/learning/curriculum/ela/>

English 9 + Game Design

Students will build a foundational understanding of esports, their history, and their evolution over time, through research in multiple genres and methodologies. They will use critical thinking skills and argumentative, analytical, narrative, expository, and descriptive pieces of writing on self-selected topics within each unit's main framework to apply their esports enthusiasm to their English study.

English 10 + Entrepreneurship

Throughout the course, using a district approved anthology and other diverse literature, students will read a combination of fiction and nonfiction pieces that reflect the themes and ideas related to both entrepreneurship and esports.

English 11 + Marketing

Students will gain the foundational knowledge of marketing in esports through the framework of English in order to enhance students' critical thinking, writing, reading, analysis, and communication skills. Students will begin with narrative and explanatory writing, building to argumentation and research.

English 12 + Hospitality

Students will learn the communication, writing, and vocabulary skills essential to planning, managing, and executing an esports tournament. During this course students will engage in activities designed to impart the necessary competence in and understanding of the video game industry, event planning sequence, and valuable collaborative mindset to achieve success in these industries.

A Pathway to College and Career

There are many opportunities for high school students interested in esports to attend colleges with esports teams. In 2016, seven colleges and universities had esports programs, and by 2018, 63 institutions had esports programs. Figure 3 shows a sampling of 20 colleges with esports varsity programs.²⁴

²⁴ Source: <https://www.gamedesigning.org/schools/varsity-esports/>



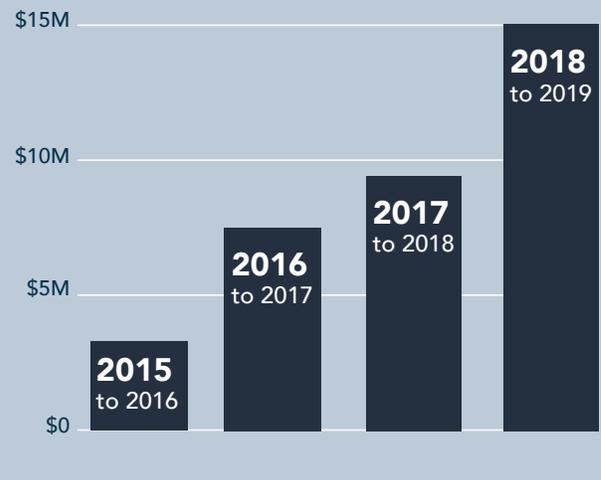
Figure 3: A geographic sampling of 20 colleges with esports programs.²⁵

Nearly 200 US colleges and universities are offering approximately \$15 million per year in combined scholarships for esports, and teams can earn millions in tournament prizes. According to NACE, the average esports scholarship a student receives toward tuition per year is \$ 4,800. However, some students may receive up to half off on tuition. NACE also notes there are over \$15 million in scholarship funds available to aspiring gamers.²⁶

²⁵ Source: <https://drive.google.com/open?id=18l-DnCCUoneAvW3e7WuZ5x1-4uQcjH0W&usp=sharing>

²⁶ Source: <https://www.theburnin.com/lifestyle/high-school-esports-programs/>

Esports College Scholarships Awarded By School Year (Millions)



Source: National Association of Collegiate Esports

Health and Wellness

It's important to note that alongside the essential, future-ready skills that esports can foster, students involved in their school's esports team are more social, more team-oriented, and more collaborative than their solo-gamer peers. They are less isolated, because they are held accountable for their own growth in a team environment. And for some students, this may be the first time they have ever been on a team sport. Because gaming can be isolating, getting students involved in esports teams shifts their experience from a solo to a social experience, where they can feel like an accepted member of their school community—which has been shown to boost physical and mental health.²⁷

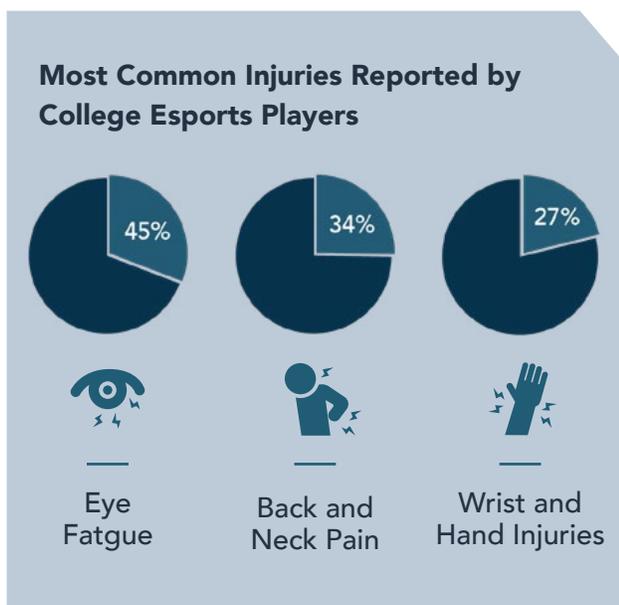
When comparing traditional sports to esports, the issue of physical fitness frequently comes up. For example, while soccer players gain exercise and stamina through practice and game play, esports players may not. Furthermore, while a soccer player will experience fatigue and diminishing returns

