Abstract:

In the context of the Mechanical Engineering (ME) 203 Design and Manufacturing course at Stanford University, a mixed method research design called embedded design using qualitative and quantitative data was performed to explore (i) how (physical) prototyping and prototypes were used students referred to as novice designers in the ME 203 design process, (ii) the effect of prototyping on novice designers thinking processes and (iii) what affects prototyping results of novice designers? The aim of this research is not to seek testing hypotheses, but rather to develop interpretive understanding and gaining meaning from (student) experiences, thinking and learning process while prototyping. The research explores what is thinking look like going through a discovery process (gaining information and new knowledge) and forming decisions (as related to the thinking cycle) while prototyping: build to think.