

Old Dominion University

CYSE 368 Internship

Final Internship Paper

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Employer: Danville Public Schools

Internship Site: Danville Public Schools Cybersecurity

Term: Summer 2026

Date: August 6, 2026

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Introduction:

I decided to do my internship with Danville Public Schools because I wanted to be able to get some hands-on experience and educate younger students about cybersecurity. I have studied numerous technical ideas throughout the years at Old Dominion University via lectures, lab work and class projects. I wanted to go out of the classroom and observe how such ideas could actually be used in "real life." On top of that, I wanted to develop my leadership qualities and communication skills through practical working experience with younger students. The internship I did was a great opportunity to work in a team, teach, and acquire new skills for my future career.

Prior to my internship I created three learning objectives. My first goal was to get work experience, learn in a structured environment and what employers expect from their employees. My second goal was to develop my communication abilities, and communicate with the younger students in a manner they could understand regarding cyber security disciplines. In order to improve these attributes, my third goal was to work with other instructors, lead activities throughout camp, and manage problems with students. I thought these goals would do more to equip myself for internships and full-time jobs, once I graduated.

Danville Public Schools is a public school division of Danville, Virginia. The division educates students across grades Elementary to High School and implements an emphasis on building students' success in academics, and for post-secondary and future pursuits. In addition to conventional academic instruction, Danville Public Schools' programs include exposure to technology and other career options for its students. I was able to attend a cyber security related camp which was an interesting, interactive and hands-on lesson for the students during my cyber security internship. The camp aimed to instill the interest in technology and educate the students about being safe online.

To start my internship, I got a tour of the other teachers and got an overview of the objectives of the cybersecurity camp. Before the students came into school, we discussed the daily routine, classroom expectations, we talked about safety, and we reviewed the lessons. During this period of time, I got to know the activities that we will be conducting and conversed with others about how to ensure that students enjoy themselves throughout the program. The orientation informed me of my tasks and made me confident to work with students.

My day-to-day tasks during the internship involved teaching cyber security courses, planning out activities with other teachers and assisting the students from the lessons while they worked on their projects and activities. Discussed topics with students that included password security, phishing, social engineering, digital citizenship, and online safety using examples with which students could relate. A lot of the students didn't really have much experience in cybersecurity, and had to come up with a way to communicate while not losing the meaning of what I'm teaching them. I gained a positive impression regarding the internship as staff provided the students with opportunities to feel at ease and to have success, communication and team working as priorities. During the internship, I was more confident about my teaching capabilities, leadership skills and relationship with students. An experience that helped both develop skills professionally, and motivate me to continue down a pathway of cyber security.

Management Environment:

The management of Danville Public Schools was structured, nurturing, and dedicated to teacher and student achievement success. I had a great deal of contact with the camp coordinators and all the other teachers who gave me direction when I needed it all through the internship. They had clearly defined expectations and communicated them from the beginning and ensured everyone was aware of their duties before the day commences. This set up enabled the camp to be run efficiently and enabled a positive learning environment for both staff and students.

Communication was an important factor in the management style. The teachers gathered before school every day to discuss the plans for the day and to review schedules, lesson plans and lesson materials for the activities. During these meetings, one could ask any questions, give thoughts, and come up with any changes that are required. Changes for an activity, if necessary, were discussed by the team and a solution was found. This level of communication was useful to ensure there was no confusion and it ensured the camp continued to be organized throughout the program.

Worked in groups and recognized the contributions of all instructors by my supervisors. They did not give a task with no reason but they gave a reason why for the explanation of each lesson or activity. This aided me to a greater level of understanding on how each component of the camp contributed towards the learning experience of the students. When I encountered a challenge I always felt at ease in asking a question or seeking some advice. They were so helpful and made me feel 'helped' as I learnt new skills.

The management team trusted instructors as internship went on as well. In the first several days, I watched how well experienced instructors were able to interact with students and conduct classes. This increased my participation in lessons, explanation and discussion within the classroom as my confidence grew in my role as teacher. I gained confidence as part of this progression of responsibility but continue to be supported by my supervisors.

