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Tinkercad for Beginners

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3D: DISCOVER, DESIGN, DEVELOP

Class Overview



WORKSHOP OBJECTIVES

- Discover your hidden Design Talent
 - Experience the use of a basic 3d modeling software program.
 - Explore pitfalls and tips for successful 3D printing.
 - By the end of the workshop educators will be more confident in your ability to teach others about 3d modeling.
- Design a solution to our NASA Challenge
 - During the workshop educators will demonstrate 3d modeling skills by designing a solution to our challenge.
 - Evaluate your own model and others given specific criteria.
 - Connect course experiences to NGSS engineering practices and/or standards.
- Develop connections to NGSS for your Classroom
 - Develop an idea for a new 3d modeling activity that could be used in one of your units to help meet an NGSS Engineering standard and a PS, LS, or ESS standard..
 - Share your activity idea with peers.
 - By the end of the workshop each educator will leave intending to implement ideas from the course into their future classrooms.



OVERVIEW — DAY 1

- Pre-Survey
- Welcome and Icebreaker
- Workshop Objectives & Overview of the Workshop
- Login/Create TinkerCAD accounts
- TinkerCAD [break] – *in 3 sections with discussion of growth beyond tinkercad.*
- TinkerCAD for Schools
- Lunch
- Q&A 3D Modeling
- NASA Design Challenge Introduction
- NASA Design Challenge – Model development
- *Lessons Learned - 3D printer tips and Tricks*
- Connecting 3D modeling to NGSS
- Wrap Up - Review Objectives, Q&A, Grad Credit, the USB, homework, and remember next meeting in Wloo.



OVERVIEW — DAY 2

- Welcome and Re-Icebreaker
- Lunch & Awards Celebration
- Wrap Up – Post Survey, Q&A
- Workshop Objectives & Overview of the Workshop
- Evaluating our End Effector models
- End Effector Reflections
- Discussion Groups – Sharing Our Connecting 3D modeling to NGSS Ideas
- Additive Manufacturing Center Tour
- Innovations of Additive Manufacturing
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NGSS

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information



NGSS

- Take a look: Engineering Standards K2, 3-5, MS, HS
- Brainstorming #D modeling in Science Courses
 - Break into groups for
 - 4th Grade PS,
 - 5th Grade ESS,
 - MS ESS,
 - MS PS,
 - HS LS



HOMEWORK & CREDIT

- Design Challenge
 - <https://goo.gl/forms/ZKcvyoCDBmyYFNYB3>
 - Submit your model by March 31st at the latest.
 - We will print second prototypes if there is time.
- Develop an idea for an activity
 - that you could do in one of your existing units
 - that would address Engineering and Physical Science, Life Science, or Earth & Space Science Standards
 - that would engage students in 3D modeling (not necessarily printing)
 - Complete the activity idea handout and bring it to the second day
 - Be prepared to share your activity idea with peers.

