

# Simplifying Assessment Design

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**Solution Tree**



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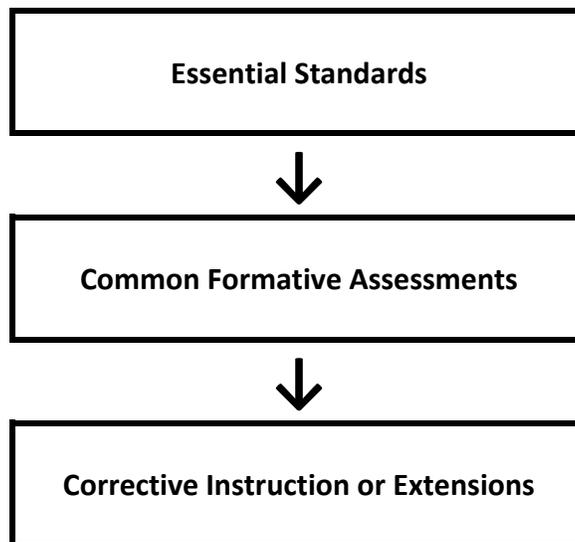
## Targets for Today

- Understand how unwrapping standards into learning targets improves the quality of classroom formative and common formative assessments.
- Explore ways to assure our items match the rigor of the assessment targets.
- Learn how to develop an assessment plan before writing questions; this assures a more valid product.

## Critical Questions Teams Ask

(DuFour, DuFour, Eaker, Many, & Mattos, *Learning By Doing*, 2016)

1. What do we want our students to know and be able to do?
2. How will we know if they can?
3. What will we do for those who can't?
4. What will we do for those who already can?



## Formative Assessment

(William, *Embedded Formative Assessment*, 2011, p. 48)

“An assessment functions formatively to the extent that evidence about student achievement is elicited, interpreted, and used by teachers, learners, or their peers to make decisions about the next steps in instruction that are likely to be better, or better founded, than the decisions they would have made in the absence of evidence.”

## Common Formative Assessment

(Bailey, Jakicic, & Spiller, *Collaborating for Success With the Common Core*, 2013, p. 100)  
“Common formative assessments are **team-designed**, intentional measures used for the purpose of monitoring student attainment of **essential learning targets** throughout the instructional process” (p. 100).

Best Test	Worst Test
Type	Type
Why?	Why?

## Big Ideas of Assessment

1. Common formative assessments are based on targets (not standards) that are clear to teachers and students.
2. The type of assessment items used must match the level of thinking expected in the learning target.
3. To be valid, the assessment must assess the learning targets that are understood by both teachers and students at the level of thinking they were taught.

## What Are Learning Targets?

(Bailey, Jakicic, & Spiller, *Collaborating for Success With the Common Core*, 2012)

- *Learning targets* are increments of learning that make up the journey to achieving the overall standard.
- They include all skills and concepts that students must acquire to master the standard.
- Common formative assessments are based on learning targets rather than standards.
- Learning targets may be written as “I can” statements in student-friendly language.

**Protocol for Unwrapping Standards**  
**Finding the Learning Targets to Teach and Assess**  
(Bailey & Jakicic, *Common Formative Assessment*, 2011)

1. Circle the verbs (skills).
2. Underline the nouns (concepts) to be taught.
3. Double underline any prepositional phrase (context).
4. Write separately each verb (skills) and noun (concept) combination as a separate learning target.
5. If a prepositional phrase (context) is included at the beginning or the end of the standard, include it in the target.
6. **Examine** each learning target asking the following questions—
  - What are the instructional and assessment implications of this target?
  - What would it look like to teach this target in the classroom (setting, materials, strategies)?
  - Is the skill measurable? What would the assessment look like? Do you need to change the verb to make it more measurable?
7. After examining the instructional and assessment implications, are there any targets that are **implicit** or not directly stated in the standard that should be included?