A feature that I liked was how flexible the management team was. The learning rates within each group of students varied, in some cases, these activities needed more time or required other explanations. The supervisors assured teachers that they need not follow lessons word for word, rather be flexible when needed. This kept students fully involved and enhanced learning opportunities.

Overall, I feel my internship was successful because of my own management environment. The supervisors were clear, collaborative and gave clear direction when necessary. They provided me with a supportive atmosphere in which to build my teaching, communication and leadership abilities. It was also a learning experience regarding how crucial effective management is in establishing a productive workplace and how it impacts on its employees to enable their best performance.

Major Work Duties, Assignments, and Projects:

During my time doing my internship, I got the chance to assist in teaching cybersecurity concepts to some of the students in attendance at the Danville Public Schools Cybersecurity Camp. Daily, I collaborated with my other teachers and instructors to organize activities, plan lessons and develop an open setting that students are comfortable to ask questions and engage in the lessons. The aim of that camp was to get the students interested in cybersecurity, and to teach them something in an interesting and understandable way.

A primary role was to be teaching lessons about cyber security issues like good password practices, phishing, social engineering, digital citizenship, and online safety. Many of the students were not very well familiar with cybersecurity and I made sure that I used a non-technical language and analogies with the real world to convey the technical concepts to them. Students' questions and comments were sought and encouraged throughout each lesson. This enabled students to remain connected and develop their knowledge in the field of cyber security.

Another key component to his job was to coordinate materials with your other instructors in the classroom. During each of the lessons, we would cover the day's objectives and then work on materials which could be used for the students to apply what they had learned. Numerous activities included collaboration, problem solving and/or critical thinking. Pupils collaborated on the identification of phishing attempts, on the creation of strong passwords, and on recognizing safe online behavior. These were some activities that students could use to apply cyber security concepts, rather than just hearing about them.

I also spent some time helping students in need of extra assistance in lessons and activities. In some cases, students grasped concepts very rapid, and in other cases, students required additional explanations before the next thing to learn. Provided answers to questions, illustrated examples and adapted to working on individual student projects until they grasped the material. This experience helped me to get good at communicating with folks and become familiar with various learning styles.

All of the responsibilities I fulfilled were helpful to the success of the cyber security camp. Online lessons allowed students to develop knowledge in identifying online risks and making safe choices online. Planning activities engaging pupils and gave opportunities for pupils to apply their learning. One to one support helped individual students with confidence building, and avoiding falling behind in class. All responsibilities played a role to create a good learning atmosphere in which students were able to build up cybersecurity knowledge and enjoy the learning process.

At the conclusion of the internship, I appreciate the opportunity I had and the experience I acquired working in the working world as well as the skills I picked up that I did not only use in cybersecurity. Increased confidence in oral presentation; better team working skills; developing communication skills to suit appropriate students. These responsibilities helped to familiarize me with the technicalities of this work as well as that of working with others, which will help me as I pursue my future career.

Use of Cybersecurity Skills and Knowledge

In my internship, I was able to use Cyber security knowledge in a field other than technical support with a background in education. Prior to starting the internship, I already had some knowledge of cyber security from my degrees at Old Dominion University. I had covered various topics like password security, protecting sensitive information, social engineering, phishing, network security and handling risks in my classes. I was able to put those concepts into practice in my internship and while I'm a teacher with students rather than just a student in a classroom.

Among all of the things I had to cover on cybersecurity, I talked about the security of passwords most. I explained the importance of strong passwords and gave students the idea on how weak passwords allow accounts to be easily compromised. In addition, students learned how to form more secure passwords and how diversifying their passwords is beneficial to their personal information. I spoke about another thing, phishing. Explained different way attackers can try to steal personal information via messages, fake emails, and websites. I also urged students to have better awareness and avoid clicking on untrustworthy links or entering personal details online without proper verification on validity.

