Abstract

For generations the planetarium has been the go to place for stargazers of any age to observe the vast tapestry of thousands of stars that could otherwise only be seen in the most remote areas far from city lights. Over time as technology in the planetarium improved we began to offer our guests virtual trips to alien planets and distant galaxies utilizing what we all now know as full dome video technology. The planetarium has always been a gateway to astronomy, but I believe it has become more than that. It is the most advanced immersive classroom, a place where people can come to learn just about anything and feel as though they are there. The whole “the sky is the limit” just got a whole new meaning when it comes to the immersive classroom. In this talk I will demonstrate the many ways we have produced live planetarium experiences in such topics ranging from history and cultural studies, earth and biological sciences, and so much more.

Introduction

For generations the planetarium has been the go to place for stargazers of any age to observe the vast tapestry of thousands of stars that could otherwise only be seen in the most remote areas far from city lights. Over time as technology in the planetarium improved we began to offer our guests virtual trips to alien planets and distant galaxies utilizing technology from slide projectors to modern day high definition digital systems. The planetarium has always been a gateway to astronomy, but in the last few decades I believe it has become more than that. It is the most advanced immersive classroom, a place where people can come to learn about anything from travelling to an ancient temple, travelling through the body, under the ocean, or visiting a remote observatory. The whole “the sky is the limit” just got a whole new meaning when it comes to the immersive classroom.

The Immersive Classroom

Planetarians have been known to enter the field from all walks of life such as music, art, history, and so much more. My personal interests run the gamut from science, history, biology, music, and cars, to list a few. I have also been interested in photography and after purchasing a fisheye lens I loved the idea of capturing real
time images of locales that I could share in the planetarium. Implementing virtual reality experiences in the planetarium can allow visitors to explore almost anywhere they would want to go. When we installed our full dome video system years ago we were very excited to work with SCISS and utilize their Uniview software. Using our new capabilities we could anywhere in real time, which fit well in our philosophy of presenting completely live and interactive programs for which we pride ourselves on in the planetarium field. Now we could take attendees on a trip to Mars, fly out of our home galaxy, or take a trip through the human body. The immersive classroom was beginning to take shape.

You can have all the wizbang technology at your disposal but without the right teacher the classroom (or planetarium) can only go so far. I find that the most effective educators can teach as though they are storytellers, connecting our emotions to the lesson we are learning and utilizing the dome for this purpose is very effective. Being inside a space that engulfs you with what you’re learning just cannot be achieved in a normal classroom environment. I always enjoy including myself in my fulldome images because the students or guests can connect with the presenter as if they were standing there themselves. In the modern planetarium the teacher can do more than just tell the story of the night sky, they can impart the story of our Universe. The planetarium, though not as sleek as a Delorean, is a time machine, taking our audience back to any time period. One of our more recent shows discusses the fate of the dinosaurs and we transports our guests to the Hell Creek Formation in modern day Montana where they discover the K-PG boundary. Being immersed in this barren landscape allows us to tell the story behind the science of how we know that the dinosaurs disappeared around 65 million years (well most of them, birds are dinosaurs too!). We then take our time machine into Earth orbit and overlay several paleontological maps created by Dr. Ron Blakey that show the plate tectonic activity from the Triassic and Createcuous periods to modern day and how much our Earth’s surface has changed over time. Sure this same thing could be done in a textbook or video, however the planetarium engages the audience in a way that leaves a lasting impression.

The immersive classroom is not limited to just science either. Recently we created a series of shows in conjunction with the Humanities Department at Seminole State College of Florida. One focused on the American Civil War, the other was about Native American history and astronomy. We travelled to several locations in the United States to capture special fisheye images that we then imported into Uniview utilizing the fisheye image uploader. As a result we were able showcase various areas: Gettysburg, the Appomattox courthouse, Chaco Canyon and Big Horn Medicine Wheel. Being surrounded by these beautiful landscapes connects the audience as if they were actually on tour in real life. Adding authentic sound effects recorded at the sites can also enhance the sensory depth of the virtual reality experience. Of course sometimes it may prove difficult to travel, however through partnerships, funding could be available for such projects. Perhaps there is a location nearby that teachers are unable to take their students to but can be done virtually in your immersive classroom. You could capture fisheye images and record
sound and then provide those students with a virtual field trip in your planetarium. These partnerships strengthen the need for a planetarium in the local community. It also removes the notion that all a planetarium can do is view the stars. Teachers are always looking for ways to enhance learning in various fields of learning. The planetarium is just that enhancement. Any way the planetarium can increase its position in the community is a good thing! Below you will see some examples of images I have taken and apply to our dome.

The Burgess Shale, a world heritage site for exquisite fossil specimens from the Cambrian Period.
Grovesnor Arch in Utah. Great example of showing geological events in the dome.

Temple of Kukulkan in the Mayan City of Chich'en Itza.
360 Panorama of Pueblo Banito in Chaco Canyon New Mexico. 360 Panoramas can be uploaded using various software like World Viewer to display 360 degree images in the dome giving a truly immersive experience.

The ALAM Radio Observatory in Chile.
Conclusion
There are few places where people can go that showcase the grandeur of our Universe other than the planetarium. In many ways we get to be like the Magic School Bus, taking our audience on a grand adventure to incredible places, and with the aid of a knowledgeable educator we are able to give them an experience they will never forget. So...Mr/Mrs teacher, where are we going to explore in class today?