

V. Making for Learning Project (20 pts)

The purpose of this project is for you to 3D design and print a new physical tool (or “manipulative”) that can be used in teaching a mathematical idea. The design of this tool and a corresponding task will reflect 1) your knowledge of what it means to do mathematics and how we learn with physical tools, 2) your knowledge of elementary-level mathematics content, and 3) your perspective on pedagogy and curriculum in mathematics education. This project has 3 components:

1. **Project Idea Assignment** (5 pts): In 2 pages, describe a project that you want to work on. You may work with one other person if you wish. This assignment is intended to be useful to you as you grapple with ideas; it is intended to be useful for me in getting to know your thinking, your interests, and your writing.
2. **Project Rationale Assignment** (5 pts): In 3 pages describe the learning rationale for your project. This is to be an account of why and how you think your project should work from a mathematical learning point of view. How is the user of your manipulative supposed to learn from working with your design? How does the design of your technology reflect your understanding of what mathematics is and of how learning happens? What would it mean for your project to be successful in terms of learning? What would it mean if it were to fail to work? What kind of testing could you imagine carrying out for your design?
3. **Final Paper and Design Show** (10 pts) A short research paper, typed and carefully edited. As a rough estimate, shoot for 10 pages. You will also present your manipulative to the class and create a tri-fold poster board or 5-slide PPT that includes: 1) the intended purpose of the manipulative, 2) the corresponding task you created, and 3) your findings from the implementation of that task with an intended user.