The FabStudio: Experiences and strategies for developing, maintaining, and teaching in a digital fabrication lab.

The integration of digital fabrication equipment into education contributes to learning by providing students with authentic explorations of designed 3D objects. Digital fabrication involves creating objects from digital files through the use of additive and/or subtractive manufacturing processes. Widespread adoption of 3D printing and the like is fueled by significant price reductions making equipment easily available. Further, integrating equipment is not only seen at the college and high-school levels but is currently being implemented in primary school education for children.

As availability and integration of equipment increases for current and future students, so do expectations of use and access to digital fabrication within learning environments. This presentation outlines the following strategies for educators on common issues of developing, maintaining, and teaching in a digital fabrication lab.

Strategies for *developing* a digital fabrication lab are 1) selecting appropriate equipment and software, 2) assessing infrastructure demands, 3) planning start-up and operation budgets, 4) overseeing equipment set-up, and 5) understanding equipment opportunities and limitations. Further, guidelines for *maintenance* on 1) keeping the lab and equipment safe and reliable, 2) providing supervision and training, 3) understanding equipment maintenance, and 4) planning material and parts budgets. The strategies presented for *teaching* in the lab include 1) selecting equipment based on pedagogy needs, 2) assessing student understanding of basic fabrication prior to digital fabrication interactions, 3) providing training on equipment and software use, and 4) inspiring innovative and meaningful learning experiences. Finally, this presentation includes instructor and student experiences paired with examples of digitally fabricated work.