²⁷ Source: <https://www.viewsonic.com/library/education/esports-schools-good#4.-esports-in-schools-fosters-stem-learning>

after hours of play, a gamer may extend their play almost indefinitely. These realities can and should be addressed by the school, and in fact provide an opportunity to “round out” students for whom gaming is a priority. Similar to GPA requirements in traditional sports, athletic requirements can be placed on an esports team as well. For example, the team could implement “walking meetings” for a change of pace and scenery or include wellness equipment in the gaming room. Garnes Vidaregåande Skule’s esports classes consist of 30 students, and the class is arranged “so that at any given time 15 students are gaming, while 15 students are working out physically.”²⁸

According to a survey at five universities, collegiate esports players practice an average of four hours a day. Like their counterparts who play physical sports, esports players are also prone to certain ailments.

²⁸ Source: <https://dotablast.com/first-public-high-school-in-norway-include-esports-core-curriculum/>



Source: Current Sports Medicine Reports

At the University of Washington, attention is being paid to the health and wellness of esports players. Structures have been set up to encourage participants to take breaks and disconnect. According to Justin Camputaro, UW’s Director of the Husky Union Building, home of the Esports Arena and Gaming Lounge, UW has established the following health and wellness guidelines:

- Students are charged to play, which encourages them to make good financial decisions and to limit their play.
- Players can only purchase up to ten hours at a time.
- Food and drink aren’t allowed in the space.
- Staff regularly roam the space so they can get to know the students and encourage them to take breaks.²⁹

Serious esports players face potential health concerns; however, currently the National Collegiate Athletic Association (NCAA) does not recognize esports as a sanctioned sport, and therefore there are no management protocols for health and injury required for these teams—at least not yet.

Schools can positively influence gamers’ physical health in their esports programs and can actively shape the curriculum to include healthy habits. In Maize, Kansas, Complete High School students can take a class that promotes healthy gaming. The curriculum, HSEL’s Gaming Concepts, teaches students interpersonal and problem-solving skills, and focuses on appropriate online behavior strategies. Students also keep an exercise and food log. Results from a trial have demonstrated increased attendance rates and a rise in GPAs, spiking 1.5 points above the average for the school.³⁰

²⁹ Source: <https://www.insidehighered.com/blogs/student-affairs-and-technology/epic-update-collegiate-esports>

³⁰ Source: <https://markets.businessinsider.com/news/stocks/high-school-esports-league-hsel-partners-with-kansas-school-district-1027547314>



Starting an Esports Program

“It is no longer “cutting edge” to have an esports team at your school. What is cutting edge is what you propose to do with this opportunity through esports...The games should provide an experience to something beyond the games. To focus solely on gaming is missing why esports is so important in school culture.”

—James O’Hagen, Rockford IL Public Schools³¹

³¹ Source: <http://www.taoesports.com/2018/08/24/having-an-esports-team-is-no-longer-cutting-edge/>

High schools generally have little trouble attracting students to esports. According to the Pew Research Center, 81% of teens have access to a gaming system and 72% of teens actively play video games outside of school.³² Playing games formally as a school is a natural next step, one that schools can have a positive role in shaping. Esports programs have the power to “transform what is often an isolating activity into a social experience...giv[ing] their student gamers a

³² Source: <https://www.pewinternet.org/2015/08/06/chapter-3-video-games-are-key-elements-in-friendships-for-many-boys/>

