
Intro to the
Engineering
Design Process
Video Worksheet. Grades 5-8

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Although all of our student engagement worksheets are free and the video access to them is free, we hope you will not think they are cheap. On average, each of these listings takes 70 hours and a considerable amount of money to produce. Our goal is to make high quality products that assist educators. If you think this product is likely to assist other educators and you want to help them find this listing, then please leave a review.

If you are going to give a review but feel you cannot give 5-stars and choose not to message or email us with your concerns, then in your review please give specific reasons as to why you think this product is <u>not</u> high quality. <u>You opinion matters: 1) we read and respond to every review 2) if possible, we will improve this product based on your feedback 3) our top priority is to offer 4.5-star or higher quality products, so we have deleted listings (including videos) when the ratings fall below 4.5-stars, and will do the same to this one if needed.</u>

Suggestions for how to use this Video Worksheet.

As you know, we all have limits on how much we can absorb in one sitting. For this reason, we have designed our videos to be viewed, and the associated worksheet (or electronic format, such as Google Forms) to be completed at home the evening **before** the topic is covered in class. If you have not already tried this with your students, we encourage you to do a little experiment to see if their enthusiasm and comprehension is improved using this **"learn-sleep-learn model**."

The **"learn-sleep-learn model**" is consistent with research showing that long-term memories are improved when we learn the same material twice, but separated by one night's sleep. During sleep, we transition short to long-term memories, so facts and concepts we learn from a video in the late afternoon become solidified. The next day, the educator may go at a faster pace and cover more content than if all the information was new to the students.

If you have not already done so, we encourage you to try the electronic formats of the worksheets. In addition to saving you time (making copies, grading papers, returning graded papers), many of our electronic versions are designed for specific Learning Management Systems (LMS) that will then allow you to see trends as to what questions many students are getting incorrect, so you may tailor your teaching as needed. You may edit your electronic copies of these worksheets (change, subtract or add questions) as you wish. Some LMSs will automate importing each student's result into gradebooks, so may save you that time. Please see our separate page for an how to use our electronic versions with LMSs.

To minimize the learner's frustration, all worksheet questions have timestamps in the video's description which student's may click on, which will then take them to the answer if they missed it the first time they watched the video. We include summary slides in all the videos as both a

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succinct review and as a way for students to see the core facts and concepts. Where possible (e.g., Google Forms and Microsoft Forms), we display the explanation to each answer to a question after the student submits the form, so the student immediately learns from the worksheet. Some products do not allow that option (e.g., paper worksheets, Easel) so we have made Google Slides available if you wish to review the answers in class, or if you wish to send that (as a link to your copy on a shared Google Drive, or as a PowerPoint attachment which is made when you download a Google Slides file) after students have completed a worksheet.

Our narrator has a Midwestern accent and talking speed, so if that is problematic please remind viewers they can change the play speed and also turn on closed captions (we have manually edited all closed captions so they are correct). Although we have been impressed by YouTube® automated translations into languages which we have some knowledge of, we cannot guarantee their accuracy in all languages. But, if you have a staff member, volunteer or consultant who is fluent in both English and a language that a student prefers, then you may wish to ask that person to confirm the translation in the chosen language is correct, and if it is then you may find those videos are suitable for students whose first language is not English.

If you disagree with what we have said or shown, then you may have found a typo or other error; we would be grateful to know about your concern so we can look into it further, and if it is an error then we'll correct it. For this reason, we encourage you to use a current version of this document so the hyperlinks to videos work (there is no way to replace a YouTube® video and keep the original link). **Unless we delist (delete) this product 1) we will keep the version number in the title of the listing so that you can download future ones if needed and 2) all future versions of this document, as well as access to the video, will remain free.**

Best wishes,
Test Prep LLC
https://TestPrepLLC.org

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Available worksheet formats and how to get a free copy.

This document has links that will take you to websites that host our free content, and you may then copy it into your own collection. If you're unfamiliar with how to do this, please consider watching one of the short videos we made that demonstrate this. The exception is that instead of going to a multi-sheet document to find a given link (as illustrated in some of the videos) you will find those links in this document in the section that follows the paper version.

