



IMMERSIVE EDUCATION INITIATIVE  
**IMMERSIVE EDUCATION SUMMIT** **BOSTON**  
**2011**

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VIRTUAL WORLDS LEARNING GAMES SIMULATORS  
K12 HIGHER EDUCATION LIFELONG LEARNING

# IMMERSIVE LANDSCAPES

STEM EDUCATION THROUGH IMMERSIVE ART

**Jane Crayton**

University of Colorado, Boulder  
University of New Mexico, Albuquerque  
Denver Museum of Nature and Science

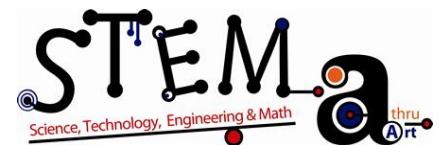
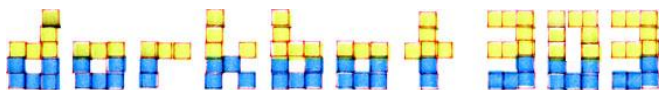
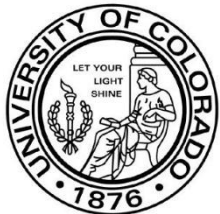
# About Jane Crayton



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Jane has been an instructor for Science Discovery since 2009, and volunteer at the Denver Museum of Nature and Science since 2003. Jane solicited collaboration of both the Museum and Science Discovery to create the first Immersive Landscapes panoramic photography class. This class is scheduled to run the week of July 18 - 22, summer of 2011.

Jane holds a bachelors degree in Media studies from the University of Colorado at Boulder, where she is faculty for science discovery. She is currently seeking a Masters in Education, Art Education at the University of New Mexico. Jane is the curator and host of dorkbot303, the Colorado chapter of “people doing strange things with electricity” initiated by her in 2006. And, in 2009 Jane founded Science, Technology, Engineering and Math thru Art (STEM-A) a program focused on exploring STEM subjects through art.



# Course Description

Immersive landscapes is a new class focused on expanding digital photography skills of students through creation of immersive panoramic experiences for the digital fulldome. Students ages 10+ use consumer quality digital cameras to capture panoramic digital photos which they stitch together in Photoshop. Then students use Adobe AfterEffects and the Navegar fulldome plugin tool, or Global Immersion software to master the panoramas to the fulldome with guidance of Dome staff.

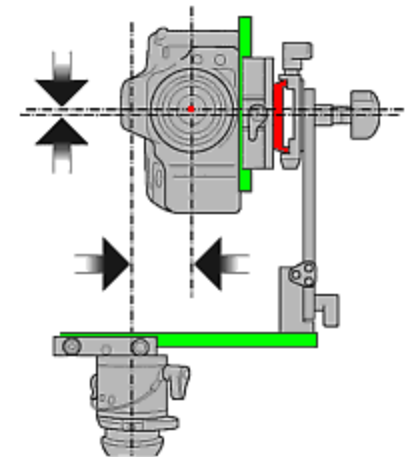


# Phase 1: Exploring theory and practice:



- Photo panoramic techniques
- Tripods and panning
- Photo stitching in Photoshop
- Photo editing, manipulation, and effects
- Introduction to dome visualization
- Single channel and multi channel dome display
- Technology (software and hardware) of the lab and dome

Students also engage in Photography ethics and Leave-No-Trace practice before working in the field.



# Phase 2: Practical experience in the field, lab and dome

Students will work individually and in groups to complete fulldome projects.

1. Each student will create a digital panorama landscape on the subject of ecology and human impacts on the environment.
2. Students will work in the computer lab at Science Discovery to stitch together the final immersive landscape panoramas.
3. Students work with Gates Planetarium staff using fulldome software to project images in the dome.



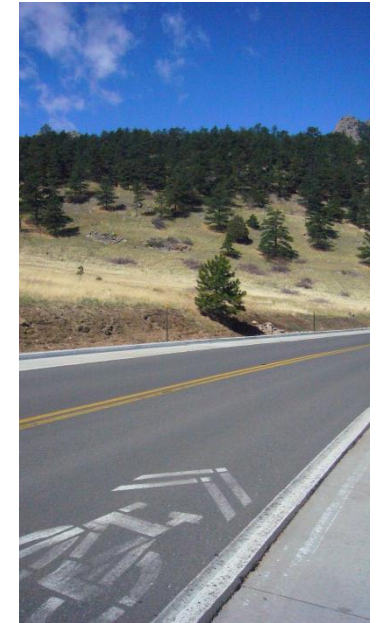
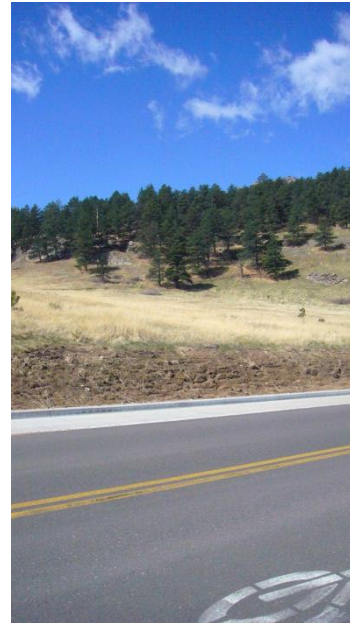
# Skills in practice