chance not only to hone their craft but also to learn how to be team players.”³³

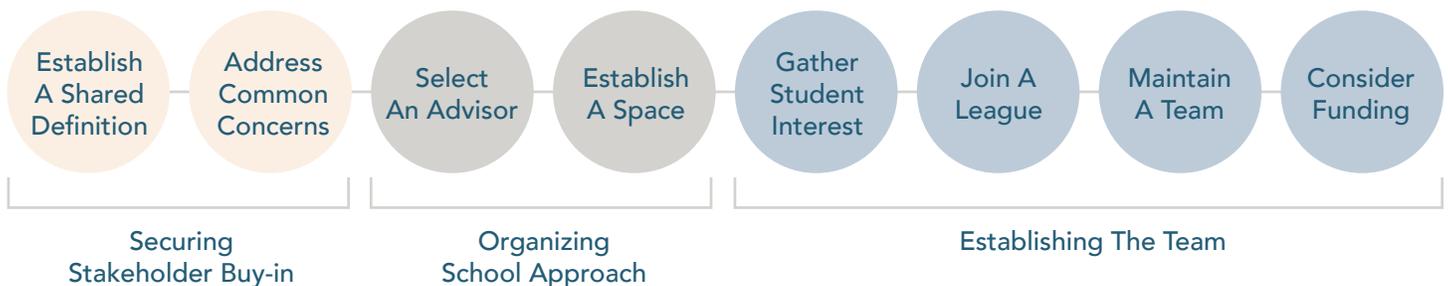
The primary obstacle for many nascent high school esports programs lies in convincing other stakeholders—teachers, administrators, and families—of the value of a high school esports program. Often this is because these stakeholders do not have a strong grasp of the what, why, and how of esports. Therefore, instead of simply asking for permission to start an esports program, potential coaches and advisors should be prepared to teach their community about esports, preemptively addressing concerns and, more importantly, highlighting the benefits that an esports program will offer students.

³³ Source: <https://edtechmagazine.com/k12/article/2019/01/esports-programs-start-pop-k-12-schools>

81% of teens have access to a gaming system.

72% of teens actively play video games outside of school.

The Path to Esports





Establishing a Shared Definition of Esports

When starting an esports program, esports advocates too often skip the “educational stage,” forgoing the process of securing stakeholder buy-in. Many enter into esports evangelism and participation without first establishing a shared definition of esports. Parents, administrators, and community members may have no shared vision of what an esports team would entail at their school. They may not understand that these games are played online in real time, and are therefore collaborative, energized, and competitive. Therefore, when advocating for an esports program, it’s important to clearly state what esports are by breaking down the definition and addressing each component of the definition with stakeholders:

“Esports are multiplayer, online video games played competitively as a part of a team.”



Multiplayer: Address the stigma that gaming is an isolated event between a single basement-dwelling teenager and their device. One of the most popular and most watched games, *League of Legends*, is a capture-the-flag style game played as a five-person team, all of whom are collaborating to achieve a common goal.



Online: Original games like *Pong*, *Tetris*, and *Pac-Man* were played on consoles in solo, offline experiences. With the advent of the Internet, games became interconnected. Broadband Internet first allowed gamers playing together in the same room to join multiplayer competitions through LAN connections. Later, through wireless connections, players could engage in game play from across cities, states, and now the entire globe. This has elevated game play from arcade high-scorers to nail-biting live events.



Video Games: The world of video games is as varied as the world of athletic sports, and includes side-scrolling arcade games to role-playing games with “persistent worlds” that continue to evolve even when a character is logged out of play. Emphasizing this variety helps stakeholders understand that not all games are violent; in fact, not all games’

goals are destruction. Goals can be shared accomplishments, like scoring a goal before time expires in *Rocket League* or simply having a better deck, like in the digital card game *Hearthstone*.*



Competitive: An esports team plays head-to-head with other teams in scrimmages, organized matches, and tournaments. Teams are then ranked in the leagues and divisions in which they play, for example NASEF or HSEL, both of which organize and host tournaments. Teams have rankings; players have statistics. Players can even be featured (and scouted for scholarships) on Twitch, a streaming platform where video games can be reviewed or watched live—video games’ current answer to ESPN. Because these players’ reputations are Internet-based, college recruiting becomes less limited by proximity, giving recruiters a “pipeline” for scouting future players.



Team: Just as traditional athletics involves team and individual sports, the same holds true for esports, where there are cooperative games and player-versus-player (PvP) games. Regardless of the game, esports players also convene in a shared space, talk with a coach about tactics, scrimmage, analyze opponents, and adhere to the team’s expectations and schedule.

Addressing Common Concerns

After establishing a shared definition, it's essential to further educate stakeholders on the value of esports and to articulate justifications in the face of common concerns. Depending on the level of reticence, it may be valuable to address these concerns prior to or in conjunction with introducing the benefits."

Our students already spend too much time in front of a screen."

Screen time is a reality in all aspects of life, for professionals, adults, and children. Therefore, it's not about avoiding participation so screen time will diminish; it's about positively influencing a current phenomena in a monitored environment. An esports program can become a part of the solution by teaching students how to create balanced screen habits. Bringing esports into the school environment provides an opportunity to set expectations around practice time to not only manage screen time, but also to prevent over-fatigue and burnout.

"Player anonymity gives way to online bullying and toxicity."

