RUBY BRIDGES ELEMENTARY

Innovative Program Proposal

Science**, T**echnology**, E**ngineering**,** the **A**rts**,** and **M**athematics

Our STEAM program creates life-long learners who will use their skills to become 21st century innovators, inventors, and designers.

SCIENCE • TECHNOLOGY
ENGINEERING • ART • MATHEMATICS

Ruby Bridges Elementary is an esteemed STEAM school which strives to increase achievement, engagement, motivation, and enrollment by using the STEAM framework whereby students collaboratively investigate, explore, invent, and create designs to solve real-life problems. These are skills required of 21st century careers that seek designers, inventors, and innovators. STEAM will be a signature program that sets the Ruby Bridges Stars apart by emphasizing whole-child social-emotional wellness in addition to building collaboration, critical thinking, communication, creativity, and problem solving skills.

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EXECUTIVE SUMMARY

The Ruby Bridges staff and families welcome this opportunity to have district support of our Innovative Program Proposal, implementation of a STEAM and Wellness program (Science, Technology, Engineering, Art, and Mathematics). We believe these programs will help increase student achievement by addressing our Title I and LCAP goals: 1) eliminate barriers to student engagement, motivation, and (wellness) and the barriers based on ethnicity or socioeconomic status, 2) support all students, including English learners, to become college and work ready, and 3) engage families as advocates for their students' success and consequently, support our efforts to increase and sustain enrollment.

Some of the academic and socio-emotional challenges our school strives to address include increasing the English language arts skills of 183 English learners and about 100 low performing English only students, decreasing disruptive behaviors of students affected by a pattern of low achievement, trauma, or family crises, providing additional resources to challenge students who are advanced, and recruiting families who have the resources and time to support fundraising and participate on committees. In general, our school-wide response to most of these concerns has been to create a K-5 exclusive schedule for Response to Intervention and English language development and provide tutoring during the day and after school, counseling support, professional development to improve English language arts and English language development instruction, positive incentives and leadership opportunities for students, and host evening events to engage our families. As result, we have seen some gains in students' reading levels and less major discipline concerns, but we have not had a measurable impact on our Title I and LCAP goals.

Unfortunately, our trend has been to use about 90% of our Title I funds to provide and increase hours of intervention that focus on "fixing" students' weaknesses and less time on expanding their strengths and the strengths of students who need to be further challenged academically (Olson 2014, p. 133). For the many students who do not show growth and those who could benefit from more rigor, maintaining their motivation and developing a growth mindset and positive attitude toward school diminishes. While about 24 to 30 students receive therapeutic counseling at school and mentoring from our Student Support Provider, we still have too many students spending time in the office because of overly disruptive and distracting behaviors that are often correlated with lack of grade level skills.

Given these results and the review of research and literature about STEAM, motivation, engagement, and social-emotional learning, it is our belief that implementing a STEAM and Wellness program will increase achievement by providing self-regulation support and school-wide access to project and problem based learning that shows how content is used in the real world. Our Wellness Center is designed to support the well-being of the whole child, and the STEAM training and lessons will help us develop student-centered, integrated, real-life learning experiences that are intrinsically motivating and engaging to all students. Families will be introduced to STEAM lessons throughout this process so that they understand and experience the components that motivate their children to take ownership of their learning as they begin to see themselves as productive problem solvers, creators, designers, and innovators.

The STEAM lessons, common classroom management routines, and peer-to-peer team work help to build on students' strengths, interests, and curiosity, promote critical thinking and problem solving skills, and increase students' competence, confidence, and capacity for life-long learning. In addition, the STEAM framework helps all levels of learners (special education, advanced, English learners, and socioeconomic disadvantaged students) develop 21st century skills required for college career readiness (STEAM Education.com). This is crucial for most of our students whose only access to technological and digital literacy is at school. Many do not routinely go to the public library, have computers or use of the internet in their homes. This is the most equitable pathway toward having them develop perseverance and habits of mind that will be further cultivated as they enter high school and beyond.

Research from the Center for Mental Health in Schools at UCLA supports our plan to target motivation and engagement.

> *"Reviews of literature on human motivation suggest that providing students with valued options and involving them in decision making are key factors of addressing the problem of engagement in the classroom and at school."*
> *"Schools and classrooms that offer a broad range of learning and enrichment opportunities (e.g., content, outcomes, procedural options) and involve students in decision making are*

best equipped to meet the challenge of (engaging and re-engaging students)."

