

Assess It



Jim
Lengel

Tuesday, October 13, 2009

Assess It

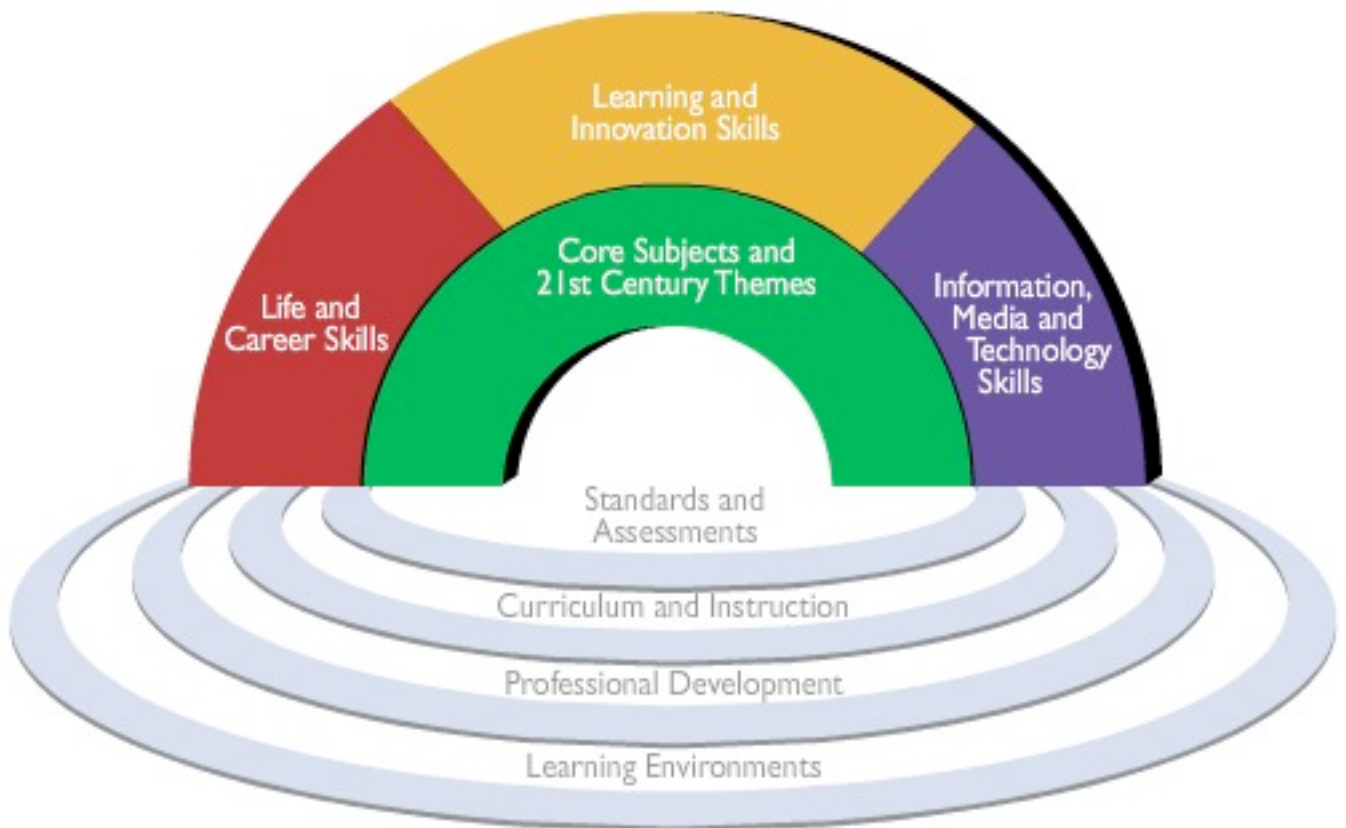
by Jim Lengel, Hunter College School of Education

If you don't test for it, why do you teach it?

If it's not on the exam, why should I learn it?

If we're not held accountable for it, why do we waste our time on it?

Last week's article looked at the nature of educational assessment and its effect on the learning of 21st-century skills and the use of technology. See *A Grain of Salt*. This week we take this concept a step further, and propose a scheme for assessing 21st-century skills, and employing digital technology fully in the process.



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Though many schools today claim to develop 21st-century, technology-using skills in their students, few assess them with any regularity.



Grade 3

Unit 1

Reading and Language Arts

Lesson 2a Language Arts Skills

SAT Practice Questions Student-Produced Responses: Directions

Directions: For Student-Produced Response questions 9-18, use the grids at the bottom of the answer sheet page on which you have answered questions 1-8.

Each of the remaining 10 questions requires you to solve the problem and enter your answer by marking the circles in the special grid, as shown in the examples below. You may use any available space for scratchwork.

Write answer in boxes.

Answer: $\frac{7}{12}$

	7	/	1	2
	○	○	○	○
1	○	○	○	○
2	○	○	○	○
3	○	○	○	○
4	○	○	○	○
5	○	○	○	○
6	○	○	○	○
7	○	○	○	○
8	○	○	○	○
9	○	○	○	○

Grid in result.

Answer: 2.5

	2	.	5
	○	○	○
1	○	○	○
2	○	○	○
3	○	○	○
4	○	○	○
5	○	○	○
6	○	○	○
7	○	○	○
8	○	○	○
9	○	○	○

Decimal point

Answer: 201
Either position is correct.

	2	0	1
	○	○	○
1	○	○	○
2	○	○	○
3	○	○	○
4	○	○	○

	2	0	1
	○	○	○
1	○	○	○
2	○	○	○
3	○	○	○
4	○	○	○

Note: You may start your answers in any column, space permitting. Columns not needed should be left blank.

• Mark no more than one circle in any column.

• **Decimal Answers:** If you obtain a decimal answer

best
ices into
big, flat
etc.
g, flat
as new.
big flat
too.

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Instead, they administer the tests they always have: the state mastery test, the CTBS or the Iowa Test, the PSAT and SAT, and the Regents. Upon the scores from these tests they measure their success. And as we learned last week, these assessments measure but a small subset of what students needed to know in the 20th century, and little or nothing of what they need to know today. Or tomorrow.

