

The Textured Universe: Astronomical 3D Printing Technology and Materials To Stimulate Interest in Careers in Science

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Astronomy has been a fascinating subject for the public for centuries and can stimulate deep questions not only on our own origin but subtly the richness of science and mathematics. It also is a science that is associated with engineering and technology to probe the universe. We have been conducting a large study of the usefulness of 3D printing for individuals (in particular students) with blindness or visual impairment (B/VI). In the environment of a summer camp, students with B/VI and their teachers (some with B/VI) build 3D printers kits and learn how to use them. We produce 3D prints of astronomical objects and use those and other assistive technologies to investigate how these methods can stimulate interest and improve skill in STEM for students with B/VI and their teachers. In the course of developing methods to produce 3D print materials, honing their design, and testing the prints in various environments, we have experienced that 3D printing has been quite useful in showcasing scientific data (largely from HST and JWST) to the general public for understanding and appreciation of science. The experience of holding a galaxy, a star cluster, or a model of the Sun resonates well with even the most casual interest in astronomy.