## Unwrapping Template

**Standard:** Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced. (RI.8.8)

What Will Students Do?	With What Knowledge or Concept?	In What Context?	DOK	Common Formative Assessment
Delineate	The argument and specific claims	In an informational text	2	
Evaluate	The argument and specific claims	In an informational text	3	
Assess	Sound reasoning		3	
Assess	Relevant evidence		3	
Recognize	When irrelevant evidence is introduced		2	

Summative Assessment: Students will be asked to read a piece of grade level argumentative text from an editorial. They will be asked to evaluate the text for the quality of the argument including what claims the author makes as well as how effectively each of those claims are supported.

## Unwrapping Template

**Standard:** Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. (4.NF.4c)

What Will Students Do?	With What Knowledge or Concept?	In What Context?	DOK	Common Formative Assessment
Solve	Word problems of a fraction by a whole number	Using visual fraction models		
Solve	Word problems of a fraction by a whole number	Using equations to represent the problems		
Solve	Mathematical (simple) problems of a fraction by a whole number	Using visual fraction models		
Solve	Mathematical (simple) problems of a fraction by a whole number	Using equations to represent the problems		

Summative Assessment:

**Unwrapping Template**

**Standard:**

<b>What Will Students Do?</b>	<b>With What Knowledge or Concept?</b>	<b>In What Context?</b>	<b>DOK</b>	<b>Common Formative Assessment</b>

**Summative Assessment:**

Standard(s) to be addressed:

Conduct an investigation to provide evidence that living things are made up of cells, either one cell or many different cells. (MS-LS1.1)

Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function. (MS-LS-1.2)

Context/  
Conditions  
(what text,  
problem type,  
or situation will  
students  
encounter?)

Students have been introduced to the use of a microscope and have learned the steps to the scientific method. In this unit they will use both of those skills. They've used models to explain phenomena but have not developed their own model before.

	Learning Target	DOK	Assessment
Concepts or information that students need to know:	•Definition of a cell	1	Vocabulary
	•Know what makes something living	1	List the factors
	•Unicellular organisms vs. multicellular organisms	2	Explain the difference
	•Cell organelles	1	
	•Define and describe osmosis and diffusion	2	Constructed response— explaining the difference
	•Plant versus animal cells	2	Provide slides of plant and animal cells and have students identify
	<b>Big Idea:</b> All living things are made up of cells. More complex animals and plants have many different kinds of cells. Cells have parts called organelles that carry out a variety of functions		

(Continued)	Learning Target	DOK	Assessment
Skills students will demonstrate:	<ul style="list-style-type: none"> <li>•Distinguish living and non-living things</li> </ul>	2	Provide a table with evidence and have students determine if the item is living or non-living
	<ul style="list-style-type: none"> <li>•Develop and use a model to describe the function of a cell as a whole</li> </ul>	2	Summative
	<ul style="list-style-type: none"> <li>•Develop and use a model to describe how parts of a cell contribute to the function</li> </ul>	3	Summative
	<ul style="list-style-type: none"> <li>•Explain how osmosis and diffusion affect cell transport</li> </ul>	3	Have students draw a model to explain cell transport with osmosis and diffusion
Academic Language/ Vocabulary	Cell Nucleus, chloroplasts mitochondria, cell wall, cell membrane		



## Sample Standards

**ELA, Grade K:** Identify the front cover, back cover, and title page of a book (ELA-LITERACY.RI.K.5).

**Math, Grade 1:** Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false (MATH.CONTENT.1.OA.D.7).

**ELA, Grade 2:** Compare and contrast two or more versions of the same story (e.g., Cinderella stories) by different authors or from different cultures (ELA-LITERACY.2.RL.3.9).

**Math, Grade 3:** Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding (MATH.CONTENT.3.OA.D.8).

**ELA, Grade 4:** Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context (ELA-LITERACY.RF.4.3.A).

**Math, Grade 5:** Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators (MATH.CONTENT.5.NFA.1).

**ELA, Grade 6:** Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas (ELA-LITERACY.RI.6.5).

**Math, Grade 7:** Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle (MATH.CONTENT.7.G.B.4).

**ELA for History and Social Studies, Grade 6–8:** Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions (ELA-LITERACY.RH.6-8.2).

**Math, Algebra:** Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales (MATH.CONTENT.HSA.CED.A.2).

**ELA for Science and Technical Subjects, Grade 9–10:** Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address (ELA-LITERACY.RST.9-10.6).

