iEngage all Learners

Using iPads to Differentiate Instruction and Engage All Learners

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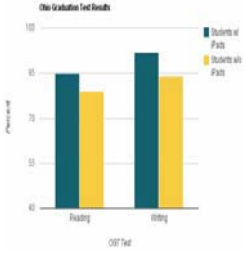## Research
iPad Boosts Achievement

- Jim Harmon- *English teacher Cleveland, OH*
- *Adjunct lecturer at Baldwin-Wallace College*
- *Apple Distinguished Educator and a Google Certified Teacher*
- *Co-director of the Through Students' Eyes Project*

Ohio Graduation Test Results

Research

- ❑ Effects of iPads in the Chicago Public Schools
  http://www.govtech.com/education/iPads-In-The-Classroom.html
- ❑ Pepperdine University: Effect of iPad on class participation
  http://community.pepperdine.edu/it/tools/ipad/research/results.htm
- ❑ Mobile Devices in the Classroom
  http://www.districtadministration.com/article/mobile-devices-classroom
- ❑ National Education Technology Plan
  http://www.ed.gov/sites/default/files/netp2010.pdf
- ❑ A First Look at Their Effect on Learning: Maine's Kindergarten
  http://hackeducation.com/2012/02/16/ipads-in-auburn-maine-kindergartens-literacy-learning/ipads-in-auburn-maine-kindergartens-literacy-learning
- ❑ One-To-One iPad Pilot, Sunrise Elementary
  http://sunriseipads.blogspot.com/

Selecting the Best App

https://sites.google.com/site/bloomsapps

Selecting the Best App

| Start with the content | Narrow down your choices | Ask around | Ask app developer | Kid tested... teacher approved |
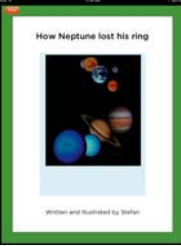
Selecting the Best App

Student Learning Partners

Why? How?

Animal Adaptation Poster by Taylor Gies   Creative Story by Stefan

Selecting the Best App

Professional Learning Partners

Comments

Likes

- Wikis and Blogs
  - http://www.iear.org
  - http://ipadeducators.ning.com
  - http://teachwithyouripad.wikispaces.com

- Twitter
  - #ipaded

- Professionals in your neighborhood

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iPad Functions

Top 10 iPad Functions

To facilitate more efficient teaching and learning

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iPad Functions

Multi-Tasking

iPad Functions

General

- Wi-Fi Network
- Side Switch
- Airplane Mode

_____

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iPad Functions

General

- Wi-Fi Network
- Side Switch
- Airplane Mode
- Restrictions

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iPad Functions

General

- Wi-Fi Network
- Side Switch
- Airplane Mode
- Restrictions
- Accessibility

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iPad Functions

Notifications

- Manage your apps that push data, don't let them manage you!
- There are going to be some apps where you want instant notification - think news or calendar items.
- There are some apps that you might want to check out on your own time - think games.

---

iPad Functions

Brightness & Wallpaper

---

iPad Functions

Mail, Contacts, Calendars

- Mail
  – Setup Gmail, Yahoo, Aol, Hotmail, mobileme, or Other
  – Fetch Schedule
- Contacts
  – Sort Order & Display
- Calendars
  – Sync Settings
  – Default Calendars

Common Core State Standards
Key Points In English Language Arts

Media and Technology
Just as media and technology are integrated in school and life in the twenty-first century, skills related to media use (both critical analysis and production of media) are integrated throughout the standards.

English Language Arts	Math

College and Career Readiness Anchor Standards for Reading

The K–5 standards on the following pages define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Key Ideas and Details

1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

Craft and Structure

4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
6. Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.
8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range of Reading and Level of Text Complexity

10. Read and comprehend complex literary and informational texts independently and proficiently.

Grade K Overview

Counting and Cardinality
- Know number names and the count sequence.
- Count to tell the number of objects.
- Compare numbers.

Operations and Algebraic Thinking
- Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

Number and Operations in Base Ten
- Work with numbers 11–19 to gain foundations for place value.

Measurement and Data
- Describe and compare measurable attributes.
- Classify objects and count the number of objects in categories.

Geometry
- Identify and describe shapes.
- Analyze, compare, create, and compose shapes.

CCSS
ELA
Table of Contents

CCSS

MATH
Table of Contents
Standards for Mathematical Content

Kindergarten	9
Grade 1	13
Grade 2	17
Grade 3	21
Grade 4	27
Grade 5	33
Grade 6	39
Grade 7	46

Free Apps

Language Arts

Social Studies

Science

Math

Teacher Productivity

Language Arts

Free Books

CCR K-12 Reading: Range of Reading and Level of Text Complexity
10. Read and comprehend complex literary and informational texts independently and proficiently.

Implementation:
(CCSS Appendix B = Grade Band Complex Text Titles)
- Read Aloud
- Buddy Reading
- Independent Reading
- Student Self Selected Books
- Small Group Guided Instruction
- Teacher Scaffolding
- Literature Circles

Language Arts

T-Charts (Pros and Cons)

CCR Reading K-12: Integration of Knowledge and Ideas

9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Implementation:
- Promote critical thinking and decision making skills
- Rate a character's actions
- Rate two stories in the same genre on their theme evolvement
- Rate a current event in Science or Social Studies

Language Arts

Google Earth

CCR K-12 Reading: Key Ideas and Details

3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

Implementation:
- Virtually see locations mentioned within class reading.
- Compare and contrast how setting has changed over time.
- Identify the course the character has taken on their travels.

Language Arts

Pulse

CCR 6-12 Reading: Key Ideas and Details

2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.

