# Lesson Plan

# Design and Draw for Production

## Unit 10 | Section 1 | Puzzle Cube Design | Day 3-5

### ITEEA Standards

5-8. Attributes of design 5-9. Engineering designs 5-10. The role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving

### Objectives [SWBATU]

* Design puzzle parts according to the proper criteria and constraints.
* Requirements of a design, such as criteria, constraints, and efficiency, sometimes compete with each other.
* The design process includes defining a problem, brainstorming, researching and generating ideas, identifying criteria and specifying constraints, exploring possibilities, selecting an approach, developing a design proposal, making a model or prototype, testing and evaluating the design using specifications, refining the design, creating or making it, and communicating processes and results.

### Materials

* Laptops/computer lab access
* Drafting tools and materials
* 3D printer + filament

### Resources

* Unit 10 - Section 1 - Handout 2
* Unit 10 - Section 1 - Handout 3

### Instructional Outline

* Review design and engineering process
* Discuss the overall project and what we will be doing along with graded assignments
* Creating a 3D puzzle cube made of plastic via our 3D printer
* Each piece will need to be interlocking
* Technical drawings to start indicating ideas and understanding
* Approval of technical drawings in order to move into CAD of pieces
* 3D model and Layout of each piece and combined puzzle piece
* Emphasize puzzle piece constraints and Criteria
* Design 20 individual parts via TinkerCAD or SketchUp to be submitted via Google Classroom

### Assignment / Activities

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| Assignment | Grade |
| Rough sketch brainstorm designs (20 individual pieces) | 100 points |

### Added Notes