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CBL Guide

Challenge Based Learning

Digital Promise

Accelerating Innovation in Education

Challenge Based Learning Guide

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Introduction

Welcome

We are surrounded by Challenges: large, small, local, global, short and long term. Some we choose, some choose us; some we look forward to, some we dread; some we address, some we try to ignore. Ultimately, how we individually and communally respond to Challenges will determine our future. The hectic pace of school, work, family and community life rarely provides time to consider different perspectives and craft thoughtful solutions. When and where do we learn how to address Challenges and create sustainable solutions? Without an effective, easy and efficient framework to think deeply, we repeat mistakes and overlook innovative ideas. As problems become increasingly complex and pressing, the need to develop a generation of engaged Learners equipped to identify Challenges and develop innovative and sustainable Solutions is crucial.

Challenge Based Learning is an effective learning framework initiated at Apple, Inc. and used in universities, schools, and institutions around the world. The framework empowers Learners (students, teachers, administrators and community members) to address local and global Challenges while acquiring content knowledge in math, science, social studies, language arts, medicine, technology, engineering, computer science and the arts. Through Challenge Based Learning, students and teachers are making a difference and proving that learning can be deep, engaging, meaningful, and purposeful.

Around the world hundreds of millions of people are involved in formal education. For a majority of these Learners, the focus is on acquiring knowledge and skills necessary to move to the next level and eventually enter the world as a productive member of society. Challenge Based Learning provides a framework for participants to accomplish this while building 21st century skills, developing a framework for life-long learning, and making an immediate impact on the world.

Imagine millions of empowered Learners focused on creating solutions to local and global Challenges as part of their school work. The world becomes a better place.

Take action. Make a difference.

Mark, Karen, and Marco
2016

About

The Challenge Based Learning user guide is for everyone (students, teachers, parents, administrators, and community members) interested in building learning communities focused on identifying Challenges and implementing thoughtful and sustainable solutions. It expands on the original Challenge Based Learning classroom guide and White Paper and reflects the most recent information about the framework.

If you are new to Challenge Based Learning the guide provides background information, key concepts, and resources for getting started. If you are a Challenge Based Learning veteran the guide includes recent updates and expands on the information found in the original white paper and classroom guide.

The Guide is organized into four sections:

1. An overview of key concepts, the updated framework, and ideas about implementation.
2. Recommendations and resources to support the use of Challenge Based Learning.
3. An in-depth walkthrough of the framework with examples, tips, and best practices.
4. The final section includes connections with other educational approaches to assist with decision making and integration, and a list of frequently asked questions.

Ready

We are all Learners. We are all teachers. By moving beyond the traditional hierarchy of the school and classroom, we can create environments where all stakeholders are working together to meet academic objectives while solving authentic Challenges.

Overview

Challenge Based Learning provides an efficient and effective framework for learning while solving real-world Challenges. The framework is collaborative and hands-on, asking all participants (students, teachers, families, and community members) to identify Big Ideas, ask good questions, discover and solve Challenges, gain in-depth subject area knowledge, develop 21st-century skills, and share their thoughts with the world.

The Challenge Based Learning framework emerged from the "Apple Classrooms of Tomorrow—Today" (ACOT^2) project initiated in 2008 to identify the essential design principles of a 21st-century learning environment. Starting with the ACOT^2 design principles, Apple, Inc. worked with exemplary educators to develop and test Challenge Based Learning.

Challenge Based Learning builds on the foundation of experiential learning and leans heavily on the wisdom of a long history of progressive ideas. The framework is informed by innovative ideas from education, media, technology, entertainment, recreation, the workplace, and society.

Using Challenges to frame learning experiences originated from an exploration of reality television, conversations with individuals who's lives center on Challenges, and reflection on personal learning experiences inside and outside of the

Resource

Apple Classrooms of Tomorrow—Today (ACOT^2) is a collaborative effort with the education community to identify the essential design principles for the 21st-century high school by focusing on the relationships that matter most: those between students, teachers, and curriculum.

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classroom. When faced with a Challenge, successful groups and individuals leverage experience, harness internal and external resources, develop a plan and push forward to find the best solution. Along the way, there is experimentation, failure, success and ultimately consequences for actions. By adding Challenges to learning environments the result is urgency, passion, and ownership - ingredients often missing in schools.

Challenge Based Learning is a flexible framework, with each implementation, new ideas surface, the framework is reviewed, and the model evolves. Challenge Based Learning provides:

1. A flexible and customizable framework that can be implemented as a guiding pedagogy or integrated with other progressive approaches to learning.
2. A scalable model with multiple points of entry and the ability to start small and build big,
3. A free and open system with no proprietary ideas, products or subscriptions.
4. A process that places all Learners in charge, and responsible for the learning.
5. An authentic environment for meeting academic standards and making deeper connections with content.
6. A focus on global ideas, meaningful Challenges and the development of local and age appropriate Solutions
7. An authentic relationship between academic disciplines and real world experience
8. A framework to develop 21st-century skills
9. Purposeful use of technology for researching, analyzing, organizing, collaborating, networking, communicating, publishing and reflecting.

Story

The CBL team visited Jamie and Adam "Mythbusters" to film Challenge pitches for the Big Ideas Water, Food, Fossil Fuels and Identity. It quickly became apparent that it would not be that simple. They were much more interested in discussing the overall CBL process and thinking about the Big Ideas. It was too easy to offer the pitch; they wanted the Learners to do that work themselves.

10. The opportunity for Learners to make a difference now.
11. A way to document and assess both the learning process and products,
12. An environment for deep reflection on teaching and learning

Foundations

The Challenge Based Learning framework builds on a set of foundational ideas. Familiarity with these concepts provides deeper insight into the framework, opportunities for discussion, and support for implementation.

A consistent vocabulary is critical to the success of all frameworks and plans. If there are disagreements, stated or unstated, about language at the beginning, the end results will be unsatisfactory.

Everyone is a Learner: Teacher/Learner and Learner/Teacher - Ubiquitous access to information create the opportunity to break down the traditional hierarchical structure of learning environments. In this new paradigm, all stakeholders become teachers and Learners. The Learners (students, teachers, administrators, families and community members) actively share the responsibility (and workload) for creating and participating in the learning experience. The framework does not diminish or demean the role of teachers and other adults in the schools as they still have the primary responsibility for a successful learning experience. It does relieve the burden of having to do all of the work by deeply involving students throughout the entire process. Teachers continue to teach, but now have the freedom to learn with their students. Students continue to learn but now share in the responsibility of defining the journey, aligning to standards, acquiring resources and teaching.

Tip

When considering new ideas examine institutional language and develop a common vocabulary across all stakeholders. A common understanding of language is critical for successful decisions.

Best Practice

Teachers and students need time and support to adjust to their new roles. They have spent years in the traditional roles. Successful Challenge Based Learning programs provide assurance, support, and scaffolding. The change does not need to be overnight.

Moving Beyond the Four Walls of the Classroom - Involving all of the community members in the process expands resources, creates opportunities for authentic learning and moves the responsibility of education to the larger community.

Learner Inspired, Learner Directed - Meaningful connections are made between content and the lives of Learners. The more passionate Learners are about the content, the deeper the learning, the more control all participants have over the process, the higher the level of ownership.

Challenges - Situations or activities that create a sense of urgency and spur action.

Content and 21st Century Skills - Authentic learning experiences foster in-depth content knowledge and help students organically develop 21st-century skills. These skills do not become "one more thing" to be addressed by the teacher but emerge from the Challenge experience.

Boundaries of Adventure - Boundaries are provided to guide the way and provide freedom for Learners to take ownership of the process. At the beginning or in particular situations, the limits will be narrow, but the goal is always to move towards more freedom and responsibility for the Learner.

Space and Freedom to Fail - Provides a safe space for all Learners to think creatively, try new ideas, experiment, fail, receive feedback and try again. All of the phases of the framework include opportunities for iteration.

Slowing for Critical and Creative Thinking - To ensure full participation and to provide opportunities for deep thinking, the learning process is intentionally slowed down at times.

Story

The idea of Boundaries of Adventure comes from experience guiding wilderness trips. When coming onto camp, the guides set boundaries of adventure to provide the campers with enough space to have an adventure while keeping them safe. As the trip progresses and the campers became more skilled, the boundaries increase until the campers set their own boundaries.

Authentic and Powerful Use of Technology - Technology is used to research, communicate, organize, create and present information. The use of technology allows Learners to own and transform the learning experience.

Focus on Process and Product - The journey to the solution is valued as much as the solution. Throughout the Challenge Based Learning experience there are opportunities to evaluate and assess both process and products.

Documentation - During each step of the Challenge process, the Learners document and publish using text, video, audio and pictures. These artifacts are useful for ongoing reflection, informative assessment, evidence of learning, portfolios and telling the story of their Challenge.

Reflection - Throughout the process, Learners continuously reflect on the content and the process. Much of the deepest learning takes place by considering the process, thinking about one's learning, and analyzing ongoing relationships between the content and concepts.

Best Practice

Tell your story. When trying something new or different in schools and classrooms, it is critical to tell the story of the experience. If you are not telling your story someone else will.

Reflect

How do these ideas match with my current practice?

Framework

The Challenge Based Learning Framework divides into three interconnected phases: Engage, Investigate, and Act. Each phase includes activities that prepare the Learners to move to the next stage. Supporting the entire process is an ongoing process of documenting, reflecting and sharing.

Best Practice

Before starting Challenge Based Learning with your students, try a personal or peer Challenge. Identify a passion (Big Idea), develop a Challenge and work through the framework to implement a solution. Personally understanding and valuing the framework will result in a better experience for the Learners.