The camp also covered such topics as social engineering and digital citizenship. Students received education on manipulation in add to the abilities only technological. Additional topics that we discussed included online etiquette, personal privacy and security, and responsible social media and online activity. The lessons helped students realize that there is a technology component to cyber-security as well as a human behavior component.

I was exposed to and gained a couple of new skills during the internship working with students. Learning to present technical concepts to the layman was the most important aspect. Many terms in cybersecurity mesh easily understood for college students, but not for younger students. I learned how to translate technical terms with real life examples, without altering the meaning of what I was teaching. Overall this experience grew my communication skills and made me better at teaching.

I Also got a new outlook on cyber security through the internship. Prior to this experience I was primarily concerned with the nuts and bolts of the field. My internship had me realize that education and awareness of users is an important component of battling cyber attacks. A significant number of security-related incidents are caused simply from failure to recognise common threats or the knowledge of safe use of the web. Learning from the students, I found it important to educate people as much as create technological answers for their needs when it comes to cybersecurity. I took away even more knowledge about the field and that communication, education, and technical knowledge would all be intertwined to help maximize cyber security.

How the ODU Curriculum Prepared Me

The experience I had at Old Dominion University was ideal for my internship in Danville Public Schools. Prior to the internship, I took a series of courses to familiarize myself with the principles of cybersecurity, networking, information security and risk management. The classes gave me a better understanding of the concepts that I had to describe to students in the cybersecurity camp. Though more of a teaching focus, the learning in class helped to build confidence in answering questions and conducting activities during the Internship.

Cyber security awareness is the one aspect that I feel is most closely related to my coursework and the internship. I was educated on topics such as phishing, password security, social engineering and securing personal information in several classes. In the internship, I taught these same topics to the students but in the language they can understand. My classes provided me with the necessary technical expertise, whereas the internship provided me with the skills needed to be able to convey those concepts to someone with few or no technical cybersecurity skills.

The internship further strengthened several of the concepts I had acquired at ODU, as well. For instance, our work in the course highlighted that individuals are a common area of poor security practice. The camp enabled me to understand the importance of user education. Common online threats were not identified by many students, nor were the dangers associated with disclosing personal information. I learned that cyber security is dependent upon technology and informed users in teaching these lessons.

The internship was also a place where I learned some skills that I didn't have fully developed in school. The majority of my classes were technical, practical, problem-solving, and centered around individual and/or small group projects. During the internship, I was expected to speak in front of the groups, have discussions with the students, provide answers to unanticipated questions, and modify lessons as a function of students' understanding. These experiences helped me to develop my communication, leadership and public speaking skills in a manner which was not possible in the classroom.

The internship also gave me great opportunities to enhance my teamwork skills. I worked with other instructors each day to plan lessons, activities, and to assist students during camp. Together, we brainstormed solutions and made necessary adjustments, and discussed ideas. This experience taught me how important it was to work together in a

business setting, and made me realize how many teamwork skills I would learned throughout group projects during my time at ODU.

Overall, I feel my education at Old Dominion University has helped me prepare for this internship well by providing me with a foundation on cyber security concepts. The internship was the next step in this process and helped to develop communication, leadership and teaching skills that are hard to learn in the classroom. My coursework and internship experience have prepared me for the future opportunities on cyber security.

Evaluation of Learning Outcomes and Objectives:

I created 3 learning objectives at the outset of my internship that I would like to achieve by the end of the internship. The goals I have set myself to accomplish encompass developing lessons on various areas of cyber security products for younger students, gaining some experience and growing in ability in the field of cyber security, and enhancing my leadership and teamwork abilities. I think I accomplished mostly each of these goals during my everyday duties and day-to-day interactions with students and staff as I wrap up my internship.

My first was to get work experience in a formal setting. During the internship, working with the supervisors, communicating with co-workers, managing responsibilities and professional attitude with each day learned. I became more comfortable working in group or team and I learned that it's important to be reliable and ready. It provided me with a valuable experience from an employment standpoint and I established some good habits that will help me later in my career.