PROPOSAL RATIONALE

Over the past few years, Ruby Bridges Elementary (RBE) has implemented several strategic action steps to increase academic achievement of all students. The results from the California Standards Test (CST) between 2009 and 2011 showed that the longer students remained at RBE, the more their CST scores improved. Some of the findings that staff felt contributed to this improvement included small group reading instruction based on ability, mathematics tutoring after school, and consistent use of Success Maker (an online reading and mathematics program) in the Media Lab and classroom. However, in 2010 the Common Core State Standards (CCSS) were adopted which meant the standardized tests changed from the CST to the California Assessment of Student Performance and Progress (CAASPP).

In 2016, our district adopted mathematics curriculum aligned with CCSS, and we expect to adopt English language arts curriculum that is aligned with CCSS this month. Prior to 2016, staff has had to find, invent and share curriculum aligned with the Common Core State Standards (CCSS). This means there was a lack of common school-wide CCSS adopted curriculum to adequately support implementation of those standards. Having access to more chrome-books and online subscriptions has helped support instruction and engage learners; however, our most recent test results based on the California Assessment of Student Performance and Progress (CAASPP) show that 40 to 50% of our students are not meeting the grade level standards. Since test scores are public, low scores affect the image of our school.

To improve achievement, we have continued to use Title I funds to pay the salaries of two literacy intervention instructors who coach teachers, provide workshops for families, and teach small groups of students who struggle with learning to read. The remainder of restricted funds have traditionally been used to pay the cost of a bilingual paraprofessional, a Student Support Provider, supplemental curriculum (leveled books for classroom libraries, reading assessment units K-5), counseling services, and professional development to improve English language arts instruction. We have continued teaching Mindfulness practices in all classrooms and reward and recognize students for positive behavior and achievement using Positive Behavior Intervention Systems (PBIS). This year, all teachers completed the English Language Development training, and we have also implemented school-wide Response to Intervention and English Language Development schedules to target the academic needs of all students.

In addition, some classroom teachers have started to develop units that integrate components of STEAM and the students' response based on the engagement, ability to take risks, collaborate, and complete their final products has been positive and rewarding for students. When given the opportunity to use their hands to explore materials and create designs that were used for an authentic purpose, students who tend to act out, lose focus, and distract others displayed none of those behaviors. Based on our research about wellness and the results of other similar schools who have implemented a STEAM program, we believe we will be able to obtain data that positively answers the following questions:

1. *What might we do differently to address barriers that hinder student achievement, engagement, and motivation?*
2. *How might we use social-emotional learning concepts and students' strengths as opposed to their deficits to help them develop a growth mindset and positive self-concept?*
3. *What established programs and instructional practices address the diverse needs of all students while also preparing them to become college and career ready?*
4. *How might we use our Title I funds to address those barriers?*
5. *How might we respond to parent/guardian's requests for more challenging curriculum for their advanced students?*
6. *How might our combined efforts support our goal to increase and stabilize enrollment?*

As a part of the STEAM assessment system, students will be keeping a portfolio of their learning that will be evaluated according to a rubric that is presented to students in advance so that they know what is expected. The training that teachers will be receiving from Steam Education also includes assessment practices related to benchmark and state assessments. In addition, student interviews will be facilitated at least three times a year to assess their motivation to achieve in all academic areas. We know that STEAM allows for students to show their talent using multiple intelligences;

however, we will also be monitoring their academic achievement in English language arts, English language development, and mathematics.

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PROPOSAL DESCRIPTION

Ruby Bridges Elementary (RBE), a collaborative school, works together to develop a dynamic, real-world learning community where all students and adults are valued, respected, and expected to achieve. Through rigorous, school-wide collaboration, we teach students to learn through a standards-based curriculum and beyond with hands-on STEAM lessons. All children will gain academic and interpersonal skills necessary to provide them with optimal success in lifelong learning as well as become helpful, contributing members of society. This program will help bring light to the innovative ways we can achieve success at RBE. STEAM lessons and curriculum align to the Common Core State Standards and district benchmarks. It is the mission of RBE to provide a high-quality education for each student and an optimum learning environment that will aid in the development of the whole child through a cooperative effort across the home, school, and community settings.