**Middle School Science:** Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved. (MS-PS1-5)

**High School Biology:** Make and defend a claim based on evidence that inheritable genetic variations may result from (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors. (HS-LS3-2)

## Using Webb's Depth of Knowledge to Discuss Proficiency

<b>Webb's Depth of Knowledge (2005)</b>	
<b>Level 1: Recall</b>	Level 1 requires rote recall of information of facts, definitions, terms, or simple procedures. The student either knows the answer or does not.
<b>Level 2: Skills and Concepts</b>	Level 2 requires engagement of mental processing or decision-making beyond recall or reproduction. Items falling into this category often have more than one step, such as organizing and comparing data.
<b>Level 3: Strategic Thinking</b>	Level 3 requires higher-level thinking than levels 1 and 2 and could include activities or contexts, which have more than one possible solution, thereby requiring justification or support for the argument or process.
<b>Level 4: Extended Thinking</b>	Level 4 requires high-cognitive demand in which students synthesize ideas across content areas or situations and generalize that information to solve new problems. Many responses falling into this category require extensive time, as they imply that students will complete multiple steps, as in a multivariant investigation and analysis.

### Examples for My Own Classroom

DOK 1:

DOK 2:

DOK 3:

DOK 4:

Level	Social Studies	ELA
<b>DOK 1</b>	<ul style="list-style-type: none"> <li>• Recalling facts, terms, concepts, and trends</li> <li>• Recognizing or identifying specific information contained in maps, charts, tables, graphs, or diagrams</li> </ul>	<ul style="list-style-type: none"> <li>• Identifying figurative language</li> <li>• Demonstrating fluency</li> <li>• Knowing vocabulary</li> <li>• Using punctuation correctly</li> </ul>
<b>DOK 2</b>	<ul style="list-style-type: none"> <li>• Comparing or contrasting people, places, events, and concepts</li> <li>• Converting information from one form to another</li> <li>• Giving an example</li> <li>• Classifying or sorting items into meaningful categories</li> <li>• Describing, interpreting, or explaining issues and problems, patterns, reasons, cause and effect, significance or impact, and points of view</li> </ul>	<ul style="list-style-type: none"> <li>• Engaging in low-level comprehension (right-there questions)</li> <li>• Making simple inferences</li> <li>• Using context clues</li> <li>• Predicting outcomes</li> <li>• Summarizing</li> <li>• Writing a first draft</li> <li>• Taking notes</li> <li>• Outlining</li> </ul>
<b>DOK 3</b>	<ul style="list-style-type: none"> <li>• Using evidence</li> <li>• Drawing conclusions</li> <li>• Applying concepts to new situations</li> <li>• Using concepts to solve problems</li> <li>• Analyzing similarities and differences in issues and problems</li> <li>• Proposing and evaluating solutions to problems</li> <li>• Recognizing and explaining misconceptions</li> <li>• Making connections across time and place to explain a concept</li> </ul>	<ul style="list-style-type: none"> <li>• Explaining, generalizing, or connecting ideas</li> <li>• Understanding how author’s purpose affects the text</li> <li>• Summarizing info from several sources</li> <li>• Identifying abstract themes</li> <li>• Writing for different purposes</li> <li>• Demonstrating awareness of audience</li> <li>• Using complex structures and ideas in writing</li> </ul>
<b>DOK 4</b>	<ul style="list-style-type: none"> <li>• Analyzing and synthesizing information from multiple sources</li> <li>• Examining and explaining alternate perspectives</li> <li>• Illustrating how common themes and concepts are found across time and place</li> <li>• Making predictions with evidence</li> <li>• Developing a logical argument</li> <li>• Planning and developing solutions to problems</li> </ul>	<ul style="list-style-type: none"> <li>• Analyzing and synthesizing from multiple sources</li> <li>• Explaining alternate perspectives from a variety of sources</li> <li>• Defining similar themes over a variety of texts</li> <li>• Writing with voice</li> <li>• Writing with information from a variety of sources</li> </ul>

