

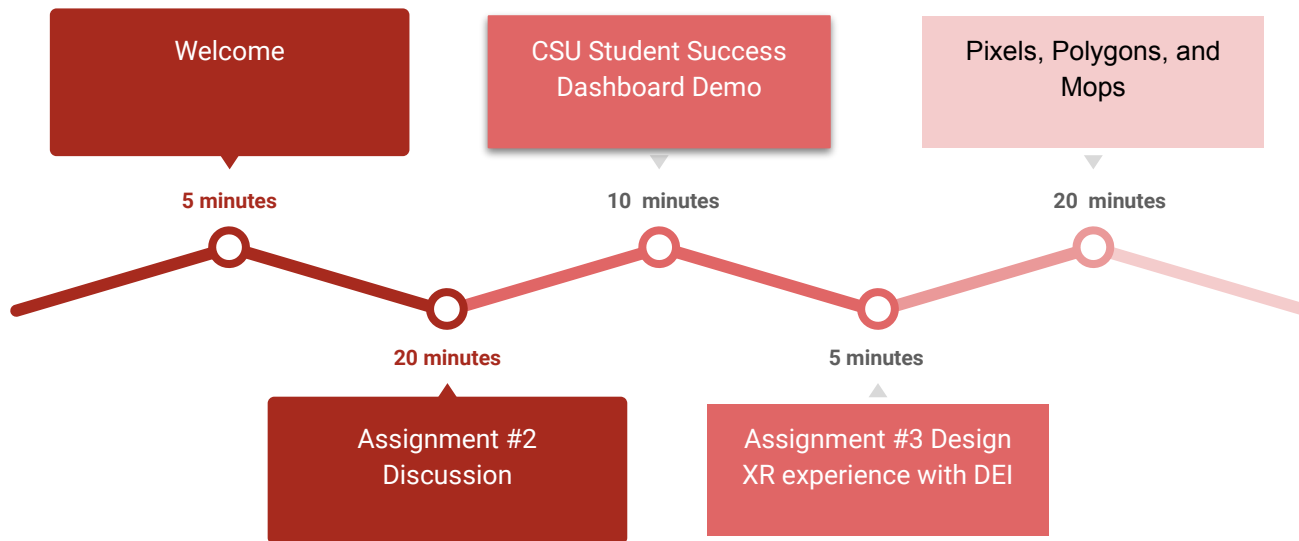


XR-FLC Cohort B Bi-Weekly Meeting

Oct. 21, 2022



Agenda





Office Hours on Oct 26



- **Date and Time:** Wed., Oct 26 @ 11 am - 12 pm
- **Hosts:** Sara and Abe
- **Zoom Link:**
<https://SonomaState.zoom.us/j/83192606317>
Meeting ID: 831 9260 6317



Assignment #2 Discussion

Using Backward Design for your class activity



Diversity, Equity, and Inclusion (DEI)

“Faculty development should include DEI as a foundation for any instructional training and development for example, but not limited to, culturally relevant and sensitive pedagogy training, implicit bias awareness and mitigation, stereotype threat, microaggressions, and fixed vs. growth mindset.”

Resources:

<https://www.peatworks.org/futureofwork/xr/inclusiveworkplacexr/>

<https://www.microsoft.com/design/inclusive/>

<https://www.indeed-innovation.com/>



CSU Student Success Dashboard Demo - 10 mins



<http://calstate.edu/dashboard>



Institutional Data Narrative





Assignment #3

Design XR Learning Experience with DEI



Design XR Learning Experience with DEI

- Does your current XR learning activity consider DEI?
- Will your assessment plan reflect how students learn differently?
- How would you rewrite your backward design with DEI in mind?