Implementation:
- Independent Reading
- Literature Circles
- Buddy Reading
- Science/Literacy Integration
- Social Studies/Literacy Integration
- Use article main ideas to write informative/explanatory texts

Language Arts

Middle School Vocab: 7th Grade

CCR 6-12 Language: Vocabulary Acquisition and Use

6. Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level.

Implementation:

- Vocabulary Center
- Independent Extension
- Independent Reinforcement
- Semantic Maps
- Vocabulary Log
- Do Now / Bell Work

Language Arts

e Edmodo

CCR K-12 Writing: Text Types and Purposes

1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

Implementation:

- Students Create Blog Discussions on Current Readings
- Students Respond to Teacher Prompts
- Collaboration
- Individualized Instruction

edmodo

Language Arts

Toontastic

CCR K-5 Writing: Production and Distribution of Writing

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

Implementation –

- Create an original story that depicts an understanding of the 5 aspects of a story arc. Develop original backgrounds and characters.
- Use existing backgrounds and characters to generate story ideas.
- Summarize a book by creating a short movie.

Language Arts

Scribble Press

CCR K-5 Writing: Production and Distribution of Writing

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

Implementation:
• Building stories for sharing on iBooks
• Creating content specific books for review

Language Arts

Story Kit

CCR K-5 Writing: Text Types and Purposes

3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

Implementation:
• Building stories for sharing on-line
• Creating content specific books

Social Studies

Stack the Countries Lite

CCR K-5 Reading: Key Ideas and Details

3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

Implementation:
• Centers
• Anchor Activity
• Do Now
• Small Group Practice
• Classroom Contest
• Post reading information text on countries
• Analyze countries won in puzzle

Social Studies

Idea Sketch

CCR K-12 Reading: Integration of Knowledge and Ideas
7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

Implementation:
- Cause and effect visual of a major world event
- Timeline
- Compare and contrast
- Concept map to summarize reading (i.e. U.S. government checks and balances)
- Illustrate cycles (i.e. rock cycle)

Social Studies

Early Jamestown

CCR K-12 Reading: Key Ideas and Details
1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

Implementation:
- Read Aloud
- Independent Reading
- Small Group Guided Instruction
- Literature Circles
- Buddy Reading

Social Studies

History: Maps of the World

CCR K-12 Reading: Integration of Knowledge and Ideas
7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

Implementation:
- Compare and contrast era maps
- Interpret map using textual evidence
- Evaluate map to determine causes and effects

Science

GreenPlanet4Kids

CCR K-12 Reading: Key Ideas and Details

2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.

Implementation:
- Read Aloud
- Independent Reading
- Small Group Guided Instruction
- Literature Circles
- Buddy Reading
- Student Self Selected Topic
- Teacher Scaffolding

Science

Leafsnap

Science 6-12 Reading: Key Ideas and Details
3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

Implementation:
- Support for botany lessons
- At-home extensions
- In-class lab support

Science

Atoms HD Lite Periodic Table

Science 6-12 Reading: Integration of Knowledge and Ideas
7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

Implementation:
- Quick review of the history of the atom.
- Mini lesson on how to read/build an atom.
- Multiple iPad competitions of being 5 atoms first.
- Homework assignment to complete 5-10 atom designs using screen capture to insert students progress in a note writing app.

Science

Video Science

Science 6-12 Reading: Integration of Knowledge and Ideas
9. Compare and contrast the information gained form experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

Implementation:
• Watch video before or after doing the experiment. Compare and contrast results.
• Make predictions before or after watching video.

Science

Science Glossary

Science 6-12 Reading: Range of Reading and Level of Text Complexity
10. Read and comprehend science/technical texts in the *grades 6-8, 9-10, or 11-12* text complexity band independently and proficiently.

Implementation:
• Tier 3 word study
• Word study notebooks
• Word of the day
• Use in a sentence
• Word maps
• Read word in different contexts
• Research scientists
• Independent study

Science

Mental Case

Science 6-12 Reading: Range of Reading and Level of Text Complexity
10. Read and comprehend science/technical texts in the *grades 6-8, 9-10, or 11-12* text complexity band independently and proficiently.

Implementation:
• Design flash cards as review for a test/quiz
• Pre-evaluation of material to be covered

Introducing Mental Case for iPad

Science

Xperica HD

Science 6-12 Reading: Craft and Structure
4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6-8, 9-10, 11-12 texts/topics.*

Implementation:
- Scientific method whole class, small group, or individual
- Inquiry based using trial and error to determine meaning of symbols
- Teacher led direct instruction for each experiment
- Anticipatory set for individual field studies

Science

Moon

CCR K-12 Writing: Text Types and Purposes
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

Implementation:
- Write narration of scientific procedures using app as a resource for experiment results.
- Daily journal to record daily moon observations
- Distinguish patterns in explanatory essay
- Independent extension activity

Math

Numberline

Grades 4-5 Number and Operations in Base Ten
Overview
- Understand the place value system.

Implementation:
- Individual review conversation methods for decimals, fractions, and percents
- Mini group activity to complete 5 stages of the app

Math

Math Ninja

Grades 3–5 Number and Operations in Base Ten
Overview
• Understand the place value system.
• Perform operations with multi-digit whole
  numbers and with decimals to hundredths.

Implementation:
  • Individual review on one or more basic math facts = addition,
    subtraction, division, multiplication
  • Create a chart where students can place their ranking/progress

Math

we seed

Bloomberg

Grades 6 – 7 Ratios and Proportional Relationships
Overview
• Understand ratio concepts and use ratio reasoning to solve
  problems.
• Analyze proportional relationships and use them to solve real-world
  and mathematical problems.
Grades 9 – 12 Conditional Probability and the Rules of Probability
• Understand independence and conditional probability and use them to
  interpret data
• Use the rules of probability to compute probabilities of compound
  events in a uniform probability model

Math

we seed

Bloomberg

Implementation:

• Teaching stock market vocabulary to students and applying
  real world connections

• Use of Bloomberg app to assess students' knowledge of the market

• Can be done in or out of the classroom with the aid of student
  made accounts for teachers to regulate and manage

Math

Math Adventures: Number Find Lite

Grades 4 -5 Operations and Algebraic Thinking
Overview
• Generate and analyze patterns.

