Providing Esports Websites to K-12 Students

by Jeremy Davis

I want to initially give significant credit to Chris Santos (former Network Engineer in my former department who now works for SAIC) who did most of the work on this project and a significant majority of the technical write-up that we eventually turned into a white paper for the Samueli Foundation, the Orange County Department of Education, and University of California, Irvine. If you have read their how-to guide you will notice many similarities to the content of this article.

I also want to start out by saying that a huge majority of our tech department was beyond excited by the idea that Esports is a thing. “You mean you can letter in video games?” “Wait, kids can get scholarships for gaming?” “Where was this when I was in high school?” As a group of techs, most of us have either grown up playing video games or still game on the weekends, so we were all-in on the idea of getting students going on Esports and not being the department of NO that would stand in anyone’s way. That being stated, my hope is this article can be shared with Cabinet members of all departments as a lesson in the complexity of implementing new programs. CETPA has been a strong advocate of ensuring that district technology leadership has a seat at the highest cabinet levels, and Esports is a great example of how technology and curriculum have continued to cross-pollinate. Technology impacts every department and many decisions being made on a daily basis at the highest levels of each district. My hope is that everyone can take away a number of lessons learned from our experience, and apply those to their current district practice.

I am currently the Assistant Superintendent of Innovation and Instructional Support for the Fullerton School District. Being a K-8, we have not delved into the world of NASEF and league play. We work with sites to have coaches for Mario Cart, and had a culminating event a few months back at the Anaheim Hilton where one of our many events was an E-Sports competition with 10 schools participating, live-streaming, brackets, colored t-shirts for each school, and a full three-hour grind it out competition to crown a winner. We have combined a live streaming internship for elementary students to learn how to operate equipment, create live events from multiple angles, and host live shows with the Esports competition. That is a very easy program to start, doesn’t require much research or whitelisting, the level of violence in the game is minimal, and the students have a great time cheering each other on.

However, this article is dedicated to the introduction to Esports I experienced when I was the Chief Technology Officer of Capistrano Unified School District. The idea of Esports came to our department though Educational Services and Career Technical Education. Capistrano is one of the state’s leaders in Career Technical Education programs, and leadership across Educational Services is exemplary. We wound up with student scholarships to college for Esports at the end of this process and students were engaged in school in ways they had not been before which means it was all worth it. We should all be here for the children as our number one priority, and gaming gives a new set of students the ability to excel in an area that has not been lifted up by public education in the past. I also want to lift up the Orange County Department of Education for their willingness to listen to concerns, adjust when they could, search for answers with us as we struggled, and for working to develop an English Language Arts curriculum tied directly to Esports that will interest and engage students by meeting them where their passions lie.

When we first were approached with the idea of students playing League of Legends in league play against other districts in Orange County and possibly in the state, the biggest concern was the turnaround needed (about 20 working days from first notice to students

needing to be registered and practicing) and that it was communicated that it was a pretty simple program to implement. Teams actually wanted to start practicing within days. In discussions with other districts around Orange County some tech departments only received a few days notice to implement. Five days after the first notice was given, we received the technical specifications which are summarized below.

Technical Requirements

League of Legends Minimum System Requirements

PC Computers:

OS: Windows XP (Service Pack 3 ONLY), Vista, 7, 8, or 10

Processor: 2 GHz processor (supporting SSE2 instruction set or higher)Video Card: Shader version 2.0 capable video card

Memory: 1 GB RAM (2 GB of RAM for Windows Vista and newer)

Mac Computers

OS: Mac OS X 10.8.5 or higher

Processor: 2 GHz processor (supporting SSE2 instruction set or higher)

Video Card: NVIDIA GeForce 8600M GT / ATI Radeon HD 2600 or better

Memory: 2 GB RAM (4 GB is strongly recommended)

The computer should be equipped with videoconferencing capability using a Skype, Google Hangouts, or a similar type platform. Exact requirements will depend on which videoconferencing is determined.

