



United States in 3D

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Target Grade: 3rd- 5th

Time Required: 90 minutes

Standards:

- 3.18 – Identify and locate on a map: Canada, Mexico, Central America, Cuba, and the 50 states of the U.S.

Lesson Objectives:

Students will:

- Know how to identify and recognize the 50 states.
- Understand they need to be an active learner in “Printing with a Purpose”.
- Be able to make a classroom set of 3D printed manipulatives of each state using Thingiverse <https://www.thingiverse.com/thing:1524543>

Central Focus:

Students will use the website [Thingiverse](https://www.thingiverse.com) to create 3D state manipulatives. Each student will be assigned a number corresponding to an assigned state.

Background Information:

Students should know the 50 states or in the process of learning them. The teacher will demonstrate the expectations for this lesson using the state Tennessee.

Materials

- 3D printer State manipulatives
- Handouts:
 - United States Map in order of statehood number
 - U.s Map Regions

Instruction

Day 1 (45 minutes):



Step 1: Hook: Show the video: Tour the States: https://www.youtube.com/watch?v=_E2CNZIIVIg

Step 2: The teacher should model how to navigate through the programs using the example state, such as Tennessee. This way the students know how to make their model. The teacher will number the students off starting at number 1. Based on this number, the students will research [order and dates of statehood](#). (Handout 1).

Step 3: Give time for each student to research their assigned state

Day 2 (45 minutes):

Step 4: Direct students to open [Thingiverse](#) 3D United States printable map. They will need to download and extract the software.

Step 5: Students will open/login to [Tinkercard](#)

- I. Select New Design
- II. Rename : name_State
- III. Import their state from the “Files” Thingiverse file. (NOTE: keep scale at 100 so all states will fit together in a class manipulative puzzle)
- IV. Zoom to see and discuss the work plan and object properties (Do not change the size)
- V. Export (Download for printing): as a .STL file. The file should already be in a .STL file, but this will allow your students to add their name on the file.

Step 6: After students finish they may transition to online activities:

- [ABCYA USA Map Puzzle](#)
- [ABCYA US States and Capitals](#)
- [ABCYA State Bingo](#)
- [Google Earth](#)

Closing: Have each student present their state by region to reinforce location of the states.

Differentiation

- Teacher will model how to use the programs for students who need to see a visual of the process.
- Have groups work by Regions
- US Map Regions (Handout #2) with Compass

Assessment

Formative:



Use worksheet one as a quiz or test to assess whether or not the students understood the region layout. The teacher can also choose to add a ticket out the door by having the students write down 5 states and their number to joining the region. This will ensure that the students payed attention while seeing their peer's state's come together at the end of the lesson.

When the 3D models have finished being printed have students work in groups during center time and construct the class model of the United State. Record how long it takes for each group to complete the puzzle.



State	Abbreviation								
1		11		21		31		41	
2		12		22		32		42	
3		13		23		33		43	
4		14		24		34		44	
5		15		25		35		45	
6		16		26		36		46	
7		17		27		37		47	
8		18		28		38		48	
9		19		29		39		49	
10		20		30		40		50	



Ticket out the door

Name of state	Order of statehood