Phase 1: Engage

Through a process of Essential Questioning, the Learners move from an abstract Big Idea to a concrete and actionable Challenge.

1. Big Ideas are broad concepts that are explored in multiple ways and are relevant to the Learners, and

Level Up

Once the Learners have developed an efficient and effective Challenge Based Learning environment, reach out to the community. Every organization in your community is facing Challenges, invite them in and work through the Challenge framework together.

the larger community (e.g. health).

2. Essential Questioning allows the Learners to contextualize and personalize the Big Idea. The end product is a single Essential Question that is relevant to the individual or group (e.g. What do I need to do to be healthy?).

3. Challenges turn the Essential Questions into a call to action by charging participants to learn about the subject and develop a Solution. Challenges are immediate and actionable.

Phase 2: Investigate

All Learners plan and participate in a journey that builds the foundation for Solutions and addresses academic requirements.

1. Guiding Questions point towards the knowledge the Learners will need to develop a Solution to the Challenge. Categorizing and prioritizing the questions create an organized learning experience. Guiding Questions will continue to emerge throughout the experience.

2. Guiding Activities and Resources are used to answer the Guiding Questions developed by the Learners. These activities and resources include any and all methods and tools available to the Learners.

3. Analysis of the lessons learned through the Guiding Activities provides a foundation for the eventual identification of Solutions.

Best Practice

Work with all Learners to develop a clear understanding of the process and set of expectations for the Investigation phase. Set dates for when they can and cannot use the "S" (Solution) word. This will help prevent the natural urge to jump to solutions.

Tip

Resist the temptation to jump in and find the solutions for your students. Part of the experience is for them to try, fail, ask questions, learn more and try again.

Phase 3: Act

Evidence-based Solutions are developed, implemented

with an authentic audience, and then evaluated based on the results.

1. Solution concepts emerge from the findings made during the investigation phase. Using the design cycle, the Learners will prototype, test and refine their Solution concepts.

2. Implementation of the Solution takes place within a real setting with an authentic audience. The age of the Learners and the amount of time and resources available will guide the depth and breadth of the implementation.

3. Evaluation provides the opportunity to assess the effectiveness of the Solution, make adjustments and deepen subject area knowledge.

Each of the phases and the steps are explored in greater detail in chapter three. Before diving deeper into Challenge Based Learning, some thinking about planning and preparation is necessary.

Reflect

How does the framework sync with my current approaches?

Where is a good place for me to start using the framework?

Approaches

Challenge Based Learning is designed to be flexible, customizable and allow for multiple points of entry. The approach can extend current practice, serve as the framework for specific capstone events during the school year, and act as an overarching framework for strategic planning, decision making, and learning.

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Throughout this book, ideas are provided for putting Challenge Based Learning into practice. These ideas build on each other and provide the scaffolding to move from individual Challenges to school-wide implementations.

In considering Challenge Based Learning, think about how the framework fits with personal and institutional learning goals and how it can be implemented and supported.

At the macro level, Challenge Based Learning is an overarching philosophical approach that uses a framework of Challenges to inform and guide strategic decision-making, curriculum development, and classroom practice.

Challenges create a sense of urgency and spur action. In Challenge Based Learning, they include a specific structure (engage, investigate and act), vary in duration and intensity and can be incorporated or adapted to most learning environments. Variations of Challenges that have emerged include:

1. Nano Challenges are shorter in length, focus on a particular content area or skill, have tight

Tip

Challenge Based Learning should not be "one more thing" added to teacher and students full plates. The framework is designed to provide structure for current best practices, and make logical connections.
CBL becomes the framework that holds everything together. For example, a STEM Challenge is combined with service learning resulting in community based solutions that involve coding or products created in Maker Spaces.

Level Up

The Challenge Based Learning Framework is useful for strategic planning at all levels. When planning consider framing issues and goals as Challenges and then follow the framework. The results will be a broader perspective and deeper ownership.

boundaries and are more teacher directed. The Learners typically start with the Challenge without identifying a Big Idea or Essential Question. The process includes the Investigation and Act phases, but at a significantly lower level of intensity and often stop short of implementation with an external audience. Typically Nano Challenges are used as scaffolding leading to more significant Challenges or during longer Challenges to address specific concepts.

2. Mini Challenges widen the boundaries and provide Learners with an increased level of choice and responsibility. An increase in duration (2-4 weeks) allows the Learners to start with a Big Idea and work through the entire framework. The research depth and the reach of their Solutions increases and the focus can be content specific or multidisciplinary. Taking a "show me what you can do" perspective, Mini Challenges are good for intense learning experiences that stretch the Learners and prepare them for longer Challenges.

3. Standard Challenges are longer (one month and longer) and allow considerable latitude for the Learners. Working together, the Learners identify and investigate Big Ideas, develop Challenges, do extensive investigation across multiple disciplines and take full ownership of the process. The Framework is used from start to finish, including implementation and evaluation of the Solution in an authentic setting.

4. Capstone Challenges are Standard Challenges used as a culminating academic and intellectual experience for the Learners. Examples include a grade level Challenge that ends the year in a content area or a Senior project that acts as a "thesis" for graduation.

Story

Faced with weeks of lectures designed to level student's knowledge and skills in a University computer science course, a group of professors opted instead for a Mini-Challenge. Charged with the Challenge of "create the best app you can" the students covered 80% of the content on their own in two weeks. You never know what Learners are capable of until you take a chance and Challenge them.

Story

Each year at the Windward School in Los Angeles, CA., seventh-grade students complete their school year with a culminating Science Challenge. The experience allows them to apply science to community Challenges and create solutions that make their community better. Through the process, they gain deeper knowledge in science, and acquire important 21st Century Skills.

5. Strategic Challenges are for planning at the institutional level. Any organization can use the framework to define the mission, identify Challenges, create a common language and developed strategic plans. Big ideas like time, achievement, learning, technology and school culture are perfect for starting deep and important conversations.

This list is not designed to be an exhaustive or prescriptive set of Challenge approaches. The framework is adaptable to meet the needs of your context.

Reflect

What are the Big Ideas that guide my school or institution?

What pedagogical approaches are being used and how do they work together?

How can Challenge Based Learning be used to connect and amplify our best practices?

Set

Challenge Based Learning is unique in that most of what is considered "teacher work" in traditional settings (e.g. determining learning goals, writing curriculum, researching content, aligning Standards, and developing assessments) is completed with the students during the Challenge experience. Success with Challenge Based Learning necessitates providing structure, support, checkpoints and the right tools to get work done, while still allowing space for self-directed, creative, and inspired learning.

Roles

One of the biggest differences between Challenge Based Learning and more traditional approaches to teaching and learning are the roles of schools, teachers, and students. With Challenge Based Learning, schools evolve from being information repositories to creative environments where all Learners can acquire real-world knowledge, address real-world Challenges, and develop skills they can use to solve complex problems for the rest of their lives. Teachers become more than information experts: they become collaborators in learning who leverage the power of students, seek new knowledge alongside students, and model positive habits of mind and new ways of thinking and learning.

Best Practice

Model the role of teacher/Learner by actively participating in all of the activities expected of your students. Try new things, fail, reflect and share. If you are expecting your students to be all in, you need to be all in.

The roles of collaborator and co-Learner can be a difficult one for teachers who are accustomed to guiding the entire experience and being the expert. You may be tempted to rush the process, over-engineer the activities, and point out Solutions to students. However, it is vital to provide space and time to make mistakes, follow false paths, and course correct. You do not need to know all of the information or even the location of the information ahead of time, but you must willing to work alongside the students to find answers. The Challenges will be real and not be simple to solve, and at times things will get "messy". Many "correct" answers will exist, and the role of the teacher in Challenge Based

Tip

The art of managing Challenge Based Learning is managing the Boundaries of Adventure based on time, expectations and the actions of the Learners.

Learning is to find the Solutions with the students, not for them. Trust that this will happen and resist the temptation to do take over the process.

Keep in mind that while students focus on each discrete part of the Challenge Based Learning process, they may find it difficult to keep the larger picture in mind, especially when first starting out. As the "senior Learner", you will help them identify the learning goals and curriculum standards, create plans and manage their time. You will use your expertise as an educator to manage the boundaries of adventure and to make sure the journey stays on track. Over time the students will take on more and more responsibility and ownership over the learning process.

Challenge Based Learning emphasizes exploring topics from many angles and through the lens of multiple disciplines, which allows Learners to appreciate the natural connections between content areas that might not always be evident. As a result, it works especially well when teachers from different disciplines work together. Just as working in collaborative groups help students acquire critical life skills, teachers who have implemented Challenge Based Learning in teams report that collaboration with other teachers is one of the most beneficial and enjoyable aspects of the approach.

Building Support

The changes in roles and responsibilities will initially be uncomfortable for everyone. Thoughtful planning, careful management of boundaries, support, and continuous communication will help guarantee a successful experience.

Challenge Based Learning also extends the learning beyond the classroom and elicits participation from a larger group of stakeholders. You and your students can pave the way by

Best Practice

Build a support network for your Challenge Based Learning efforts. Create a study group if you have peers who are implementing CBL. Also, reach out to the larger CBL community and through social media using the hashtag #CBLWorld.

cbl.digitalpromise.org

Reflect

What roles do I currently play in my classroom?

What roles do my students play?

Best Practice

When building support for Challenge Based Learning use the language whenever possible. As you are planning and working through problems, frame them in the language of CBL. What is our Big Idea? What is our Challenge?

Share Challenge Based Learning stories with your peers, parents, and administrators. The more people hear and see, the more comfortable they will be.

