# Financial Literacy Education & the Common Core State Standards (CCSS) in Mathematics

Boston Federal Reserve Bank October 14, 2014

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## Common Core State Standards (CCSS)

- Developed by the National Governors Association and the Council of Chief State School Officers, NOT the federal government
- A set of rigorous academic standards in mathematics and English language arts/literacy (ELA) that outline learning goals for what a student should know and be able to do at the end of each grade.
- Voluntarily adopted by 45 states and the District of Columbia.
- The CCSS are a "Disruptive policy change" an opportunity to spur innovation and increase willingness/need to expend resources in order to align with these standards.
- Implementation of the CCSS, including assessments (e.g., Smarter Balance and PARCC), instructional materials, professional development and information technology (IT) spending, is expected to cost as much as \$15 billion dollars over the next 5 years.\*

<sup>\*</sup>Source: http://pioneerinstitute.org/download/national-cost-of-aligning-states-and-localities-to-the-common-corestandards/

## Importance of Financial Literacy

Americans' ability to build a secure future for themselves and their families requires the navigation of an increasingly complex financial system. As we recover from the worst economic crisis in generations, it is more important than ever to be knowledgeable about the consequences of our financial decisions. ... We recommit to improving financial literacy and ensuring all Americans have access to trustworthy financial services and products.

President Barack Obama Presidential Proclamation – National Financial Literacy Month, March 31, 2011

## Importance of Financial Literacy

Recent economic challenges have highlighted the importance of teaching our kids to understand personal finance. The day-to-day relevance of economic concepts and financial responsibility will only continue to increase as the world is rapidly transformed by science and technology. Providing students with the practical tools they need to apply that knowledge will help them succeed financially by creating businesses, driving innovation, and achieving personal dreams. Working together, we can infuse our classrooms with the necessary foundational capabilities and make financial education a centerpiece of our public and private agenda.

Richard D. Fairbank, Founder and CEO of Capital One.

## Importance of Financial Literacy

Financial literacy is strongly correlated with use of financial services, savings and retirement planning.

A compelling body of survey evidence from developed countries shows that households with low levels of financial literacy tend not to plan for retirement, borrow at higher interest rates, acquire fewer assets and participate less in the formal financial system relative to their more financially-literate counterparts.

Source: World Bank, May 2009.

## Economic/Financial Literacy Education

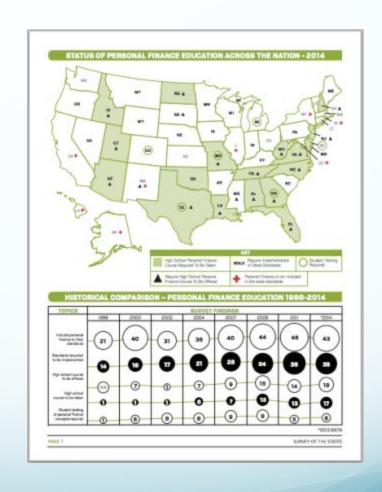
- For the first time all 50 states and DC include economics in the K-12 standards.
- 24 states require that a high school course in economics be offered.
- 22 states require that students take a course in economics.
- 62% of students on free & reduced lunch are taking an economics course (58% of students overall).



Source: Survey of the States, 2014, CEE.

## Economic/Financial Literacy Education

- 43 states include personal finance concepts in their standards.
- 35 states require that these standards are implemented.
- 19 states require that a high school course be offered.
- 17 states require that students take a course in personal finance in order to graduate.
- Only 6 states require testing of personal finance concepts.



Source: Survey of the States, 2014, CEE.

The OECD INFE (International Network on Financial Education) has defined financial literacy as follows: 'A combination of awareness, knowledge, skill, attitude and behaviour necessary to make sound financial decisions and ultimately achieve individual financial wellbeing.'

FLEC (The Financial Literacy Education Commission) of the US Treasury defines financial literacy as the ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial well-being and defines financial education as the process by which people improve their understanding of financial products, services and concepts, so they are empowered to make informed choices, avoid pitfalls, know where to go for help and take other actions to improve their present and long-term financial well-being.

The good news is that there is general agreement on what should be taught!