Verified access to the following websites on the team computers for use during the league season. Please note that this list is not exhaustive and additional access needs may be shared throughout the season.

na.leagueoflegends.com

www.twitch.tv

www.ochighschoolesports.org

discordapp.com

www.myteamspeak.com

www.youtube.com

As technicians focused on security, and as administrators with an understanding of the Children's Internet Protection Act (CIPA), we had a few immediate concerns. One was the technical specifications of required computers. Whomever had put together the technical specs had probably done so off of the software company's website. This is a common-sense approach but many software companies want consumers to purchase their games no matter how slow it will run, and their minimum specs are often not appropriate. Being 2018 (at the time) Windows XP and Vista machines should have been salvaged as e-waste years earlier. Machines with XP, 2GB processors and 1GB of RAM can barely run Microsoft Office much

less be competitive playing fast-moving graphics-intensive games against students who may have high-end gaming machines with 8gb Graphics cards, i7 processors, and the latest operating system. It would be like sending your football team out with leather helmets and expecting them to win.

The Esports conversation at each district should have multiple facets, but one of them is the expense of running proper equipment to give students a chance and not handicap their ability to succeed with old equipment. This may mean running dummy terminals with nice graphics cards and playing off a server, it may mean County Offices of Education stepping in to offer server-based play, or it may mean buying high-end gaming machines with a refresh plan as part of the sporting equipment budgets for sites.

Another major consideration for us was opening Twitch, Discord, and MyTeamSpeak to our students. If you are an educator who is not familiar with CIPA, please get familiar. Today. Anyone receiving E-Rate funds is subject to CIPA, which is probably 99% of people reading this article.

"*Schools and libraries subject to CIPA may not receive the discounts offered by the E-rate program*

unless they certify that they have an Internet safety policy that includes technology protection

measures. The protection measures must block or filter Internet access to pictures that are: (a)

obscene; (b) child pornography; or (c) harmful to minors (for computers that are accessed by minors). "

"Harmful to minors" and "obscene" are harmfully vague to education, as there is no single definition of what is harmful to minors or what is obscene. One person's priceless artwork may be considered obscene by someone else. Youtube is one of the greatest educational websites available, yet you can find videos from terrorists trying to recruit minors, which I would think is harmful. But until the Federal government fixes the language in CIPA, we have to abide by it and do our best to allow as much as we can without violation. In the case of Twitch, a quick search for various words that might lead to pornographic content revealed an adult streamers community, a "school room sex" channel, 99+ channels with the word breast in the title, and 99+ channels with the word sex in them. We felt that we could not open this program to minors. We reached out to the County Office and they quickly worked to ensure that all game play would be posted to Youtube rather than Twitch. As a district we had a legal opinion on opening Youtube to students not violating CIPA and we were grateful with their quick change to the program.

Discord and MyTeamSpeak caused concern as well. (The rest of this paragraph is based on these two technologies at the time of implementation, they may be updated now). Both programs allow teams to communicate to each other during gameplay. They are both great platforms for gamers with incredibly quick response time, excellent sound quality, and allow both voice and chat. However, neither program is moderated and neither allows any kind of control over who participates. Our students could be having un-moderated and un-managed chats with adults from around the world. This may seem like an overreaction, but we decided as a district to utilize Google Hangouts as we can control who has access to our students and teachers can moderate the conversations. Another concern with Discord was that it allowed users to open up what amounts to a VPN tunnel into your network that bypasses your security measures, and executable files can be sent through to users. So users can send and receive viruses, malware, and ransomware into your systems through the program. If exploited, this

could cause data loss on critical servers, teacher machines, and spread infections that could do significant damage to district-wide operations. The County and NASEF were quick to agree with the use of Google Hangouts for teams.

Another consideration that needs to be addressed by any district is ensuring stakeholders understand that the students will be playing violent games. While League of Legends is not a first-person shooter, Fortnight and Overwatch are both first-person shooter games with violence including headshots. Districts should ensure that parents and board members understand that these games are being played as part of a school program and the benefits of these programs.

I hope that those reading are starting to see that program implementation that seems easy or seems like it may only take a few steps can often have multiple issues that need to be addressed and may not only take significant man-hours (105 for us), but may require either significant overtime or a shift in priorities. The role of the CTO or Assistant Superintendent over Technology is vital in communicating to all stakeholders all concerns with any program and all the possible solutions, so you are not standing in the way of progress or students being engage or learning through their passions and interests. The rest of leadership needs to understand the high-level concerns and must be willing to take a step back to make decisions regarding these programs and implementations.