- Panorama camera techniques in the field
  - Wide angle, panoramic, fish eye
  - Planning a Panorama (space, horizon, depth of field, sweet-spot)
  - Panoramic tripod head & using a tripod (panning, nodal stabilization)
  - Resolution
- Building Panorama images in Photoshop
  - Dome resolution and aspect ratios (270, 180 degrees/ 360 degrees)
  - Segmented & *stitched* panoramas
  - Parallax adjustments
- Building an art show in Immersive environments
  - Adobe AfterEffects and the Navegar 'fulldome' plugin tool



# STEM education benefits

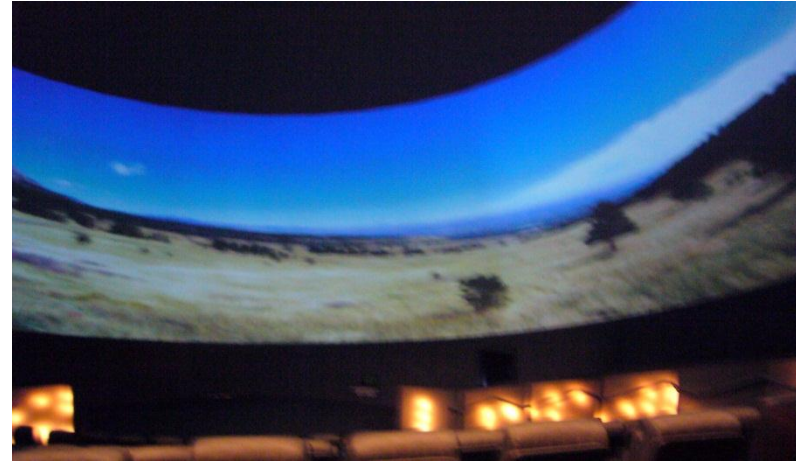
- ❑ Sequencing
- ❑ Parallelism
- ❑ Problem solving
- ❑ Curve and curvature fitting
- ❑ Vectors
- ❑ Visualization
- ❑ Perspective (point of view)
- ❑ Logic building
- ❑ Technology integration and application
- ❑ Hardware and software integration



# Phase 3: Finishing perspectives and critical review

An evaluation and feedback session will be held so participants can have an opportunity to improve future works with regards to technique, skill or style.

Students will present their Immersive Landscapes at the Gates Planetarium on the last day of class during a private evening event for parents, teachers and friends.



# Images in the digital fulldome



Additional video: <http://youtu.be/L6ACDebC2c8>

# Immersive Landscapes Poster



**Immersive Landscapes** is a new class focused on expanding digital photography skills of students through creation of immersive panoramic experiences for the digital fulldome. Students in this course use consumer quality digital cameras to capture panoramic digital photos which they stitch together in Photoshop. Then students use Adobe AfterEffects and the Navegar fulldome plugin tool, or Global Immersion software to master the panoramas to the fulldome with guidance of Dome staff.

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Left: Photo of dome imaging software used at Gates Planetarium.  
Right: Photoshop-manipulated panoramic images produced at Gates Planetarium.



This class is offered through Science Discovery Summer Class Program 2011, in collaboration with Gates Planetarium at Denver Museum of Nature and Science] with [Science, Technology, Engineering and Math thru Art (STEM-A)] teacher and instructor Jane Coyne.



Above: Jane Coyne portrait  
Right: Jane Coyne with Digital Photography teachers at Carleton Ranch, Colorado 2009

Jane has been an instructor for Science Discovery since 2009, and volunteer at the Denver Museum of Nature and Science since 2003. Jane solicited collaboration of both the Museum and Science Discovery to create the first Immersive landscape panoramic photography class. This class is scheduled to run the weeks of July 10 - 22, summer of 2011.

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I thought there was a poster session?

# Contact Jane

Special thanks to iED Summit and Dr. Walsh for inviting me to present.

Additional thanks to UNM College of Education & ARTSLab, CU Science Discovery, Gates Planetarium at Denver Museum of Nature and Science, Imersa, Dorkbot303 and Alex Sweetman of CU Fine Arts for continued support for my research in STEM education through art.