Level	Math	Science
<b>DOK 1</b>	<ul style="list-style-type: none"> <li>• Knowing math facts</li> <li>• Applying an algorithm or formula</li> </ul>	<ul style="list-style-type: none"> <li>• Defining</li> <li>• Completing simple (one step) procedures</li> <li>• Knowing a formula</li> <li>• Representing in words or diagrams a concept or relationship</li> </ul>
<b>DOK 2</b>	<ul style="list-style-type: none"> <li>• Making a decision about how to approach a problem</li> <li>• Solving at least two-step problems</li> <li>• Interpreting info from tables or graphs (simple)</li> </ul>	<ul style="list-style-type: none"> <li>• Specifying and explaining the relationship between facts, terms properties, or variables</li> <li>• Describing and explaining examples and non-examples of science concepts</li> <li>• Selecting a procedure according to specified criteria and performing it</li> <li>• Formulating routine problems given data and conditions</li> <li>• Organizing, representing, and interpreting data</li> </ul>
<b>DOK 3</b>	<ul style="list-style-type: none"> <li>• Making conjectures</li> <li>• Drawing conclusions</li> <li>• Justifying reasoning especially when tasks have more than one right answer</li> <li>• Citing evidence</li> </ul>	<ul style="list-style-type: none"> <li>• Explaining the reasoning for an answer</li> <li>• Identifying research questions and designing investigations for a scientific problem</li> <li>• Solving non-routine problems</li> <li>• Developing a scientific model for a complex situation</li> <li>• Forming conclusions from experimental data</li> </ul>
<b>DOK 4</b>	<ul style="list-style-type: none"> <li>• Requiring complex thinking over a period of time (with different tasks)</li> <li>• Requiring planning</li> <li>• Making connections between a finding and related concepts</li> <li>• Critiquing design</li> </ul>	<ul style="list-style-type: none"> <li>• Using complex reasoning, experimental design, and planning</li> <li>• Deducting the fundamental relationship between several controlled variables based on provided data from a complex experiment novel to the student</li> <li>• Conducting an investigation, from specifying a problem to designing and carrying out an experiment, to analyzing its data and forming conclusions</li> </ul>

## Choosing an Appropriate Assessment

Type of Assessment	Examples in Practice	Advantages	Disadvantages
<b>Selected Response</b>			
<b>Constructed Response</b>			
<b>Performance</b>			
<b>Performance Task</b>			

## Validity

Assessment items match what you have taught in both **content and rigor**. The assessment will tell you whether the students have learned the material you want them to learn.

## Reliability

The assessment tells you **with confidence** whether students are ready to move on or if they need more time and support. Can you rely on the information from the assessment to make decisions about what to do next for students?

### Does the Question Match the Learning Target?

Note similarities and differences in the point of view two different accounts of the same event represent.

#### 1. Multiple-Choice Question

Read these two newspaper articles about the wildfires in California. From what point of view is the first article written?

- a. First person
- b. Secondhand
- c. Third person
- d. Many different points of view

#### 2. Constructed-Response Question

Read these two newspaper articles written about the wildfires in California. In class, we talked about how details included in the first person account are different from those in a third person account. Explain how the author's point of view affects what details you see in the article. (clear rubric provided)

## Making Assessments Valid

1. Unwrap standards into learning targets to clearly uncover the important knowledge and skills you want to teach and assess and identify the DOK level of each target.
2. Create an assessment planning chart to ensure you have assessed each of those targets at the level you expect students to reach.

**Assessment Planning Chart**

<b>Content or Targets</b>	<b>Level of Cognitive Demand</b>				<b>What will proficiency look like?</b>
	<b>Knowledge Retrieval DOK 1</b>	<b>Comprehension Application DOK 2</b>	<b>Analysis DOK 3</b>	<b>Evaluation or Knowledge Utilization DOK 4</b>	

Assessment Planning Chart				
Content or Targets	Level of Cognitive Demand			
	Knowledge Retrieval DOK 1	Comprehension Application DOK 2	Analysis DOK 3	Evaluation or Knowledge Utilization DOK 4
Delineate the argument and specific claims in a text.		4 Multiple Choice		3 of 4 Correct
Assess whether the reasoning is sound.			1 Constructed Response	"Proficiency" on the Rubric

## Assessment Planning

- Identify the specific targets to be assessed. (One or two work best.)
- Determine the level of cognitive demand. (What kind of thinking is required?)
- Decide what type of assessment items and how many to use.
  - Selected response for knowledge, application, analysis
  - Constructed response for higher level
- Consider how much time the assessment will take.