Communication is vital, and most technicians are at least bi-lingual. Some even tri-lingual or more as they have computer language, networking language, and potentially a few database or coding languages that they need to understand with semi-fluency. Often we as technologists (or former teachers who have learned the technology side) struggle to communicate effectively the most important aspects without getting into technological terms that make people's eyes glaze over. The concerns I have outlined so far can be summarized for my fellow leaders in this way:

"We love this program and will do everything we can to make it work. We need to ensure the students have computers that are fast enough that they can compete and the specs they gave us are old. If they play on really old computers their ability to compete will be hampered, so we have to decide if we are buying new systems. We did some quick research and found inappropriate adult videos on one of the sites that they are suggesting we open so we need some time to come up with alternatives. If we open one of the sites they gave us bad actors could bring our network down or hijack our data with ransomware and we need some time and to come up with alternatives. The students will be playing some first-person shooters with the goal being to kill other players so we should discuss how to communicate that to stakeholders. We love this program and will do everything we can to make it work."

Now we get a bit more into "tech speak" as we delve into the programs themselves. League of Legends isn't a simple whitelist. It is a piece of software that requires the student users to be administrators on the systems they are using. As a district we did not allow students to have admin rights as they could do some significant damage. Most districts have technology repair departments that are handling 1500-3000 devices per technician and giving students administrative rights could cause significant increases in repair tickets and repair times. Some students love to push the boundaries with technology, and administrative access gives keys to the kingdom. League of Legends is also not a software that can be mass deployed without customization, so you must account for individual touches to computers if you are on a tight timeline. When we installed the program and watched the traffic on the firewall, we found that the software called out to at least fifteen other websites that needed to be whitelisted. Because of some of the other games located on these pages, we decided to use Active

Directory to create a special group with these sites opened. We created an extra-curricular in the Student Information System so site office staff would move students into that extra-curricular group so the scripting in the system would move the students to a special filter group when on certain machines.

The install needed to be customized. We ended up creating a customized System Center Configuration Manager (SCCM) package that would create a task sequence to install the program into the Program Files so it wouldn't self-install in the root location. It would then do a file copy of the data the game needs to work (8gb file). We worked with our programmers to create a custom .exe to allow users to "run-as" other users. This allowed the student accounts to mimic an administrator on the computer for the purposes of this game. Group Policy was used to take a generic LoL Service basic user account and set is as an admin only on the specific lab gaming computers. We also created AD groups for the specific computers in order to authenticate to our Network Access Control (NAC) appliance.

We also worked with students on mouse acceleration settings for better game play, and we worked with the site admin and the ESports coach to give them the basic idea of what was happening from a tech perspective. We worked with the Teacher's association and created a signature page for the coaches who would be supervising students on a more open Internet so they were reminded of their responsibilities and of the greater access students had been given.

Often in the world of technology there is a lack of understanding of how much goes on behind the scenes in order to make a simple website work. It is like when I used to overhear technicians who were frustrated that a Kindergarten teacher had made a silly mistake with tech. I would ask them "Do you know what a phoneme is?" They would say no, and as a former kindergarten teacher myself I would tell them that they didn't have to know, but that kindergarten teachers were magic people who taught children to read. And technicians are magical people who make all the tech work. We just need to make it work so children can learn, and we all need to understand that there are complexities to everyone's job and just because we don't understand all of their work doesn't mean their work is easy. As the tech departments, we all have to consistently keep in mind student safety, the Children's Internet Protection Act, various federal and state regulations, as well as basic student privacy while prioritizing innovation and student creativity on devices. While often it is as easy as whitelisting a website to make a program work, sometimes implementing a new program for 40 students causes significant disruption to current projects for 50,000 students. It is our job as CTOs to diagnose all issues, figure out alternatives, and communicate all concerns to our fellow leaders so they can make informed decisions on how to move forward. When CTOs have a seat at the table we can help keep students safe while lending a voice of expertise to ensure projects are feasible and tested before commitments are made.

I love Esports. I love engaging students in ways that weren't possible in the past. I love allowing students to follow their passions and personalize learning. All of these things can be scary, but we all have to be committed to making them all happen for our students.