- Canvas: How to Find, Copy and Edit our Quizzes in Canvas by Instructure (youtube.com)
- Easel Activities and Assessments: How to Find, Copy and Edit our free Easel Activities and Assessments. (youtube.com)
- Google Forms: How to Find, Copy and Edit our free Google Forms. (youtube.com)
- Google Slides: How to Find, Copy and Edit our free Google Slides. (youtube.com)
- Kahoot: How To Find, Copy and Edit Our Free Kahoot Quizzes (youtube.com)
- Lumio: How to find, copy and edit our free Lumio science quizzes. (youtube.com)
- Microsoft Forms: How to Find, Copy and Edit our free Microsoft Forms. (youtube.com)
- Moodle: How to Find, Copy and Edit our free tests on Moodle. (youtube.com)
- Quizizz: How to Find, Copy and Edit our free tests on Quizizz. (youtube.com)

Importing into some Learning Management Systems:

- Importing into Google Forms into Google Classroom: How to Import our Forms into Google Classroom. (youtube.com)
- How to import several formats from this document: Science Video Worksheet Electronic Options: Blackboard, Canvas, Google Forms, MS Forms and more. - YouTube
- These are produced by Easel of TPT: Assigning Easel Assessments - YouTube and Easel – Frequently Asked Questions

General info about these videos and worksheets / quizzes:

- Overview: Intro to Science Video Worksheets. - YouTube
- Accessibility: Options to improve our videos' accessibility. (youtube.com)

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Science Video Worksheet

ANSWER KEY. Green comments only appear on this answer key.

For teachers: 1 minute preview of "The Engineering Design Process"

Video (please click to view): Intro to the Engineering Design Process

For educators: you may be able to save time correcting paper worksheets if you use a long-reach hole-punch (e.g., 2-inch) to punch out the solid circles in this key. Then you can place this key over the student's worksheet and put a correction mark inside any empty circles on the student's sheet.

Question	Question	NO	YES
1	Is the Engineering Design Process used to discover new scientific facts? No. It is used to invent a new product or process, not to discover science facts.	●	○
2	Is one of the first steps in the Engineering Design Process to test a prototype? No. A function test is one of the last steps in the process.	●	○
3	During a brainstorming session, is it OK to suggest invention ideas that might be a little silly? Yes. A 'silly' idea might turn out to be a great idea.	○	●
4	Does the word 'constraints' mean limits? Yes. It's limits us like a budget (money), time, laws and resources.	○	●
5	Do engineers design products using computers? Yes. There are many programs to help make very detailed drawings (like blue-prints).	○	●
6	Is a prototype a product that it's OK to destroy during the testing step? Yes. Its purpose is to test it, and if it is destroyed during the test that's OK.	○	●
7	If a new product fails the function test, is the Engineering Design Process always over? No. If the team wants to continue and has resources, they can.	●	○
8	Is it good to criticize flawed ideas or work done by others? Yes. Constructive criticism is done with the purpose of preventing a dangerous product failure.	○	●

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Science Video Worksheet

Student's name:_____. Date:_____.

Video (please click to view): Intro to the Engineering Design Process

Please look over the questions before playing the video. If you need to replay a part, you can click on a timestamp link for that question in the video's description and it will jump to that part of the video. Please mark your answer by completely filling in the circle (marks outside the circles may not be counted), thank you.

Question	Question	NO	YES
1	Is the Engineering Design Process used to discover new scientific facts?	○	○
2	Is one of the first steps in the Engineering Design Process to test a prototype?	○	○
3	During a brainstorming session, is it OK to suggest invention ideas that might be a little silly?	○	○
4	Does the word 'constrain' mean limit?	○	○
5	Do engineers design products using computers?	○	○
6	Is a prototype a product that it's OK to destroy during the testing step?	○	○
7	If a new product fails the function test, is the Engineering Design Process always over?	○	○
8	Is it good to criticize flawed ideas or work done by others?	○	○

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Electronic Formats for this Worksheet

Compared with paper, using electronic worksheets or quizzes may save you time, money and enhance learning since students will get immediate feedback so they can learn from their mistakes while the content is still fresh. Video: Science Video Worksheet Electronic Options

To get a copy of the Canvas quiz, click on this link:
https://lor.instructure.com/resources/bd70599f29c0413980efca3d4f18ef9e?shared

To get a copy of the Easel Activity & Assessment for this worksheet, click on this link: Intro to The Engineering Design Process. Science Video Worksheet & Easel.

To get a copy of the Kahoot Quiz, click on this link:
https://create.kahoot.it/share/intro-to-the-engineering-design-process/8254b9e3-a649-4500-bf41-96e85e65c02f

To get a copy of the Lumio Lesson, click on this link:
https://lum.io/share/2b4bf7a4-dc44-4a1d-a9ad-fa7c921f8285

To get a copy of the Moodle Quiz, click on this link:
https://moodle.net/resource/lqgx0rbW/video-based-quiz-intro-to-engineering-design-process

To get a copy of the Quizizz test, click on this link:
https://quizizz.com/admin/quiz/6610b6976b04be3ef3679c05?source=quiz_share