This unfortunate reality exists everywhere on the Internet, and as with in-person bullying, students need protection. Fortunately, playing games in a supervised, positive environment provides a safe haven for players who might otherwise face this toxicity alone. In HSEL's *Gaming Concepts* curriculum, the first lesson recommends establishing a Code of Conduct for players that addresses such concerns. "

Online games pose student security and privacy issues."

As with just about every Internet-connected tool, technology, or service, users must be careful to safeguard their personal information and avoid behaviors that could put their digital security at risk. Some K-12 esports players might use their personal accounts (as opposed to school accounts), which can pose a risk. Regardless of the account setup, students still must be taught to practice safe and ethical online behavior to safeguard their identity and information.

**“‘Real’ sports are healthy.
Esports aren’t.”**

Sedentary concerns are valid, but physical fitness and wellness is essential to peak esports performance too. In a monitored environment, students can be held accountable for physical requirements for team participation. Just as athletic teams pose academic requirements on players, esports teams can address physical wellness requirements in their team charters, such as mandatory, whole-team morning workouts, walking meetings, or even having workout equipment in the player room.

As with traditional sports, esports include a rigorous mental component that can challenge and foster adolescent emotions, which is better done in a team environment.

Add A Mindful & Balanced Approach to Your Esport Curriculum



Pre & Post
Game
Stretches



Scheduled
Half-time
Breaks



Healthy
Snack
Options

**“Esports athletes are removed from
a team environment. Such isolation doesn’t
foster sportsmanship like traditional sports.”**

Even if the sport in question is a PvP game, sharing a room with other students may be the first time that those students are engaged in an organized sport, with a shared experiences and goals. Chris Aviles, coach of a middle school team in New Jersey, says, “Everything that students can learn playing “real” sports can be learned in esports including social skills and teamwork.”³⁴ Anytime you have the opportunity to influence a gathering of young adults, you have the opportunity to foster sportsmanship.

³⁴ Source: <http://www.techedupteacher.com/what-ive-learned-from-coaching-an-esports-team/>

“Esports glorify violence and misogyny.”

This is a very real concern in the world of video games, for stakeholders and gamers themselves. As a result, handbooks in popular tournaments dictate player etiquette. Gamers have spoken out against negative behaviors, and game makers have begun designing and producing games that think outside of the violent or sexualized box, such as *Rocket League*. Violence, while undeniably present in games like *Call of Duty* and *Grand Theft Auto*,* is not a requirement for esports games. If we can popularize through league play games that are not violent but instead require strategy, quick decision making, and collaborative problem solving, those are the games students will gravitate to. High school esports programs can choose to compete in games that fit their level of appropriateness.

It’s important to consider that these concerns are not unique to online gaming. The athletic environment is rife with violence and misogyny. As with any organized competition, competitiveness can bring out unfavorable behavior from participants. It’s already any school’s mission to monitor, manage, and model good behavior, with esports and with any other communities within the school.

“Hardware, licensing, and physical space represent significant costs.”

Luckily, an esports team can start small and grow big. In the beginning, players can bring in their own equipment from home and play in a school-designated space. Then, schools can start to build what they can afford, for example, a nicer lounge area with comfortable chairs and tables where students can place their consoles or PCs. Organizations including Intel, CDW, and many others can offer advice and solutions based on their years of experience helping professionals, colleges and universities, and K-12 schools engage in esports.

As a team gets more competitive, a school may want to invest in gaming setups that give their athletes all advantages possible. Again, this can be done slowly. And unlike traditional sports teams, travel expenses and uniforms aren’t really necessary.



Implementing an Esports Team

Once all stakeholders are on board, the rest is relatively easy, because it will never be a challenge to attract students to an esports program. In fact, as with many new school initiatives, the students themselves can and will lead the charge.

Many leagues provide resources to help high school esports clubs or teams get started. *HSEL's Handbook* walks students and stakeholders through the entire process, covering topics such as identifying a coach or advisor, hosting the first meeting, and preparing for the first competition.³⁵ HSEL also offers a free curriculum, *Gaming Concepts*, that covers everything from gaming history and appreciation to troubleshooting and field trips.³⁶ NASEF's guide to starting an esports program offers an Activation Kit,³⁷ and it too offers curriculum for different formats of esports: ELA, CTE, Middle School, and Out-of-School Time.³⁸

There are many pathways to creating a successful program, but the following diagram outlines a typical path.