- 1 Treasury Core Competencies
- 2 JumpStart Coalition Standards
- (3) CEE National Standards
- 4 PISA Framework
- 5 NEFE HSFPP

### **Treasury Core Competencies**

Core concept	Knowledge	Action/behavior
Earning	Gross versus net pay Benefits and taxes	Understand your paycheck. Learn about potential benefits and taxes.
Spending	The difference between needs and wants	Invest in your future.  Develop a spending plan.  Track spending habits.  Live within your means.
		Understand the social and environmental impacts of your spending decisions.
Saving	Saved money grows	Start saving early. Pay yourself first.
	Know about transactional accounts (checking)	Understand and establish a relationship with the finan- cial system.
	Know about financial assets (savings accounts, bonds, stocks, mutual funds).	Comparison shop. Balance risk and return.
	How to meet long-term goals and grow your wealth	Save for retirement, child's education, and other needs. Plan for long-term goals. Track savings and monitor what you own.
Borrowing	If you borrow now, you pay back more later. The cost of borrowing is based on how risky the lender thinks	Avoid high cost borrowing, plan, understand, and shop around.
	you are (credit score).	Understand how information in your credit score affects borrowing.
		Plan and meet your payment obligations.  Track borrowing habits.  Analyze renting versus owning a home.
Protect	Act now to protect yourself from potential catastrophe later.	Choose appropriate insurance. Build up an emergency fund.
	Identity theft/fraud/scams	Shop around. Protect your identity. Avoid fraud and scams.
		Review your credit report.

Source: Federal Register / Vol. 75, No. 165 / Thursday, August 26, 2010 / Notices

### **Jumpstart Standards**

Financial Responsibility and Decision Making

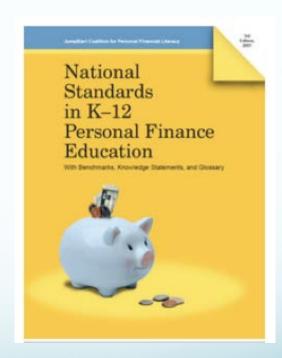
Income and Careers

Planning and Money Management

Credit and Debt

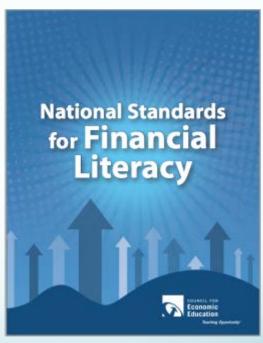
Risk Management and Insurance

Saving and Investing



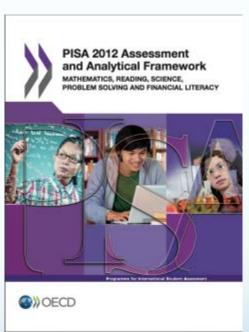
CEE (Council for Economic Education)
National Standards for Financial Literacy

- Earning Income
- Buying Goods and Services
- Using Credit
- Saving
- Financial Investing
- Protecting and Insuring



PISA (Programme for International Student Assessment) 2012 Financial Literacy Framework

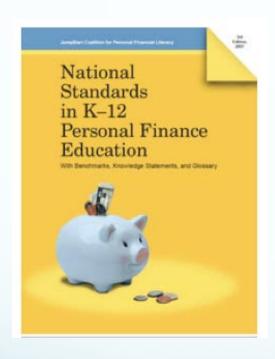
- money and transactions
- planning and managing finances
- risk and reward
- financial landscape

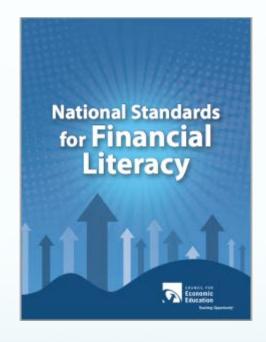


NEFE (National Endowment for Financial Education)

Module Topics	Learning Outcomes
1. Money Management	Manage your spending.
2. Borrowing	Control your credit and debt.
3. Earning Potential	Boost your earning capacity.
4. Investing	Make the most of your financial resources.
5. Financial Services	Choose financial services that are right for you.
6. Insurance	Protect your financial resources.