21st-century skills

1. Define
2. Teach
3. Assess

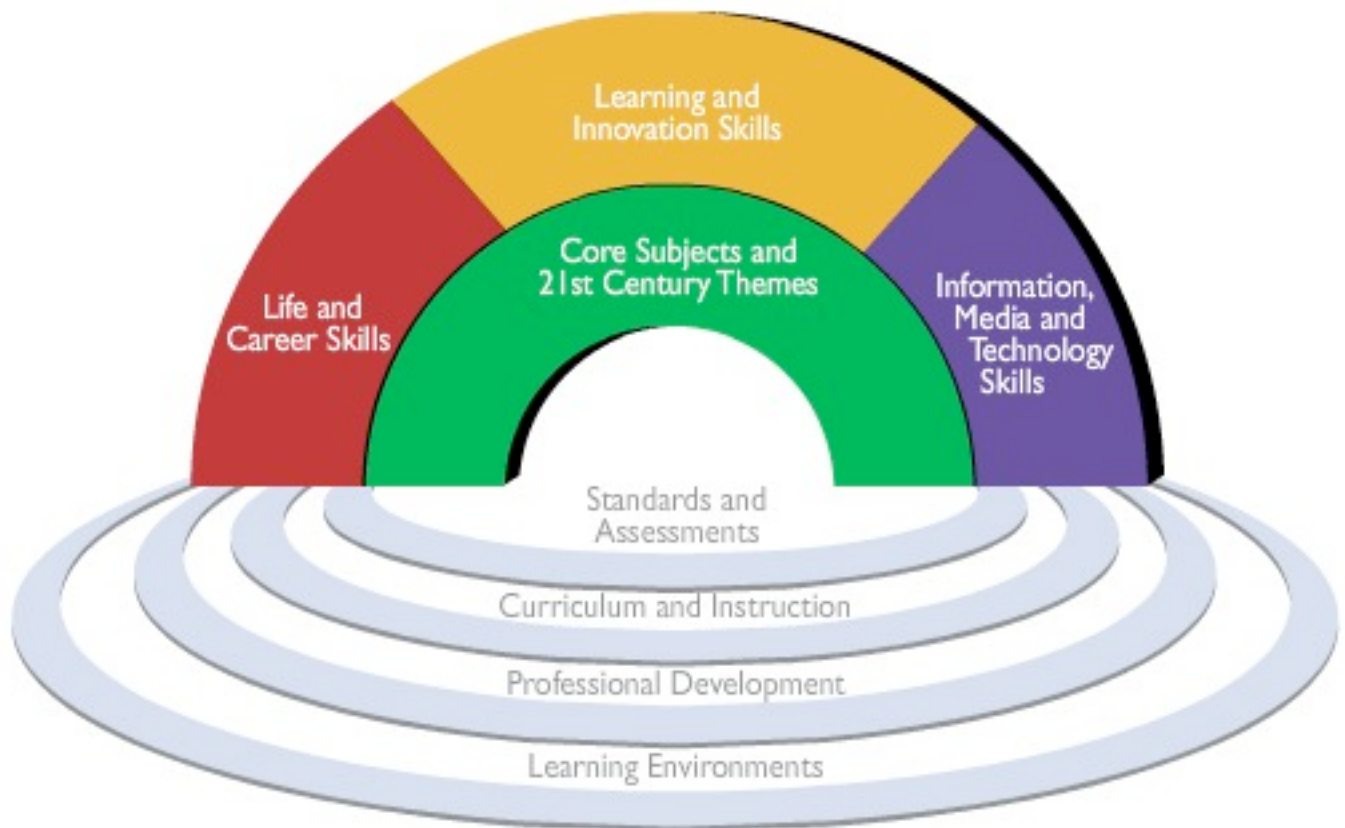
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If we want to test tomorrow's skills, we need to start today. First, we need to define what those skills are; second we need to teach those skills to the students; and third, we need to see if they've learned them.

Define



PARTNERSHIP FOR
21ST CENTURY SKILLS



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Define the Skills

You may spend several weeks or years coming up with your own list of 21st-century skills or technology competencies; or you may piggy-back on the work of colleagues who have already done this. For a good list of 21st-century skills, look to the Partnership for 21st-Century Skills; for a list of technology competencies, check out what the faculty of Hunter College has done. Either way, you need a compact, pithy list, one that students and teachers can understand easily.

21st-Century Skills

English language arts	Communicate Clearly
World languages	Collaborate with Others
Arts	Access and Evaluate Information
Mathematics	Use and Manage Information
Economics	Analyze Media
Science	Create Media Products
Geography	Apply Technology Effectively
History	Adapt to Change
Government and Civics	Be Flexible
Global Awareness	Manage Goals and Time
Business Literacy	Work Independently
Civic Literacy	Be Self-directed Learners
Health Literacy	Interact Effectively with Others
Think Creatively	Work Effectively in Diverse Teams
Work Creatively with Others	Manage Projects
Implement Innovations	Produce Results
Reason Effectively	Guide and Lead Others
Use Systems Thinking	Be Responsible to Others
Make Judgments and Decisions	
Solve Problems	

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Teach the Skills

There's no sense in measuring these new skills if you haven't first taught them. And given students a chance to learn them. You will find that you have been teaching many of these 21st-century skills all along -- it's just that you weren't testing them in any formal way. So somehow you must make sure that the new skills and new technologies are embedded into every course in every classroom. Before you start assessing, give the faculty a chance to adjust the curriculum to focus on the new skills.

