Bridging the Instruction-Industry Divide

: Multidisciplinary Approaches to 3D Technology Education

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Overview

- Adopting Industry Experiences to Education
- Technical Trend, 3D Wave - Impact on our students
- What will be a promising framework of teaching new technology, especially 3D, in college?
- How are we approaching?
Past Research/Business Experiences

Very Expensive/Limited

MSME @Yonsei, 1986-1988
3D position measurement

Researcher @KIST,-1992
Robotic Sculpturing

PhD @UT, Austin, -1999
SLS 3D Printer

Director @ Hitachi LG
Optical Disc - Micro 3D laser scanning

CTO @ VoRo Tech
Call of Duty

CTO @ i3Deas
AR & VR
What are trendy technologies that future engineers learn now?

What are new technologies attractive to college students?

Is current engineering curriculum attractive to college students?

What should be a risk taking change in undergraduate education?
Preparing Future Education - New Success Factors

Written: 2006

Now: 2021
New Jobs and Biz Trend after 2006

AR/VR Producers

TED.com

YouTubers

etsy.com
turbosquid.com
CGTrader.com

https://www.blender.org

BTS
3D technologies Now
Attractive & Affordable enough to classrooms

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Synergy Effect of 3D Technologies: 

3D Graphics + Programming + Story

Once upon a time in Dragon Land there lived a family of extraordinary dragons. They were huge with shining scales and very large teeth. But the most surprising thing about them was their enormous appetite.
Synergy Effect of 3D Technologies:
3D Graphics + Programming + Story

The little dragon, Baby, was just learning how to crawl. His 3D member of the dragon family had a favorite food. Baby could pull himself over to a shiny van and gobble it up. Small trucks were his favorite.
Hypothesis - Multi-Disciplinary Approach

Current Values Added: Motivation, Collaboration

“3D Class contents, designed by educators, Created by students”
Entrepreneurial 3D Education Programs

Game Design at A&M

EON at Duncanville

Low Tech at MIT
Preliminary Survey
- Investigation for New Education Framework

- Industry Partners
  - Job market
  - Ideal skillsets?
  - Verification

- Local Universities

- Dallas College
  - Transfer pathway
  - Internal Process

- Our Students
  - Certificate?
  - New Class?
  - Project-based learning?
Experimental & Collaborations Classes

- **Engineering Graphics**
  - Introduction to Engineering
  - in ME

- **Sculpture Class**
  - in Art

- **C-programming Class**
  - in CS

- **Reverse engineering with 3D scanner**
- **Industrial design and prototyping w 3D printers**
- **DFM with 3D printer and casting**

- **Digital art with 3D scanner and Meshmixer**
- **Industrial design and prototyping w 3D printers**
- **3D Tooling**

- **Unity C# for OOP Concept**
- **AR with 3D models**
Tentative Changes: Certificate or Modification/Addition of Classes

- Add 3D lessons
- Current Engineering, CS, Art classes
- Teach 3D scanning, printing, and tooling (e.g., molding)
- New 1 or 2 3D Tech class
- Interdisciplinary Realworld Project