³⁵ Source: <https://www.highschoolsportsleague.com/high-school-partnership/#starter-packet>

³⁶ Source: https://static1.squarespace.com/static/5317bce9e4b06ab557245f78/t/5d10f8d4bedffa00014e1252/1561393400257/Gaming+Concepts.pdf?__s=qtuqgdzvxah76qjwyncb

³⁷ Source: <https://clubs.esportsfed.org/activate>

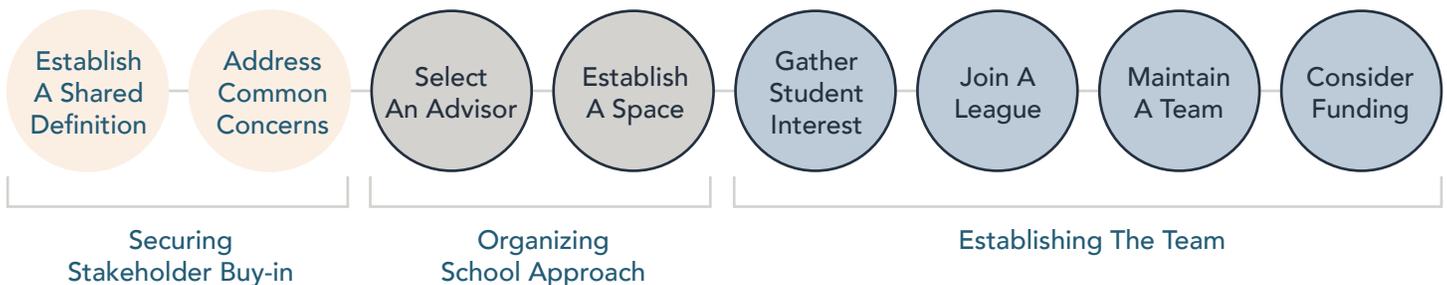
³⁸ Source: <https://www.esportsfed.org/learning/curriculum/>

Selecting a Coach or an Advisor

The most important qualities of an esports coach or advisor are passion and a belief in the legitimacy of esports as an endeavor. Coaches should be excited to facilitate a positive, inclusive environment where gamers can hone their teamwork and sportsmanship skills in a supervised sport, and celebrate their shared accomplishments.

In traditional athletics, coaches usually have some experience in the sport themselves (and may even excel at it). In esports, coaches are often adult gamers who play the same game(s) the students will play. For instance, if students choose *Rocket League* as their competitive focus, the coach would ideally be versed in that game as well. Alternatively, if a coach is an *Overwatch* player, then the team might naturally prioritize that game. Of course, multiple games can also be explored and played competitively on an esports team—these are just considerations for selecting a coach or an advisor.

The Path to Esports



If a potential coach is not a gamer at all—which is common—NASEF would consider this coach a “General Manager,” in which case, a student who is an expert in the game might be appointed the “shot caller,” “game coach,” or “team captain.”

Once established, the coach can then help determine meeting times based on their availability. Considerations include whether the team will be an elective during the school day or will meet and practice before or after school. Meeting more than once a week, allows players to practice together, discuss strategy, scrimmage, and engage in tournament play.

“The only thing a bit different is that most of my players have never been part of an organized sport. When I was a varsity coach, most of my players had been part of a team before. Most of my esports players have not. I’m spending a lot of time teaching my esports players how to be part of a team. I think the difference between video games for fun and esports sunk in when I starting using the same coaching line I used with my varsity athletes: ‘We’re not here to have fun. We’re here to become better players, become better people, and win games. We’re getting better every practice. Our communication is improving, along with our ability to win and lose with class, and our ability to lift up our teammates.’”

— Chris Aviles, @TchedUpTeacher³⁹

³⁹ Source: <http://www.techedupteacher.com/what-ive-learned-from-coaching-an-esports-team/>

Establishing a Space to Play

Technically, esports team players can meet online in their own homes at a coordinated time, which means the school need not supply any equipment or space at all. However, if schools plan to take their participation in esports to the next level, they will want to think about establishing and investing in a space where the team can meet, discuss strategy, plan practices, scrimmage, and bond. A natural place to start is an existing computer lab in the school, where students can access and reserve computer time. As participation and funding grow, teams can look to adding furniture and equipment.

Assembling the Team

Once it’s clear a team is possible—or perhaps even beforehand, as a school is trying to establish potential participation—the coach or advisor should have an Interest Meeting. This will help establish game preferences and allow students to share what they would like out of an esports team, as well as establish future meeting times.

It’s important that this meeting be separate from the first Team Meeting, since that meeting will potentially involve writing a team charter, appointing student officers, prioritizing games for competitive play, and other decisions that affect the team’s future.