To get a copy of the Microsoft Form for this worksheet: Sign into your Microsoft 365 account by going to https://forms.microsoft.com then click the following link, then click the 'Duplicate it' button in the top right. This will make a copy in your personal Microsoft 365 forms folder that you can view and edit. You can send your form to your students and receive their results.
https://forms.microsoft.com/Pages/ShareFormPage.aspx?id=DQSIkWdsW0yxEjajBLZtrQAAAAAAAAAAAAN__tEEHMRUQVhJNkRVUVE0SktTUE1EOURMVUJDQzYwSC4u&sharetoken=ych625ycxt3czvMRFjgm

- **To get a copy of our Google Forms and Slides.** Sign into your Google Drive account by going to https://www.google.com/drive then **left**-click on either of the following links, then **right**-click on the product you want (so you can see the shortcut menu), then **left**-click on "Make a copy" in the short-cut menu. You can then view the product in your Google Drive by left-clicking the "My Drive" icon on the top left of the screen. Then you can edit it as you wish, send this to your students and receive their results. There are no copyright restrictions on any of the worksheets.
- **Shared folder for all Google Forms:**
https://drive.google.com/drive/folders/1zAy7KnZgrcVIXreV-7si95Q0HTbF62pz?usp=sharing
- **Shared folder for all Google Slides**
https://drive.google.com/drive/folders/1N_yLHpUVPSwNTYAIOTM6GdaTJLlBZv5o?usp=sharing

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Format for Blackboard (part of Anthology)

- Link to video: https://youtu.be/t6r73lFaIzY
- To import as a quiz into Blackboard:
    - Copy and paste the following text into a new text document (e.g., Microsoft's Notepad), save it, then import that text document into Blackboard. The spacing may seem odd because it is in tab delimited format; this format is required.
    - Assign points (e.g., 1 point) to each question.

```
MC	Is the Engineering Design Process used to discover new scientific facts?	No	correct	Yes	incorrect
MC	Is one of the first steps in the Engineering Design Process to test a prototype?	No	correct	Yes	incorrect
MC	During a brainstorming session, is it OK to suggest invention ideas that might be a little silly?	No	incorrect	Yes	correct
MC	Does the word 'constrain' mean limit?	No	incorrect	Yes	correct
MC	Do engineers design products using computers?	No	incorrect	Yes	correct
MC	Is a prototype a product that it's OK to destroy during the testing step?	No	incorrect	Yes	correct
MC	If a new product fails the function test, is the Engineering Design Process always over?	No	correct	Yes	incorrect
MC	Is it good to criticize flawed ideas or work done by others?	No	incorrect	Yes	correct
```

Format for importing into Canvas and Respondus 4.0

- Link to video: https://youtu.be/t6r73lFaIzY
- To import as a quiz into Respondus 4.0 or Canvas by Instructure:
    - Copy and paste the following text into a new text document (e.g., Microsoft's Notepad), save it, then import that text document into Respondus 4.0 or Canvas.
    - Assign points (e.g., 1 point) to each question.

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1. Is the Engineering Design Process used to discover new scientific facts?
*a. No
b. Yes

2. Is one of the first steps in the Engineering Design Process to test a prototype?
*a. No
b. Yes

3. During a brainstorming session, is it OK to suggest invention ideas that might be a little silly?
a. No
*b. Yes

4. Does the word 'constrain' mean limit?
a. No
*b. Yes

5. Do engineers design products using computers?
a. No
*b. Yes

6. Is a prototype a product that it's OK to destroy during the testing step?
a. No
*b. Yes

7. If a new product fails the function test, is the Engineering Design Process always over?
*a. No
b. Yes

8. Is it good to criticize flawed ideas or work done by others?
a. No
*b. Yes

For importing into Moodle as GIFT format

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- Link to video: https://youtu.be/t6r73lFaIzY
- To import as a quiz into Moodle as GIFT format:
    - Copy and paste the following text into a new text document (e.g., Microsoft's Notepad), save it, then import that text document into Moodle as a File Format of GIFT format.
    - Edit points (e.g., 1 point) to each question.

```
::Q1:: Is the Engineering Design Process used to discover new
scientific facts? {=No~Yes}

::Q2:: Is one of the first steps in the Engineering Design
Process to test a prototype? {=No~Yes}

::Q3:: During a brainstorming session, is it OK to suggest
invention ideas that might be a little silly? {~No=Yes}

::Q4:: Does the word 'constrain' mean limit? {~No=Yes}

::Q5:: Do engineers design products using computers? {~No=Yes}

::Q6:: Is a prototype a product that it's OK to destroy during
the testing step? {~No=Yes}

::Q7:: If a new product fails the function test, is the
Engineering Design Process always over? {=No~Yes}

::Q8:: Is it good to criticize flawed ideas or work done by
others? {~No=Yes}
```

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