Language and stories shape the way we think and act.

including families and community members as co-Learners at the very beginning of the experience. As the Challenge develops, build in time to identify possible community partners, set up meetings with stakeholders, and send news releases to those who might be involved. If students identify a Challenge in the school make sure to inform other teachers and administrators, so the students' efforts do not come as a surprise. If the Challenge is lengthy, keep the community informed and interested with short updates. Groups can create a weekly "news flash" about what they have discovered and what they are planning, then compile and distribute them via local newspapers, blogs, and community forums.

Continuous documentation also provides evidence of learning that can be used to educate observers concerned about the value of the experience.

Reflect

Where does Challenge Based Learning fit best in my school or organization?
What are some of the possible barriers?

Where can I try the CBL framework now?

Workspace

Challenge Based Learning extends the classroom environment and necessitates access to real-world communication and project management tools. Ideally, the learning environment includes computers, rich media creation tools, the Internet, and mobile devices for anytime, anywhere access to information, content, and communication. Because the work will extend beyond the school day, a collaborative virtual workspace available 24/7 is helpful.

A variety of free and for-fee resources are available to manage the Challenges online. At a minimum, the workspace should include a calendar, space for collaboration, and storage for project documents.

In the school setting a flexible environment allowing for Learners to move efficiently from individual to group work is ideal. Schools that have created modern learning spaces

Tip

Explore the research on classroom and modern workplace design. Use the ideas to structure a learning environment for the CBL experience.

will see that the Challenge Based Learning process is a perfect fit. In traditional school settings, there will need to be a bit more imagination used when figuring out the work environment, but CBL has flourished in the most typical classrooms.

Remember, the better organized the process, the online workplace and the access to tools, the easier it will be to manage the Challenge.

Standards

In traditional academic settings, standards, curriculum content and testing must be taken into account when implementing Challenge Based Learning. Fortunately, the open architecture of the Challenge Based Learning framework enables the Learners to address academic standards, curriculum content, and testing while meeting the demands of their environment.

Challenges can be designed to meet specific curriculum standards and objectives, be focused on achievement expectations, or be approached broadly with the Learners charged with aligning the experience to the applicable standards and curriculum goals. The following are a few examples drawn from experiences in schools:

School Level. Before each school year, all the stakeholders meet to review the standards and curriculum objectives for each grade and content area. The stakeholders develop a set of Big Ideas that match the objectives forming the backbone for the learning experiences. Ideas like connection, community, and relationships are by nature interdisciplinary and allow for Challenges that will address a variety of Standards and learning outcomes. Take into account the curriculum scope and sequence and the testing schedule when organizing the Big Ideas. Throughout the school year, the Learners make personal connections with the Big Ideas and develop Challenges to

Best Practice

Check with your institution's Information Technology staff to learn what resources you can access to manage the Challenge Based Learning experience.

Learning and content management systems are valuable for Challenge management.

If your institution does not have resources, explore free services such as iTunesU and Google.

Reflect

How does the design of environments impact the way I feel and learn?

What flexibility do I have in organizing the physical structure of my classroom?

Resource

Explore the stories in the CBL Toolkit to learn about schools that have developed school-wide Challenge Based Learning to meet curriculum standards.

http://cbl.digitalpromise.org/toolkit/

pursue at the school, classroom and personal level. The Investigation phase tasks the Learners with identifying learning activities and resources that answer the Guiding Questions and align with curriculum standards. When specific learning objectives do not fit the Challenges, the Learners can identify alternative approaches to ensure coverage of the material. Apply traditional assessments as scheduled and add alternate assessments like portfolios and business plans. In this scenario, the Learners (teachers, students, families, community members) are working together to build meaningful school-wide Challenge Based Learning experiences that meet the standards and results in Solutions/products that benefit the community.

Grade Level. A "capstone" Challenge implemented at any grade level demonstrates content expertise, deeper learning and the impact of community service. Starting with a Big Idea, the Learners develop Challenges to guide their personal and group learning experiences. Using the Challenge Based Framework, the Learners research, develop, implement and evaluate in an authentic setting. Traditional assessment methods threaded throughout the experience ensure mastery of content and show progress. In this scenario, the Challenge experience ties standards and assessment to a culminating activity that demonstrates the application of knowledge and serves the larger community.

Classroom Level: Focus on Content. While Challenge Based Learning encourages multidisciplinary approaches, the framework can also be used to address content area knowledge. Starting with a particular standard, the Learners can develop Challenges that address the learning goals inherent in the Standard. Through the Guiding Questions (e.g. Why is this important? How does it connect with what we have already learned? What is the most effective way to meet the standard?etc.) the Learners design a journey resulting in a Solution that meets the standard. Ideally, the Learners make a personal connection with the Standard

Best Practice

The Windward School, a 7-12 school in Los Angeles, CA offers a year seven capstone Challenge. Starting with science related Big Ideas students develop deep content area learning while developing meaningful solutions for their community.

http://cbl.digitalpromise.org/

resulting in deeper learning, a higher level of engagement, and a useable Solution. At the minimum, the Learners take charge of the learning process and understand expectations.

Classroom Level: Focus on Goals. The Challenge Based Learning framework can also be used to assist Learners in achieving specific academic goals. These focused Challenges can meet immediate needs and provide a bridge to doing more authentic Challenges in the future. For example, Advanced Placement and International Baccalaureate programs sometimes present difficulties in implementing Challenge Based Learning because of the sequence and quantity of content. Focusing on a shared Challenge (e.g. The entire class receives the top mark on an exam) allows the Learners to become familiar with the Challenge Based Learning framework, take ownership of the learning process while accomplishing a shared goal.

These are just some ways that Challenge Based Learning can be used to meet standards and learning objectives while still engaging Learners and making a difference in the larger community. Standards provide what the Learners should know and be able to do, content provides the resources, while Challenge Based Learning provides a framework for the Learners to make it personal and meaningful.

Tip

Any educational goal can be translated into a Challenge to build energy, improve collaboration, and increase ownership among the stakeholders.

Reflect

How do academic standards and goals shape learning at my school?

What standards are by nature cross-curricular and allow for authentic solutions?

What are my daily Challenges? Can I start with one of them?

Deliverables

Throughout the Challenge experience, there are many opportunities to develop products that provide evidence of learning. The quantity and depth of products will depend on where the Learners enter the process, their maturity, and the length of the Challenge. At the beginning of the Challenge, teachers, students and parents should work together to define the products and determine approaches for assessment. Examples of deliverables include:

Survey of Big Ideas - Individuals or teams identify and research Big Ideas and develop reports or presentations.

Challenge Proposal - Teams produce a document, video or presentation that defines the Big Idea, the Essential Question, the Challenge, and why the Challenge is significant. The proposal is presented as a compelling invitation to others to join them in a quest to understand and identify Solutions.

Guiding Questions - Once the Challenge is determined, Learners generate sets of questions that will guide the search for a Solution. The sets of questions should be extensive, categorized and prioritized.

Learning Plans and Timeline - A comprehensive plan to answer the Guiding Questions will ensure a thorough and organized learning experience as the Learners develop the foundation for a Solution. The Learners can also demonstrate an understanding of applicable standards through reports or presentations.

Research Reports - During the Investigation phase, Learners can develop research or position papers to demonstrate their knowledge of the content. These can be traditional laboratory reports, research papers and short policy briefs.

Solution Proposals/Design Briefs - Using the research reports, the Learners create presentations proposing a solution that include prototypes, concepts and initial feedback from focus groups and outside experts.

Implementation and Evaluation Plans - The development of the Solution leads to an implementation and evaluation plan. The plan includes an in-depth description of the Solution, strategies, the stakeholders, and how success will be measured.

Tip

Throughout the Challenge Based Learning experience there are natural opportunities for Learners to deliver products demonstrating progress. Be clear on the expectations and timing for the deliverables.

Work with the Learners to create a structure to collect and organize the deliverables as they can be used to develop portfolios for assessment and public presentations.

Resource

Templates for these deliverables can be download from the Challenge Based Learning Toolkit.

http://cbl.digitalpromise.org/toolkit/

Evaluation Results - The Learners develop reports from data gathered during the Implementation. If time allows, the Learners can develop plans for Solution improvement based on the results of the evaluation.

Final Presentations - After the Solutions have been Implemented and Evaluated, the Learners can report the entire story. This document or video includes information about the group, a statement of the Challenge, why the Challenge is significant in their particular context, what was learned, the Solution, implementation, and evaluation process, and whether it was a success. Video, audio, and images collected throughout the experience provide resources for the presentations.

Journals - Throughout the experience, students document their personal and group experience through written or video journals. You will want to make sure that you can access the journals to track progress and include them as part of the evaluation process. Students can use the reflections to create a final product that represents their learning over the duration of the project.

Final Reflection Videos - At the conclusion of the experience, the Learners reflect on what they learned about the content, process, and overall experience. Providing a series of prompts will allow the Learners to organize and present their ideas in a concise manner.

Portfolios - The products created throughout the project are excellent resources for the development of portfolios that provide evidence of learning and can evolve into presentation portfolios for external audiences.

Tip

If you expect your students to keep learning journals and create portfolios, you should model this behavior. Take time to reflect and share you thoughts with your students. Develop a professional portfolio and share with the students.

Reflect

Which deliverables do I currently expect from my students? Do they match this list?

How can I use the deliverables to tell the story of Challenge Based Learning to administrator and parents?

Assessment

In Challenge Based Learning the process and product is measured with both conventional and real world assessment methods. The assessments should inform

decision making as the Learners move towards a Solution and provide feedback on the effectiveness of their efforts and depth of their content knowledge.