Joining a League

The next step is to join a league for full-scale involvement in regional, national, and international competitions. NASEF, EGF, and HSEL all offer resources to help teams get started with league play. Similar to traditional athletics, esports leagues can have seasons. But unlike traditional sports, weather doesn’t affect play, so esports seasons are more frequent and can accommodate almost any schedule. HSEL, for example, has two types of leagues (Majors and Opens) that run in the fall, winter, spring, and summer.

Managing the Team

After the team is up and running, what will ensure it stays successful? As with any team, it's important that teams not only achieve wins in their chosen competitions, but that they have a healthy culture that helps ensure their continued presence in their school.

Team culture is fostered over time as players and coaches build trust. To begin, a team charter can be helpful in articulating the team's goal and norming behaviors. A few items to include in the charter might be:

- The teams' hierarchy
- The articulated goals for why the team exists
- What is viewed and expected as respectful behavior. The Code of Behavior section of HSEL's Gaming Curriculum provides guidance for such an activity.⁴⁰
- Wellness and GPA requirements
- Schedules, practices, and other expectations

Finally, for an esports coach (or any other type of organization), there is no substitute for communing with and learning from other esports coaches. New coaches can reach out on social media, locate other coaches at nearby schools, and research meet-ups and conferences to foster fellowship and exchange advice.

As esports coach Chris Aviles says, "You don't need coaching experience or game experience to use esports to help make your kids better players and better people; there is a wonderful #esportsedu community willing to help. Everything that students can learn playing 'real' sports can be learned in esports including social skills and teamwork. And esports taps into a segment of your school that may not have a home-school connection while getting them excited for a career path they might not have known existed."⁴¹

⁴⁰ Source: https://static1.squarespace.com/static/5317bce9e4b06ab557245f78/t/5d10f8d4bedffa00014e1252/1561393400257/Gaming+Concepts.pdf?__s=qtuqgdzvxah76qjwyncb

⁴¹ Source: <http://www.techedupteacher.com/what-ive-learned-from-coaching-an-esports-team/>

Funding

As with other sports, esports represent an investment, not only of time, but of school dollars. Players need a place to practice, meet, and play; they need specialized equipment that doesn't limit their ability to be competitive; and coaches/advisors need compensation for their time and expertise.

Articulating this need to stakeholders can be challenging, especially if steps toward education and buy-in haven't been taken. Fortunately, start-up costs of an esports team are low, and every purchase can be phased in as the team grows. Eventually, schools may need to reevaluate how much money they can contribute. If they are budgeting a large amount for their traditional athletics and none to esports, it may be worthwhile to ask if the dollar amount supporting traditional athletics mirrors the economy of the real world, especially as esports grows in terms of participation, advertising, and viewership—all of which lead to revenue. As this industry grows, so do the associated careers an esports team can equip students to enter.



Esports Hardware and Innovation Spaces

Think for a moment about the spaces available to athletes in a traditional sport at the professional, collegiate, and high school level. Professional basketball teams play in huge arenas and have tremendous facilities for training and practice. Collegiate basketball players don't have quite the same caliber of spaces, but colleges do strive to provide the best resources possible to attract the best athletes and coaches. The average high school basketball player competes and practices in spaces that pale in comparison, but high schools attempt to provide at least a minimum level of requirement. The players also need locker rooms, uniforms, and a place to practice and compete.

Esports teams operate in a similarly wide spectrum across the professional, collegiate, and high school levels. And while high schools aren't expected to provide professional-level spaces and hardware, they do need to meet a basic level of support for their esports athletes.

The following graphic organizer summarizes the space and hardware considerations for an esports program:



The good news for high schools is this set of minimum requirements can and should be multi-purpose. In addition to being the home base for the esports program, the hardware and space provide the foundations for modern learning environments for all sorts of CTE applications and can even begin in an existing computer lab. Indeed, when deciding about the space and hardware for their esports teams, high school decision makers should consider their larger vision. Instead of basing their purchasing on the requirements for specific games, they should base their decisions on how the technology and space will benefit students both in their esports program and in the entire school community.

Often schools adopt a gradual approach to implementing an esports program. They might start small, providing a space for students to bring in their own gaming consoles and compete against one another after school. As the esports team becomes more competitive, the natural next step is moving to PC-based gaming that allows for more powerful cross-platform competition.

Purchasing for esports programs is different than for other education technology. With esports, system performance can correlate directly to an athlete's performance in a game. It can cause the refresh cycle to be faster, avoiding "lag" that drastically shifts a player's ability to compete in an online, real-time environment. However, purchasing also tends to be more modular. Instead of purchasing all new computers, often a new video/graphics card is all that is needed. In fact, many schools begin their esports programs with existing technology infrastructure and a handful of upgrades.

