

Chinese Oracle Bones

Subject: Mandarin Chinese

Learning Objectives:

Mandarin Chinese learners will practice writing characters while also physically connecting with the history of Chinese script development.

Summary:

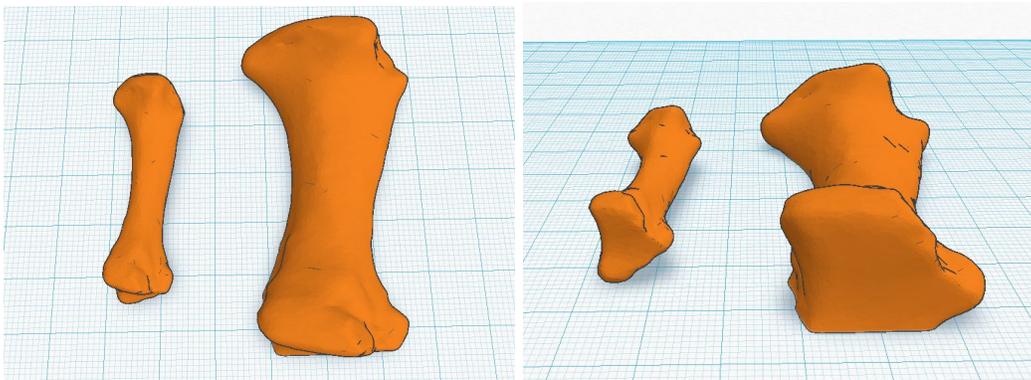
Students learning Mandarin Chinese learn the history and development of Chinese characters, including the importance of the earliest writing found on "oracle bones" as some of the earliest examples of Chinese script. In preparation for students to make their own oracle bones, the teacher can modify 3D scans of actual bones to have flat bottoms for molding and then 3D print a few of those bones. Using a small vacuformer or other mold-making tool, the teacher can make molds that the students will then pour plaster into. Students carve their own characters - names, vocabulary words, their own questions for divination - into the bones when the plaster has dried enough.

Other equipment/materials necessary:

- A vacuformer or other means of creating molds. A [dental vacuformer](#) is an inexpensive option, or one can be [made very inexpensively](#). You might also choose to [make silicone molds](#).
- Plaster of Paris

Teacher Prior Preparation:

- Identify and download 3D model files of scans of real bones, such as these [human hand bones](#) at Thingiverse. This [scapula model](#) would be more historically accurate.
- Modify the files to be a workable shape and size for molding. In our case, we made each bone about 5cm long and the narrowest part at least 2cm wide. We then sunk each bone into the build plate to have a flat bottom for easier vacuforming.



The bone model of the left in each picture is the original model.

The bone model on the right in each picture is sized and flattened for easy vacuforming.

- 3D print the bone models, and use your vacuformer or other casting method to make molds of the bones for your students. We used clear plastic plates and plastic trays from microwave dinners (both plastic #6 - polypropylene) for our molds.

Depending on how much work you would like for your students to do, you might have them make the molds themselves.

Student Prior Learning:

- Students should be mid-level Mandarin speakers, with several characters in their repertoire. The Cambridge University Library has [an excellent introduction](#) to the significance of oracle bones.

Activities:

- Distribute the molds to students, and distribute Plaster of Paris for students to pour their molds. We used paper Dixie cups and coffee stirrers, and a ratio of 2:1 Plaster of Paris:water.
- Leave the molds for at least one full day to dry.
- Have students very carefully remove their solidified bones from their molds, and use a toothpick to etch characters into the bones. If the bones break, that's okay! Since original oracle bones were made to crack and break, broken models do not detract from the connection to the history.