What is steam?

STEAM is the exploration of the field of Science and Technology interpreted through Engineering and the Arts, based in Mathematical elements that build on the foundation of inter-disciplinary-teaching, hands-on project learning, maker education enrichment, and science investigation. Lessons will be cross-curricular units for each grade level and will provide opportunities for leadership and learning. This trans-disciplinary approach to teaching and learning cultivates positive self-expression, breaks down socioeconomic barriers, and encourages multiple perspectives through Whole Child Awareness. Research shows socioeconomically disadvantaged students who have high levels of arts and sciences engagement with hands-on learning show more positive outcomes in a variety of areas. Like socioeconomically disadvantaged students, there is also a disparity in gender representation in STEM fields. Early exposure in STEAM lessons allows young girls and socioeconomically disadvantaged students the opportunities to look ahead and think about their futures (Catterall 2012). All staff will be enrolled in an online training provided by STEAM Education. To ensure successful implementation and coordination of the program, STEAM Education requires schools to also train someone to be the STEAM Coordinator. At RBE, this will position will be filled with an AUSD Teacher on Special Assignment (TSA).

What are the program components?

The STEAM Coordinator (TSA) will provide cross-curriculum units every week to all K-5 classes. The STEAM coordinator will teach small groups in specialized content areas. The STEAM Coordinator will collaborate with grade level teachers monthly, as well as work with individual teachers in the implementation of STEAM lessons during core curriculum times. The STEAM Coordinator will facilitate meetings with the STEAM Team (previously the Art Committee) comprised of the Coordinator and at least 1 upper grade and 1 lower grade teacher to plan community events like the STEAM Carnival, STEAM Night & Auction, and our Art-a-La-Mode exhibit. Further, this positon requires facilitation of STEAM lessons collaborations throughout grade levels guided by the coordinator. The STEAM Coordinator will also be the main contact and head trainer for a “teach the teacher” implementation of the STEAM Education professional development for all current and new teachers to RBE, as well as act as a liaison between RBE staff and the STEAM Education consultant.

A former classroom will become, the Studio, our own makerspace. In general, makerspaces are places where students use a variety of tools, technology, and materials to explore, tinker, create, invent things they build and also take things apart to see how they work, similar to the process used by engineers. The Studio will include a creative learning with a flex room, a variety of physical materials, chrome-books, and an interactive whiteboard projector. These features will optimize a variety of learning opportunities to allow universal access to all learners. The STEAM Coordinator will provide engaging, hands-on lessons for all k-5 classes as well as provide small group instruction once a week in specialized areas like robotics, arts disciplines, or computer illustration. The room is a flexible space that allows for changing configurations to accommodate the variety of lessons and scope of focus where students can design, tinker and create.

This year, teachers organized a former classroom to become The LAB. The Lab is structured to provide a gateway to 21st Century learning with technology and advanced equipment, including a chrome book cart, a 3D printer, and an interactive whiteboard projector that provides access to the latest technological advances in modern science and engineering. The LAB will be run by core classroom teachers to implement FOSS curriculum, Mystery Science, and BaySCI—in addition to other science curriculum—as well as continued programs like #medialab and our K-5 coding courses. The STEAM Team will help facilitate the LAB schedule and supplies management. The Studio & the LAB classroom spaces will be used in tandem to create an effective and enriching setting for optimal success in all STEAM areas of learning.

The Wellness Center focuses on the well-being of the whole child. The Student Support Provider and Wellness Liaison will help students learn self-discipline, teamwork, and leadership skills to empower them. Regular Mindfulness practices will assist in increasing focus and retention of skills in RBE students as well as deter behavioral problems caused by learning challenges and difficulty regulating and managing their emotions. The Wellness Center will be a place where all types of student can come to learn, grow, and feel safe. They will have the support to develop stronger academic skills and a better attitude toward school while incorporating STEAM and mindfulness activities to build self-esteem and curb behavior issues. The Wellness Center will be located between the LAB and the Studio to allow streamlined opportunities for self-regulation and minimize academic disruption for students.