When deciding about the space and hardware for their esports teams, high school decision makers should consider their larger vision. Instead of basing their purchasing on the requirements for specific games, they should base their decisions on how the technology and space will benefit students both in their esports program and in the entire school community.

Hardware Options

Computers

Different games publish their own set of minimum computing requirements. Here are some general considerations to ensure athletes can compete.

Operating System: Some games can be played across platforms, but Windows-based PCs dominate the esports landscape and will generally give an esports program the most versatility.

Laptop vs. Desktop: Laptops provide the added benefit of easy portability when a team travels to esports competitions. But because travel is minimal in the world of esports—a fortunate money-saving feature— desktops can give players more power and at a somewhat more economical price point.

CPU: The processor inside of a gaming computer affects everything from frame rate to general stability to battery life (for laptops). At a minimum, a device with an Intel Core i5 processor will provide a decent clock speed. Higher-end processors may be needed if the esports program plans on streaming and/or recording gameplay, since encoding video requires additional CPU. Purchasing an unlocked Intel Core i9 processor allows a PC to be overclocked to maximize frequency and minimize voltage for extreme gaming performance.

Memory: RAM, or the short-term memory of a computer, is vital to smooth and fast gaming. Many games list 8GB of memory as the minimum requirement, but 16GB may soon become the standard in gaming setups.

Storage: High-speed, solid-state drives (SSD) give systems quicker access to gaming and media storage. The absence of moving parts decreases the likelihood of hardware failure. Intel Optane Technology offers a variety of accelerated storage options that can help devices perform at their best.

GPU: If planning to play games at 4K resolution, the gaming systems will need to push twice the number of pixels as 1080p. Many current professional, collegiate, and K-12 schools use NVIDIA* GeForce* GTX 1060 graphics cards as their starting point, because they offer high performance at a reasonable price.

When deciding on the number of gaming computers an esports program will need, consider the team's game of choice. Teams of three compete in *Rocket League*, so at least three devices are needed, and up to six if athletes will scrimmage internally for practice. Other games will require additional gaming setups. *League of Legends*, *Dota 2*, and *Overwatch* have five and six players on a team respectively.

Monitors

More so than with other education technology applications, the monitor is extremely important in esports. A slight lag in response time can have an enormous impact on game play and viewing a live tournament. While the computer hardware outlined above will ensure a balanced gaming system, choosing the right gaming monitors will ensure the computer power is actualized in the gaming experience. When choosing a monitor, it is important to consider the following:

Resolution: the number of horizontal and vertical pixels

Screen size: the viewable area of a monitor

Refresh rate: the frequency with which the image on the screen is refreshed, measured in hertz or frame per second

At a minimum, high school esports programs should consider a 1080p monitor with a 144Hz refresh rate, twice as fast as the standard 60Hz monitors.

Networking

While most other parts of high school technology are prioritizing WiFi, hard-wired Internet is still preferable in esports. For reliability and speed, ensure that the locations of esports practices and competitions have access to Ethernet connections.

Input-Output Devices

Esports also require a different set of input and output accessories for gaming setups, and many high schools are also adding these items as their programs grow:

Keyboards: Many players prefer mechanical keyboards over the traditional and more common membrane variety. The spring-activated switches give players a much better feel.

Headsets: Players will need headsets with mics so they can communicate with their teammates inside a game during competition.

Controllers: Depending on the games chosen, external controllers or gaming mice for gameplay may be required.

Sample Collegiate Gaming Setup

What lies ahead for the aspirational high school esports player? Take a look at the hardware the University of California Irvine purchased through iBuyPower for their athletes:

Motherboard: ASUS Z170 Pro Gaming

Graphics: NVIDIA GeForce GTX 1080 8GB

Gaming Accessories: Logitech

Monitors: ASUS 24" 144Hz FreeSync

Esports Spaces

In addition to planning for appropriate hardware, decision makers need to think about where their budding esports club or team will meet, practice, and compete. Again, as with the hardware, the space can grow as an esports program develops. Remember, the space can and serve multiple purposes. Consider how the space can benefit students in other classes and programs, including CTE applications.

“Alex Egan’s graphics classroom at Naperville North High School can hold 26 students. Plenty of space, he thought, for an introductory meeting about a new esports program...[but] students kept piling into the room, doubling the attendance within minutes—and then doubling it again. By the end of that first meeting last fall, more than 130 students had signed up.”

