A Reflective Journey: Navigating Your Cumulative Experience at Iowa State University

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Standing here on the brink of graduation, I find myself reflecting on the experiences that have helped shape my time here at Iowa State University. From just sitting in the classroom soaking up as much as I can to many late nights spent grinding out assignments and projects, each experience has helped both my technical proficiency and academic prowess. As I reflect on this journey, it is ever more apparent that the challenges and people at ISU have not only prepared me for the world to come but have also instilled a great sense of discipline in me.

Embracing the Bigger Picture

My education at Iowa State has not only helped me achieve technical precision but has also shown me how to tackle challenges from an engineering perspective. There is usually never a simple straightforward solution to a complex problem, there will need to be brainstorming with many trials and errors before a solution can be made. This is very apparent in the engineering program here at Iowa State. The classes are designed to foster this mindset, there should be failures, there should be errors, there should be struggles when trying to build something. This taught me how to be resilient in my efforts and to not stop until a solution is found. However, the workload is not always assigned just to me. Group projects were a very common scenario in many of the engineering classes I took. These group projects were essential in my career development as they taught me how to communicate within a group setting and use each other's strengths. This collaboration within a team additionally strengthens my ability to persuasively communicate, it helps build confidence in defending my ideas when believing they are a path to the solution.

The education I have received has shown just a glimpse of what responsibilities may look like in the professional world; however, ethical responsibilities are one of those responsibilities that you know will always be there. During my time here, I had the opportunity to take a class which introduced me to hacking and the various amounts of tools that can be used to support these efforts. This left me with an ethical responsibility. I now knew tools that could be used to cause harm to society and people, but I shall only

use the tools within trusted networks as to not disrupt the lives of others. This is just one of many ethical responsibilities that were encountered during my time here, but because of these, my skills in identifying and acting upon responsibilities have increased.

Beyond the Classroom: Tapping into the Richness of Resources

In many of the engineering classes here at Iowa State, the student is expected to consult outside resources to help guide them in their learning. As some would call it, a learning curve. One instance where this is very apparent was while I was taking COM S 309. In this class, we are tasked with building an app in just one semester, backend and frontend. Most times, it takes years to develop apps so there was a lot of information to be learnt in a short amount of time. Instantly, I knew that I would have to rely on sources outside of the classroom to aid me in my learning. Academic papers, FAQs and textbooks were useful but the most useful tool of all is just the internet. I was able to find a multitude of documents to help me by just looking things up. Talking to other students is another great outside source to help with your struggles. More times than not, there is another student in the class that is just as stuck as you are, and if not, ahead of where you are. On this same project, I had a friend that had taken this class previously and was a great outside source, he taught me things that I struggled with, helped me with code that I didn't understand, and even looked over my code to help me find errors. Overall, doing your own research while leveraging the internet along with classmates, was a great way to help elevate my understanding and proficiency in many classes.

Embracing Lifelong Learning Beyond the Classroom

The classroom was just the beginning of my learning here at Iowa State. Learning extends far beyond it, primarily through extracurricular activities provided by the university. The first of these would be the career fair. The career fair has taught me valuable skills that will be useful for the rest of my life. The career fair has taught me how to communicate professionally and how not to be nervous when talking. It has helped me in ways that the classroom simply cannot. Another extracurricular activity that has excelled me learning is the Information Assurance Security Group. This is a group of fellow cybersecurity engineers that meet weekly to discuss new topics in cybersecurity and just go over cybersecurity in general. This club has been a great opportunity to show me how to extend my learning outside of the classroom. There are plenty of tools and documents out there waiting to help me learn new concepts and become a better learner in general. Overall, most of my time learning here at Iowa State has been outside of the classroom and has taught me skills and techniques that will be valuable for the rest of my career.

Pioneering Growth Through Adaptation

Adapting is something that every student needs to be comfortable with, especially engineers. Most classes that I walked into, I barely knew anything that was on the board, but by the time I left, it was a completely different story. I was required to learn new skills, new tools, and just new technologies in almost every class that I took. A perfect example of this is also COM S 309. In this class, we were put into groups of 4 and tasked with building a complete app in just a mere 4 months. I had no idea how to build an app of course, and both the programming languages being used I had little to no skill in, so I knew that I would have to dedicate some time outside of class to learn the skills that I lacked. By the end of the semester, we had a complete working app, and I learned multiple skills that I still know today. In the end, technologies are ever changing and with that the skill and knowledge gap. Continuing this desire to adapt and learn new skills while still improving on old ones is the path to success in my professional career.