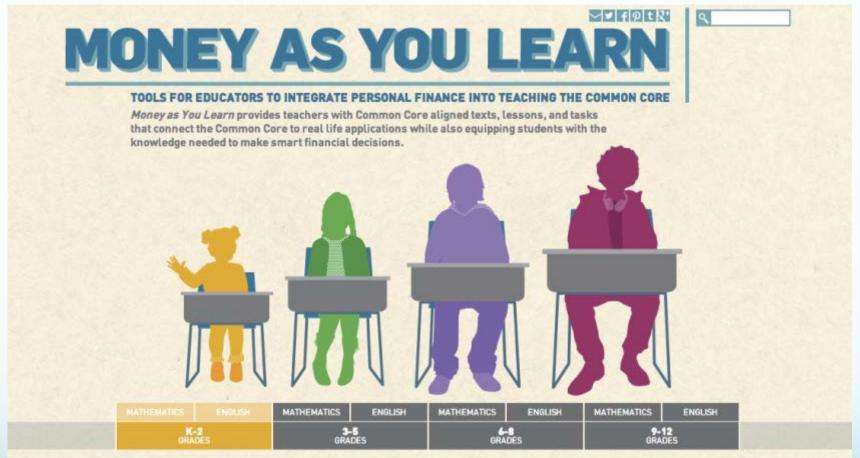
Source: www.HSFPP.org





Council for Economic Education published the new National Standards for Financial Literacy, there have been some questions about the existence of multiple sets of standards. Jump\$tart is pleased to be working with CEE on a plan to coordinate efforts. As we execute our plan to collaborate. Jump\$tart's National Standards in K-12 Personal Finance Education remain available online and through the Federal Citizen Information Center. We look forward to bringing you updates on our progress in the near future.

## Financial Literacy - Big Ideas



Money as You Learn was developed based on the recommendation of the President's Advisory Council on Financial Capability. This is not a United States Government website and the content on this site does not represent official policies of the United States Government or the United States Department of Treasury.

## Financial Literacy – Big Ideas

### WHAT ARE PERSONAL FINANCE BIG IDEAS?

ESSENTIAL PERSONAL FINANCE CONCEPTS THAT CAN BE INTEGRATED INTO TEACHING OF THE COMMON CORE

Personal Finance Big Ideas are critical aspects of personal finance that can be appropriately integrated into teaching the Common Core State Standards and can lead to increases in young people's financial capability.

#### PERSONAL FINANCE BIG IDEAS:

- Generate action or fuller understanding. For example, an understanding of compound interest can lead to the actions of savings and reducing debt.
- Focus on important personal finance knowledge and skills our students must acquire to be financially capable young adults
- Draw from the best existing guidance to the field. Sources include the Council for Economic Education's recently released National Standards for Personal Finance, the National Standards in K-12 Personal Finance Education Standards housed at Jump\$tart, the Pisa Financial Literacy Assessment Framework, Money as You Grow and other resources.



UNDERSTANDING	LEADS TO THESE	GRADE BAND COVERAGE		AGE	
CONCEPTS	ACTIONS	K-2	3-5	6-8	9-12
Compound Interest	Saving and understanding the importance of starting early Debt management	Z Z	881	<b>3</b> 2	32
Opportunity Cost	Effective decision-making Recognition of options foregone	388	<b>3</b> 3		
Value of Education	Investment in variety of human capital	333	38	38	355
Risk	Diversification of portfolio Understanding appropriate levels of protection Purchase of insurance products			<b>38</b>	<b>3</b> 8
What Is Money	Ability to use money Understanding value of money	<b>3</b> 2	33	28	
Time Value of Money	More informed purchasing More appropriate investing Ability to use time horizon to plan			<b>3</b> 2	38
Cost/Benefit Analysis	Better decision-making	33	33	200	388
Debt	Its appropriate use in investment in education, housing, and purchasing		<b>3</b> 2	88	355
Setting Goals	Purposeful, more achievable outcomes	<b>3</b> 3	<b>3</b> 2	88	38
Delayed Gratification	Ability to consume things in the future that are unattainable in the present	32	<b>3</b> 2	88	35
Scarcity	Acknowledging limitations and making choices	88	33	38	355
Inflation	Ability to mitigate its effects with respect to investments, assumption of debt, and purchasing decisions	38	<b>3</b> 2	22	38

Financial Literacy is an effective, rich and relevant context to teach and assess the math common core.