In deciding how to assess the process and products, place appropriate emphasis on three areas: content knowledge and understanding, mastery of real-world skills, and the process of Challenge Based Learning.

To prepare for measuring progress, you will want to think through two kinds of assessment strategies: informative and summative. Informative assessment occurs continuously throughout the process and guides the learning process, while summative assessment evaluates progress at specific checkpoints or the conclusion.

Informative and summative assessments can include papers, quizzes, examinations, journals, peer reviews, teacher observations, student-teacher conferences, interim work reviews (based on rubrics), and others.

Because Challenge Based Learning is collaborative and includes work outside the classroom and online, Learners receive a variety of feedback that can either deepen learning or cause confusion. In addition to teacher feedback, Learners will receive feedback both in person, and online, through blog responses, text messaging, verbal interactions, or video/audio responses.

To prepare students for interpreting and using feedback beneficially, schedule regular checkpoints with teams and individuals to help clarify goals, process steps, and timelines, and to encourage reflection. While Challenge Based Learning puts much of the responsibility in the hands of students, this is one area where your role as the teacher is vital. The more you know about each group's progress and the feedback they are getting from all sources, the better you can offer a guiding hand and make adjustments when needed.

Tip

You do not need to abandon traditional assessment strategies. Use the appropriate tool for the appropriate purpose. There is room for traditional and progressive assessment strategies throughout the Challenge Based Learning process.

Best Practice

Schedule regular checkpoints with your students to ensure that they are on track and use the feedback to help them improve their work.

In between checkpoints have the teams record their progress online so you can make quick checks and prioritize the face to face meetings.

Examples of prompts to use during the checkpoints:

- Where are you in the process?
- What new knowledge or skills have you acquired?
- What has been your biggest success?
- What has been your biggest Challenge?
- How is your group doing as a team?
- What are your top priorities for next week?

Summative Assessment takes a variety of forms to meet the needs of your particular situation. With Challenge Based Learning, a summative event is built in with the completion and implementation of the Solution. Real world testing results in immediate feedback. Other types of summative assessment include final reports, exams, and presentations.

Consider how to evaluate students at both the group and individual level. Students can be assessed using traditional school and district assessments to determine subject and content knowledge. Other ideas include oral defenses, conference presentations and job evaluations for the unique role on their team. It is important to determine the summative assessments during the planning process and to provide the students with specific expectations and rubrics.

Including real-world summative assessments such as job evaluations and conference presentations provides students with skills that will serve them well in the workforce.

Level Up

Introduce the "Shark Tank" concept by having the teams present to local business leaders, incubators and investors.

Reflect

What role does assessment currently play my classroom?

What external assessments to I need to be concerned with? How do they fit into the Challenge Based Learning experience?

Where do I have flexibility with assessment?

What do I need to communicate to administrators and parents about assessment?

Workflow

The Challenge Based Learning framework provides opportunities for both independent and group work. Moving back and forth from individual thinking to group thinking increases the diversity of opinions and creates space for all Learners to participate. Being able to work independently and in a group is a desired outcome of the experience for the Learners in Challenge Based Learning.

When forming working groups, four to five Learners per group is optimal. Groups can be formed based on a variety of factors including personal interests, balancing skill sets, and diversity of opinions. Think carefully about the goals, length of the experience and the maturity of the Learners when creating groups. In general, the longer the experience, the more pressing the compatibility of the group members becomes. In shorter Challenges, having Learners work with people they are unfamiliar or uncomfortable with can be a valuable lesson, as in the workplace students will rarely get to work only with the people they choose.

Reinforce that each group is responsible for the research, Solution, implementation, analysis, and final products: there is no one right answer. The Learners work collaboratively but have room for a variety of Solutions to the same problem, and for delivering the final products in a variety of formats.

During the process, group members will need to play a wide range of roles. They will be researchers, writers, reporters, photographers, producers, and publishers. Ultimately, they will be activists. Some of these roles will be new to them; reassure them that you will help them succeed.

Explain that, throughout the Challenge Based Learning process the adults will serve as co-Learners, project

Best Practice

Involve the students in discussions about group formation. Make sure everyone is clear on why there is group work. Reinforce the importance of individual work and responsibility in group settings.

Resource

The Challenge Based Learning Toolkit provides a set of documents to help with managing the process.

http://cbl.digitalpromise.org/toolkit/

Tip

Structure groups in a variety of different ways. Explore the work of Katherine Phillips and the impact of diversity within groups.

http://cbl.digitalpromise.org/2016/07/08/creating-groups-for-innovation/

managers, mentors to help answer questions and provide examples (such as initial lists of Guiding Questions, activities, and resources). They will not direct all of the activities, answer every question or solve all of the problems.

To help Learners become comfortable working in groups, provide initial guidelines for how to divide the work and make meaningful contributions to the success of the team. For example, schedule class time to work on skills such as group management, constructive feedback, and conflict resolution. Establish a safe-space where groups can air issues, and encourage them to work out differences in a positive way. Have each group draw up a contract or outline that clearly states team member roles and responsibilities,

The best groups allow for a combination of individual and group work that moves towards a common goal or product. By allowing students to come together around Big Ideas and Challenges they are passionate about, the Challenge Based Learning process naturally creates a positive interdependence, where doing one's individual best and working with the group is necessary to develop and implement the Solution.

Tip

Being able to work both independently and in a group is critical to success in school and the workplace. Don't over emphasize group work at the expense of individual work.

Reflect

What is the purpose of group work in my classroom?

Do I have Learners who struggle working in a group? Why?

What can I do to create positive interdependence in groups?

Management

Classroom management is an understandable concern when considering Challenge Based Learning. Placing students in charge of identifying curriculum goals and resources, creating their schedules and working with outside organizations requires patience, planning, and structure.

The variable nature of classroom management (school climate, student maturity, teacher attitude, etc.) makes providing specific and detailed recommendations difficult.

Tip

Before starting a Challenge Based Learning experience discuss concerns about classroom management with the participants. Share how the CBL experience will allow for considerable freedom and discuss how everyone must take responsibility for themselves and his or her groups. Develop a set of agreed upon workplace expectations

Here are some general ideas that have proven to be useful in Challenge Based Learning settings:

Boundaries of Adventure provide a flexible structure to build the requisite skills and attitudes needed for a successful Challenge Based Learning Experience. Starting with narrower Challenges and tighter boundaries help the Learners to become gradually comfortable with the process, learn skills and take responsibility for their behavior. In other words, don't start big and be surprised when the Learners struggle. Think about the skills and attitudes the Learners need to participate fully in a lengthy Challenge and provide opportunities for them to be acquired through shorter, less critical situations.

Be Organized. Challenge Based Learning aspires to be an environment where all participants own the learning experience and can work without constant supervision. Of course, you cannot lead them to the edge of the forest, turn them loose and hope they come out the other side with content knowledge and 21st Century Skills. In the beginning, creating a responsive organizational structure that provides explicit expectations and checkpoints is critical. All Challenges should begin with a clear and shared understanding of the schedule, behavior expectations, deliverables (individual and group) and the assessment process. Web-based Learning and Project management environments offer shared calendars, checklists, and mechanisms for reporting that can be used to check individual and group progress.

Participate Fully. Challenge Based Learning expects that all of the Learners be actively involved in the journey. When teachers become Learners (part of the team) and demonstrate the behaviors expected of the students, the impact is significant. Work in the groups, learn together and reflect. Do everything expected of the students and the result will be greater trust and respect.

Story

A good coach never places someone new to a sport directly in the middle of a game. Instead, they start with the basic rules and skills needed to compete. Gradually game-like conditions are added in a smaller controlled environment, Next the athletes move to scrimmages, and finally to an actual game.

Best Practice

For one of the Challenges participate as a group member. Do everything that is expected of the Learners. This will provide insight into the process and help build empathy for your Learners.

Identify Meaningful Big Ideas. When Learners make personal connections to the content and create significant Challenges, interest increases, and classroom management is less of an issue. They will still need to cover some ground that may not be of interest, but when it is part of a grand adventure attitudes will be better.

Create an environment of ownership. The bottom line is that we take better care of things we own and feel better when we have control over our situation. The same goes for learning: when Learners feel ownership over the destination and experience, they become more involved and invested. For students, much of the normal school experience is out of their control and focused on content that is not relevant to their lives. Transitioning Learners from passive and reactive passengers to active participants takes time, but is a primary goal for Challenge Based Learning. Start small, provide scaffolding, nurture along the way, and ownership will follow.

Level Up

Work with all of the stakeholders to solve classroom management issues. Make it a Challenge!
Big Idea: Classroom Management
Essential Question: How do we build a positive learning environment?

Reflect

What are my main concerns about classroom management?

How can I use scaffolding to prepare my Learners to take more responsibility for learning?

Go

This chapter provides an in-depth exploration of the Challenge Based Learning framework and includes best practices, tips, and resources. As you work through the three phases of the Framework, think about connections with current practice and expectations (internal and external). Keep track of your notes in the book or create a planning journal to record ideas and questions.

Engage!

en·gage (ĕn-gāj') 1. To draw into: involve. 2. To attract and hold the attention of: engross.

Goal: the Learners personally connect to the subject matter through the identification, development and ownership of a compelling Challenge.

During the Engage Phase, the Learners move from an abstract Big Idea to a concrete and actionable Challenge using the Essential Questioning process. Although starting with a Big Idea and developing engagement and ownership through identifying a captivating Challenge is ideal, it is not mandatory. The framework allows for flexibility and multiple points of entry.