Implementation:
• Do Now
• Anchor Activity
• Centers

Math

Quick Graph

Grade 8 Expressions and Equations
Overview
• Understand the connections between proportional relationships, lines, and linear equations.

Implementation:
• Solve real-world problems individually or small group
• Basic calculations throughout math period
• Compare provided equations

Math

Pearl Diver

Grade 3 Number and Operations—Fractions
Overview
• Develop understanding of fractions as numbers.

Implementation:
• Individual Review
• Anchor Activity
• Centers

Math

Tangram XL

Grade 3 Geometry
Overview
• Reason with shapes and their attributes.

Implementation:
• Individual Review
• Anchor Activity
• Centers

Math

iTooch Lite

Grade 5

Overview
• Operations and Algebraic Thinking (Graphs & Stats)
• Number and Operations in Base Ten
• Number and Operations - Fractions
• Measurement and Data
• Geometry

Math

ACE the SAT

High School

Overview
• Number and Quantity
• Algebra
• Functions
• Modeling
• Geometry
• Statistics and Probability

Teacher Productivity

PaperPort Notes

Implementation:

Any and all aspects of classroom instruction:

- Do Now
- Lecture Note Taking
- Independent Enrichment
- Scaffolding
- Centers
- Math Centers
- Science Centers
- Social Studies Centers
- Guided Reading
- Shared Reading
- Independent Reading
- Math Instruction
- Science Instruction
- Social Studies Instruction, etc.

Teacher Productivity

Teacher Clicker
Student Clicker
by Socrative

Implementation:

Any and all aspects of classroom instruction:

- Instant feedback on students understanding of a concept having been taught
- Multiple choice quizzes
- Tests/quizzes can be taken on the iPad or computer lab
- Prep students with questions for Tests/ISAT

Introductory video: http://vimeo.com/27564554

Teacher Productivity

Teacher Pal

- Class Notes
- Seating Chart
- Attendance
- Behavior Records
- Gradebook
- Parent/Student Email Communications

Teacher Productivity

Educreations

Implementation:

Any and all aspects of classroom instruction:

- Teacher Developed
- Student Developed
- Note Taking
- Scaffolding
- Centers
- Math Centers
- Science Centers
- Social Studies Centers
- Math Instruction
- Science Instruction
- Social Studies Instruction, etc.

Teaching with iPads

Combine apps for greater productivity
Challenge students to utilize previously learned apps

Teaching with iPads

Let's get started!
Identify your current level of iPad instruction.

- Instructor Station
- Student Work Station
- Class Set
  - Lower Level Apps
  - Higher Level Apps
    - Incorporate Apps into Lesson Plans
    - Challenge Based Learning

Lesson Plan

Free Books

Lesson Objective: The student will accurately quote from a text to explain his/her inference.

Subobjective #1: The students will use details in text to make an inference.

Subobjective #2: The students will make a prediction using inferred character traits about the main characters future.
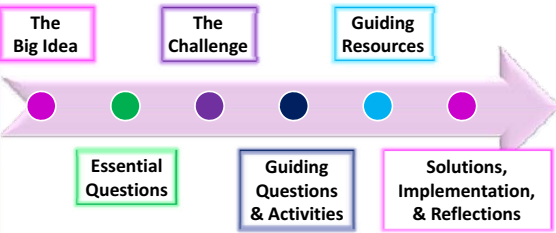
Challenge Based Learning

The Big Idea

The Challenge

Guiding Resources

Essential Questions

Guiding Questions & Activities

Solutions, Implementation, & Reflections

http://www.apple.com/education/challenge-based-learning

Reflect

How does your classroom instruction reflect the way new technologies are changing the way we work, live, play, and learn?

Thank You

Moon Writing Prompts

Reporting Observations Made:
What properties of the Moon can be observed and described?
- Did the Moonrise occur before or after Sunrise today?
- How long was the Moon up today?
- Was the Moon mostly visible during the daylight hours or nighttime hours today?

Organizing Observations:
How would you describe the Moon's pattern of movement in the sky?
- Did the Moon stay in the same place in the sky all night long?
- Was the Moon in the same place at dusk two weeks ago--last week and last night?

Applying What Has Been Learned:
Based on what you observed, predict what will happen tomorrow?
- When and where do you think the Moon will rise tonight?
- What will the Moon's shape be tonight?
- (After seeing the Moon one day at lunch) Where do you think the Moon will be at the end of school today?

Checking Predictions:
How do the data compare to your predictions?
- Were your predictions about last night's Moonrise correct?

Making Generalizations:
Based on your observations and thoughts about the Moon, what rules have you discovered about the Moon's behavior?
- What properties of the Moon change over the course of one day?
- What properties change from one day to the next?
- How does the Moon change over the course of a month?
- What properties stay the same over the course of one day?
- How does the location of Moon and Sun relative to each other affect the Moon's shape?

Moon Story

Name_____

Date_____

Period_____

Every culture in the world has their own collection of original myths, legends, and stories. If you compare one culture's myths to another, you can begin to identify common threads. One of these threads includes Moon stories. There are an unlimited amount of Moon stories from cultures all over the world. Many of these stories are designed to tell people why the Moon does certain things. Often the Moon in the story has a personality. It may have a name and act like a person. It may be evil or good. Some stories involve characters that interact with the Moon. These characters may be people but they often include animals that talk. Moon stories have been with us for as long as people have been telling stories. During the Moon project you will be sharing Moon stories with other students from other countries and cultures.