Crafting a Narrative of Growth

Being able to start my undergraduate journey afresh would be a blessing by giving me the opportunity to become an even better student. Something I did not do enough during my time here was talk to professors. Most professors are here to help and are great sources for additional information and support anytime I find trouble. Going back, I would make sure to establish better connections with my professors as these connections are very important for a student. An additional thing to change would be making better connections with my classmates as well. In most of my classes, I would just show up, not talk much, take notes, and then head home. Restarting, I would be more talkative to my peers and get to know them better, having better connections with my classmates would help me and them become better students. Overall, the biggest thing I would focus on with this restart would be communication. With better communication, my learning journey could have been different.

A Glimpse into the Acquisition of Knowledge

A recent engineering topic that I have been closely learning and working with has been the concept of security in wireless communications. The process I use to learn new concepts is simple. I start by simply googling main terms and concepts. In this case, I started by googling “security in wireless communications”. This search gave me general descriptions in what goes into wireless security and gave me some tools and concepts to learn further. Encryption was one of those topics. From this, I then googled “encryption in wireless communications” this gave me all the encryption methods in place for most current wireless networks. I continued this approach until I had a good pile of notes and felt pretty good on most of the concepts. After this google process, I then start getting more specific and will watch YouTube lectures and professors talk about these topics so I can

hear the concepts from professionals and get better explanations on what I am trying to learn. These two steps are the most important to me when trying to learn a new concept, it has worked for me in the past and keeps working for me to this day. It allows me to guide the research in my own direction and learn things as I go which has been very helpful in my academic career.

Transformative Application of Knowledge

Theoretics are a powerful tool and can be very useful when used in innovation. Many projects that I undertook required me to theoretically think about a possible outcome and then try to make that happen. A project in particular would be designing a pipelined MIPS Processor for my CPRE 3810 class. For this project, I was required to think about and draw a possible solution before I was even able to start coding. At the time, I thought this was ridiculous and just wanted to start coding, however, this helped me a lot. It allowed me to step back and look at the project from kind of a top-down view. Once the drawing was complete and I was allowed to code, I found that it was much easier to implement my solution than previous assignments/projects where I did not think from a theoretical perspective. In this scenario, creativity was also a great ally. I had to creatively draw a schematic to understand how the processor worked along with using it to visually to check that I was incorporating everything necessary into the solution. Overall, theoretically thinking was a great help during my projects here at Iowa State and will continue to support me in my future endeavors.

Evolution of Learning Strategies

Many times, during my studies there would be ideas or concepts that I would struggle to pick up on or would take me longer than usual to understand. At first, my most common strategy was to just do a quick google to try and learn the definition and a little more. This worked great until the introduction of AI. I was now able to leverage a tool to help assist me in learning these difficult concepts and ideas in a much shorter time. Over time, as I started to enroll in more challenging classes, I came to learn that this tool only had so far of a reach. Certain technical terms or strategies would stump the AI and it would never be able to give a reliable answer. Once this started to happen, I knew that I would have to extend my research. I began to look at forums, blogs and other types of sources where other students can post the issues they are having for an expert to answer. Slowly, this started to become the most effective strategy because for the most part, there was always another student stuck in the same position where I was looking for the same answers. Overall, it appears that my learning strategies have adapted according to the technicality of what I was trying to learn. The more technical the information, the harder I must look to find answers.

The Path Ahead: Continuous Development

As my time here at Iowa State comes to a close, I'm taking a moment to reflect on where improvements are needed, what strategies I need in place to keep learning and what aspirations I have to continue my development. To start, I feel there are two obvious areas where I can improve. The first is communication. Naturally, I do not talk that much and prefer to keep my thoughts to myself. In certain situations, this is good, in others it is not. I know that I need to practice my communication skills to better improve my conversations. Improving my communication skills would benefit me tremendously in all aspects of life because I would then be able to make connections much easier. Secondly, I would like to improve my leadership skills. More times than not in a group project I never take the lead role and end up taking a side role where I am not too involved and can just do what I need to. However, I feel that needs to change. I feel that I need to be more involved in leadership positions because it will only help me become better. Being able to motivate the people around me to perform to the best of their abilities is something that I dream of and hope to accomplish one day.

Past school, there are many strategies that I can put into place to keep acquiring new knowledge. Last summer, I was able to employ some of these strategies at my first internship. The first strategy was to attend any and all talks possible. Whether it be a simple coffee chat with the people in my building or the CFO talking to all the interns, I tried to attend whenever possible. This strategy was very effective in just gaining general knowledge about professional life. These helped me develop as a professional throughout the summer and is a strategy that I am going to keep in place. Other than this, I hope to get opportunities where I can travel and attend conferences hosting the experts in my field to further my learning.

Lastly, I hope that I continuously evolve and develop throughout my career because there is always an area to improve on or a concept to learn. I hope to continue developing until I reach the status of an expert in my field. I want people to be able to come to me for help and know that I can provide them with an answer. In the end, there is always something to learn, and I will always want to keep learning.