"What If we stopped operating on a deficit model that focuses on a learner's weaknesses and started operating on a strengths-based model that builds on the learner's strengths? If we are going to empower our students, we must help them find what they love and create learning experiences that encourage them to develop their strengths." --G. Couros

Academic and Socio-emotional learning Goals

- Reduce the achievement and opportunity gap, especially for English learners, girls, and socioeconomically disadvantaged students by providing access to computer programming (coding) and science based education that includes integration of the arts.
- Increase students' engagement and motivation to learn and apply new skills by focusing on their natural desire to use their hands to creatively build, manipulate, design, and invent structures and products.
- Develop and increase students' confidence and competence in their own problem-solving abilities by teaching them to manage their own behavior, set their own goals, and achieve them.
- Develop students' ability to collaborate, solve conflicts, and learn from their peers by utilizing academically and socially balanced cooperative learning teams.
- Empower students to become curious, critical thinkers who can effectively communicate their ideas and challenge the ideas of others by using their own questions and interests to develop lessons and units of study.
- Develop a growth mindset and intrinsic motivation by encouraging students to take risks and emerging them in the learning activities they are interested in and requires them to look for problems and create solutions.
- Improve transference of knowledge and skills by integrating standards and subject matter to solve relevant, real-life problems.

Critical Teaching Practices (adapted from STEAM Education.com and the Center for Mental Health in Schools at UCLA)

- Use STEAM classroom management strategies to promote group identity and pride
  WELCOME: within, everyone, learn, cooperate, observe, makers, and enjoy and THINK: truthful, helpful, inspiring, necessities, kindness
- Develop functional literacy in within the STEAM content
- Involve students in decision making and support independent thinking to develop autonomous learners
- Integrate content, make learning authentic by including use of real life situations
- Foster development of joint/team products
- Extend the time students engage in learning through designed motivated practice
- Use a mix of methods, choices, and advanced technology to make the learning more valuable to students
- Collaboration across grades so the school-wide initiatives and protocols are being fully articulated
- Give students more control over their learning, help students see how new learning connects to them

IMMEDIATE ACTION STEPS REQUIRED FOR 2017-18 IMPLEMENTATION

1) 2016-17 Fund professional development for staff and purchase materials
   - STEAM online professional development provided by Steam Education; all teachers will receive the training to implement lessons and two staff who will be STEAM certified (they learn how to write STEAM lesson plans)
   - Purchase a 3-D printed the aligned professional development
   - K-5 science literature
   - Online subscriptions to enhance learning of science content and subscriptions that teach coding K-5, and various materials for our makerspace, the Studio.

2) Organize and stock the Studio and Wellness Center
   - Work with MOF to finalize and complete renovations so that the Studio and Wellness Center are ready for operation Sept. 2017.

3) Employ the following staff:
   - Fulltime STEAM Coordinator to facilitate and work with all students on enhancing the school experience and provide hands-on, exploratory lessons and specialized opportunities for all students beyond the district adopted curriculum within the Studio.
   - Support Provider and Wellness Liaison to work with all students and teachers in mindfulness and support within the Wellness Center, as well as throughout the school community.

4) Follow-through with Professional Development and Program Implementation
   - Teachers and the STEAM coordinator will complete the STEAM training by October 2017
   - Teachers and the STEAM coordinator will meet during the months of October and November to develop STEAM lesson plans.
   - Our Media/Librarian Specialist, will also receive training to become STEAM certified, she will focus on teaching computer programming (coding) throughout the 2017-18 school year.
   - The STEAM coordinator (TSA) will begin implementation of weekly lesson plans to students K-5 beginning in November 2017
   - All teachers will implement at least two, STEAM units between January and April 2018.
   - By fulfilling the requirement of 90% staff trained in STEAM by Steam Education our school can become a designated national STEAM school in the next 3-5 years

5) Conduct community Outreach and Facilitate Action Steps to Increase and Stabilize enrollment
   - Invite families to our first STEAM event on April 28, 2017 to build excitement around being a STEAM school
   - Invite incoming kindergarten families to end of the year event June 2017
   - Send flyers to prospective families
   - Seek assistance to become an “open-enrollment school”
   - Develop a video to share with families and all school-wide committees
   - Host at least two STEAM workshops for families 2017-2018

THEORY OF ACTION: MISSION STATEMENT & VISION

Current situation

Our school is a microcosm of the racial, cultural, linguistic, socioeconomic, and family diversity that is representative of the global society. Our students speak over 30 different languages. As a Title I, west end school, much of our population is comprised of Coast Guard families, English Learners, and Alameda Point Collaborative Families. Sixty-seven percent of students' families qualify for free/reduced meals.