Compound Interest	Saving and understanding the importance of starting early Debt management
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### Standards by Domain

Counting & Cardinality

Operations & Algebraic Thinking

Number & Operations in Base Ten

Number & Operations—Fractions

Measurement & Data

Geometry

Ratios & Proportional Relationships

The Number System

**Expressions & Equations** 

**Functions** 

Statistics & Probability

### Source:

http://www.moneyasyoulearn.org/ideas/

### **MATHEMATICS**

Money as You Learn shows the areas for integration of personal finance and teaching of Common Core State Standards for Mathematics by grade band. All mathematics tasks were collaboratively developed with Illustrative Mathematics, which provides guidance to states, assessment consortia, testing companies, and curriculum developers by illustrating the range and types of mathematical work that students experience in a faithful implementation of the Common Core State Standards, and by publishing other tools that support implementation of the standards. The tasks are also available at http://illustrativemathematics.org and are tagged "financial literacy."

## Financial Literacy & Math CCSS by Standard

VIEW BY PERSONAL FINANCE BIG IDEAS		
VIEW BY COMMON CORE		
K. HID. 3	CLASSIFY/COUNT/SORT	
K.CC.6	ID >, <, = GROUPS	
K.0A.2	+,- AND WITHIN 10	
1.0A.A	REPRESENT AND SOLVE WITH +/-	
1.MD.C	REPRESENT AND INTERPRET	
2.0A.A	REPRESENT & SOLVE WITH +/-	
2.MD.C	WORK WITH TIME AND MONEY	
2.MD.8	SOLVE WORD PROBLEMS WITH MONETARY UNITS	
	DRAW PICTURE AND BAR GRAPH TO REPRESENT / SOLVE SIMPLE PROBLEMS USING BAR GRAPH	
2.0A.C	WORK WITH EQUAL GROUPS OF OBJECTS TO GAIN FOUNDATIONS FOR MULTIPLICATION	
2.NBT.	UNDERSTAND PLACE VALUE	
2.HOT.0	USE PLACE VALUE UNDERSTANDING AND PROPERTIES OF OPERATIONS TO ADD AND SUBTRACT	

### K-2 GRADES MATHEMATICS

Money as You Learn provides teachers with Common Core aligned texts, lessons, and tasks that connect the Common Core to real-life applications while also equipping students with the knowledge needed to make smart financial decisions.

#### MONEY AS YOU LEARN SHOWS:

- The specific mathematics standards for which tasks and lessons using personal finance content can engage students and strengthen learning;
- The Personal Finance Big Ideas appropriate for K-2 students starting on their path to be financially capable young people;
- Mathematical tasks, which can be sorted by Standard and by Personal Finance Big Ideas, that illustrate key shifts called for by the Standards, including application of knowledge in realworld settings.

To get started, use the sidebar to view tasks by Personal Finance Big Ideas or Common Core Standard.

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TERMS OF USE PRIVACY POLICY

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## Financial Literacy & Math CCSS by Personal Finance Big Idea

VIEW BY PERSONAL FINANCE BIG IDEAS

VIEW BY COMMON CORE

COST/BENEFIT ANALYSIS

DELAYED GRATIFICATION

INFLATION

**OPPORTUNITY COST** 

SCARCITY

SETTING GOALS

VALUE OF EDUCATION

WHAT IS MONEY

### K-2 GRADES MATHEMATICS

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VIEW BY PERSONAL FINANCE BIG IDEAS		
VIEW BY COMMON CORE		
3.0A.3	USE X AND + WITHIN 100 TO SOLVE EQUAL GROUPS	
3.0A.S	SOLVE 2-STEP WORD PROBLEMS USING LETTER FOR UNKNOWN	
3.MD.3	DRAW SCALED GRAPH TO REPRESENT DATA WITH SEVERAL CATEGORIES	
3. NBT. A	USE PLACE VALUE UNDERSTANDING AND PROPERTIES OF OPERATIONS TO PERFORM MULTI-DIGIT ARITHMETIC	
4.0A.A	USE 4 OPERATIONS WITH WHOLE #S	
	RELATIVE SIZES OF MEASUREMENT	
	USE 4 OPERATIONS TO SOLVE PROBLEMS WITH MONEY WITH FRACTIONS/DECIMALS	
	OPERATIONS WITH MULTI- DIGIT WHOLE #5 AND DECIMALS TO HUNDREDTHS	
	CONVERT LIKE MEASUREMENT UNITS	
S.NET	UNDERSTAND THE PLACE VALUE SYSTEM AND PERFORM OPERATIONS WITH MULTI-DIGIT WHOLE NUMBERS AND WITH DECIMALS TO HUNDREDTHS	