Step 1
You need to share a Moon story from your country with your discussion group. Since we live in North America, we will be looking at Native American Moon stories. Read a story to your class from the books provided. Write the title and author of the story you read on the following line:

_____

Step 2

Now it is your turn to write your own Moon story. Your story must involve the Moon as a character and must explain why the Moon does a particular thing. For example, your story may explain how the Moon got into the sky. Or it may explain why a particular animal looks the way it does (because of something that happened between it and the Moon!). You are limited only by your imagination. What question are you going to answer with your Moon story? Write it on the following line.

_____

Step 3

Write your Moon story! The final copy must be:
- One page long, typed, 12 point font.
- Explain a natural phenomenon.
- Turn in a copy of your story and get it approved.
- Post the story online with your discussion group.

Moon Story Rubric

TRAIT ONE   Preparation

_____ Read at least one other Moon story from a native culture.
_____ Identified a question to explain within the story.
_____ Turned in the completed "Moon Story" paper.
_____ Story pre-approved.

TRAIT TWO   Written Expectations

_____ Paper is typed, double-spaced, 12 font.
_____ Font Times New Roman or pre-approved, neat appearance, organized.
_____ Accurate spelling, grammar and punctuation.
_____ Correct margins: top and bottom 1", sides 1.25"
_____ Story is posted with the discussion group.

TRAIT THREE   Story Line

_____ Story has a plot that involves a problem that needs to be solved.
_____ The characters are well defined and the Moon is one of the characters.
_____ The story explains why a natural phenomena occurs.
_____ The main idea is clear to the reader.

TOTAL PTS: _____/ _52__   Scale: 4   Excellent
                                                  3   Proficient
                                                  2   Limited
                                                  1   Missing

Teacher should use Free Books app and Appendix B in the Common Core State Standards for lists of text exemplars and sample performance tasks. Download book by Burnett, Frances Hodgson *The Secret Garden* which is listed as a text exemplar for grades 4-5.

Common Core State Standard: 5.RL.1 Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.

Lesson Objective: The student will accurately quote from a text to explain his/her inference.

Subobjective #1: The students will use details in text to make an inference.
- **Information:** Any inferences you draw about what you are reading should be based on relevant details in the text.
- **Model:** Write the following paragraph on the board. "The stripes of zebras help to protect them from predators. When zebras are traveling in a herd, animals that hunt them cannot see individual zebras because the stripes make the herd look like a large striped block." Use a conclusion map to show students that zebras need to be protected from predators which will hunt them for food.
- **Checking for Understanding:** Write the below paragraph on the board and read it aloud to students. The students will infer how they think Rita feels when she arrives home. Students will use the text to explain how they decided. **"**Rita arrived home and let her tennis racket slip from her hand to the floor. She walked slowly to the kitchen and poured cold water in a large glass. "Finally!" Rita said as she settled herself into a comfortable chair." Possible Answer: She is probably tired. The clues include slip from her hand, walked slowly, finally and comfortable chair.
  Reference:
  http://activities.macmillanmh.com/reading/treasures/html/teacher_comprehension_lessons.html

Subobjective #2: The students will make a prediction using inferred character traits about the main characters future.
- **Information:** Character traits include habits, personality, likes, values, dislikes, behaviors and manners. You can make an inference about a character's traits by paying attention to: the author's description of the character, the character's reactions to other people and situations, and the ways that other people react to the character.
- **Model:** After reading page 5, predict what the mother, Mem Sahib, will do next. I predict that the mother will leave her daughter and escape from the cholera outbreak alone. Mem's first reaction when hearing about a servant dying was to run into the house and take the boy officer with her. Her first reaction wasn't concern over her daughter's well being. When the boy officer said Mem should have gone to the hill two weeks ago, we found out that Mem stayed to attend a dinner party. This tells me that Mem only cares for herself and entertainment. Mem's priorities are not her family. On page one, we find out that Mem "had not wanted a little girl at all, and when Mary was born she handed her over to the care of an Ayah". Mem clearly did not care for her daughter and acts selfish; therefore, I predict Mem will leave her daughter to die of cholera.
- **Check for Understanding:** After finishing chapter one, the students will predict Mary's reaction to being without a father and mother. Quote Mary's character traits accurately from the text when drawing this inference.

PROJECT PLANNING FORM

Project title:_____

Teacher(s):_____

School:_____

Grade level(s):_____

Subjects:_____

**STANDARDS-FOCUSED
PROJECT BASED LEARNING
Buck Institute for Education**

http://pbl-online.org/pathway2.html

PBL Planning Resources; Project Planning Tools

Begin with the End in Mind

Summarize the theme for this project. Why do this project?
Identify the content standard that students will learn in this project (two to three per subject).
Identify key skills students will learn in this project. List only those skills you plan to assess (two to four per person).
Identify the habits of mind that students will practice in this project (one to two per project).

- *Does the project meet the criteria for standards-focused PBL?*

Craft the Driving Question

State the essential question or problem statement for the project. The statement should encompass all project content and outcomes, and provide a central focus for student inquiry.

- *Have you posed an authentic problem or significant question that engages students and requires core subject knowledge to solve or answer?*

Plan the Assessment

Step 1: Define the products for the project. What will you assess?
Early in the Project:
During the Project:
End of the Project:

Plan the Assessment (2)

Step 2: State the criteria for exemplary performance for each product:
Product: Criteria:
Product: Criteria:
Product: Criteria:
Product: Criteria:

- *Do the products and criteria align with the standards and outcomes for the project?*

Map the Project

What do students need to know and be able to do to complete the tasks successfully? How and when will they learn the necessary knowledge and skills? Look at one major product for the project and analyze the tasks necessary to produce a high-quality product.