Over the past three years, our school has obtained free and paid online subscriptions to not only increase students' English language arts skills but to also build fluency in mathematics. In 2013, our fourth and fifth grade students were introduced to computer programming and coding using Scratch and because of their enthusiasm and engagement, our Media/Librarian continues to teach coding, K-5, during Media prep periods. We also have five chrome carts that are used for research and report writing, development of power-point presentations, and to practice literacy and mathematics skills using various programs including Success Maker that is funded by our district.

Starting in 2015-16, our teachers began receiving training in Mindfulness and we purchased the Inner Explorer program to support classroom use. We also enrolled teachers in Mindfulness curriculum courses to facilitate the implementation. We have traditionally used $10,000-$20,000 for counseling over the years. With the development of our Wellness Center, we are going to continue using our site funds to support whole-child well-being and the maintenance of the Center. The overall shift is to use our Title 1 funds for the health and academic wellness of all students, not just our at-risk & low performing youth. Our plan is to revise our use of the 2018-19 Title I funds to address the financial components of STEAM from year to year, totaling about $80,000. School Site Council (SSC) met and were excited about the possibilities of the STEAM program. Through the guidance of our current principal, our SSC is exploring and agreeing to recommendations that we use our Title I funds to support the needs of every learner.

Though the teaching standards and state accountability systems have changed, RBE is still identified as a Program Improvement school which affects our public image. Fortunately, we have a positive and communicative relationship with the District; we have felt supported as we try to find various solutions to the increase and stabilize our enrollment. Even though we have highly involved families from all demographics, many families in our school area still choose alternative educational options such as east end elementary schools, NEA, or the Academy of Alameda. Due to the extremely close proximity of charters to our school site, we struggle with maintaining stable enrollment year to year.

Our Mission

The mission of this program is to:

- Provide all learners, regardless of their ability, economic, ethnic, or linguistic background, frequent opportunities to demonstrate learning and strengths through the five, integrated strands of STEAM.
- Develop a dynamic, real-world learning community where all students and adults are valued, respected, and celebrated in a nurturing, global learning environment.
- Through rigorous, school-wide STEAM instruction we help students not only acquire the skills for college & career readiness but also learn to value themselves, and take pride in their accomplishments.
- All students will develop academic and interpersonal knowledge necessary to provide them with optimal success in lifelong learning through a diversified curriculum.

School Vision

Ruby Bridges Elementary is deeply committed to every student's success and focuses on teaching to the whole-child. To reach our vision of high achievement for all of our students, we will promote a positive school climate that ensures all staff, students, and families feel welcome, safe, and valued. With a positive school culture, we embrace our unique global community and empower every learner to reach his or her educational potential. As a Title-I K-5 school, we have high expectations for our students—who come from diverse backgrounds—and provide access for students to become the next generation of scientists, engineers, strategists, planners, innovators, and entrepreneurs. We expose students to real life, authentic lessons and projects that challenge their reasoning skills, while enhancing their interests, talents, and strengths. Using STEAM, we give students opportunities to serve in a multitude of leadership roles that promote life skills such as empathy, cooperation, perseverance, self-reflection, and the ability to solve complex problems.

Using the mission and vision of Ruby Bridges, the Theory of Action will guide our work toward achieving this vision. In examining and connecting our vision with our mission, it is essential that we build a strong academic foundation for the future success of our students. Research supports that the integration of STEAM helps tie all the subjects to each other in interdisciplinary ways (Jacob 1989). Shifting to a STEAM school perspective also allows RBE to further apply the tenants of the AUSD mission and vision. By aligning our Theory of Action with District initiatives, we can raise the bar and optimize our enrollment to support and guide overall social, emotional, and academic growth. In order to provide nurturing and supportive environments, we will continue to utilize school wide implementations of the AUSD adopted programs: Positive Behavior Interventions and Support, Everybody Belongs Here, and Response to Intervention (RtI).

In order to prepare our students to move through their educational career and into the work force, we need to build equitable access to fields often left outside the scope for our students' daily experiences and awareness. While we teach instruction through science, math and technology, the current pace lacks the rigor needed to meet the demands of the 21st century movement towards advanced fields. Research shows that by integrating STEAM as a core to our educational approach, our students will become global citizens, critical thinkers, and literate in these crucial inter-disciplinary subjects (Thurley 2016). Our Theory of Action is based on this research and our current school dynamic.

