WebGL and Education

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Overview

• Textbook: Angel and Shreiner, Interactive Computer Graphics, Seventh Edition
  - First edition 1996
  - Introduced top-down approach with OpenGL
  - Over 250 US adoptions
• SIGGRAPH courses (SIGGRAPH U)
• Coursera MOOC
• Also Eric Haines’ three.js Udacity MOOC
Difference in Perspective

• Key topics in a university course
  – Geometry
  – Representation
  – Coordinate systems and transformations
  – Projection
  – Lighting and shading
  – Rasterization
  – Texture mapping
  – Interaction
Three Major Transitions

• 1997: fixed function OpenGL
  - OpenGL + GLUT + GLEW
• 2011: shader-based OpenGL
  - Major change for instructors
  - CORE profile incompatible with GLUT
• 2014: WebGL
My Experience (academic)

- WebGL is big winner
- Runs everywhere without recompilation
- Uses local resources
- No other libraries needed
- Easy to support instructors
- Startup slower but huge benefits later
But there are issues

• JS
• HTML, CSS, jQuery,……
• Browser inconsistencies
• Unclear where WebGL fits in
  - Why not three.js?
• Books and websites often not helpful
• MOOC audience very different
Future

• No question that for educational purposes, WebGL is big winner for CS/CE course
  - As is three.js for CAD courses
• Waiting for ES6