## What Targets Do We Choose?

- Targets that are essential for student learning
- Targets that are difficult or that lead to misconceptions
- Targets that are prerequisite to future learning
- Targets that are absolutely necessary for students to know

## Scoring Guide

- The team should develop a scoring guide when they are writing the assessment.
- The guide should list the correct answers and possibly predict wrong answers.
- The team should agree on how they will score the assessment—what does the student have to demonstrate for proficiency?

## Why No Cut Score?

- A cut score is identified when developing a summative assessment. For example, 90-100 is an A, 70% is proficient on this test.
- For formative assessments the team looks at learning targets separately to assure student learning.

## Making Assessments Reliable

1. Review the assessment plan to make sure you have enough items for each target so students aren't able to guess the answers and appear *proficient* or misread the items and appear *not proficient*.
2. Ensure items are constructed with good format to minimize misunderstanding or guessing.

**Fourth Grade Math Learning Target:** Solve math problems involving multiplication of a fraction by a whole number.

1.  $6 \times 1/4 =$

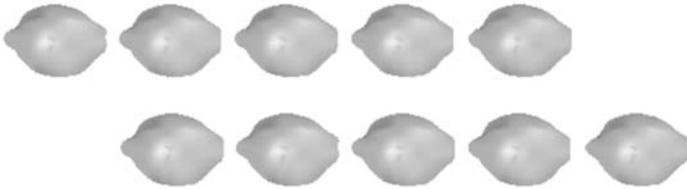
2.  $3 \times 2/5 =$

3.  $5 \times 1/2 =$

4.  $10 \times 1 \frac{1}{2} =$

**Fourth Grade Math Learning Target:** Solve word problems involving multiplication of a fraction by a whole number.

Liam is making lemonade. He needs 16 ounces of lemon juice. He has 10 lemons.



Each lemon makes about  $1 \frac{1}{2}$  ounces of lemon juice. Will he have enough lemon juice? Draw a picture to show your thinking and explain in words how you know.

Picture:

Explanation:

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**Scoring Rubric**

Proficient	Partially Proficient	Not Proficient
The student solves the problem correctly and is able to show an appropriate solution pathway explaining their answer.	The student does not show complete understanding of the learning target. (S)he either makes an error in executing the process; or solves the problem correctly, but doesn't provide an explanation of how.	The student doesn't show any understanding of the learning target. (S)he either chooses an inappropriate solution pathway or provides an explanation that shows misunderstanding of the problem.

## Grade 8 ELA Common Formative Assessment

Learning Target: Delineate the argument and specific claims in a text.

In his column, *The Easy Problem*, David Brooks lays out the argument that immigration is an easy problem to solve. What are the claims he provides to support his argument?

- a. Immigration helps our economy.
- b. Immigration is the moral thing to do.
- c. The United States is a country of immigrants.
- d. Immigration helps more people than it hurts.

What evidence does David Brooks provide to support his claim that fears associated with immigration are overblown?

- a. Immigrants pay more in taxes than they cost in benefits.
- b. Immigrants are less likely to end up in prison than native-born Americans.
- c. Immigrants don't lower the wages paid to Americans.
- d. All of the above

What is David Brooks' perspective on this issue of immigration?

- a. Illegal immigrants take jobs away from native born Americans.
- b. Immigrants should learn and speak English.
- c. Native born Americans should be paid higher wages than immigrants
- d. Immigration is our best chance to help keep America's economy thriving.

Learning Target: Assess whether the reasoning is sound

Read the attached argument about immigration written by an editor from the New York Times.

Identify the specific claims the author is making and for each claim determine what evidence is provided. For each claim evaluate whether the evidence used is relevant and sufficient.

Claim	Evidence Provided	Relevant Y or N	Sufficient Y or N
1.			
2.			
3.			