In some cases, it makes sense to start with a Challenge and not be concerned about the Big Idea and Essential Question. In other cases, it can be educational to start with a Challenge and work backward to discover the Essential Question and Big Idea. Decisions about where to begin the process depend on goals, time, boundaries of adventure, the age of the Learners, and experience with Challenge Based Learning.

Engage: Big Ideas

A Big Idea is a broad concept that can be explored in

Resource

The Challenge Based Learning Toolkit has examples of Big Ideas, Essential Questions, and Challenges to get started.

http://cbl.digitalpromise.org/toolkit/

Story

Ringwood North Primary in Australia, one of the schools in the 2011 Implementation Project, selected Resilience as their Big Idea after having experienced a series of natural disasters. Since a majority of the individuals in the schools knew of someone personally connected with a disaster the Big Idea and Challenge had deep and personal meaning.

http://cbl.digitalpromise.org/2016/06/25/story-ringwood-primary/

multiple ways and is relevant to Learners, and the larger community. Examples of Big Ideas include Community, Relationships, Creativity, Health, Sustainability, and Democracy.

Big Ideas can often be correlated with curriculum themes and have inherent cross-curricular potential. A good place to look for Big Ideas is major news stories, social media trends, upcoming events, discussions with community members and personal reflection. When Big Ideas reflect the immediate concerns and interests of the Learners, the resulting Challenges are meaningful and engaging.

For example - "Relationships" is an excellent Big Idea for Learners because it is both a pressing personal concern and fits within all academic disciplines. Understanding relationships are critical in different ways across all content areas. In the sciences, it can be explored at the molecular or ecosystem level. In math, understanding the relationships between variables is critical. Language Arts, Socials Studies, Arts, etc. all have connections with relationships.

When planning, it can be valuable to think with the "end in mind" and consider how Big Ideas can be introduced at the appropriate time to address specific curriculum goals and standards.

Engage: Essential Questioning/Essential Question

After identifying the Big Idea, the next step is for the Learners to contextualize and build personal connections. The Essential Questioning process is set up to allow the Learners to begin asking personal questions about the Big Idea (e.g. Why is this important to me? Where does this concept intersect with my world? etc.) By asking personal and contextual questions, the Learners begin to narrow and personalize the focus. Essential Questioning can be an individual or group activity and provides the opportunity to

Best Practice

Before moving into the Essential Questioning process, it is a good idea to spend time learning and practicing how to ask questions. Understanding the purpose of different types of questions will pay off throughout the Challenge Based Learning experience.

http://cbl.digitalpromise.org/2016/07/24/mastering-the-art-of-questioning/

explore language and develop a common vocabulary that will support the process.

The Essential Questioning process leads to the identification of questions that have personal meaning to the individual or group. Most Big Ideas will generate a variety of Essential Questions. The number of Essential Questions moving forward will be dictated by factors such as time, learning goals, numbers of Learners and management concerns.

Examples of Essential Questions connected to Big Ideas:

- **Big Idea:** Community
  Essential Question: How do we build supportive communities?
- **Big Idea:** Relationships
  Essential Question: How can we improve relationships between groups in our school?
- **Big Idea:** Creativity
  Essential Question: What is creativity and why is it important?
- **Big Idea:** Health
  Essential Question: What is a healthy lifestyle?
- **Big Idea:** Resilience
  Essential Question: How do communities recover from disasters?
- **Big Idea:** Democracy
  Essential Question: How do we foster participation in democracy?

Tip

When first starting out with Challenge Based Learning it is simplest to identify one Essential Question for the class. As the comfort level increases, multiple Essential Questions can be pursued by the Learners.

Engage: Challenges

The Challenge turns the Essential Question into a call to action by charging participants to learn about the subject.

A Challenge is immediate, actionable and builds excitement.

Choosing and setting up the Challenge is crucial. If it is interesting and sufficiently close to home, students will derive personal meaning and feel a sense of accomplishment upon understanding the content, proposing and implementing a Solution. If the Challenge also has greater global significance, students will gain confidence and self-esteem as they engage with issues they know to be truly important.

If the Challenge is too broad or vague, the Learners will struggle. If it is too narrow, they will not be able to experience the self-direction that is required to develop the skills that Challenge Based Learning cultivates. Challenges should be difficult and have multiple possibilities for Solutions, as well as organized and scaffolded to support the Learners.

The amount of time the Learners have to work on the Challenge is also important. Some Challenges can be addressed in a day or a week, while others need a semester or even an entire school year. If the Challenge is too big for the allotted time, the Learners will feel pressured or frustrated. If it is too small, they will lose interest.

The Challenge identification stage is another point where the Learners can begin to move into groups if they have not done so already. Having multiple groups working on one Challenge is efficient while still providing the possibilities of having multiple Solutions.

Finally, it is important for the Challenge to be real and meaningful to the Learners. If a Challenge is contrived or something that the Learners cannot personally connect with, they will not fully engage in the process.

Tip

The scope of the Challenge is determined by the number and type of words used. For example:

1. Create positive relationships! This Challenge provides the maximum amount of latitude for learning and solutions.
2. Create positive relations in school! This limits the scope of the solution by location.
3. Use math to create positive relationships! This limits the scope of the learning by subject area.
4. Create positive relationships by developing an online community for discussion and problem solving! This is too narrow as it includes a solution inside the Challenge.

Level Up

Consider partnering with other schools and organizations to sponsor a community-wide Challenge!

Examples of Challenges drawn from the Big Ideas and Essential Questions:

- **Big Idea:** Community
  Essential Question: How do we build supportive communities?
  Challenge: Build a supportive community!
- **Big Idea:** Relationships
  Essential Question: How can we improve relationships between groups in our school?
  Challenge: Improve relationships in our school!
- **Big Idea:** Creativity
  Essential Question: What is creativity and why is it important?
  Challenge: Use creativity to improve someone's life!
- **Big Idea:** Health
  Essential Question: What is a healthy lifestyle?
  Challenge: Be healthy!
- **Big Idea:** Resilience
  Essential Question: How do communities recover from disasters?
  Challenge: Help a community recover from a disaster
- **Big Idea:** Democracy
  Essential Question: How do we foster participation in democracy?
  Challenge: Involve Citizens in Democracy

By the end of the Engage phase, the Learners will have identified a compelling and actionable Challenge statement. At this point, the natural reaction is to start immediately identifying Solutions. It is critical to slow the process down and let the Learners know that there is important work to be done before articulating Solutions.

Reflect

What Big Ideas do I see in my community and school?

What are my passions?

What are my students concerned and excited about?

Investigate!

verb. /ɪn'ves·tɪˌgeɪt/ To carry out a systematic or formal inquiry to discover and examine the facts . . . so as to establish the truth.

Goal: Learners develop and own contextualized learning experiences and conduct rigorous, content- and concept-based research to create a foundation for actionable and sustainable Solutions.

The Investigation phase intentionally sets a high bar by asking Learners to pursue a systemic inquiry to determine the truth about the Challenge. Seeking truth implies looking at the Challenge deeply and from multiple perspectives, rather from a narrow perspective of preexisting beliefs and ideas.

The investigation phase includes developing Guiding Questions, identifying Guiding Activities and Resources, and ensuring alignment with Standards or curriculum goals and research analysis. Through these steps, the Learners (students, teachers, administrators, community members) create a curriculum map that reflects personal and group interests, is aligned to standards and curriculum requirements and will lead them to thoughtful Solutions for their Challenge. Using the map, the Learners embark on an organized journey to answer the questions and collect evidence of learning along the way.

Guiding Questions

The Investigation phase begins with generating questions related to the Challenge. The questions include everything that needs to be learned to develop an informed Solution to the Challenge. For example, if the Challenge is "Be healthy", Guiding Questions might include: What does it mean to be healthy? What is the biology of health? What factors influence health? What are the major health issues

Best Practice

In some schools, the policy is to bar the use of the "S" (solution) word until the Learners complete the Investigation phase. The goal is to keep the Learners from jumping to solutions until after they done the necessary research.

Tip

Stop doing all of the work. By including the Learners in the development of the journey, ownership is shifted. Learning is something done with students rather than something done to them.

in the world, my community, and my family? What is the role of nutrition? What is the role of exercise? What is the role of genetics? At this stage the more questions, the better. To increase participation, have each student in the group generate as many questions as possible and share with the group. Starting with group brainstorming can stifle the involvement of some individuals.

To further increase the quantity and diversity of questions, include other groups of students, family members, community members, and experts. Online surveys and social media are useful tools for gathering questions. Teachers can use this opportunity to sow the mix with standards and content specific questions, setting the stage for future efforts to align the experience to curriculum standards and requirements. Make sure to develop an extensive list of Guiding Questions, as this will guide the learning and ultimately the validity of the Solutions. The initial questions should be recorded and saved.

Tip

Although a goal is to have the students take more responsibility for the process, you can still intervene to make sure the Guiding Questions include pertinent curriculum ideas.

Once the Learners have a sizable and diverse set of initial questions, the next step is to consolidate similar questions and develop categories of questions. Creating categories is a critical step, as decisions made about categories will shape the learning journey moving forward.

As the Learners review the questions, they consolidate ones that have similar language and thoughts. For example in the Health Challenge example, the questions "What is the biology behind good health" and "What is the chemistry of good health" are merged into "what is the science of good health". While combining like questions, the Learners begin identifying patterns in the questions and create categories. In the Health Challenge, the categories might be science, exercise, education, diet, etc..

As categories solidify, the questions can be sorted and prioritized ("must know" questions at the top, "good to

know" at the bottom). The result is a set of categories that contain prioritized sets of questions.