Product:

KNOWLEDGE AND SKILLS NEEDED	ALREADY HAVE LEARNED	TAUGHT BEFORE THE PROJECT	TAUGHT DURING THE PROJECT
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			

What project tools will you use? □ Know/need to know lists □ Daily goal sheet □ Journals □ Briefs □ Task lists □ Problem logs	□ _____ □ _____ □ _____ □ _____ □ _____ □ _____

- *Do the products and tasks give all students the opportunity to demonstrate what they have learned?*

Map the Project (2)

List the key dates and important milestones for this project.

Use the Tuning Protocol with other teachers or a group of students to refine the project design or guide you further in your planning. What other thoughts do you now have on the project?

- *What challenges or problems might arise in this project?*

Manage the Process

List preparations necessary to address needs for differentiated instruction for ESL students, special-needs students, or students with diverse learning styles.

How will you and your students reflect on and evaluate the project?

□ Class discussion

□ Fishbowl

□ Student-facilitated formal debrief

□ Teacher-led formal debrief

□ Student-facilitated formal debrief

□ Individual evaluations

□ Group evaluations

□ Other: _____

□ _____

- *What do you expect to learn from this project?*

Challenge Based Learning
A Classroom Guide

Contents

Teacher Planning and Preparation

Best Practices

Challenge Based Learning mirrors the 21st century workplace. To stay true to its intent, make sure participants:

- Work in collaborative groups
- Use technology commonly used in daily life
- Tackle real-world problems using a multidisciplinary approach
- Share the results with the world

Challenge Based Learning mirrors the 21st century workplace. Students work in collaborative groups and use technology to tackle real-world issues in the context of their school, family, or local community. For teachers, the task is to work with students to take multidisciplinary standards-based content, connect it to what is happening in the world today, and translate it into an experience in which students make a difference in their community. Accomplishing this goal necessitates giving students structure, support, checkpoints, and the right tools to get their work done successfully, while allowing them enough freedom to be self-directed, creative, and inspired.

Understanding the Process

Challenge Based Learning begins with a big idea and cascades to the following: the essential question; the challenge; guiding questions, activities, and resources; determining and articulating the solution; taking action by implementing the solution; assessment; and publishing the solution and sharing it with the world. Reflection and informative assessment are an important part of the process at every stage as they reinforce learning and prepare students for what is coming next.

The Framework

Big Idea

Essential Question

The Challenge

Guiding Questions

Guiding Activities

Guiding Resources: Web and iTunes U

Solution: Implementation

Evaluation/Assessment

Publishing: Student Solutions

Publishing: Student Reflections

Setting the Stage

Setting a solid foundation for the Challenge Based Learning experience is critical for a successful experience. The resources in this section will assist in organizing the process, keeping student teams on track, and getting started with big ideas.

These resources have been developed and contributed by educators who have participated in Challenge Based Learning efforts at all grade levels. They are offered not as required documents but as ideas available for you to use and to adapt to meet your particular needs. As you create new resources, please share them with the Challenge Based Learning community.

- **Big Ideas and Essential Questions**—A collection of big ideas to start your thinking. Remember to also explore your local community for big ideas.
- **Preparation Checklist**—A document designed to assist with preparing for the Challenge Based Learning experience.
- **CBL Timeline Template**—A tool for planning and keeping track of the process. It is important to set clear deadlines for the process and products.

CBL Timeline Template

Fill in due dates for each stage of the challenge.

Stage	Dates
Stage 1: From Big Idea to Challenge	
Understanding the Big Idea and Essential Question	
Create and/or Accept the Challenge	
Create Challenge Proposal Video	
Create Solution Teams/Explore Roles	
Stage 2: Setting the Foundation	
Develop Guiding Questions, Activities, Resources	
Researching Answers to Guiding Questions	
Brainstorming Solutions	
Stage 3: Identifying the Solution	
Initial Testing of Solution Prototypes	
Final Solution Presentation	
Stage 4: Implementation and Evaluation	
Implementation Plan	
Solution Implementation	
Data Analysis and Presentation	
Stage 5: Publishing Results and Reflections	
Solution Video	
Reflection Videos	

Standards and Assessment

National and state standards should be considered when you implement Challenge Based Learning. Fortunately, the open architecture of CBL enables teachers and students to develop challenges that address all standards and allows for multiple methods of assessment. This section provides ideas from other educators how to address standards, sample rubrics for CBL, and assessment ideas.

These resources have been developed and contributed by teachers who have participated in Challenge Based Learning efforts at all grade levels. They are not offered as required documents but as ideas that you can use and adapt to meet your particular needs. As you create new resources, please share them with the Challenge Based Learning community.

- **Thoughts on Standards**—Teachers who are implementing CBL explore the role of standards and provide ideas for addressing them.
- **Sample CBL Rubric**—A general rubric covering the entire CBL process.
- **Assessment Ideas**—A list of ideas for how to build assessment into the Challenge Based Learning experience.

Supporting the Process

The CBL process provides students the freedom to think freely, learn, plan, fail, succeed, evaluate, and try again as they move toward the implementation of a solution. A large part of the teacher's responsibility is creating organizational scaffolding for the learning experience. The materials in this section are examples of resources that can be used to support the process and move it to a successful conclusion.

- **Roles and Responsibilities**—A list of potential roles for students that will support the process. In most cases, students will play multiple roles throughout the challenge.
- **Guiding Questions, Resources, and Activities Matrix**—A resource for students to collect guiding questions, list corresponding activities/resources, and record their findings.
- **Group Challenge Guide**—A tool for teams to use to organize, track, and document their efforts. The form can be expanded or moved to a digital format for easy updating. This is a great way for teachers to keep track and assess student effort.
- **Technology Guide**—A guide for how technology can be used to support the CBL process.
- **Reflection Prompts**—Students should be encouraged to capture their reflections throughout the process. Reflections can be captured via text, audio recording, or video recording. This section provides ideas for reflection prompts that can be used throughout the process.
- **Team Contract—**A resource to use with each team to document that they understand the responsibilities of working in a team, their individual roles, and the due dates for products.