Assess

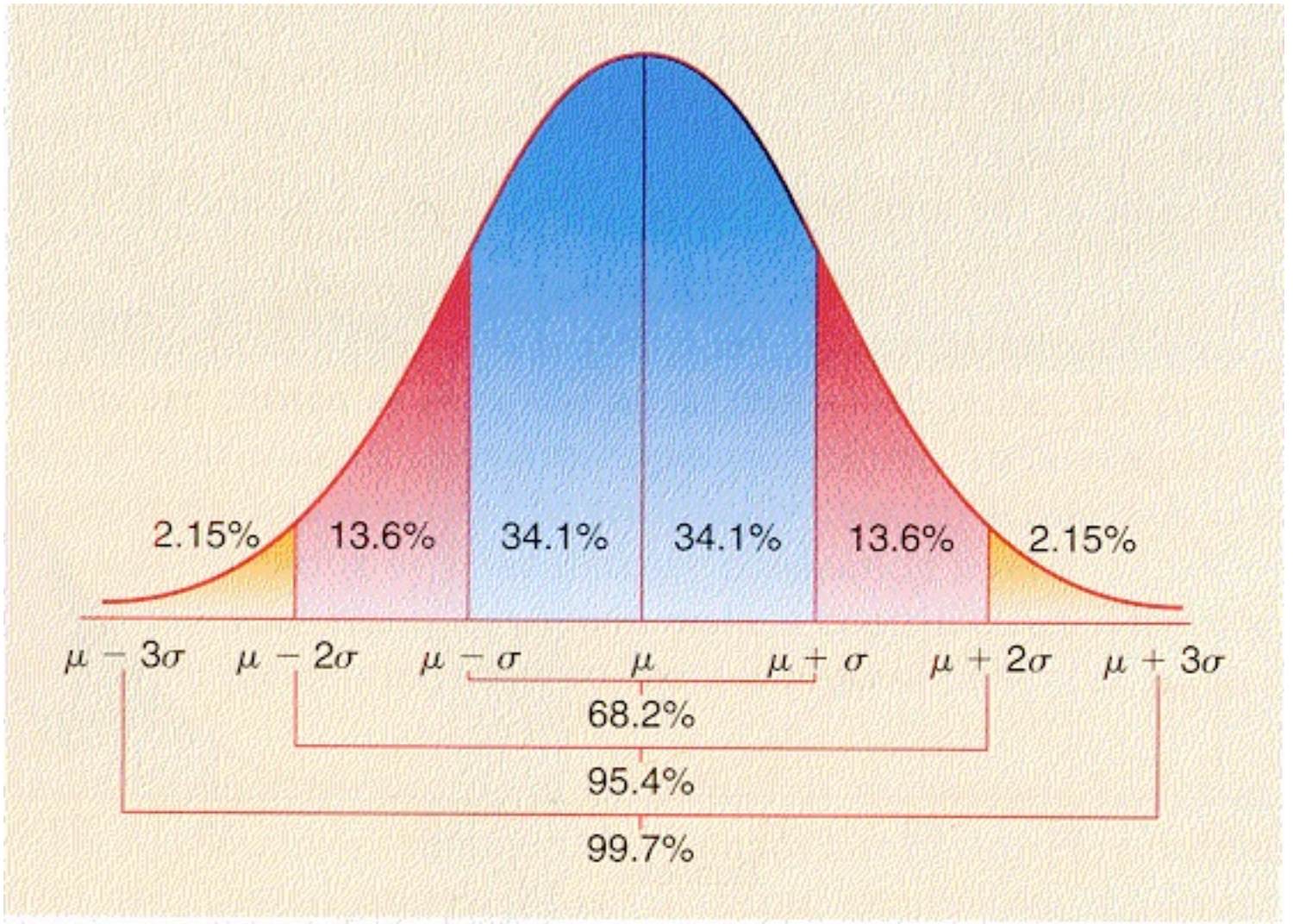


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Assess the Skills

Don't fall into the salt mine as you do this.

Assess



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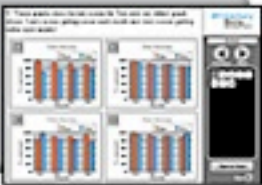
Don't look for a single, 15-minute test that gives you a nice, neat score on 21st-century skills. Many vendors would like to sell this to you. Don't bite.

21st Century Skills assessment

Question Types



Sample Tests



Sample Reports



Portfolio Assessment



Request Information and/or Consultation



21st Century Skills Assessment

Valid Data and ISTE NETS-S Aligned

Learning.com's 21st Century Skills Assessment provides psychometrically valid data on how well your students grasp critical 21st century skills, and is fully aligned to the ISTE NETS-S 2007 refreshed standards.

21st Century Skills Assessment:

- Psychometrically valid data
- Fully aligned to all 24 ISTE NETS-S 2007 Standards
- Criterion-referenced
- Optional [portfolio assessment](#)
- Elementary and Middle School versions
- Pre- and post-tests

Performance- and Knowledge-based items

The 21st Century Skills Assessment uses a psychometrically validated blend of interactive, [performance-based questions](#) that allow students to authentically perform complex tasks in simulated applications, and multiple choice, knowledge-based questions. [See an 8-item sample assessment test.](#)

Reports that inform instruction

- [Reports on multiple levels of proficiency](#) overall, and for each NETS-S 2007 standards category – advanced, proficient, basic and below basic
- Valid reports at the district, school, teacher, class and student levels with comparative national data
- Item details show student performance at the level of each of the 24 NETS-S 2007 standards

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One such company touts an online test of technology competency, complete with quartiles, statistics, and graphic district-wide reports.

1. Which of these is a picture of a computer?

techliteracy assessment

StudentName01

Previous Next

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30
31	32	33	34	35
36	37	38	39	40
41	42	43	44	45
46	47	48	49	50

Turn in Test

Exit

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Let's look more closely at how it works. Here's one of the questions:

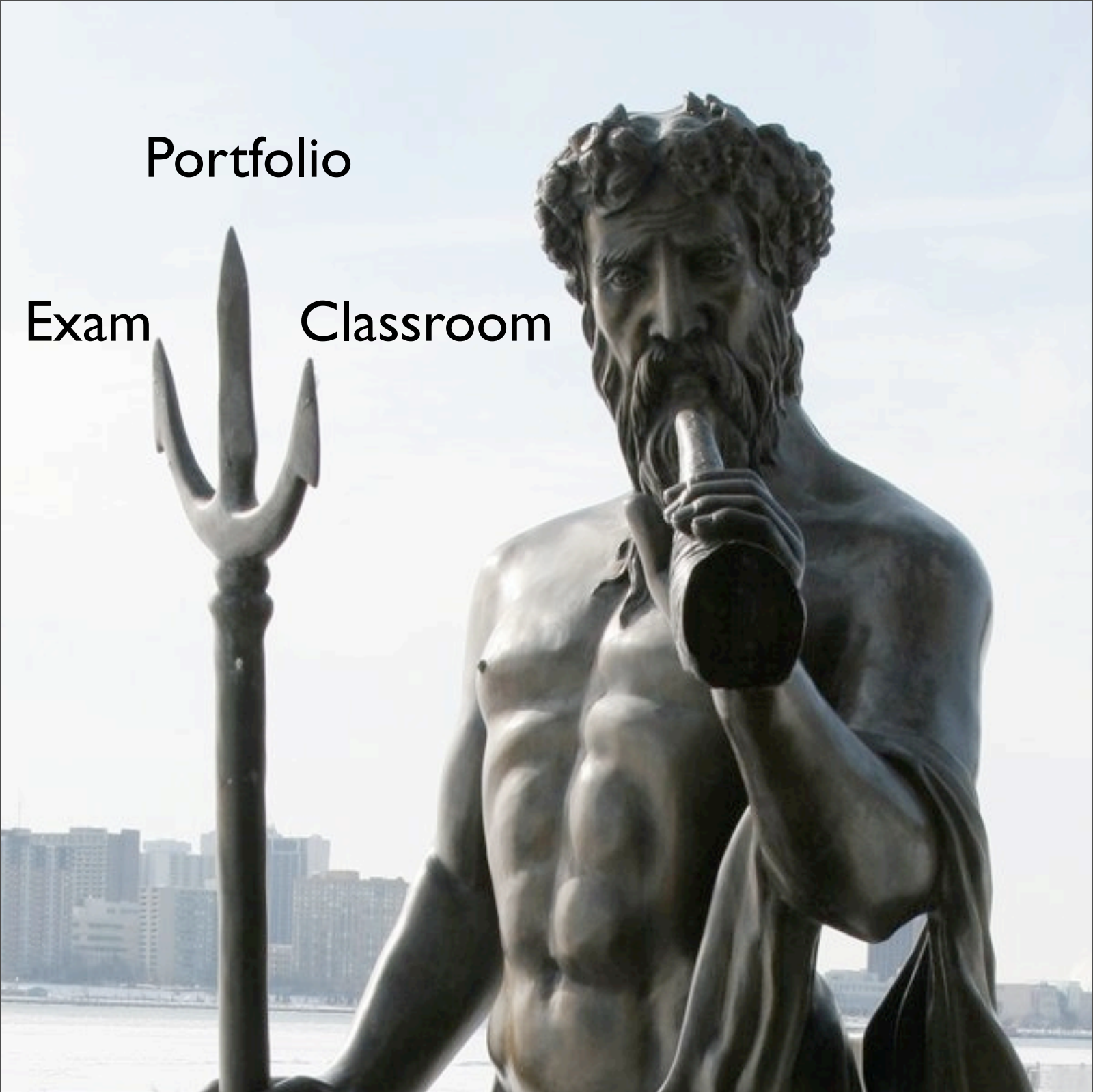
(I am not making this up. See for yourself.) This is probably not what you had in mind when you considered 21st-century skills.

