
Installment of the Hampden-Sydney College Planetarium and Establishment of an Outreach Program

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Introduction

In September of 2019, Hampden-Sydney College accepted a \$30 million donation from Mr. Stanley F. Pauley via The Pauley Family Foundation and dedicated it to the construction of the new Pauley Science Center. The building lies on the corner of College Road and Via Sacra, replacing Bagby Hall, which stood since 1922. In 2022, the building will open in time to host classes in the fall semester. Between the time final exams begun and the graduation ceremony for the class of 2022 took place, the College installed a planetarium on the fourth floor of the Pauley Science Center. This planetarium was constructed with the help of Spitz Inc, the world's leading manufacturer of dome projection screens, and the Elumenati, an engineering firm that specializes in solutions for immersive visualization. My project for the summer was to assist the Elumenati with the installation and calibration of the projectors, speakers, and computers that run the planetarium, to learn how to use the software the Elumenati has provided in order to plan and create shows using the planetarium, and to launch an outreach program that gives local schools an opportunity to visit the campus in an engaging field trip that also covers astronomy-based Standards of Learning.

Discussion

The Elumenati provided the College with some software along with the computers. Much of their appeal was their utilization of free and open-source software including World Wide Telescope and Stellarium, which could encourage students watching the planetarium in use to download and get more familiar with the software and astronomy of their own volition. Another positive aspect of the open-source aspect of the software is the time it takes to find new data or upload our own is minimal. For example, on July 12 when the NASA had announced the first pictures from the James Web Space Telescope, the pictures were visible in World Wide Telescope within 6 hours of the publication. This aspect of the software is particularly exciting, as we can now showcase new astronomical discoveries in real time and display

them with breathtaking resolution. These software programs are integral to the content being made for field trips and other shows. The Elumenati also provided us with software of their own, called WorldViewer and WorldComposer, which allows us to create content and manipulate how it appears in the planetarium. Creating compositions in WorldComposer is like other media editing software like Photoshop, with different rows signifying which layer of content is furthest forward or behind or whether it appears on the computer screen or planetarium dome.

The content for the planetarium shows is mainly created on the tower computer given to us by the Elumenati that sits in the astronomy lab. Astronomy organizations around the world produce content curated for planetariums. Some offer free content, like the European Southern Observatory (ESO), and others offer options to either purchase the rights to display their show indefinitely or a finite number of showings. Content from the ESO mainly consists of larger file folders that contain tens of thousands of JPEG files that need to be animated together and blended with the corresponding audio. This is mainly done on the lab computer because of its processing capabilities and its proximity to the planetarium. This summer, my focus was on finding content that is good at showing off the capabilities of the projectors while also remaining relevant to what's being taught in the Intro to Astronomy course we offer. I've begun creating one definitive composition that focuses on the Standards of Learning for Virginia science between grades four and six to have a show prepared in case any of the elementary or middle schools in the nearby area decide to visit the College. I have also been putting together a show that covers all the requirements to achieve the Boy Scouts of America astronomy badge, but the most complete save file I had created was lost. I have a document with the storyboard of how the content will be presented so recreating it will not be a difficult task.

The final aspect of my research project includes reaching out to schools in the local area and encouraging them to set up field trips to come see the campus and partake in a planetarium show. This

part of the project has been slow to start, as administrators and principals of the schools contacted had busy schedules and couldn't maintain a consistent line of communication. I am, however, in the preliminary stages of scheduling a field trip with an Amelia County elementary school. Additionally, I am taking steps towards making the planetarium more accessible by making sure there are long enough periods of time for events like field trips to occur without interruption.

Conclusion

Overall, my work isn't entirely complete, as it requires me to maintain a strong line of communication with local schools and I must work on teaching some professors and students how to operate the hardware and software that controls the planetarium. However, I made significant strides in setting up the planetarium software and outreach to local schools.