Group Challenge Guide

The Big Idea: _____

The Essential Question: _____

The Challenge: _____

Group Members and Roles/Responsibilities

(Possibilities include project manager, product manager, public relations, media specialist, documentarian, add any other jobs that our group will need)

Name Roles/Responsibilities

1. _____

2. _____

3. _____

4. _____

5. _____

Our Guiding Questions

(Questions we need to answer—what we think we need to know to find a solution)

_____

_____

_____

_____

Our Guiding Activities

(Learning activities, research, experimentation, interviewing, exploring—how we will get information)

_____

_____

_____

_____

_____

Our Guiding Resources

(Websites, podcasts, movies, people, tools—sources we can access to find information)

_____

_____

_____

_____

Training

(Skills we need and our professional development plan—could include video production, interviewing techniques, and so on)

_____

_____

_____

_____

_____

_____

Our Production Schedule

(Events we want to record, what format, necessary resources, and dates)

_____

_____

_____

_____

_____

_____

Things We've Learned—and How We Learned Them

(Important information about the big idea and the challenge—keep a running list on another sheet or on a wiki)

_____

_____

_____

_____

_____

_____

Publishing

An important element in the Challenge Based Learning experience is publishing. This allows the students to share their challenges, solutions, and reflections with a local and global audience. This section provides resources to assist with the publishing process.

- **Challenge Proposal Storyboard**—A template for developing a storyboard for a challenge proposal video. This short video informs users about the challenge and serves as a call to action for the participants.
- **Solution Storyboard**—A template for developing a storyboard for a challenge proposal video. This three-to-five minute documentary video tells the story of how the group moved from the challenge to the implementation of their solution.
- **Video Specifications**—Technical information for preparing your videos for archiving and posting to the web.

Challenge Proposal Storyboard

This storyboard template can be used by teams to plan their challenge proposal video. Use the large box to sketch ideas, the smaller box for production notes, and the line below for dialogue.

1

Big Idea

Image or statement that grabs the viewers interest.

2

Team Info

Team name, country, state, school, grade, and so on.

3

Essential Question

Present the question of interest.

4

Significance/ Context

Why is this important to your team and their community?

5

Example

A concrete example of the significance or context.

6

The Challenge

An engaging statement of the challenge.

Solution Storyboard

This storyboard template can be used by teams to plan their solution video. Use the large box to sketch ideas, the smaller box for production notes, and the line below for dialogue.

1

Team Info

Team name, country, state, school, grade, and so on.

2

The Challenge

State the challenge within your context.

3

Process

Overview of what your group did to explore the challenge.

4

Solution

State your solution.

5

Implementation

Tell how, where, and with whom the solution was implemented.

6

Lessons Learned

Present what you learned.

App Name	Cateogry	Description
Doodle Buddy	Art	A finger painting and stamping app
Harmonious	Art	A smart sketch pad that includes tools to make it possible for anyone to easily create impressive works of art
Bloomberg	Economics	Offers news, stock quotes, company descriptions, market leaders/laggers, price charts, market trends analysis, and moore.
BrainPOP Featured Movie	Education	Watch a different animated movie every day, then test your new knowledge with an interactive quiz
ABCs and Me	Language	Six interactive flashcard games aimed at teaching reading and math readiness concepts for kindergarten
Alice Light	Language	This is a free, abridged, interactive version of "Alice in Wonderland."
Bluster	Language	Helps students develop vocabulary skills while learning to recognize word patterns (in order to answer a question, students need to select three words from a list that share a common relationship)
Bluster Rhyming	Language	Game in which students have to identify three words that rhyme.
FreeBooks	Language	Download and read over 20,000 classics for free
Futaba	Language	Students practice identifying words that match the displayed pictures.
i-Prompt Pro	Language	Disguise reading fluency in this fun teleprompter. Provide a reason for students to read with expression and fluency when using i-Prompt for TV reporting, presenting, or giving speeches.
Letterfall Free	Language	Word game in which you try to remove falling letter tiles from the screen by using them to create words of three letters or more
Living Language Chinese	Language	With this app, lesson one is free and features Essential Expressions with interactive flashcards, pronunciation support and game-based.
MeeGenius Kid's Books	Language	A great library of books featuring read-along technology, word highlighting and professional narration.
Mousefish	Language	Contains illustrations of various animals whose heads, bodies and legs or tails can be mixed and matched to create different combinations (can be used for story prompts, habitat and adaption discussions)
Mr. Wolf and the Ginger Cupcakes	Language	A wonderful, interactive book

App	Subject	Description
Pocket Phonics	Language	Opportunity for students to practice letter sounds, writing letters, and joining letters together to form words.
Read Me Stories	Language	This app provides students with an opportunity to hear some one reading to them.
Booktrack: The Adventure of Sherlock Holmes with	Language	This app plays a soundtrack while you are reading that is paced to your individual reading speed.
Sight Words List	Language	An exciting new way for students to learn sight words; fully customizable with flashcards and games
SparkleFish	Language	Practice your parts of speech and record humorous stories with this mad lib-like activity
Speakall!	Language	This Purdue University app helps children learn the process of constructing sentences.
StoryLines	Language	This is a fun app that encourages students to think creatively to make up stories.
Talk to Me 100 Free	Language	A tool for children who are learning to talk or are having difficulty mastering verbal expression
Toontastic	Language	Students can create their own animated stories complete with visuals and sound. In addition to writing skills, students will develop problem solving and communication skills.
Verses Poetry	Language	This app reminds me of refrigerator magnets. Students have access to a variety of words that they can organize to create a variety of poems that can be shared.
Wild Fables	Language	This app features three Aesop's fables rewritten with interactivity on each page.
Wooords	Language	Students make their own words with fridge magnets.
Word BINGO	Language	Helps beginning readers recognize and locate more than 300 sight words
Elevated Math	Math	This free app offers instruction and practice on middle school math topics, including estimation, Pre-Algebra and Algebra
Equation	Math	Allows students to build agebraic equations and have assistance solving them.
Flash to Pass	Math	Free Single and double digit multiplication, and division practice.
Free Graphing Calculator by William Jockusch	Math	This is an excellent scientific calculator with graphing capabilities, a unit converter and math/science references

Graphbook	Math	This application provides students with a collection of interactive graphing
iToochLite Math Grade 5	Math	Explore 15 free chapters featuring achievements to unlock, leaderboard status and an integrated calculator and blackboard
Khan Academy Algebra	Math	Video lesson that models and walks students through the challenges of higher level math.
KidsMath	Math	Single digit addition, pictures for students who still need visuals to add and numbers for students who are more advanced.
Math Drills Lite	Math	More opportunity to practice single digit addition, subtraction, multiplication, and division.
Math Ninja	Math	Replace flash cards for testing math skills
Math Terms	Math	Search an illustrated English/Spanish glossary of math terms that includes both middle and high school mathematical concepts
MathRef	Math	A math reference guide for a variety of higher order mathematical topics.
Minesweeper HD	Math	Like minesweeper of old! Try to turn over all of the tiles without hitting a mine!
Motion Math Zoom	Math	This app features a zoomable, stretchable number line where students have to fill in the missing numbers as well as several free lessons that help teach place value
My Math App	Math	This app provides students with an opportunity to practice single digit addition, subtraction, multiplication, and division.
Number Bubbles	Math	This fun game app helps students practice addition and multiplication skills by popping a variety of bubbles when they add or multiply correctly.
Numberline	Math	Help students learn about fractions, decimals, and percents on a number line.
Pizza	Math	Students identify fractions by looking counting the number of slices a pizza has been cut into and counting the number of slices that remain. Easy, medium, and hard levels.
Quick Graph	Math	Graphs equations including area of a triangle and polynomial equations. The interface is complex for younger students, but it could serve as a basic calculator also.
QuickGraph	Math	Students can graph algebraic equations allowing them to see a visual representation of the mathematical equation.
Rocket Math	Math	In this single or multi-player game, students rocket into space while learning odd and even numbers, addition, subtraction and more.

App	Subject	Description
Sumoku	Math	Students work to get the highest score by arranging tiles in rows and columns which add up to multiples of the same number
TanZenLite	Math	A challenging set of tan gram puzzles
Telling TimeLite	Math	A fun interactive clock application
TriZenFree	Math	Another puzzle game using a variety of shapes
Undersea Math	Math	Single digit addition. Students drag wooden answer blocks to match the equation block. If they match the two blocks correctly, a section of the picture is revealed.
Zentomino	Math	A tan gram type game with a variety of shapes
Khan Academy Mobile	Multiple	Students can download lectures/lessons that are related to the topics they are interested in or their teachers assign.
Kids Apps	Multiple	This is 13 apps in one. There are a variety of site words and math games.
Mental Case	Multiple	Prepare flash cards and distribute them to students via a web server or other online storage solution.
My Country HD	Multiple	With this app, students can "create a country" with a starting capital of $65,000.
Timmy's Kindergarten Adventure	Multiple	Math, Reading, Sight Words, Clock Time, and more games.
Congas	Music	In this incredible app with realistic sound and response time, students can choose between four sets of conga drums
Dr. Seuss Band	Music	A wonderful musical instrument game.
Old MacDonald Had a Farm	Music	A sing-along app that helps teach rhythm and sound
VidRhythm	Music	The fun and easy way to make music videos - you create the sample sounds, the app creates the remix.
Flipboard	News/ Soc Stds	Flipboard creates a personalized magazine out of everything - customizable news feeds
Chore Pad HD Lite	Other	A fun way to keep track of four chores for one user.

Houzz	Other	This app offers over 200,000 photos of interior and exterior home design ideas.
Signing Time Lite ASL	Other	Includes six flash cards with video explanations and three music videos
Art Collections	Productivity	Students have access to more than 25,000 pieces
Bamboo Paper	Productivity	Enjoy the ease of your own natural handwriting as you sketch your thoughts on a neat digital paper notebook
BestAlarm	Productivity	A free alarm clock good for any traveler
box	Productivity	Similar to dropbox, this allows access to view, share, and upload files/pictures.
Brainscape	Productivity	Helps students learn efficiently by personalizing the timing of study patterns
CloudOn	Productivity	A free app that is almost identical to MS Office that uses dropbox for file storage.
Dragon Dictation	Productivity	A wonderful voice to text application that allows you to speak text messages or any information which is then copied and pasted into the app of your choice.
Dropbox	Productivity	A free online storage service which will store files to share between devices.
Edmodo	Productivity	Send notes, submit assignments, post replies, and check messages and upcoming events while away from the classroom.
Evernote	Productivity	This app gives you the ability to create text, photo and video notes. It is an excellent tool for research and classroom notetaking.
GoodNotes	Productivity	Allows students to take notes, email notes, annotate files. Invaluable to going digital.
iBrainstorm	Productivity	Mindmapping app
iBrainstorm	Productivity	A great tool for focusing on possible solutions—sort ideas, collaborate with up to four iPhones and more
Idea Sketch	Productivity	Lets you easily draw a diagram - mind map, concept map, or flow chart - and convert it to a text outline, and vice versa.
In Class	Productivity	A note-taking app that helps students keep track of courses and reminders