—*Overwatch at school*, Daily Herald⁴²

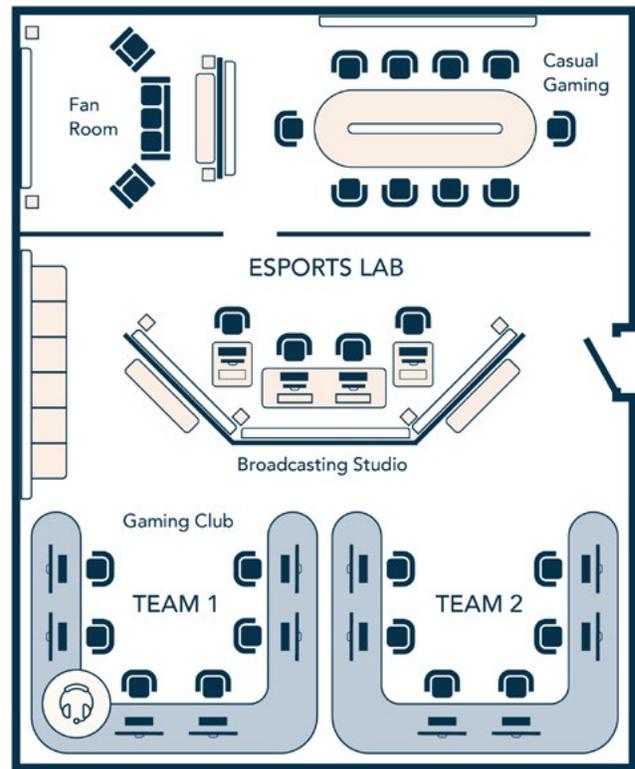
⁴² Source: <https://www.dailyherald.com/news/20190603/overwatch-at-school-esports-moving-fast-toward-becoming-ihsa-sanctioned-event>

Chairs and Desks

Banks of gaming setups are often placed against a wall. The chairs don’t need to be gaming chairs, but they should be ergonomically designed and reinforce healthy computing habits. Esports is not a couch-based activity. Computers are often set up in groups based on the number of players on an esports squad. For example, if a school is playing *Overwatch* competitively, they may set up their computers in two groups of six.

Meeting Areas

Esports programs need places for athletes and coaches to work together, plan, and debrief in both large and small groups. It is helpful to include a larger monitor in these areas, so players can review film and strategy,



as well as a whiteboard for discussion. These areas can also include couches and comfortable seating options, because players likely won’t be in front of a computer. Fortunately, there is a lot of overlap between these types of spaces and collaboration spaces in the modern, active classroom. Many programs are also converting extra space in shoutcasting and media production rooms by separating them from the larger room and including AV equipment.

Arena or Competition Spaces

Because many tournaments and matches are played remotely, a dedicated competition space is usually not necessary, especially at the start. Consider how meeting areas can double as places where audience members can watch their peers compete. As a program develops, decision makers can start thinking about how to use some of a school’s larger assembly areas, such as gymnasiums or theaters, as esports arenas.

Additional Resources

Aviles, Chris, "Guide to Esports in Education," (<http://www.techedupteacher.com/the-guide-to-esports-for-education>).

CNN Sports, "Video games are now a legitimate high school sport," (<https://www.cnn.com/2019/03/18/tech/esports-varsity-arena/index.html>): esports are an approved and recognized high school sport in 8 states (as of March 2019).

Cynopsis Esports (<http://www.cynopsis.com/esports>): industry information, links to jobs (relevant to CTE discussion).

Dot Esports (<https://dotesports.com>).

EdTech Magazine, "Esports Programs Start to Pop Up in K-12 Schools" (<https://edtechmagazine.com/k12/article/2019/01/esports-programs-start-pop-k-12-schools/>).

Electronic Gaming Federation (<http://egfederation.com/high-schools>).

Gamer League (<https://www.gamerleague.org/2019/05/25/gamer-leagues-first-year>).

High School Esports League (<https://www.highschoolsportsleague.com>).

Intel, "Transforming the Future of Esports," (<https://www.intel.com/content/www/us/en/gaming/esports.html>): Intel's industry-focused landing page on esports.

NewZoo, "Global Esports Economy Will Top \$1 Billion for the First Time in 2019," (<https://newzoo.com/insights/articles/newzoo-global-esports-economy-will-top-1-billion-for-the-first-time-in-2019>).

North American Scholastic Esports Federation (<https://www.esportsfed.org>).

Pew Research Center, "Video Games Are Key Elements in Friendships for Many Boys," (<https://www.pewinternet.org/2015/08/06/chapter-3-video-games-are-key-elements-in-friendships-for-many-boys>).

Super League (<https://www.superleague.com/about>).

TechedUp Teacher, "What I've Learned From Coaching an Esports Team," (<http://www.techedupteacher.com/what-ive-learned-from-coaching-an-esports-team>).

UCI Sportslab (<https://www.ucisportslab.org>): Includes research projects, papers, and esports conference information based out of University of California Irvine.