Guiding Activities and Resources

Next, the Learners review the highest priority questions and begin to identify Guiding Activities and Resources that can be used to answer them. Many options available for Guiding Activities and Resources: online databases and journals, online courses, the school or public library, social networks, local experts or experts located anywhere in the world via the web. Guiding activities can include simulations, experiments, projects, problem sets, research, games, expert interviews, surveys, lectures, and textbook assignments.

Any resource or activity that helps uncover the knowledge needed to answer the Guiding Questions and to develop an innovative, insightful, and realistic Solution is valuable. In the Health Challenge example, resources and activities might include interviews with physicians, research using online databases and participation in an online course about nutrition.

Curriculum and Standards Alignment

If the Challenge experience connects to specific subject areas (Math, Science, Language Arts, etc.) driven by standards and external assessments, the next step is to align the questions and activities with the applicable standards. In typical approaches, this is teacher work, but in Challenge Based Learning the process is moved into the classroom and becomes the responsibility of all the Learners (which can extend to parents and community members). The question of "Why are we learning this?" is brought to the forefront and the influence of external standards is transparent to everyone. The result is increased ownership and esprit de corps, as all the

Resource

The Challenge Based Learning Toolkit includes a Matrix that can be used to organize and report the actions taken during the Investigation

http://cbl.digitalpromise.org/2016/06/25/resource-investigation-matrix/

Learners come together to identify ways to meet the standards.

Provide all Learners with access to the standards and curricula documents for the pertinent subject areas. Provide time to read and align them to the Guiding Questions, Activities, and Resources identified in the prior steps. Existing Guiding Questions may need to be modified or new ones added to address all of the standards. For some standards or specific curriculum goals, there may not be a match with the Challenge. In these cases, have the Learners create an "other" category and identify additional activities to meet the standards.

Tip

When working with students to align the learning journey with Standards and curriculum goals be honest with them about the expectations placed on teachers and schools.

Recruit them to work with you to meet the standards even when they do not fit the Challenge.

To avoid the tendency to rush through the Investigate phase and jump to pre-conceived Solutions, create a schedule, set firm expectations about research and identify a concrete set of deliverables. Make it clear that all Solutions presented must be backed by research.

Provide sufficient structure and time for the Learners to conduct the necessary research to answer the highest priority Guiding Question in each category. Research findings should be recorded and shared among the group and with the teacher. It is advisable to have regular meetings during this time to ensure that all of the Learners are doing adequate research and help to keep the process on track and organized. Finally, the reports will help the Learners to begin identifying common ideas and threads that will come into play in the analysis phase.

Best Practice

Require the groups to validate the research finding with an outside expert or stakeholder to avoid bias. If outside experts are not available, have peer groups review the research to see if they can identify gaps.

Analysis

Once all of the Guiding Questions have been addressed, and the results of the Guiding Activities recorded, the Learners analyze the accumulated data and identify themes. The goal is for the Learners to move from a list of findings to research conclusions. An example conclusion from the Health Challenge might be that the most

important aspects of being healthy include nutrition and diet are dependent on access to certain types of food.

The Investigation phase concludes with reports and presentations where the Learners demonstrate they have successfully answered all of the Guiding Questions, addressed curriculum standards, and developed clear conclusions that will set the foundation for the solution.

During the Investigation supply (just) enough structure (boundaries of adventure). Challenge Based Learning is meant to be a free-flowing process in which students are allowed to search, struggle, re-focus, and learn through making mistakes. The amount of structure provided depends on the maturity of the students. Give them freedom to explore, but make sure there are boundaries, so they do not get completely lost. Structure for this phase can include providing an initial set of Guiding Resources, including a focused set of relevant and credible sources.

Act!

verb. akt/ take action; do something.

Goal: Learners develop grounded Solutions and implement them in authentic settings, receive feedback, and learn from their successes and failures.

Moving beyond the term paper, test and presentation as the culminating event for a learning experience, Challenge Based Learning requires the Learners to act on the cumulative knowledge and skills gained through the Challenge. Students want to make a difference now rather than waiting until after they finish school. The Act phase provides the opportunity to combine the desire to help and make a difference with content mastery.

The Act phase includes Solution development, implementation, and evaluation.

Reflect

How can I create time and space for all Learners to participate and be heard?

How can the Investigation phase align with my subject area standards?

How can we use technology to expand the classroom for deeper research?

Story

Students in schools around the world have used Challenge Based Learning to make a difference in the local and global community. From changing policies to creating innovative products students are making a difference.

http://cbl.digitalpromise.org/

Tip

As the Learners consider solution concepts, review the timeline and any other limiting factors (resources, school rules, etc.) to help guide the planning.

Solution Development

Having completed the Investigation phase, the Learners have a firm foundation to begin developing Solution concepts. Although the exploration of the Challenge will lend itself to multiple Solutions, each group or individual needs to identify a single Solution to design and implement.

Solution concepts may involve a campaign to inform or educate, school or community improvement projects, product development, or other activities. Encourage the students to be creative in designing the Solutions while ensuring that they remain true to their research findings and actionable within the parameters provided.

Some participants may have been waiting to reveal a Solution since the beginning of the Challenge, and they may try to revert to the pre-conceived Solution. To avoid this, make sure the Solutions they identify can be defended based on their research.

After the Solution concept is approved, the Learners develop prototypes, experiment, and test. This iterative design cycle will most likely raise new Guiding Questions requiring further research and swing them back into the Investigation Phase. The refinement process will produce a Solution that is ready to be implemented.

Implementation and Evaluation

After developing their Solutions, the Learners implement them, measure outcomes, reflect on what worked and what didn't and determine their impact on the Challenge. Each group develops and presents a detailed implementation plan that includes the audience, dates, activities, costs, anticipated difficulties, and the responsibilities of each team member. The Learners develop research plans to measure the impact of the Solution.

Best Practice

Have the groups pitch their solution concepts to an audience that includes peers, teachers, family members and content experts. Citing what they learned during the Investigate phase, the groups state their case for proposed solutions.

Best Practice

Keep everyone informed. Some of the students' solutions will involve activities outside of normal classroom hours and beyond the boundaries of your school. At the start of the process, inform parents about the structure of Challenge Based Learning so that they understand the process and how it is connected to learning goals.

Tip

Helping the Learners select the correct tools for collecting data is critical for analyzing the success of their solution. Spend some time going through the different types of collection tools along with their advantages and disadvantages. Mobile and web-based resources have made data collection, analysis, and visualization easier than ever. Use these tools to extend the breadth and depth of the research efforts.

In the research plan, the Learners decide what, and when they measure throughout the implementation phase. Creating this plan at the beginning will help the team members collect consistent data to compare throughout the process. If the Learners plan to use surveys or questionnaires for pre- and post-evaluation, the Learners, will need to prepare the questions and determine the delivery method. If the research methods include interviews, they will need to develop protocols, write questions and set up the logistics. The teams can create a notebook or set up online workspaces to record measurements and/or observations.

When Learners have implemented their Solution and collected the data, they begin the analysis process. Did anything change? Did it change the way they had thought it would? In addition to comparing the pre and post data points, the students will identify trends. When did the most significant changes occur? How did the audience react to the solution? Using this information, they will analyze whether the Solution had the desired effect.

Learners can continue to refine the Solution or develop a completion report and share their work with the rest of the world. How much time the Learners can spend improving the Solution will be determined by the overall boundaries of the Challenge. Both short and extended timelines for Solution development, implementation and evaluation can produce similar experiences for the Learners.

Document, Reflect and Share

Throughout the Challenge, Learners document their experience using audio, video, images and photography. The ongoing collection of content provides the resources for reflection, Informative assessment and the documentation of the learning process. Creating a plan for managing the content developed during the Challenge is

Tip

Throughout the process, provide students with examples of different types of research and the resulting data. Help them to understand the difference between quantitative and qualitative data. This is a good time to get math and science teachers involved, if they are not already.

Reflect

What partners are available in my school and surrounding community to support solution implementations?

What are the potential barriers to involving my students in the local community? How can I manage them?

Tip

Build time and structure for reflection into the Challenge Based Learning experience. For most people, reflection is not a habit, and it will be uncomfortable at first. Thoughtful prompts and regularly scheduled opportunities to reflect will ease adoption of the practice.

important. Web-based services such as iCloud, Google Drive, and Dropbox are excellent tools for collecting and organizing these artifacts.

All Learners should keep individual written, audio, or video journals throughout the Challenge. Frequent reflection prompts allow the Learners to step back and think deeper about the experience. The end of each Phase of the process offers an opportunity to have the participants reflect.

Reflections can serve a variety of roles during the Challenge, and it is important to explain their purpose at the very beginning. The role of reflections include:

1. Private opportunities for the Learners to process their experiences. Examples include a private diary or journal that is only visible to the Learner. A goal of Challenge Based Learning is to create reflective Learners, so individual reflection should be strongly encouraged.

2. Process reflections made by individuals and groups. During the process, it is valuable to have space where the Learners can privately share reports, ideas, and concerns with teachers and other mentors. Process reflections provide a helpful way for teachers to manage the progress of individuals and groups throughout the experience.

3. Public reflections made by individuals and groups about the experience. Using a blogging platform or social media outlets, the students can inform the world about their experience.

As a culminating event, students can be provided a series of prompts for final reflections about what they learned about the subject matter and the process. They can also use the content collected and reflections to create a documentary about the Challenge from start to finish.

Story

To create space for reflection in a crowded classroom Arizona school for the Arts teachers and students build reflection booths. The idea started with the Challenge of creating a place to reflect. The students researched, developed and implemented unique reflection spaces. The results were pretty remarkable.

http://cbl.digitalpromise.org/2016/06/24/essay-student-voices-the-power-of-reflection/

Reflect

Why is reflection important for learning?

