

EDML 4372 Design Project

As part of a focus on critical thinking and problem solving, and integration of 21st-century educational technology into teaching, this course features a 3D design project. Its goals include: project design, reflection and self-assessment, time management, familiarity with 3D modeling software (and coding more generally), and familiarity with 3D printing.

Create a set of classroom manipulatives that fills a gap in the set of commercially available manipulatives (such as those seen in class). Of particular interest might be models for fifths and sevenths. In your design process, consider not only the representational properties of the manipulative (like those discussed in class, e.g., range of numbers modeled, proportionality, identifiability of the whole, specificity vs. versatility, compose/trade/interlocking) but practical issues like usability and durability. Make sketches of your designs.

Use 3D modeling software such as Tinkercad to implement your designs.

Exchange written feedback with a classmate on your respective designs. Revise your design if necessary.

Print your design in a FabLab such as the one in the UTA Library.

Write a report on the entire process of approximately 1-2 pages to submit along with your finished product. In your report, write a paragraph on each of the following:

- introduction including physical description and intended use;
- design decisions and their motivations;
- 3D modeling process---what was easy/hard, what took the most time, etc.;
- 3D printing process including any preliminary prints;
- time management issues related to the project.

Submit a full 3D print of your project in a sealed Ziploc-type bag with your report.

We will spend some time working on designs and discussing properties of manipulatives in class in Session 3, learning to use Tinkercad in Session 4, and providing feedback on each other's designs in Session 6. Students will need to plan time outside of class to finalize their designs and print them in a FabLab (the timing is intended to allow students to use the period between placements to complete the project).