Improving communication skills was my second goal; to teach cybersecurity concepts in a manner young students could understand. I knew that some cybersecurity topics would be more difficult than I thought as there were a lot of words younger students may not have been familiar with. I found a way to explain complicated ideas in simple terms, and gave examples that students could relate to, and even make their own, and let them ask questions when they don't understand something. As the internship progressed, my abilities in speeches started to grow because I had to speak before groups and break down some really complicated information in a logical manner.

The third area of improvement I wanted to work on was my leadership skills and my teamwork skills. In the camp, I worked together with all teachers to set up lessons, design activities and help the students in lessons. Helped each other and spoke often when

having difficulties. Acted as discussion leaders, facilitated activities. The experiences gained boosted my confidence and enabled me to understand why it is important to be part of a team to achieve a successful learning environment.

In retrospect I think I missed a few things while doing the internship. I'm hoping to expand on my cybersecurity expertise but I also learned some useful skills as well that I can use in my career. My technical skills were not the only thing that mattered; communication, leadership, patience, adaptability, and teamwork were key as well. The internship provided me with ongoing insights into the importance of being able to collaborate with others and communicate technology in an understandable fashion in the field of cybersecurity. The internship was a valuable experience that helped me reach these learning objectives, and it has gotten me ready for what's to come in my cybersecurity career.

Most Motivating Aspects of the Internship

What was the most motivating part of my internship was watching students get more and more interested about cybersecurity throughout the Camp. Many students came with less awareness about certain issues such as password security, phishing, and online safety. During the lessons I found it slowly became easier for them to ask questions, engage in activities/lessons and put into practice what they had learned as our lessons moves forward. It was rewarding to see their minds expanding and told me that education will play an important role in Cyber Security.

I also loved to design an atmosphere which the students could feel happy learning in. In the initial few days, there were some students that were reluctant to participate or answer questions. Many became more engaged in discussions and activities in the classroom by encouraging them and sharing ideas in simple terms. Each student's ability to become more confident spurred me to create work that was more effective in teaching and communicating.

A motivating factor was the cooperation with the other teachers. There was an objective common to everyone to ensure a learning experience which had a positive impact on the students. Shared lesson preparation, activity planning and problem solving all day long. The staff's cooperation and support provided made the environment a happy place to work making each day enjoyable.

The internship was also taken because it made me feel motivated seeing that I knew I was interested in pursuing a career in cybersecurity. I soon discovered that cyber security isn't about only securing systems and networks as I taught schools. It also means assisting individuals in the identification of threats and the making of informed decisions online. The experience helped me realize how much I can use communication skills for all aspects of cybersecurity and consider continuing my education in both technical and soft skills.

Most Discouraging Aspects of the Internship

Although I had a positive experience during my internship, but it had its moments of discouragement. It was most difficult to see some pupils getting distracted in lessons. There are lots of new terms and concepts to keep all students attending, in a meaningful way, throughout all of the activities. Students did become distractible at times and had to find other means to get students focused to move on with the lesson.

The other disappointing part was to discover students' learning rates were different. There were some students that grasped the concept rapidly, while others derived meaning from it when there were more explanations and examples given. Sometimes it was hard to meet the pace of the lesson and to ensure that everyone understood the lesson. Patience and flexibility were needed during the camp.

There have even been times I had to explain what something meant that students apparently still didn't get it. In such times, I'd have to reconsider and look at other examples or way of doing that which would make more sense for them. This frustrated me at times, but it also taught me the concept that "not all students learn the same way, and that communication is key in effective teaching.

With these trials and tribulations, however, discouragements turned into enriching lessons. They showed me to be patient, adapt my teaching styles and put the emphasis on the success of all students. By the end of this internship I was more comfortable in dealing with any situation where the student was in need of some extra assistance or a different explanation. I felt as though I was enhancing my communication abilities, skills and getting ready for future scenarios.