But without such a standardized test, how will we know if are students are learning the new skills? How will we know if we're doing better than last year, or better than our neighbors?

Portfolio

Exam

Classroom



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Consider a three-prong approach to assessment:

Day to day assessment in the classroom

A structured online portfolio for every student

Comparable standard tests

Teach Assess



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Day to day, in the classroom

As you work to make sure that every course and every teacher in every classroom teaches of 21st-century skills and technologies, make sure also that they assess them. Include them in required assignments. Award grades based on their performance. So that a B + in English represents not only knowledge of Shakespeare but ability to collaborate with a diverse group of peers.

Media Teach Assess

Mastering ASTRONOMY Bennett/Donahue/Schn...

Astronomy 10

Assignment

Due at 9:00am o...

N7

	A	B
1	0	F
2	70	D
3	76	C
4	86	B
5	93	A
6		
7		Name
8		Ann
9		Bill
10		Carol
11		Doug
		Elaine

Osceola County Rural Schools

MONTHLY REPORT OF

Flossie Peterson a Member of

the *first* Grade, District No. *8* of *Evart* Township

191.3. and 191

	Sept.	Oct.	NOV.	Dec.	Jan.	Feb.	March	April	May	June	Avg.
Times tardy	0	1	4	3	1	5	3	4	4	4	
Days absent	95	93	93	94	94	93	93	94	94	94	
Department	94	93	93	93	93	93	93	94	94	94	

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Think Creatively	5th-grade science; English 9; U.S. History
Work Creatively with Others	
Implement Innovations	
Reason Effectively	7th-grade math; 10th-grade health; Economics
Use Systems Thinking	
Make Judgments and Decisions	American Literature; 4th-grade social studies
Solve Problems	6th-grade math; Practical Mathematics
Communicate Clearly	10th-grade English; Chemistry
...and so forth	

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This is not an easy task. Approach it from two angles:

1. Take your list of 21st-century skills, and make sure each one is taught somewhere. At least once, preferably several times. Fill out a form like this.

Let the faculty determine when and where the skills being taught and assessed already. This will fill in many of the blanks. For the ones that remain blank let the faculty figure out new ways to include them.

English 10	
Think Creatively	Poetry composition assignment
Work Creatively with Others	Drama production task
Implement Innovations	
Reason Effectively	
Use Systems Thinking	
Make Judgments and Decisions	Moral dilemma discussion
Solve Problems	
Communicate Clearly	Oral presentation assignment
...and so forth	

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At the same time, you should take each course, and make a list of where the skills are currently being taught and assessed, getting right down to the specific assignment in the syllabus.

This will uncover the skills that need more attention; the faculty will need time to develop new assignments and assessments to ensure that all the skills are included across the curriculum. The important thing is that the 21st-century skills are assessed every day, and that they count in a student's grade.

Osceola County Rural Schools

MONTHLY REPORT OF

..... *Flossie Peterson* a Member of

the *first* Grade, District No. *8*
Evart Township

191 *3* and 191

	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April.	May.	June.	Aver- age.
Times tardy....	0	1	3	3	1	1	0				
Days absent....	6	1	4	2	5	3	4				
Deportment....	95	93	93	92	90	91	92				
Reading.....	96	94	94	94	93	94	94				
Spelling.....	94	93	93	93	93	94	94				
Writing.....	90	90	91	91	94	95	92				
Numbers.....	93	93	95	95	95	92	93				
Language.....	98	96	97	96	96	96	96				
Arithmetic....											
Grammar.....											
Geography.....											

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Combining these two approaches will increase the probability that all students learn some of the new skills, and that some learn all of them. And that everyone pays more attention to them. But it's not a guarantee. A student could get a passing grade in all of his courses, and yet not be fully ready for the 21st century. We need something more to ensure that every student can demonstrate all the skills.



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Structured Online Portfolio

Many of the 21st-century skills cannot be measured by paper-and-pencil assignments or multiple choice tests. The ability to work collaboratively with a diverse group for instance, or to communicate clearly through a narrated slide show. These kinds of skills are best assessed through video clips, or multimedia projects, submitted by students, and evaluated by standard rubrics. How do we implement something like this?



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Academic Portfolio

OLT-ITS Trainer

psychmajor1@drexel.edu (Personal Email)

Degrees:

Drexel University (Undergraduate)

Major: *Psychology*

GPA: 3.89/4

Completion Date: June 2010

Assessments:

Professional Psychology Test:

Drexel University-93

Educational Institutions:

Community College

Drexel University

Academic Objectives:

To maintain a 3.5 or higher cumulative GPA.

Professional Objectives:

To obtain a professional practice in criminal psychology.

Resume Portfolio

Research Projects:

Effects of types of Food on Prisoners

After 10 weeks, the study has shown that...

Skills:

- *Painting* (Expert)



COMMENT ON THIS INFORMATION

ion contained herein is provided with the understanding that Drexel University does not make warranties, either expressed or imp
the accuracy of th

Data noted with is certified, All other information i

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How do we implement something like this?