Design Inclusive XR Learning - Additional Readings

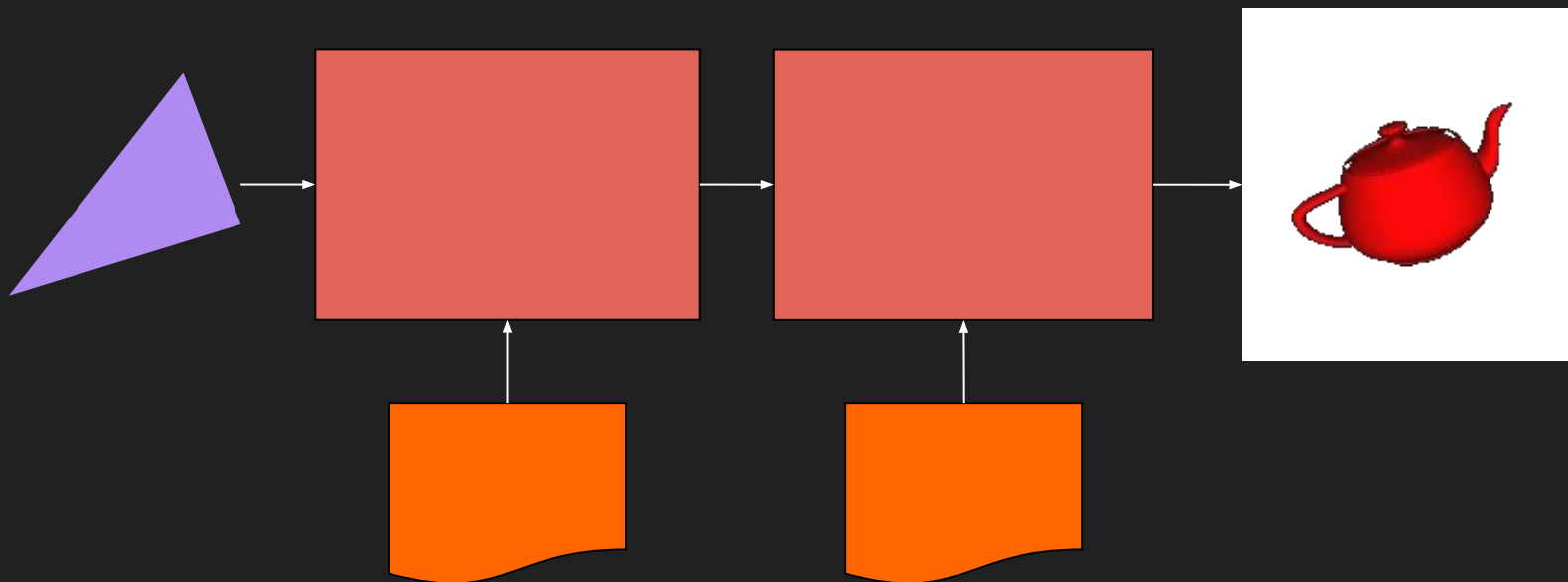
- [Can XR improve Racial Equity in Higher Education?](#)
- [XR Accessibility](#)
- [Immersive Learning Environments: Designing XR into Higher Education](#)
- [XR Association Developers' Guide Chapter 3 - Accessibility & Inclusive Design in Immersive Experiences](#)



Pixels, Polygons, and Mops

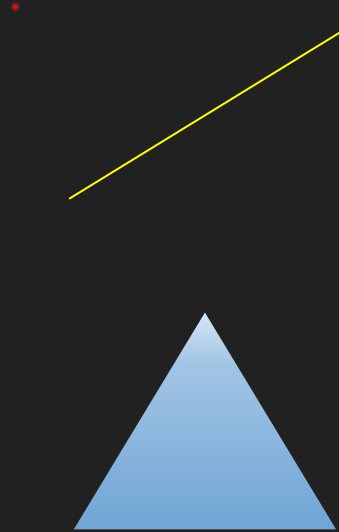
By David Shreiner

The Graphics Pipeline



Drawing in Computer Graphics

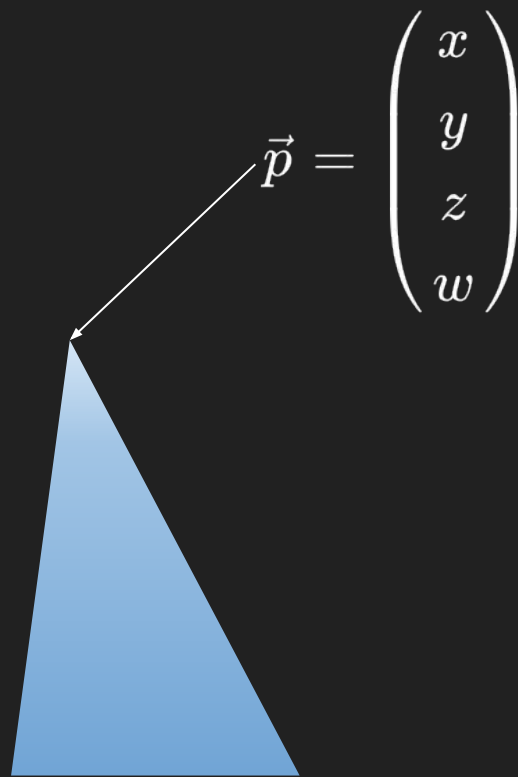
- We only know how to draw three *graphics primitives*:
 - Points
 - Lines
 - Triangles
- Anything more complicated is a combination of those primitives
 - Usually triangles, as most objects are solid
- Primitives are decomposed to *pixels*
 - We compute a unique color for every pixel, which is how you get all sorts of effects:
 - textures
 - illumination
 - ...



Describing Objects

- In Graphics, we describe 3D objects using *vertices*
 - They're just points in space
 - Described by an (x, y, z) coordinate

Primitive Type	Required Vertices	Rendered Pixels
Point	1	1
Line	2	?
Triangle	3	???



Why is this Important?

- A recurring discussion for this group is to include domain-specific objects and data into XR experiences
 - This is totally what we want!
 - But the process may likely to be more complicated than it first appears
- LIDAR and scanners generate *point-clouds*
 - Lots of data, specifically vertices
 - lots of bandwidth, comparatively few pixels
 - Definitely need to consider the display device's capabilities
 - Oculus Quest is a phone; it's very limited in its available performance
 - PCs are more powerful, but that's not a guarantee of suitable performance
 - Graphics systems are optimized for filling pixels, not necessarily processing vertices

Data Conditioning

- Data reduction is often required
 - Reducing the number of points in the cloud
- Convert point clouds into solid objects
 - Effectively connects the dots – the vertices to form filled primitives
 - Enables a number of quality improvements:
 - applying textures
 - occlusion
 - etc.
- Model *level-of-detail* can be quite helpful
 - Reduce the geometric complexity of objects
 - remove vertices, which removes triangles
 - Enables better real-time rendering performance