### 3-5 GRADES MATHEMATICS

Money as You Learn provides teachers with Common Core aligned texts, lessons, and tasks that connect the Common Core to real-life applications while also equipping students with the knowledge needed to make smart financial decisions.

#### MONEY AS YOU LEARN SHOWS:

- The specific mathematics standards for which tasks and lessons using personal finance content can engage students and strengthen learning;
- The Personal Finance Big Ideas appropriate for Grade 3-5 students students as they make age-appropriate financial decisions and build the skills they will need in young adulthood;
- Mathematical tasks, sorted by Standard and by Personal Finance Big Ideas, that illustrate key shifts called for by the Standards, including application of knowledge in real-world settings.

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VIEW BY	Y PERSONAL FINANCE BIG	6-8 GRADES	
IDEAS		6-8 GRADES MATHEMATICS	
VIEW BY	Y COMMON CORE		
	USE VARIABLES TO REPRESENT 2 QUANTITIES, INDEPENDENT AND 9: Use variables to represer	Money as You Learn provides teachers with Common Core aligned and tasks that connect the Common Core to real-life applications we equipplies students with the knowledge needed to make smart finar	hile also
1400400712441	pendent and dependent var	iables	
	WORLD PROBLEMS	HONET AS TOU LEARN SHOWS:	
6.NS.5	POSITIVE/NEGATIVE HS	<ul> <li>The specific mathematics standards for which tasks and lessons using personnent can engage students and strengthen learning;</li> </ul>	onal finance
5. EE. 1	WRITE/EVALUATE USING WHOLE # EXPONENTS	<ul> <li>The Personal Finance Big Ideas appropriate for 6-8 students as they mak financial decisions and build the skills they will need in young adulthood;</li> </ul>	e age-appropriate
. EEL.2	WRITE, READ, EVALUATE EXPRESSIONS WHERE LETTERS STAND FOR #S	Mathematical tasks, sorted by Standard and by Personal Finance Big Ideas shifts called for by the Standards, including application of knowledge in real	
i.sp	STATISTICS AND PROBABILITY	To get started, use the sidebar to view tasks by Personal Fin	ance Big Ideas
MS.2	FLUENTLY DIVIDE MULTI- DIGIT NUMBERS USING THE STANDARD ALGORITHM	or Common Core Standard.	
3	FLUENTLY ADD, SUBTRACT, MULTIPLY, AND DIVIDE MULTI-DIGIT DECIMALS USING THE STANDARD ALGORITHM FOR EACH OPERATION	Money as You Learn was developed based on the recommendation of the President's Advisory Council on Financial Capability. This is not a United States Government website and the content on this site does not represent official policies of the United States Government or the United States Department of Treasury.	PRIVACY POLIC
	USE PROPORTIONAL RELATIONSHIPS TO SOLVE MULTISTEP RATIO AND PERCENT PROBLEMS		
1	SOLVE REAL-LIFE PROBLEMS USING # AND ALGEBRAIC EXPRESSIONS AND EQUATIONS		
	STATISTICS AND PROBABILITY		
9	INTEGER POWER OF 10 TO ESTIMATE LARGE/SMALL QUANTITIES		
E.4	SCIENTIFIC NOTATION AND DECIMALS		
61	CONNECTIONS BETWEEN PROPORTIONAL RELATIONSHIPS, LINES, AND LINEAR EQUATIONS		
EFG	LINEAR FOLIATIONS		

