

**Task: Three Dimensional (3-D) Printing and how they are used by
Team Technologies, Inc.
Technology 6-8**

Describe the context of your task here. Separate the parts of the task into A, B, C, etc.

Team Technologies, Inc. use 3-D Printers in order to design and develop many of their products. 3-D Printers are used to save time and materials and are used to create inventions and innovations full scale.

Students will develop an understanding of Three Dimensional Printing by:

- A. Reading three articles about 3-D printing
- B. The articles will provide students with a basic description of 3-D printing
- C. There are domain -specific vocabulary words that will be important to address with students
- D. Graphics will both increase complexity while allowing visual learners to engage with the material
- E. The articles are simple in language and easy to understand
- F. Pictures and organization can lead to learning about purpose and craft
- G. Students will watch a series of 3-D Printing videos
- H. Students will gain a better understand of how **Team Technologies, Inc.** use 3-D Printers (I will explain how the process was used with their newest innovation.)
- I. Students will make a free hand drawing of a 3-D printer

Title: "How 3-D Printing Works"

Author: Bob Tita

Citation/Publication Information: Tita, B. (2013, June 7). "How 3-D Printing Works." *The Wall Street Journal*. Retrieved July 15, 2013.

Link:

<http://online.wsj.com/article/SB10001424127887323716304578483062211388072.html#articleTabs%3Dinteractive>

Title: "How exactly does 3-D printing work?"

Author: John Hembrey

Citation/Publication Information: Hembrey, J. (2013, Jan. 28). "How exactly does 3-D printing work?" *CBCNews*. Retrieved July 15, 2013.

Link:

<http://www.cbc.ca/news/technology/story/2013/01/23/f-3d-printing.html>

Title: “The 3-D Printing Revolution: Dreams made real, one layer at a time”

Author: Rachel Ehrenberg

Citation/Publication Information: Ehrenberg, R. (2013, March 9). “The 3-D Printing Revolution: Dreams made real, one layer at a time” *ScienceNews*. Retrieved July 15, 2013.

Link:

http://www.sciencenews.org/view/feature/id/348429/description/The_3-D_Printing_Revolution

Common Core State Standards

List the Common Core State Standards (and math practices if applicable) associated with your task.

ELA/Literacy Common Core State Standards addressed by task*

CCSS Reading for Technical Subjects: Key Ideas and Details

1. Cite specific textual evidence to support analysis of science and technical texts.
2. Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.

CCSS Reading for Technical Subjects: Craft and Structure

4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6-8 texts and topics*.

CCSS Reading for Technical Subjects: Integration of Knowledge and Ideas

7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

Tennessee CTE Standards addressed by task

- 3.0 Students will develop an understanding of how to turn ideas into products using invention, innovation, and inquiry.
- 4.0 Students will use, manage and assess the engineering design process as they apply STEM to create solutions to a problem.*
- 5.0 Students will use design and creativity concepts to improve the daily lives of others through invention and innovation.*

Note: These standards were selected because they address the engineering design process, drafting, and building a prototype. The text in this activity demonstrates how one can design an object (or product) using CAD and how to send the design to a 3-D printer to build a prototype.

Essential Understandings

What key insights should students take from participating in this task?

1. Three-dimensional printing builds an object using a form of additive manufacturing, rather than using machining or molding techniques.
2. Three-dimensional printing is a powerful tool that can be used in a variety of situations and with varying levels of expertise and tools.

Text-Dependent Questions

1. Citing information from the text, define “additive manufacturing.” How is this process different from machining or molding techniques?
2. What types of items can be created using a 3-D printer? What examples of these items can you point to in the text?
3. Ehrenberg uses the word “revolution” to describe what is happening in the world of 3-D printing. What evidence does she cite to support the use of that word?
4. Ehrenberg asserts that this technology may change how we create, and use, products. Do you agree with her? Explain why or why not using information found in the texts.

Possible Solutions/Solution Paths

What solutions or solution paths are acceptable in achieving a correct response for this task? Be sure to address all parts of the task.

Students will look up the following link and develop a better understanding of how a 3-D Printer works.

[How to use 3D Printing - 3D Printing online video tutorials](#)

Adwww.lynda.com/subscribe-today
Watch and learn at your own pace

Students will draw a free hand drawing of a 3-D printer to help them understand how a 3-D printer operates.

Additional Teacher Information

Add any additional notes that will help the teacher execute the task including necessary manipulatives, equipment, etc., and possible student's misconceptions that may need to be addressed.

- *Teacher will provide an introduction to basic 3-D Printers and allow time for discussion and questions.*
- *Teacher will guide students and help, if needed, with the reading of information.*
- *Teacher will provide technical support for the usage of computers and finding of the articles.*
- *Support will be provided for special needs students, English Language Learners and other students as needed.*
- *Usage of visual aids will be used as needed.*
- *Students will be paired as needed.*
- *Teacher will pre-teach the vocabulary to help the students gain a better understanding of 3-D Printing.*
- ***Team Technologies, Inc.** will be mentioned throughout the lesson, tying the lesson to our community and how they are the world leader in the toothbrush industry.*
- *Students may watch this video at home if they like, which explains many aspects of **Team Technologies**. This site is blocked at school. [General Information - Team Technologies, Inc.](#)*

teamtechinc.net/general-information/

General Information. In 1988, Steve Henrikson, David Schumaker and Rich