Go back to your list of skills.

Choose those that are best evaluated through the portfolio method.

Publish a rubric for each one that details what is expected for mastery.

Require that every student submit a digital document online -- a video clip, a multimedia report, a statistical analysis -- that proves his or her mastery of the skill.

Assign faculty members to evaluate the submissions anonymously. And online.

Make a complete portfolio from each student a graduation requirement.

College and Work Readiness Assessment (CWRA)

COLLEGE AND WORK READINESS ASSESSMENT (CWRA)

We invite you to participate in an important project that will help your school learn how well your students are learning how to think critically, reason analytically, solve problems, and write well. You will also be participating in an ongoing national project building a database of information about teaching higher order skills to prepare students for college, and for life.

The acquisition of higher order skills is made more urgent today as the Information Age places added pressure on our educational system. While some critics fault secondary institutions for graduating students unprepared for college and others place the onus on higher education, both need to and can do better. Indeed, all agree that what counts most: the ability to access, structure, evaluate, and use information rather than only accrue facts.

Helping students to develop higher order skills (e.g., critical thinking, analytic reasoning, problem solving, and written communication) is central to the missions of all colleges, universities and high schools. While these institutions also foster other key competencies, such as artistic expression, civic engagement, moral/ethical reasoning, and environmental stewardship, of paramount importance is helping students to develop intellectual curiosity and a lasting desire for learning. It is within this context that many colleges and universities have participated in the Collegiate Learning Assessment (CLA), an ongoing project that incorporates a breakthrough learning assessment approach. The CLA approach is to measure an institution's contribution, or value-added, to the development of higher order skills, including the effects of changes to curriculum and instructional methods.

The CLA is now available to high schools as the College and Work Readiness Assessment (CWRA), to measure how students perform on constructed response tasks that require an integrated set of critical thinking, analytic reasoning, problem solving, and written communication skills. The CWRA is delivered entirely online over the Internet in a proctored setting.

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Comparable standard tests

As a complement to the previous two approaches to assessment, consider administering a summative, standardized test that includes many of the 21st-century skills. This can provide information that the classroom-based and portfolio systems cannot: to compare your school with others; and to compare your school's performance year to year.

The available tests in this genre do not cover all the skills; they sample just a few. And their limited testing formats do not enable a full assessment of some of the social and performance-based aspects of the skills. But as a complement to the others, these tests can be very useful. The good tests are not inexpensive, and go far beyond the simplistic multiple-choice style in the example shown above. Here are some approaches to consider.

College and Work and Readiness Assessment. This test was designed by The Council for Aid to Education, a national nonprofit organization

Introductory Material:

You advise Pat Williams, the president of DynaTech, a company that makes precision electronic instruments and navigational equipment. Sally Evans, a member of DynaTech's sales force, recommended that DynaTech buy a small private plane (a SwiftAir 235) that she and other members of the sales force could use to visit customers. Pat was about to approve the purchase when there was an accident involving a SwiftAir 235. Your document library contains the following materials: (the test manual contains the actual documents listed below)

1. Newspaper article about the accident
2. Federal Accident Report on in-flight breakups in single-engine planes
3. Internal Correspondence (Pat's e-mail to you & Sally's e-mail to Pat)
4. Charts relating to SwiftAir's performance characteristics
5. Excerpt from magazine article comparing SwiftAir 235 to similar planes
6. Pictures and descriptions of SwiftAir Models 80 and 235

Questions:

Do the available data tend to support or refute the claim that the type of wing on the SwiftAir 235 leads to more in-flight breakups?

What is the basis for your conclusion?

What other factors might have contributed to the accident and should be taken into account?

What is your preliminary recommendation about whether or not DynaTech should buy the plane and what is the basis for this recommendation?

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Here's a sample of an item from the CWRA.

Which of our 21st-century skills is this measuring? How does the situation in the sample question compare with what happens in the world outside of school? Enough schools are using the CWRA that national comparisons are possible, and change over time can be measured.

Insight Assessment

A division of California A

Measuring Critical Thinking Worldwide[Tests & Measures](#)[Testing Services](#)[How to Purchase](#)[CT Resources](#)[Contact IA](#)

The California Critical Thinking Skills Test (CCTST)

All Forms And Versions Except Profession-Specific Adaptations

The **California Critical Thinking Skills Test** is the premier critical thinking skills test in the world today. Called the "gold standard" of critical thinking tests, the CCTST is based on the [Delphi Expert Consensus Definition of Critical Thinking](#). The CCTST has been shown to predict strength in critical thinking in authentic problem situations and success on professional licensure examinations.

The CCTST provides an objective measure of critical thinking skills. CCTST questions engage the test-taker's reasoning skills across a wide range of topics and contexts. Specialized information needed to respond correctly is provided within the questions themselves. Different question formats progressively invite test-takers to analyze or to interpret information presented in text, charts, or images; to draw accurate warranted inferences; to evaluate inferences and explain why they represent strong reasoning or weak reasoning; or to explain why a given evaluation of an inference is strong or weak. The 34 multiple choice test items range in difficulty and complexity.

The CCTST items broadly represent reasoning ability required to succeed in those educational and workplace settings where forming a judgment regarding what to believe or what to do is a prerequisite. The CCTST itself is recommended for use with high school and post-baccalaureate populations. Other tests in the [CCTST Family of critical thinking skills tests](#) are designed for use with other educational levels or with question content attuned to the interests of specific professional fields.

Skills test scores on these [CCTST scales](#): Analysis, Inference, Evaluation, Inductive Reasoning, Deductive reasoning, and Total Critical Thinking Skill score. [Qualified purchasers](#) may preview the CCTST by ordering a [CCTST Specimen Kit](#). There are many [authentic translations](#).

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The California Critical Thinking Skills Test is an old-fashioned multiple-choice test widely used in business to measure thinking skills, one of the elements on everyone's list of 21st-century skills. It was developed by qualified psychometricians, and has been used for many years.

Using the phone at her desk, Sylvia in Corporate Sales consistently generates a very steady \$1500 per hour in gross revenue for her firm. After all of her firm's costs have been subtracted, Sylvia's sales amount to \$100 in bottom line (net) profits every 15 minutes. At 10:00 a.m. one day the desk phone Sylvia uses to make her sales calls breaks. Without the phone Sylvia cannot make any sales. Assume that Sylvia's regular schedule is to begin making sales calls at 8:00 a.m. Assume she works the phone for four hours, takes a one hour lunch exactly at noon, and then returns promptly to her desk for four more hours of afternoon sales. Sylvia loves her work and the broken phone is keeping her from it. If necessary she will try to repair the phone herself. Which of the following options would be in the best interest of Sylvia's firm to remedy the broken phone problem?

A = Use Ed's Phone Repair Shop down the street. Ed can replace Sylvia's phone by 10:30 a.m. Ed will charge the firm \$500.

B = Assign Sylvia to a different project until her phone can be replaced with one from the firm's current inventory. Replacing the phone is handled by the night shift.

C = Authorize Sylvia to buy a new phone during her lunch hour for \$75 knowing she can plug it in and have it working within a few minutes after she gets back to her desk at 1:00 p.m.

D = Ask Sylvia to try to repair her phone herself. She will probably complete the repair by 2:00 p.m.; or maybe later.

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Here's a sample question.

As you can see, the format reminds you of the bubble-tests described in last week's article. But the content is quite different. The focus is on a subset of thinking skills, an area often included in 21st-century lists, but not often measured by the tests most of us use today. The CCTST is certainly not a comprehensive measure of what we are looking for, but it could serve as a statistically comparable sample.

OECD Programme for International Student Assessment (PISA)

PISA (Home)

- > What PISA Is
- > What PISA Assesses
- > What PISA Produces
- > Participating Countries
- > Contacts

Are students well prepared for future challenges? Can they analyse, reason and communicate effectively? Do they have the capacity to continue learning throughout life? The OECD Programme for International Student Assessment (PISA) answers these questions and more, through its surveys of 15-year-olds in the principal industrialised countries. Every three years, it assesses how far students near the end of compulsory education have acquired some of the knowledge and skills essential for full participation in society.

What's new

[Equally prepared for life? How 15-year-old boys and girls perform in school](#)

26-May-2009

School students are still being held back by gender perceptions. In most countries, girls and boys now show similar results in PISA, but systematic assessment of gender differences shows that students are still being held back by their own gender-related perceptions.

[Top of the Class - High Performers in Science in PISA 2006](#)

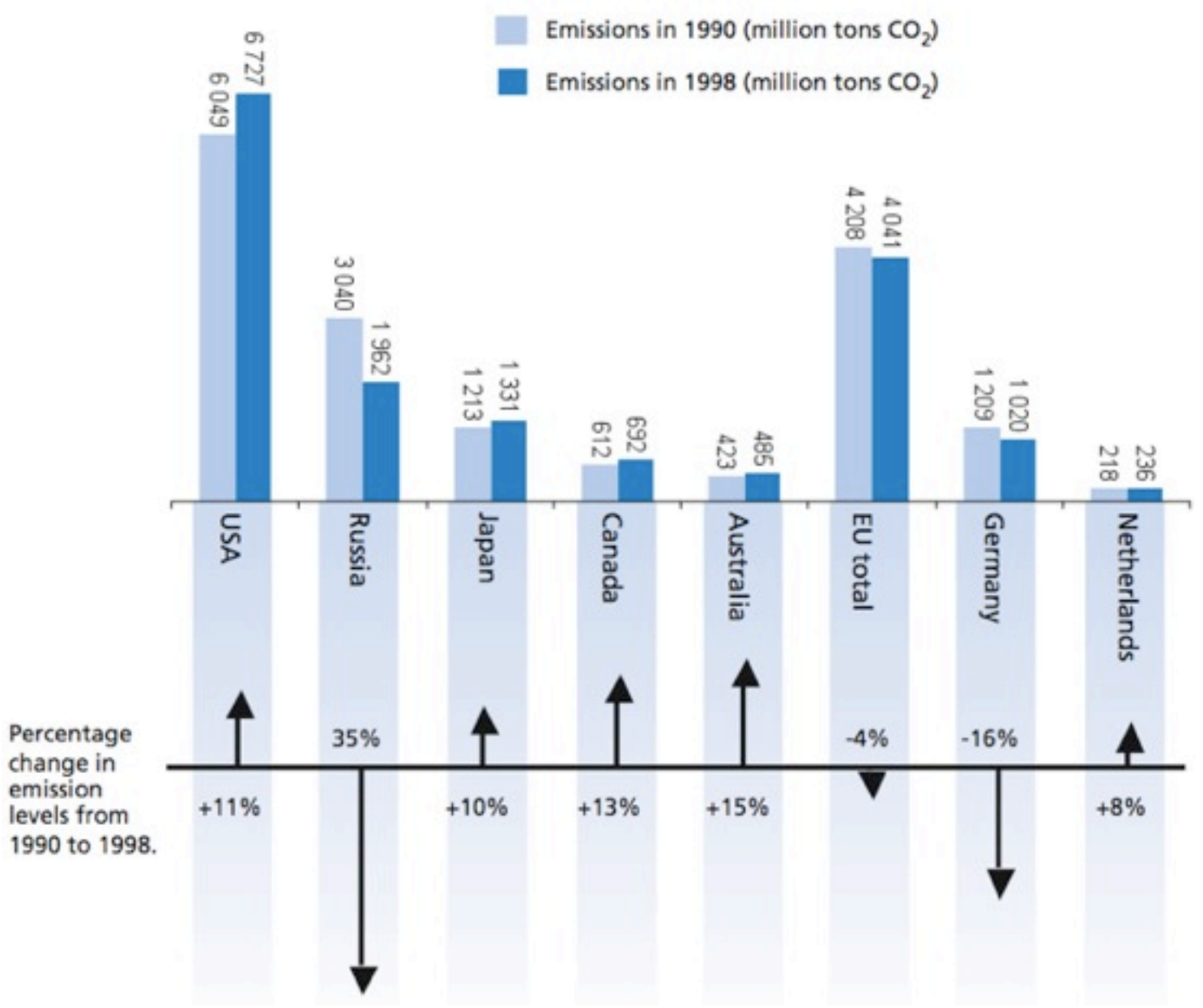
28-Apr-2009

Which factors contribute to the successful performance of students in science?

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The Programme for International Student Assessment, known as PISA, has since 2000 been gathering information on the relative performance of 15-year olds in more than 60 countries. It's run by the Organization for Economic Cooperation and Development, a respected inter-governmental agency. The skills and content they focus on, though not inclusive of all the 21st-century skills, certainly come closer than most of the tests in common use today. And their methodology seems to be closer to what we are looking for.

CO2 Emissions



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Here's a sample question

Question 44.1

In the diagram you can read that in the USA, the increase in CO₂ emission level from 1990 to 1998 was 11%.

Show the calculation to demonstrate how the 11% is obtained.

Question 44.2

Mandy analysed the diagram and claimed she discovered a mistake in the percentage change in emission levels: "The percentage decrease in Germany (16%) is bigger than the percentage decrease in the whole European Union (EU total, 4%). This is not possible, since Germany is part of the EU."

Do you agree with Mandy when she says this is not possible? Give an explanation to support your answer.

Question 44.3

Mandy and Niels discussed which country (or region) had the largest increase of CO₂ emissions.

Each came up with a different conclusion based on the diagram.

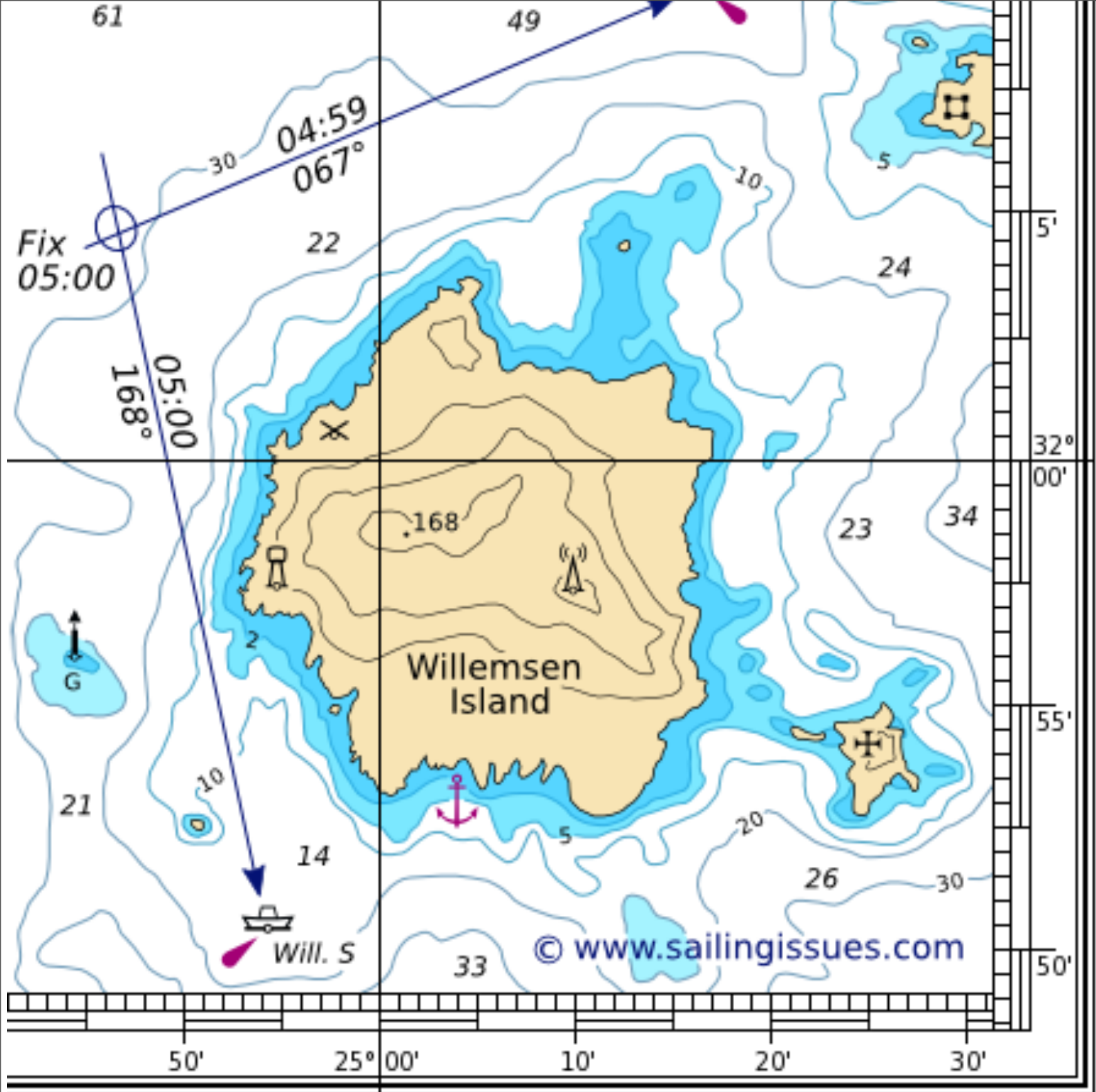
Give two possible 'correct' answers to this question, and explain how you can obtain each of these answers.

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Here's a sample question.

Makes you think, doesn't it? Compare the nature of this question with those from the state mastery test we looked at last week. Which is closer to what we are looking for? Notice that the content of the question relates to one of the 21st-century themes from the Partnership, and the skills necessary to complete the question draw from at least three from the same list.

