



Knowledge and Skills: How to Unpack a Standard

Overview

Why unpack a standard into knowledge and skills?

The first step in translating CTE course standards into relevant, engaging and student outcome-focused lessons involves a careful reading of the standards to ensure an understanding of how the individual competencies fit together to form a deep conceptual comprehension of a topic.

Unpacking a standard into knowledge and skills allows for a sequenced approach to instruction that is grounded in real world application. Once teachers have broken down the knowledge and skills inherent in their standards, they can start to group standards with like content to deepen student understanding.

Unpacking Process

Part One

The first part of unpacking a standard into knowledge and skills is to identify the knowledge (what a student should know) and the skills (what a student should be able to do). You can start this process by simply underlining or highlighting the **nouns** and **verbs** within the standard. The **nouns** are the “what” and typically correspond to concepts a student should grasp and the **verbs** are the “how” and typically correspond to skills the student should be able to complete to demonstrate proficiency. Let’s take a look at an example.

Principles of Engineering and Technology Standard 7

In **teams**, **evaluate** an existing large-scale engineering **design using** the **engineering design process**. **Produce** a **report** on the chosen **design**, and **assume** the **role** of the engineering design **team** that produced the **design**. **Document constraints** that may have been faced by the design **team**, **criteria** for measuring effectiveness of the **design**, and **progress** through each **step** of the engineering design **process**. **Create** and **deliver** a **presentation** appropriate for a career and technical student organization (CTSO) **event**. (TN Reading 3, 4, 5, 7; TN Writing 2, 4, 9)

Once basic knowledge and skills have been identified, you should think critically about what each individual topic would look like in a classroom. Some concepts may need to be expanded to capture all of the details students would need to know to fully grasp the concept. A knowledge and skills chart, like the example below, can assist in detailing out the distinct pieces of information that will need to be addressed to ensure all of your students reach proficiency on the standard. Depending on the complexity of the standard, all knowledge and skills may not be able to be covered in one lesson. Breaking down the distinct concepts will assist you in planning how long the standard will take to cover completely.



Knowledge and Skills: How to Unpack a Standard

Principles of Engineering and Technology Standard 7

Standard	Knowledge	Skills
<p>In teams, evaluate an existing large-scale engineering design using the engineering design process. Produce a report on the chosen design, and assume the role of the engineering design team that produced the design. Document constraints that may have been faced by the design team, criteria for measuring effectiveness of the design, and progress through each step of the engineering design process. Create and deliver a presentation appropriate for a career and technical student organization (CTSO) event. (TN Reading 3, 4, 5, 7; TN Writing 2, 4, 9)</p>	<p>Engineering Design Process</p> <ul style="list-style-type: none"> Identify the problem; identify the criteria and specify constraints; brainstorm possible solutions; research and generate ideas; explore alternative solutions; select an approach; write a design proposal; develop a model or prototype; test and evaluate; refine and improve; create or make a product; and communicate results <p>Role (of a design team)</p> <ul style="list-style-type: none"> Team consists of individuals knowledgeable of various perspectives of the final product. <p>Constraints</p> <ul style="list-style-type: none"> Restrictions or limits to the design process. <p>Criteria</p> <ul style="list-style-type: none"> Requirements for the design that are used to determine the most optimal solution. 	<p>Evaluate</p> <ul style="list-style-type: none"> Judge product/design solution to determine its value and alignment to criteria and constraints. <p>Produce a report, document (verb)</p> <ul style="list-style-type: none"> Organized, clear, and complete written communication that includes text and graphic illustrations about the design process and solution, as well as considers the knowledge of the audience. <p>Create and deliver a presentation</p> <ul style="list-style-type: none"> Organized, clear, and complete oral communication that includes text and graphic illustrations about the design process and solution, as well as considers the knowledge of the audience.



Knowledge and Skills: How to Unpack a Standard

Part Two

Once you have identified the knowledge and skills within the standard, reference the aligned Common Core State Standards in Technical Subjects and relevant general education standards (if applicable) listed at the end of the standard. You can find additional information on these referenced standards by scrolling to the bottom of the [course description document](#) to the *Standards Alignment Notes* section (see blue example box below).

These referenced standards will assist you in creating strong objectives, understanding how to present information to students and what additional types of information should be used to support conceptual understanding of the knowledge and skills identified in the CTE standard. For example, looking at the Common Core Standard for Reading 3 will assist this teacher in understanding how to teach the “engineering design process” identified on the knowledge and skills chart, while Common Core Standard Writing 4 will assist in teaching about the skill “create and deliver a presentation.”

Principles of Engineering and Technology Standard 7

In teams, evaluate an existing large-scale engineering design using the engineering design process. Produce a report on the chosen design, and assume the role of the engineering design team that produced the design. Document constraints that may have been faced by the design team, criteria for measuring effectiveness of the design, and progress through each step of the engineering design process. Create and deliver a presentation appropriate for a career and technical student organization (CTSO) event. **(TN Reading 3, 4, 5, 7; TN Writing 2, 4, 9)**

Standards Alignment Notes

*References to other standards include:

- TN Reading: [State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects](#); Reading Standards for Literacy in Science and Technical Subjects 6-12; Grades 9-10 Students (page 62).
 - Note: While not directly aligned to one specific standard, students who are engaging in activities outlined above should be able to also demonstrate fluency in Standard 10 at the conclusion of the course.
- TN Writing: [State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects](#); Writing Standards for Literacy in History/Social Studies, Science and Technical Subjects 6-12; Grades 9-10 Students (pages 64-66).

TN Reading 3: Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

TN Writing 4: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Bridge to Practice

It's your turn!

Follow the two-step process outlined above with a course of your choosing using the green templates in the following pages.



Knowledge and Skills: How to Unpack a Standard

- **Step 1:** Write down each standard for the course in the *Standard* column of the worksheet. Looking at the standard carefully, underline the nouns (“what”/knowledge) and verbs (“how”/skills) embedded in each standard in your course. Capture these concepts in the *Knowledge* and *Skills* columns of the worksheet.
- **Step 2:** Reference the aligned standards (Common Core State Standards for Technical Subjects, general education, national industry, etc.) referenced at the end of each standard (if applicable) and add additional clarifying statements or details to your *Knowledge* and *Skills* columns as necessary. If you are having trouble finding the standards, follow the links at the end of the Course Description Document.

You’re done!

The unpacking is complete! This detailed chart will be useful when you move on to creating strong objectives and student outcome-focused lessons.

Questions about this process or need assistance? Please contact CTE.Questions@tn.gov.



Knowledge and Skills: How to Unpack a Standard

Standard	Knowledge	Skills



Knowledge and Skills: How to Unpack a Standard

Standard	Knowledge	Skills



Knowledge and Skills: How to Unpack a Standard

Standard	Knowledge	Skills



Knowledge and Skills: How to Unpack a Standard

Standard	Knowledge	Skills