Abstract
This research is to design and develop a mobile Moon observation app running on smart phones, as a part of World MOON (The More Observations Of Nature) project. The World MOON project is to teach students how the Moon works from both their local point of view and also a global perspective. The project has been executed more than 12 years for more than 6,000 students from 10 different countries. Unlike prior paper- or Web-based observation approach, a smart phone is used to observe the Moon using a rich set of sensors (i.e., camera, GPS, or gyroscope) for accurate and portable data collection. We are implementing the app with the Google software development kit based on Android operating system. We envision that this mobile Moon observation app will have anyone easily collect lunar data anytime and anywhere, and improve the global understanding of the Moon.

Methods
- Goal: record the moon’s size and color through a picture and then record the location, time, and angle relative to the Earth.
- Location, time, longitude, and latitude are pulled from the pictures data.
- The longitude and latitude are passed through a geocoder and the address is obtained.
- Only the city, state, and zip code should be stored.
- The angle of the moon is calculated from the initialized angle of the device and the angle when the picture is taken.
- The orientation sensor is used to find the angle data.

References
World Moon Project
http://www.worldmoonproject.org

Video: 

About World MOON Project
- MOON is an acronym for “More Observation Of Nature”.
- In order to understand the moon’s appearance, students have been asked to observe the moon and identify patterns where they live.
- Based on the student’s observations, essays are then compiled and then spread throughout the community so that others can have an understanding of what the moon is like in other locations.
- The World MOON Project can help teachers emphasize curricular goals in the certain areas, such as lunar phases, inquiry skills, and the nature of science.
- Due to its flexibility, each teacher can use the Project to fit what ever needs they have.
- Students’ identities remain anonymous, and emails are not exchanged with students. The web site is strongly protected, so the participants are as safe as possible.

Who can participate?
- Many students and teachers, both locally and internationally, participate in this project.
- The Project is completely free and open to all ages.

When does the Project take place?
- The project takes place during the fall semester (August-November) and the spring semester (January-April).

How to get involved:
- If you have questions or would like to enroll your class, email walter.smith@ttu.edu. Enrollment is completely free and is open to teachers and students from anywhere in the world.

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Video: