21st Century Curriculum and Instruction

The relationship between curriculum and instruction is obviously a very close one. Curriculum is essentially a design, or roadmap for learning, and as such focuses on knowledge and skills that are judged important to learn. Instruction is the means by which that learning will be achieved. To meet the needs of the 21st century learner and achieve the student outcomes described in its Framework, the Partnership calls on schools

- to adopt a **21st century curriculum** that blends thinking and innovation skills; information, media, and ICT literacy; and life and career skills in context of core academic subjects and across interdisciplinary themes, and
- to employ methods of **21st century instruction** that integrate innovative and research-proven teaching strategies, modern learning technologies, and real world resources and contexts.

The Partnership's approach to curriculum is well supported by academic research. In this section, we'll look at just a few of any number of effective, research-based curricular models capable of supporting a 21st century skills learning agenda. We're all familiar with the old-fashioned curriculum of the 3 R's – reading, 'riting, and 'rithmetic, but Robert Sternberg of Tufts University has called for a curriculum that centers on developing student competence in what he calls "the other 3 R's." In this case, the R's stand for *Reasoning* which include analytical, critical thinking, and problem solving skills, *Resilience* which encompasses life skills such as flexibility, adaptability, and self-reliance, and *Responsibility* which Sternberg links to wisdom, which he defines as "the application of intelligence, creativity, and knowledge for a common good."[1]

Tony Wagner and Robert Kegan, co-directors of the Change Leadership Group at Harvard University, recommend a curriculum built on a different set of "new 3 R's" – that is, Rigor, Relevance, and Respect.[2] (Note that the Change Leadership Group's 3 R's address instructional approaches, while Sternberg's R's are framed as student outcomes.) *Rigor*, for Wagner, et al, does not mean content that is difficult for students to master, rather it concerns what students are able to *do* as a result of their learning. *Relevance* means helping students understand how their learning connects to their further studies and future work settings. *Respect* means promoting respectful

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[1] Sternberg, R. & Subotnik, R., eds. (2006). *Optimizing Student Success with the Other Three Rs: Reasoning, Resilience, and Responsibility.* Greenwich, CT: Information Age Publishing.
[2] Wagner, T., Kegan, R. , Lahey, L., Lemons, R., Garnier, J., Helsing, D., Howell, A., Rasmussen, H. (2006). *Change Leadership: A Practical Guide to Transforming Our Schools.* San Francisco: Jossey Bass.

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21st Century Project Based Learning Template

Name of Project: Grade: Subjects:

Teachers: Duration:

Entry Event	
Driving Question	
Student Choice	
21st Century Skill (4 C's) **Communication** **Collaboration** **Creativity** **Critical Thinking** *** Rubrics will be shared in session to asses these skills or you could create your own.**	
Inquiry & Innovation	
Feedback	
Publicly Presented Culminating Product	
Possible SEL Connections	

Illinois Math Standards	Illinois Science Standards	Technology Standards[1]
6.B.3a Solve practical computation problems involving whole numbers, integers and rational numbers.	**11.A.3a** Formulate hypotheses that can be tested by collecting data.	**Access and Evaluate Information** • Access information efficiently (time) and effectively (sources) • Evaluate information critically and competently
6.B.4 Select and use appropriate arithmetic operations in practical situations.	**11.A.4a** Formulate hypotheses referencing prior research and knowledge.	**Use and Manage Information** • Use information accurately and creatively for the issue or problem at hand • Manage the flow of information from a wide variety of sources • Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information
6.C.3a Select computational procedures and solve problems with whole numbers, decimals, percents and proportions.	**11.A.5a** Formulate hypotheses referencing prior research and knowledge.	**Create Media Products** • Understand and utilize the most appropriate media creation tools, characteristics and conventions • Understand and effectively utilize the most appropriate expressions and interpretations in diverse, multi-cultural environments
6.C.3b Show evidence that computational results using whole numbers, fractions, decimals, percents and proportions are correct and/or that estimates are reasonable.	**11.A.3b** Conduct scientific experiments that control all but one variable.	**Apply Technology Effectively** • Use technology as a tool to research, organize, evaluate and communicate information • Use digital technologies, communication networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy • Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies
6.C.4 Determine whether exact values or approximations are appropriate.	**11.A.4b** Conduct controlled experiments or simulations to test hypotheses.	
6.C.5 Determine the level of accuracy needed for computations involving measurement.	**11.A.4b** Conduct controlled experiments or simulations to test hypotheses.	
6.D.3 Apply ratios and proportions to solve practical problems.	**11.A.5b** Design procedures to test the selected hypotheses.	
7.A.3a Measure length, capacity, weight/mass and angles using sophisticated instruments.	**11.A.3c** Collect and record data accurately using consistent measuring and recording techniques and media.	
7.A.3b Apply the concepts and attributes of length, perimeter, area, in practical situations.	**11.A.3d** Explain the existence of unexpected results in a data set.	
7.A.4b Apply formulas in a wide variety of theoretical and practical real-world measurement applications involving	**11.A.3e** Use data manipulation tools and quantitative (e.g., mean, mode, simple equations) and	

21st Century Project Based Learning Template

Name of Project: Grade: Subjects:

Teachers: Duration:

Entry Event	Newspaper Article outlining the problems school districts are having with money.
Driving Question	How can we save money at Park Junior High School?
Student Choice	Working as a group, the class will brainstorm questions to determine how much money it takes to run the district. The teacher will record responses on a. Responses will be grouped by type and the five most important questions will be chosen. *(Critical thinking and Collaboration)*
21st Century Skill (4 C's) Communication Collaboration Creativity Critical Thinking * **Rubrics will be shared in session to asses these skills or you could create your own.**	
Inquiry & Innovation	
Feedback	
Publicly Presented Culminating Product	
Possible SEL Connections	

Problem Based Learning Rubric for _____

Grades 4-6

Name: _____   Date: _____

	Advanced			Proficient			Basic		Not Evident or Included
Collaboration • *Stays focused* • *Listens and interacts respectfully with group* • *Shares responsibility for tasks* • *Contributes to group consistently*									
Points Earned (Circle)	8	7	6	5	4	3	2	1	0
Communication • *Understands the content and can answer questions about it* • *Provides ideas and evidence that are accurate, includes details, are relevant, and are appropriate for audience.*									
Points Earned (Circle)	8	7	6	5	4	3	2	1	0

Criteria									
Critical and Creative Thinking • *Analyzes and evaluates content* • *Draws conclusions and shares own perspective.* • *Produces creative work that fulfills established criteria*									
Points Earned (Circle)	8	7	6	5	4	3	2	1	0
Presentation • *Approach is appropriate and engaging* • *Presentation flows well*									
Points Earned (Circle)	8	7	6	5	4	3	2	1	0
Inquiry Process • *Selects and uses appropriate resources* • *Develops questions* • *Collects information that answers questions*									
Points Earned (Circle)	8	7	6	5	4	3	2	1	0
Self Reflection • *Completed and includes careful thought*									

on process and product				
3	2	1	0

Total Points: _____

Unit Overview

Content Area:	
Unit Title:	
Target Course/Grade Level:	

Unit Summary and Title:

Primary interdisciplinary connections:
21st century themes:

Unit Rationale

Learning Targets

Standards

Content Statements

Formative Assessments	Progress Indicators

Unit Essential Questions	Unit Enduring Understandings
• •	• •

Unit Learning Targets
Students will ...
-
-

Evidence of Learning

Summative Assessment (X days)

Equipment needed:
Teacher Resources:

Week Plan			
Content Area:			
Lesson Title:			**Timeframe:** X hours/days

Lesson Components

21st Century Themes

	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy

21st Century Skills

	Creativity and Innovation		Critical Thinking and Problem Solving		Communication and Collaboration		Information Literacy
	Media Literacy		ICT Literacy		Life and Career Skills		

Interdisciplinary Connections:
Integration of Technology:
Equipment needed:

Goals/Objectives	Learning Activities/Instructional Strategies	Formative Assessment Tasks
Students: • • • •	**Lesson Sequence** 1. 2. 3.	• • • •
Differentiation		
Resources Provided • •		

Challenge Based Learning

Take action and make a difference

Introduction

Traditional teaching and learning strategies are becoming increasingly ineffective with a generation of secondary students who have instant access to information, embrace the roles of content producer and publisher and have access to extensive social networks online.

High school curriculum tends to present students with assignments that lack a real-world context and that lead to uninspired projects and end in a letter grade or score. Many students either learn to do just enough to get by or they lose interest and drop out. In this interconnected world, with ubiquitous access to powerful technologies, new models of teaching and learning are possible, and engagement is paramount to meeting the needs of more students.

Outside of school, students encounter media that present participants with a challenge and require them to draw on prior learning, acquire new knowledge, and tap their creativity to fashion solutions. The entertainment networks have capitalized on this formula with shows such as *The Amazing Race, Top Chef, Trading Spaces,* and *Project Runway.*

The task of engaging more students to achieve has become increasingly important. To that end, Apple worked with educators across the country to develop the concept of Challenge Based Learning. Challenge Based Learning applies what is known about the emerging learning styles of high school students and leverages the powerful new technologies that provide opportunities to learn through an authentic process that challenges students to solve problems and make a difference.

The Challenge Based Learning effort is part of a larger collaborative project initiated in 2008 called Apple Classrooms of Tomorrow—Today (ACOT²) to identify the essential design principles of the 21st century learning environment with a focus on high school. ACOT² follows in the tradition of Apple Classrooms of Tomorrow (ACOT), a research and development collaboration among public schools, universities, and research agencies that Apple initiated in 1985 and sustained through 1995 with outstanding results.

Challenge Based Learning is an engaging multidisciplinary approach to teaching and learning that encourages students to leverage the technology they use in their daily lives to solve real-world problems. Challenge Based Learning is collaborative and hands-on, asking students to work with peers, teachers, and experts in their communities and around the world to ask good questions, develop deeper subject area knowledge, accept and solve challenges, take action, and share their experience.

Challenge Based Learning provides:

- A multiple entry point strategy and varied and multiple possible solutions
- A focus on universal challenges with local solutions
- An authentic connection with multiple disciplines
- An opportunity to develop 21st century skills
- The purposeful use of Web 2.0 tools for organizing, collaborating, and publishing
- The opportunity for students to do something rather than just learn about something
- The documentation of the learning experience from challenge to solution
- 24/7 access to up-to-date technology tools and resources so students can do their work

These attributes enable Challenge Based Learning to engage learners, provide them with valuable skills, span the divide between formal and informal learning, and embrace a student's digital life.

Key Components

The Challenge Based Learning process begins with a big idea and cascades to the following: an essential question, a challenge, guiding questions, activities, resources, determining and articulating the solution, taking action by implementing the solution, reflection, assessment, and publishing.

The Framework
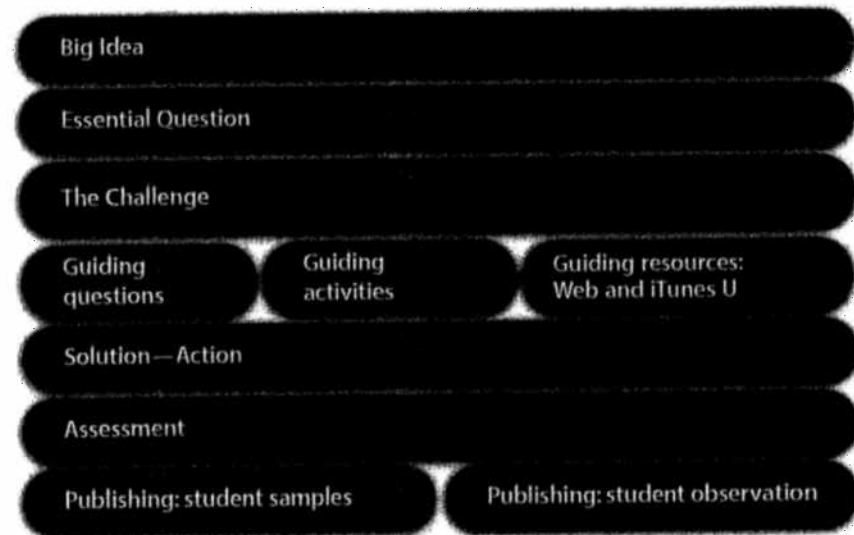
The Big Idea: The big idea is a broad concept that can be explored in multiple ways, is engaging, and has importance to high school students and the larger society. Examples of big ideas are Identity, Sustainability, Creativity, Violence, Peace, and Power.

Essential Question: By design, the big idea allows for the generation of a wide variety of essential questions that should reflect the interests of the students and the needs of their community. Essential questions identify what is important to know about the big idea and refine and contextualize that idea.

Recommended Resources

What and Why 21st Century Skills and the CCSS.

Articles

Bellanca, J., Fogarty, R., & Pete, B. (2011). "A Question of Balance: Making Practical Sense of the Common Core State Standards." *Illinois 21* white paper.

Kolderie, T., & McDonald, T. (2009). "How Information Technology Can Enable 21st Century Schools." Washington, DC: Information Technology and Innovation Foundation.

_____ (2009). "Will You Want to Hire Your Own Child? (Or Will Anyone Else?)." New York: The Conference Board, Inc.

Books

Bellanca, J., & Brandt, R. (2010). *21st century skills: Rethinking how students learn.* Bloomington, IN: Solution Tree Press.

Darling-Hammond, L. (2010). *The flat world and education: How America's commitment to Equity Will Determine Our Future.* New York: Teachers College Press.

Feuerstein, R., Feuerstein, R., & Falik, L. (2011). *Beyond smarter: Mediated learning and the brain's capacity for change.* New York: Teachers College Press.

Gardner, Howard (2007). *Five minds for the future.* Cambridge, MA: Harvard Business Press.

Pink, Daniel , (2009) *Drive: The surprising truth about what motivates us.* New York: Riverhead Books.

Twilling, B., & Fadel, C. (2009). *21st century skills: Learning for life in our times.* San Francisco, CA: Jossey-Bass.

Wagner, T. (2008). *The global achievement gap: Why even our best schools don't teach the new survival skills our children need—and what we can do about it.* New York: Basic Books.

Project Based Learning: A Tool to Develop 21st Century Skills

Bellanca, J. (2010). *Enriched learning projects: A practical pathway to 21st century skills.* Bloomington, IN: Solution Tree Press.

Bellanca, J. A., & Stirling, T. (2011). *Classrooms without borders: Using internet*

projects to teach communication and collaboration. New York: Teachers College Press.

Fogarty, R. & Pete, B. (2011), *Supporting differentiated instruction: A professional learning communities approach.* Bloomington, IN: Solution Tree Press.

Online Resources

The Big Picture

Edutopia: www.edutopia.org

New Tech Schools: www.newtechnetwork.org

Buck Institute of Education: www.bie.org

International Renewal Institute, Inc.: www.iriinc.us

Partnership for 21st Century Skills: www.P-21.org

Cooperative Learning Institute: www.co-operation.org

Best Practices

Common Core State Standards: www.corestandards.org/the-standards

Intel Teach: www.intel.com

Thinkfinity: www.thinkfinity.org

Social Studies: Library of Congress: www.loc@service.govdelivery.com

Science: www.beyondpenguins.nsdl.org

Oracle: www.thinkquest.org

Language Arts: Read, Write, Think: www.readwritethink.org

Class Tools: www.classtools.net

Science Simulations: www.phet.colorado.edu/en/simulations

Mathematics: www.khanacademy.org

Thinking Skills Technology (free or mostly free)

Class Tools: www.classtools.net

Brainstorming: *www.*Bubbl.us

Polling: www.Pollyeverywhere.com; www.surveymonkey.com

Portfolios: www.eportfolio.org

Journals: www.edailydiary.com/