	Proficient	Partially Proficient	Not Proficient
Assess whether the reasoning is sound	The student is able to list the claims the author makes and the ways (s)he develops the reasoning for the claims made. Sound reasoning relies on facts and data to support a claim rather than on opinions and rhetoric.	The student is able to list the evidence the author uses, but is unable to evaluate the quality the reasoning.	The response is incomplete or incorrect.

### The Easy Problem

New York Times, January 31, 2013

Over here in the department of punditry, we deal with a lot of hard issues, ones on which the evidence is mixed and the options are all bad. But the immigration issue is a blessed relief. On immigration, the evidence is overwhelming; the best way forward is clear.

The forlorn pundit doesn't even have to make the humanitarian case that immigration reform would be a great victory for human dignity. The cold economic case by itself is so strong.

Increased immigration would boost the U.S. economy. Immigrants are 30 percent more likely to start new businesses than native-born Americans, according to a research summary by Michael Greenstone and Adam Looney of The Hamilton Project. They are more likely to earn patents. A quarter of new high-tech companies with more than \$1 million in sales were also founded by the foreign-born.

A study by Madeline Zavodny, an economics professor at Agnes Scott College, found that every additional 100 foreign-born workers in science and technology fields is associated with 262 additional jobs for U.S. natives.

Thanks to the labor of low-skill immigrants, the cost of food, homes and child care comes down, living standards rise and more women can afford to work outside the home.

The second clear finding is that many of the fears associated with immigration, including illegal immigration, are overblown.

Immigrants are doing a reasonable job of assimilating. Almost all of the children of immigrants from Africa and Asia speak English and more than 90 percent of the children of Latin-American immigrants do. New immigrants may start out disproportionately in construction and food-service jobs, but, by second and third generation, their occupation profiles are little different from the native-born.

Immigrants, including illegal immigrants, are not socially disruptive. They are much less likely to wind up in prison or in mental hospitals than the native-born.

Immigrants, both legal and illegal, do not drain the federal budget. It's true that states and localities have to spend money to educate them when they are children, but, over the course of their lives, they pay more in taxes than they receive in benefits. Furthermore, according to the Congressional Budget Office, giving the current illegals a path to citizenship would increase the taxes they pay by \$48 billion and increase the cost of public services they use by \$23 billion, thereby producing a surplus of \$25 billion.

It's also looking more likely that immigrants don't even lower the wages for vulnerable, low-skill Americans. In 2007, the last time we had a big immigration debate, economists were divided on this. One group, using one methodology, found immigration had a negligible effect on low-skill wages. Another group, using another methodology, found that the wages of the low-skilled were indeed hurt.

Since then, as Heidi Shierholz of the Economic Policy Institute explains, methodological advances suggest that the wages of most low-skill workers are probably not significantly affected. It turns out that immigrant workers are not always in direct competition with native-born workers, and, in some cases, they push the native-born upward into jobs that require more communication skills.

Shierholz found that between 1994 and 2007 immigration increased overall American wages by a small amount (\$3.68 per week). It decreased the wages of American male high school dropouts by a very small amount (\$1.37 per week). And it increased the wages of female high school dropouts by a larger amount (\$4.19 per week).

The argument that immigration hurts the less skilled is looking less persuasive.

Because immigration is so attractive, most nations are competing to win the global talent race. Over the past 10 years, 60 percent of nations have moved to increase or maintain their immigrant intakes, especially for high-skilled immigrants.

The United States is losing this competition. We think of ourselves as an immigrant nation, but the share of our population that is foreign-born is now roughly on par with Germany and France and far below the successful immigrant nations Canada and Australia. Furthermore, our immigrants are much less skilled than the ones Canada and Australia let in. As a result, the number of high-tech immigrant start-ups has stagnated, according to the Kauffman Foundation, which studies entrepreneurship.

The first big point from all this is that given the likely gridlock on tax reform and fiscal reform, immigration reform is our best chance to increase America's economic dynamism. We should normalize the illegals who are here, create a legal system for low-skill workers and bend the current reform proposals so they look more like the Canadian system, which tailors the immigrant intake to regional labor markets and favors high-skill workers.

The second big conclusion is that if we can't pass a law this year, given the overwhelming strength of the evidence, then we really are a pathetic basket case of a nation.

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