Most Challenging Aspects of the Internship

My toughest part of the internship was trying to talk about technical information on the subject of cybersecurity to a younger audience. I was familiar with the topics I would cover, like phishing, social engineering and password security; they were topics that I had studied at Old Dominion University. The challenge was to be able to give simple explanations without omitting the core concepts. I soon found that teaching was a whole new set of skills, not just knowing what they were.

Another difficulty I had was trying to accommodate different students. All students developed at their own speed and with various responses to each activity. Some students were able to grasp the concepts with the first explanation while others required further examples or individual assistance. I needed to pay special attention to their reactions and adapt my approach as needed. This was a beneficial learning opportunity as it worked to broaden my flexibility and understand the importance of starting with students at their point of learning.

Being a teacher was challenging as well, when it came to the classroom. It was necessary to keep students busy, respond to their queries and ensure that they focus on the learning. Meanwhile, I supported the other instructors to maintain the proper schedule and ensure each student got to participate in activities. These roles helped me develop my management, organization and leadership skills.

While these challenges were difficult, they were also rewarding to me throughout the course of my internship. At the end of the program, I have gained a great deal more confidence in front of an audience, when presenting technical concepts and when adapting my communication to the audience. As I continue to strive to pursue a career in Cybersecurity, the lessons will continue to have an impact on me since technical knowledge is most useful when shared with others.

Recommendations for Future Interns

I suggest that interns of the future read some fundamental security principles prior to joining the internship. Teaching lessons will be much easier if you have a good grasp on topics like phishing, password security, social engineering and online safety. It is helpful to

have a good foundation so that interns can dedicate more time to explaining the content, rather than acquiring it during the internship.

Students must also be able to communicate with the various age and learning levels of students in the future in order to be considered for the internship. As a teacher of younger students, you must be patient, flexible and be able to explain technical concepts in simple terms. The intern needs to be prepared to try alternate examples and build in questions as students' understanding of the concept is not achieved with the first explanation.

Another suggestion is to coordinate with the other teacher(s). Norman and Katie both can deliver good communication to support the smooth operation of the camp, and this is a team project. It is good to share ideas, seek input and encouragement from co-instructors and students, setting up a better learning environment for both.

Last but not least, future interns should be prepared to learn and have a positive outlook. The internship offers more than just the technical experience. It fosters communication, leadership, teamwork and problem solving abilities that are useful for any cyber security career. By making the best of all opportunities to teach, lead activities, and communicate with the students, future interns will be better prepared for success and the internship will be more rewarding.

Conclusion

My Internship with Danville Public Schools has been a valuable experience which allowed me to apply my fundamental cybersecurity knowledge in a professional setting while making a positive impact on younger students. Throughout the internship experience, I gained skills such as working with a team, teaching cybersecurity concepts, and communicating with students who had a wide range of knowledge. These experiences helped me grow both personally and professionally.

One of the biggest lessons I learned was that cybersecurity is not only about the technical aspects of it. Helping people recognize online threats and educating them is equally important. Teaching students about password security, phishing, social engineering, and online safety showed me how effective communication is when it comes to cybersecurity. I

also developed stronger teamwork, leadership, and problem-solving skills by working with other teachers and forming a teaching style to meet the needs of different students.

This internship will influence the remainder of my time at ODU by encouraging me to proceed with strengthening both my professional and technical skills. I plan to take advantage of projects, future coursework, and opportunities that improve my leadership, communication, and cybersecurity knowledge. I now have a better understanding of certain skills employers' value and how important it is to apply classroom knowledge to the real world.

Another thing is that this experience also influenced my future career goals. I entered the internship hoping to develop my professional skills and improve my teaching abilities. I completed those goals while gaining a great appreciation for the role education plays when it comes to cybersecurity. The internship solidified my interest in pursuing a career in the cybersecurity field and has given me more confidence when it comes to communicating technical information, contributing to a professional organization, and working with others. I plan to carry the lessons I learned from this internship into future internships and my career after graduation.