App	Category	Description
iScroll	Productivity	Library of books, lectures and speeches synchronized with word-for-word narrated audio
LogMeIn	Productivity	An app that allows you to control another computer if you have the connection information
Merriam Webster Dictionary	Productivity	America's most useful dictionary, designed and enhanced for the iPad
Mind Mash	Productivity	Brainstorming and note-taking application. Allows you to create an ideas mash-up by combining and manipulating text, images & drawings on the iPad ina visual and free-form manner.
Popplet Lite	Productivity	In this mind-mapping app, students can create outlines based on texts they are reading, brainstorm main ideas and sub ideas as well as share their conclusions and thoughts with others
Prezi Viewer	Productivity	View and present your prezis anywhere
Quizlet's Flashcards*	Productivity	The world's most popular flash card app
Screen Chomp	Productivity	This app allows you to quickly sketch or narrate your ideas on a recordable whiteboard and easily share them with others. Teachers can pre-record lessons and students can show what they have learned by creating a Screen Chomp to teach
Show Me	Productivity	A digital whiteboard that allows you to record screen capture videos with audio.
Skitch	Productivity	From Evernote, this app lets you capture and edit images
Skype	Productivity	Promotes communication and collaboration skills. Think penpals of the digital age. Bring the experts to you with no cost.
Storyboards	Productivity	Students can pick from a range of camera angles, action poses, backgrounds, characters, props and costumes when creating storyboards
Student Clicker - Socrative	Productivity	Student response tool that works on any device with a web browser.
Tap to Talk	Productivity	A talking picture library.
Teacher Clicker - Socrative	Productivity	Student response tool that works on any device with a web browser.
Teacher Pal	Productivity	A digital tool that allows educators to track student progress, complete seating charts and grades.
TeamViewer	Productivity	An app that allows you to control another computer if you have the connection information.

Name	Category	Description
Verbally	Productivity	A text-to-speech app where students can tap in what they want to say.
FoldIt	Reasoning Game	FoldIt is a mind-bending puzzle game that will test your intelligence and visualization skills
Qwiki	Reference	Explore 3,000,000 topics in a format perfect for the iPad: learn about what's near you, across the world - and everything in between
Animals Forest Adventure	Science	Filled with beautiful illustrations and animations, this game teaches students about forest and wildlife animals
Building Atoms, Ions, and Isotopes HD Lite	Science	Explore the composition of the elements. Build atoms, ions, and isotopes by selecting appropriate numbers of protons, neutrons, and electrons.
ChemCalLite	Science	A free chemical calculator
Dinosaurs World	Science	This app is loaded with information on over 40 different dinosaurs and provides students with a vocal memory match game.
Go Sky Watch Planetarium	Science	Students can easily and quickly identify and locate stars, planets, constellations and more with a touch or by simply pointing to the sky. An astronomy app allowing the user to see the stars and constellations from different points on the
Molecules	Science	3D models of a variety of molecules which allow the student to zoom and rotate.
NASA App HD	Science	Explore thousands of images and videos of planets, moons, comets, meteorites and more
Periodic Table Of Elements	Science	An in-depth periodic table
Science Glossary	Science	A glossary of scientific terms and scientists that is originally intended to supplement the visionlearning.com science curriculum. (A free online science curriculum). Each term definition is accompanied by a list of links to the specific online
ScienceVL	Science	A science encyclopedia where the terms are connect to a scientific lesson on focused on each term.
Video Science	Science	A collection of videos teaching us how to do many different kinds of scientific experiments.
VirtualCell	Science	An app demonstrating cellular processes. It includes text, images and video.
3D Brain	Science	A view of the various parts of the human brain.
3D Cell Stain	Science	Learn about the cell and its structures through this app's 3D model and explore cellular imaging.

App	Subject	Description
Color Uncovered	Science	This app offers an interactive book of illusions, activities, articles and videos from the Exploratorium.
How Stuff Works for iPad	Science	This app features over 40,000 articles and 12,000 videos from the HowStuffWorks and Discovery archive.
iCell	Science	Explore animal, bacteria and plant cells through high quality photographs and interactive animations. Users may select basic, intermediate or advanced text support.
Mars Globe	Science	Information about Mars.
National Geographic	Science	Limited content is available free through the Newstand app, choose the National Geographic Magazine Sampler
Planet	Science	A view of the planets
Science 360	Science	A National Science Foundation app, this resource integrates high definition photos, video clips and articles into a 360 degree grid. Pinch to zoom in on more detail and spread your fingers to see more options.
Xperica HD	Science	Explore four free experiments that deepen understanding of the Law of Moments, specific heat of water, resistance in series and spring and bob oscillations.
Early Jamestown	Social Studies	This textbook-type application explores how the early settlers of Jamestown survived, the confrontations with natives and the beginnings of the slave trade in Virginia
European Exploration	Social Studies	Explore the world as a European power in the 15th Century using this simulation app developed through a grant from the Virginia Department of Education
Fotopedia Heritage	Social Studies	Selected as one of the top 50 apps of all time in the Hall of Fame, Fotopedia gives you access to more than 25,000 photos with thorough descriptions by UNESCO and Wikipedia
Google Earth	Social Studies	Navigate the world. View mountain terrain, show the panoramio layer and browse the millions of geo-located photos from around the world, view geo-located Wikipedia articles.
History: Maps of the World	Social Studies	This app contains a wide variety of maps of regions found around the world--many maps relate to specific eras such as "North America before the War of American Independence" or "Medieval Europe of the 13th Century"
Model Me Going Places	Social Studies	This visual teaching tool helps children navigate challenging locations in the community.
Tour Wrist	Social Studies	Research and take virtual tours of different places, landmarks and points of interest from around the world.
Zite Personalized Magazine	Social Studies	It provides a current, personalized compilation of all of the "stuff" that interests me from magazines all over the world.
Evernote Peek	Study Aides	Create your own study notebooks