Where can I build in reflection time for myself and my students?

How can I model reflective practice?

Etc.

Effective educators begin with core principles and then draw from a broad collection of methods and resources to provide a great educational environment and meet the unique needs of their students. Explore, experiment, combine ideas and develop a framework that works for you and your fellow Learners.

Challenge Based Learning is flexible and works effectively with a wide variety of educational methodologies, and ideas about teaching and learning. The framework is designed to be an organizational framework and not presented in opposition to other methods. Many progressive educational approaches share similar, developmental paths, foundational ideas, and similar methods.

This chapter provides a variety of additional resources including:

1. Connections between Challenge Based Learning and other current approaches.

2. Frequently Asked Questions including how to become more involved with Challenge Based Learning.

Tip

As you consider Challenge Based Learning, carefully look at your current environment. What are the Big Ideas? What is working? What are the Challenges? What are your goals? Challenge Based Learning can help to connect the dots, but you need to understand what they are first.

Connections

School systems are awash in different pedagogical approaches and the "latest and greatest" ideas. To navigate these waters, focus on Big Ideas and develop contextual frameworks to support them. Challenge Based Learning provides an overarching framework that coordinates a variety of ideas and approaches to learning. This section explores connections between Challenge Based Learning and several current trends in education. It is not designed

to provide broad explanations of these approaches but simply identifies areas where the ideas are complimentary intersect with Challenge Based Learning.

Direct Instruction

Direct instruction and lectures have received bad press in the wake of an increased emphasis on inquiry-based and student directed learning. While there are legitimate concerns about direct instruction in its most extreme and dogmatic forms, there is also significant research that shows direct instruction can be effective.

Within Challenge Based Learning, direct instruction and lectures can be useful guiding activities when answering Guiding Questions that have a consistent set of answers. A quick lecture or directed lesson on a concept is much more efficient than sending everyone on a scavenger hunt to find the answer themselves. There are also lectures online that provide valuable insights into different subject areas. As with everything, the key is finding a balance - if every guided activity becomes a lecture, or if the entire Challenge experience becomes scripted, it becomes a problem. However, if a directed experience is the best way to answer a guiding question, then, by all means, use it.

Project Based Learning

Challenge Based Learning shares many similarities with Project Based Learning. The Challenge Based Learning Framework was informed by Project Based Learning, and over time the differences have decreased as both approaches have learned from each other. Initially, a significant difference was the origin of the project and the role of the teacher. The original project based approach had the teacher identifying the project idea, doing a majority of the preparation work and then managing a series of events that would lead to a product. Challenge Based Learning, on the other hand, starts with the teacher

and student as partners who plan and implement the journey together. With the new Gold Standard PBL, this gap has narrowed. If the goals are to engage all learners, share responsibility, address real needs in the community while deepening subject area knowledge, then a project may be included in Challenge Based Learning, and a Challenge may be part of a Project Based Learning Experience. In the end, the goal is that the responsibility for, and ownership of, the entire learning experience is shared.

Design Thinking

Design Thinking applies the core concepts of design to problem solving and organizational improvement. There are clear parallels between Design Thinking and Challenge Based Learning, and a variety of opportunities to use the ideas together.

While the traditional design thinking steps of Empathize, Define, Ideate, Prototype and Test overlap with Challenge Based Learning Phases, they are particularly applicable in the Act Phase. Once a Solution concept has been identified, the design cycle is an excellent way to develop an effective Solution. The iterative approach allows for the development of new Guiding Questions, ongoing improvement, and better Solutions.

Blended Learning

Blended learning combines the traditional and online learning. This method integrates especially well with Challenge Based Learning during the Investigation phase and supports efforts to expand learning beyond the four walls of the classroom. Online resources (MOOCS, collections of learning objects, etc.) can serve as a rich source for Guiding Activities and Resources. With the Guiding Questions providing structure, Learners can use

online educational resources to learn about the Challenge and build a foundation for their Solution.

Personalized Learning

Adjusting the approach and pace of learning for the personal needs of Learners is a long-standing goal for education. Historically, the barrier to personalization is student-teacher ratios and the difficulty of accessing enough appropriate resources for all Learners. Advances in technology have started to bring personalized learning closer to reality through advanced software platforms. At the core level, personalized learning is a desire to tap into the Learner's interests and abilities to help the Learner take ownership of the experience. Challenge Based Learning strives to personalize learning by putting the Learners in charge of the process. In defining Big Ideas and Challenges, the Learners tap into personal interests, and, during the Investigation phase, the Learners create learning paths to meet curriculum goals and lay the foundation for a Solution. Personalized learning plans can be developed within the Challenge Based Learning experience and existing personalized learning plans can include participation in Challenges.

Maker Movement

The Maker Movement encourages the use of digital design and production tools to make new things and perfect existing ideas. These ideas are moving into education resulting in efforts to add maker spaces in schools. Challenges add purpose and focus to Maker Spaces and compliments the emerging ideas around maker learning. Having space where the Learners can design and test prototypes is a perfect fit with the Act phase of Challenge Based Learning. Identifying community needs and developing Challenges that result in real products as Solutions is a powerful addition to Challenge Based Learning.

Coding

There has been an increased push to expose all students to computer science and have them learn computer coding. As with any subject matter and language, it is easier to learn when there is a clear purpose. Challenge Based Learning can provide purpose and incentive for learning to code. Challenges can be presented that result in software Solutions providing the incentive to learn software programming. Learning to solve Challenges through application development is a more engaging and realistic approach to building interest in coding. The entire Challenge Based Learning process also provides opportunities to acquire the computational thinking and organizational skills found in the coding process.

Service Learning

The practice of Service-Learning, popularized in the 1980s, is now a standard requirement for most high school students. Service-Learning and Challenge Based Learning share a foundational connection with experiential learning. In practice, service learning has become more passive than originally intended. For many students, community service is no longer about learning and is not connected with the academic curriculum. It is simply an item to check off the list, rather than an active learning experience. Combining Community Service-Learning with Challenge Based Learning allows students to work with community members to actively solve real problems and make a lasting difference. CBL returns the learning and activism to Community Service.

Agile and Scrum

Scrum, a version of the Agile software development methodology has recently moved into the traditional classroom setting. In software development, Agile offers an alternative to the traditional incremental or waterfall

approach. The adaptive, collaborative and interactive nature of Scrum compliments the Challenge Based Learning framework and is particularly useful during the Act Phase when Solutions are developed. While the complete Scrum Framework may be too intense for shorter Challenges, it is ideal for longer Solution development projects.

Computational Thinking

Drawing from concepts from computer science computational thinking seeks to solve problems through systematic thinking, logical investigation, thinking algorithmically, finding patterns and abstraction organically emerge when working towards a Solution. The Investigation Phase will provide many teachable moments that can be used to address the core computational thinking concepts. During the Act phase the computer science mechanics of creating, tinkering and debugging can easily be taught and applied.

Reflect

What are the dominant approaches to learning being used in our schools today?

How can all of these approaches work together?

How can we use Challenge Based Learning to connect the different approaches?

FAQs

I am concerned about whether my students will master the material they need to know. They have statewide tests coming up. How can I be sure they will learn what they need through Challenge Based Learning?

The Pilot and Implementation research projects found, Challenge Based Learning lends itself to content mastery. By the end of the pilot, nearly every teacher observed that students had mastered the content well beyond expectations. Many felt that the depth of student learning was remarkable, in fact, much greater than anticipated. Students engaged with the content worked harder than expected and demonstrated critical thinking and collaboration skills. Your task as a teacher is to facilitate this by starting with standards-based content and connecting it to 21st-century content and skills throughout the process. Build basic skill practice into the activities and students will see a purpose for gaining the skills.

My school does not make a computer and/or a mobile device available for every student. Can I still use Challenge Based Learning?

Yes. Build extra time into your schedule to allow students to access school computers during class, especially during the research phase and while students create their presentations. Consider allowing students to use their personal technology.

I would like to try Challenge Based Learning, but my schedule is very tight. Can I fit this into a week's worth of classes?

Yes. A Challenge can be completed in as much or as little time as you would like. You can select from different Challenge types and streamline certain stages of the process. For example, while students still work in groups to develop Guiding Questions, do research, propose Solutions, and create a final product, the implementation of the Challenge can be limited to individual students working on their own. However, remember, when students engage in this type of learning, they do not want to stop working on their projects when the school day is over. Explore ways in which you can help your students continue working beyond the school day.

Do I need to collaborate with other teachers at my school, or can I "go it alone"?

Collaboration with other teachers is a best practice for Challenge Based Learning. It helps ensure that the content is multidisciplinary, and it allows for students to immerse themselves in content and draw connections between subjects. However, a single teacher and a single class can successfully collaborate to complete a Challenge. You can also collaborate virtually with teachers in other schools in your community or beyond.

Some of my students don't even want to be in school. How can I get them to feel engaged in this?

The Pilot and Implementation project research reports completed by the New Media Consortium found that even students who tended to disengage from school were excited and interested in Challenge Based Learning. Because it connects schoolwork with the Learner's interests and real life and because it is structured so differently from what many students are used to, Challenge Based Learning is engaging, even for at-risk students. Your task as a teacher is to present the process and Challenge in a real-world context and in an interesting and motivating way.

Where can I learn more about Challenge Based Learning?