www.moneyasyoulearn.org

VIEW BY P	ERSONAL	FINANCEBIG
IDEAS		

IUEAS	
VIEW BY	COMMON CORE
N-G-A	REASON QUANTITATIVELY AND USE UNITS
CED.A	CREATE EQUATIONS THAT DESCRIBE #S OR RELATIONSHIPS (ESP. STD. 1)
A- RELD	REPRESENT/SOLVE EQUATIONS AND INEQUALITIES GRAPHICALLY (ESP. STD. 11)
F-IF.B	INTERPRET FUNCTIONS FROM APPLICATIONS
F-IF.C	ANALYZE FUNCTIONS
F- BF-A	BUILD FUNCTION THAT MODELS RELATION BETWEEN 2 QUANTITIES
F-LE	LINEAR, QUADRATIC, EXPONENTIAL
S-ID	INTERPRET CATEGORICAL AND QUANTITATIVE DATA
S-IC.B	MAKE INFERENCES FROM SURVEYS, ETC.
S-MB	USE PROBABILITY TO EVALUATE OUTCOMES OF DECISIONS
A-SSE	INTERPRET THE STRUCTURE OF EXPRESSIONS AND WRITE

EXPRESSIONS IN EQUIVALENT FORMS TO SOLVE PROBLEMS

### 9-12 GRADES Mathematics

Money as You Learn provides teachers with Common Core aligned texts, lessons, and tasks that connect the Common Core to real-life applications while also equipping students with the knowledge needed to make smart financial decisions.

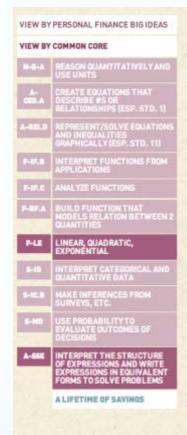
#### MONEY AS YOU LEARN SHOWS:

- The specific mathematics standards for which tasks and lessons using personal finance content can engage students and strengthen learning;
- The Personal Finance Big Ideas appropriate appropriate to High School students preparing to make significant financial decisions such as paying for college, setting career goals, managing credit, or selecting a cell phone plan.
- Mathematical tasks, sorted by Standard and by Personal Finance Big Ideas, that illustrate key shifts called for by the Standards, including application of knowledge in real-world settings.

To get started, use the sidebar to view tasks by Personal Finance Big Ideas or Common Core Standard.

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TERMS OF USE



#### A-SSE A LIFETIME OF SAVINGS

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#### PERSONAL FINANCE BIG IDEAS TAUGHT IN THIS TASK:

Compound Interest

#### TASK

For 70 years, Oseola McCarty earned a living washing and ironing other people's clothing in Hattlesburg, Mississippi. Although she did not earn much money, she budgeted her money wisely, lived within her means, and began saving at a very young age. Before she died, she drew worldwide attention by donating \$150,000 to the University of Southern Mississippi for a scholarship fund in her name. The fact that Ms. McCarty was able to save so much money and generously gave it away is an inspiration to many others. She was honored with the Presidential Citizens Medal for her generosity. How did she do it?

Let's assume that she saved the same amount at the end of each year and invested it in a savings account earning 5% per year compounded annually. (When you contribute the same amount each year to an account it is called an annulty.) How much do you think Ms. McCarty would have to save each year in order to accumulate \$150,000 over a 70-year period?

- A. Before we figure it out, take a guess.
  - \$100
  - \$250
  - · \$500
  - . \$1,000
  - \$2,000
- B. Suppose Ms. McCarty saved \$100 and then deposited it at the end of the year in an account that earns 5% interest, compounded annually.
  - How much will it be worth at the end of the second year? At the end of the third year? At the end of the 70th year?
  - Write an expression that represents the value of an investment of C dollars after 70 years. Assume as above that it is deposited at the end of the first year in an account that earns 5% interest, compounded annually.

### Financial Literacy – Companion Site



## Financial Literacy Assessment

### Role of assessment

- Recall that only 6 states require testing of personal finance concepts, even though 43 states include personal finance concepts in their standards, 35 states require that these standards are implemented, 19 states require that a high school course be offered and 17 states require that students take a course in personal finance in order to graduate.
- Florida is the first state to formally adopt a comprehensive set of financial literacy standards (CEE).

## Financial Literacy Assessment

### Role of assessment

- Financial Literacy education will only work if districts and schools are accountable.
- Standardized assessments set clear expectations for students and teachers and also for content developers.
- Results can provide a baseline on which to measure progress, can inform future instruction and curriculum development, and can help target and tailor resources to the most at risk and vulnerable students.
- Do we need a comprehensive national assessment in financial literacy?