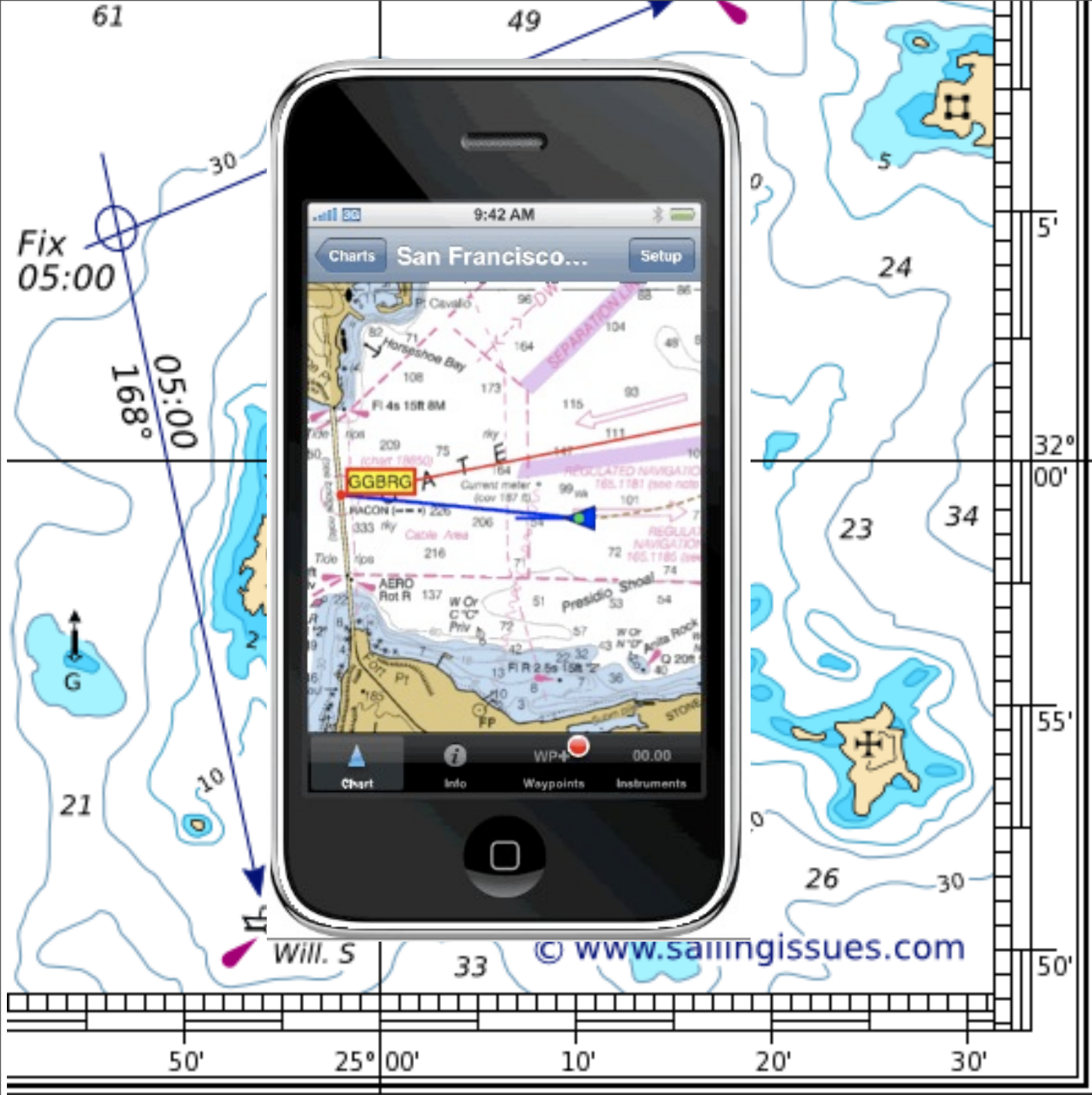
Unfortunately, PISA is not available for purchase by schools. It uses a sophisticated sampling procedure, so that not every student takes every test; and the scoring of the open-ended questions requires time and training that most of us are not willing to invest in. But a school that wanted to compare itself, over time and across countries, could administer the PISA questions, samples of which are available online, do its own scoring, and gather some very useful information.



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Triangulation

When you're sailing along the coast, you need the bearings to at least three landmarks to determine where you are.



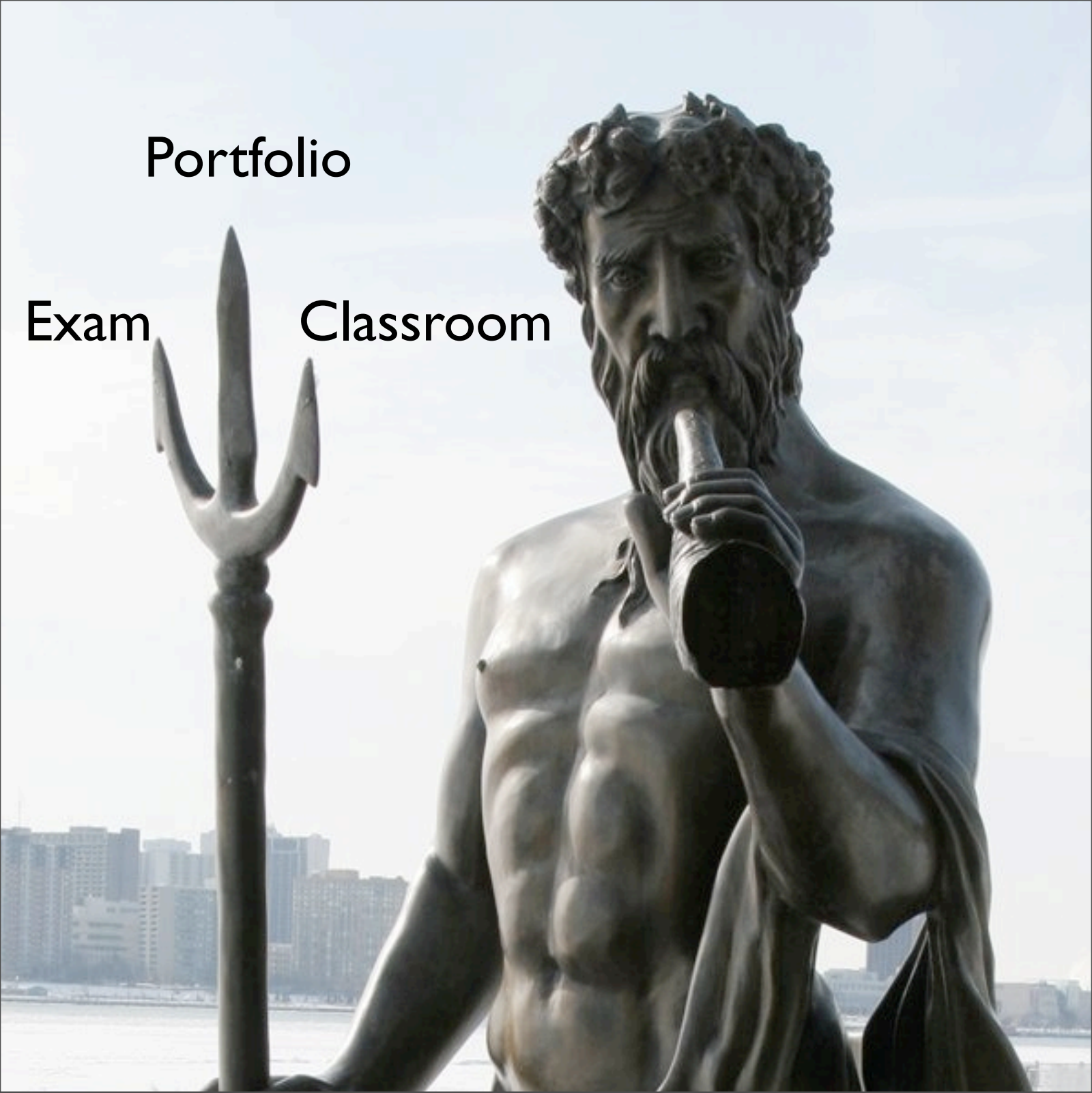
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With a modern GPS, you still need the information from at least three satellites to figure out your position.

Portfolio

Exam

Classroom



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So when you want to measure 21st-century skills, it may be best to assess from three points of view: in the classroom, day to day; through structured student portfolios; and with relevant standardized instruments. The combination of information from all three may help you know where you are, and guide you toward your destination.