Visit the Challenge Based Learning website for tips, suggestions for Big Ideas and Challenges, additional descriptions of the pilot program, and more. The site is available at cbl.digitalpromise.org. Use social media and the #CBLworld hashtag to interact with a global Challenge Based Learning community. Through Digital promise you can find a range of professional development opportunities including consulting, workshops and online courses.

Reflect

What are my next steps?

What other resources and information do I need to get started?

How can I get involved in the worldwide CBL Community?

CBL Timeline

CBL Timeline

2008

March - Apple Classrooms of Tomorrow Today (ACOT^2)

The ACOT^2 project explores what is needed to keep students in school. In other words how do we get students to come back from lunch, both physically and mentally? The research results in the development of 6 Design Principles that set the foundation for Challenge Based Learning. The report was published in May of 2008

April - ACOT2 Phase 3 - 200 Days for a Lifetime of Success

Phase 3 of ACOT^2 includes the development of "a freshman year high school curriculum specially designed to prepare students for success in life and work in the 21st century." Initial planning sessions with educational leaders lead to a decision to do a deeper survey of the educational landscape to inform the curriculum development.

May - Research

In the spring of 2008 the ACOT2 team explore current best practices in education to determine how they align with the ACOT2 Design Principles. They also explore the changing landscape outside of education including the advent of Web 2.0 technologies, changes in the world (global competition and dependence) and trends within entertainment and popular culture.

June - The First Steps Toward a Framework

ISTE 2008 in San Antonio, Texas provides the backdrop for a move towards a learning framework rather than a curriculum. Building from lessons gathered from educational best practices, the changing technical and economic climate, and the formula driving reality television the concept of Challenge Based Learning is formulated.

July - Apple Distinguished Educators (ADE) Meeting, Cupertino, CA

To test the fledgling 'Challenge Based" framework ADEs work to develop Challenges around specific Ideas or themes. This free flowing, and at times frustrating (building the

plane while flying), experience clarifies ideas and raises new questions about the framework.

September - CBL 1.0

Through the summer and into the fall of 2008 the ACOT2 team refines the Challenge concept and in September releases a white paper describing the framework.

November - Jamie and Adam Interview, M5 Industries, San Francisco, CA

The CBL team spends two days with Jamie and Adam thinking about how Challenges influenced their work and the Big Ideas of Water, Food, Identity and Fossil Fuels. A major lesson from the experience is the critical importance of the process.

November - CBL Pilot Project Training, Cupertino, CA

To put the Challenge Based Learning framework to the test six schools from around the United States are recruited for a pilot project. Twenty-nine Faculty from the schools participate in a three day training and then return to their schools to implement Challenge Based Learning.

- Manor New Tech High
- Mooresville Graded Schools
- Moreau Catholic
- O'Neill Public Schools
- Pratt USD 382
- Punahou High School

December - CBL Pilot Project

The teachers from the six pilot schools implement the framework using a variety of approaches across multiple academic disciplines. Big Ideas include food, energy, sustainability, identity and war. The CBL team visits the sites and observe the Learners at work. The New Media Consortium coordinates the program evaluation.

2009

January - CBL: An Approach for Our Time, New Media Consortium Program Report

The New Media Consortium publishes their research on the Challenge Based Learning pilot project. The report confirms the effectiveness of the approach in engaging

students and meeting academic standards. Two important findings that guide future research are the framework's impact on student leadership and 21st Century Skills.

February - Blindsight Project Climbing Team Interviews Erik Weihenmayer and Michael Brown

Digging deeper into the concept of Challenges in education the CBL team travels to Boulder, CO to learn from Erik Weihenmayer, the only blind person to reach the summit of Mt. Everest, award-winning adventure filmmaker Michael Brown and other high altitude mountaineers. Erik had recently returned from an expedition with blind students in Nepal documented in the movie Blindsight. Lessons from these conversations include the importance of frameworks, breaking down Challenges into manageable elements, celebrating along the way, the importance of preparation and the power of experience in the learning process.

2010

May - CBL 1.0 Website Launched

Working with the Apple Learning Interchange team a website is launched to provide an overview of the framework

.

November - CBL Webcast, Cupertino, CA

Katie Morrow, Larry Baker, Don Henderson and Mark Nichols present Challenge Based Learning in Action

2011

January - Implementation Project Workshop, Dallas, TX

To further explore the research findings from the 2008 Pilot Project and to see if CBL is scalable to all ages an Implementation project is initiated. In January of 2011 the CBL team joins Apple Education staff and 56 teachers and faculty for a three day professional development experience. The Challenge is to develop a CBL project at their institutions in the spring of 2011 and report the results.

February - CBL 2.0 - Framework Update

Building from feedback from schools around the world the CBL team updates the White paper and creates a new visual for the CBL framework. The updates help clarify

the role of teachers and the importance of both content knowledge and 21st Century skills. The new visual represents the constructivist and iterative nature of process.

April - Challenge Based Learning on iTunes U

In April of 2011 an iTunes U Channel launches for Challenge Based Learning to share courses, videos and other resources.

May - Implementation Project Report, New Media Consortium

The results from the Implementation project support and expanded the Pilot findings. Challenge Based Learning:

- builds 21st Century Skills
- engages students in learning
- is an effective process for content mastery.
- takes advantage of technology.

2012

April - CBL in Geneva

In 2012 The CBL team works with Independent Schools throughout Geneva, Switzerland to develop unique Challenges and showcase them at the Apple International Summit. Videos of student perspectives are available at cbl.digitalpromise.org.

Part of the project includes working with physicists and educators at CERN (European Organization for Nuclear Research) to develop a Challenge focused on Science. The result is a global Challenge to “make Science Matter”

May - CBL Advisory Committee, Cupertino, CA

In May of 2012 a passionate group of educators convene at Apple, Inc. to review the progress of Challenge Based Learning and develop future plans.
The group included:

- Liz Castillo, Kapalama Middle School
- Dr. David Dwyer, USC’s Rossier School of Education
- Don Henderson, Apple, Inc.
- Dr. Larry Johnson, New Media Consortium
- Maxx Judd, Apple, Inc.
- Mark Labouchere, Kipp Atlantic Collegiate
- Holly Ludgate, Full Sail University

- Katie Morrow, O'Neill Public Schools
- Mark Nichols, Arizona State University
- Dr. Helen Padgett, ISTE Past president
- Dr. Ruben Puentedura, Hippasus
- Fraser Speirs, Cedars School of Excellence
- Marco Torres, ALAS Media
- Elaine Wrenn, Echo Horizon School
- Steven Zipkes, Manor New Tech High

2013

November - Big Ideas Series, Australia

Teachers throughout Australia publish multi-touch books about their experiences with Challenge Based Learning.

2014

March - CBL Books: One Best Thing Series

In 2014 Apple Distinguished Educators publish multi-touch books about Challenge Based Learning.

April - CBL in Action

Challenge Based Learning is adopted by a consortium of Universities in Brazil to teach mobile application development. The effort to merge the CBL framework with modern software development methodologies provides interesting insights and leads to new ideas.

2015

March - CBL 3.0 Part 1

A portion of the original CBL leadership group meets at the West Coast office of Digital Promise, an educational non-profit, in Redwood, CA to discuss future directions for Challenge Based Learning.

July - CBL 3.0 Part 2

Digital Promise and Apple Education initiate discussions to transfer day to day management of CBL to the non-profit.

2016

January - CBL Advisory Committee, Virtual Meeting

Educational leaders from around the world convene to receive an update and discuss ideas from moving forward with Challenge Based Learning.
Participants include:

- Cristiano Araujo, UFPE, Brazil
- Jim Beeler, Digital Promise, USA
- Adam Brice, Apple, Australia
- Adele Brice, Wonga Park Primary, Australia
- Liz Castillo, Punahou School, USA
- Karen Cator, Digital Promise, USA
- Gilles Deltel, Apple, USA
- David Dwyer, Consultant, USA
- Gavin Dykes, Consultant, UK
- Stacy Erb, Apple, USA
- Don Henderson, Apple, USA
- Maxx Judd, Apple, USA
- Chantel Kastrounis, Lee Elementary, USA
- Mark Labouchere, Westminster Schools, USA
- Katie Morrow, RSC Nebraska, USA
- Mark Nichols, Challenge Institute, USA
- Michael Pazinas, UAE University, UAE
- Ruben Puentedura, Hipassus, USA
- Marco Torres, Digital Promise, USA
- Elaine Wrenn, Echo Horizon Schoo, USA
- Chelsea Waite, Digital Promise, USA

May - CBL 3.0

The Challenge Based Learning framework is simplified and updated based on feedback from worldwide users.

June - CBL 3.0 Launched, ISTE Conference , Denver, CO

The new Challenge Based Learning framework and website are launched during a presentation at the ISTE conference in Denver, CO.

August - CBL User Guide

The Challenge Based Learning Users Guide is published, merging and updating the original White Paper and Classroom Guide.

September - New CBL Courses

In fall of 2016 a series of courses are released including a year long course designing Challenges around the United Nations Sustainability Goals.

Thank You

Thank you to everyone who shared their thoughts, ideas, resources, and time to assist in the development of Challenge Based Learning. Your contributions are appreciated and will go a long way to helping others step outside the box of traditional teaching to become a Learner alongside their students.

A special thanks to:

- Apple, Inc.
- ALAS Media.
- The Apple Distinguished Educator program.
- The CBL Advisory Committee.
- Katie Morrow and Adam Brice and every other educator who has stuck with CBL through thick and thin.
- The Schools and Learners in the Pilot and Implementation Programs.
- The New Media Consortium.
- The Cupertino Inn.

All of the educators around the world who take action and make difference with Challenge Based Learning on a daily basis.

Take Action. Make a Difference.