RBE is looking ahead to meet workforce and societal needs for the 21st Century. We recognize that students must also learn the essential skills for success in today's world, such as critical thinking, problem solving, communication, creativity, and collaboration, often referred to as 21st Century Skills (Kharbach 2016). Those who can think critically and communicate effectively must build on a base of core academic subject knowledge. We will build this foundation with the development of this STEAM program.

Imagine walking through classes and seeing students having hands on experiences with real world tools. Working in collaborative groups, students take on the roles of engineer, project manager, and designer. Imagine students using different technologies to research information, create visuals, and apply applications to explain their work. With the necessary support systems—standards, assessments, curriculum and instruction, professional development and learning environments—students will be more engaged and better prepared to thrive in the global economy of the future. This STEAM innovative program will help further develop positive transitions for our students as they move into secondary education at Wood Middle School, another STEAM Education trained campus.

COMMUNITY ENGAGEMENT & MARKETING

A survey was created for RBE educators to assess the possibility of changing our academic approach to set us apart from other AUSD schools. The survey results showed there was a strong desire for RBE's focus to shift to whole-child wellbeing and enrichment in the areas of science, technology, and the arts. Together with PTA, the staff and families created a list of aspirations to help optimally support our students. Parent representatives met with Superintendent McPhetridge that spring to find avenues to explore options for our school.

Outreach to our community about our innovative program has been initiated through various means. Information has been presented at all family informational meetings such as English Language Advisory Committee, School Site Counsel, and general membership PTA meetings. Information about the plan proposal is posted on our school website with other links to educational websites that support STEAM literacy. A survey was also distributed to families through office provided emails, the PTA Facebook page, and our school loop website.

The results of Family survey that were completed this school year showed that our school community was deeply invested in establishing additional resources to meet the needs of our students particularly in the areas of science, technology, math, and the arts. The desire to provide improved reading and resources in wellness for our students was also noted as an area of need. Families see these areas as important ways to work alongside teachers to help our students set higher expectations and for students to gain confidence to achieve these goals to reach future success.

Many members of the RB community are actively involved in seeing this Innovative Plan proposal become the school's new academic parameters. A parent and PTA officer joined our Innovative Plan team to help provide a crucial point of view that represents the family voice as well as gather important research on the benefits of a STEAM school. A teacher member, who is also a parent, has activity participated in facilitating meetings with the school community as well as with District cabinet members. A small group of parents, and another teacher team member, are currently exploring ways to create and build Nonprofit, Business and Philanthropic Partnerships in STEAM areas. The 1st grade team has developed Learning Circles that work in tandem with professionals from a local Alameda company, Google Makani Power, to teach inter-disciplinary and hands-on lessons.

The current Art Committee and PTA are planning a STEAM Night & Silent Auction scheduled for April 28 to bring engaging and meaningful activities that will highlight the STEAM program. The event will have hands-on activities in all STEAM areas including structural engineering and art theory. Families and teachers are continuing to explore other avenues to build local partnerships and gather funds through grant writing and donation solicitations. Teachers and staff are gearing up to complete STEAM online training from STEAM Education by July 2017. We are also planning a STEAM Carnival with a Science Fair component for spring 2018. With a traditional & STEAM based set-up, this event will facilitate students' ability to defend and answer questions about their science fair projects and become an annual community event around STEAM.

FACILITIES

Required is the addition of two specialized classrooms, The LAB and The Studio, as well as a conversion of pod space into the Wellness Center.

The LAB, room 402

The classroom will be set up to allow for a maximum of 34 students and one classroom teacher to facilitate science lessons within the room. Much of the furniture needed is already in place in room 402 but desks will need to be adjusted to a lower height to accommodate all K-5 students. At this time, room 402 is currently functioning as a Title I intervention classroom. This Title I teacher will move to room 502 or 503. Rooms 502 and 503 are currently first grade classrooms and one that will close in 2017-2018.

The LAB will be equipped with:

- desk/chair configurations that seat 34 students
- 1 personnel staff office desk with lock/chair
- 1 document camera and 1 projector
- 1 Staff computer
- All Foss kits and science materials (in the class and partially in the pod 401B)
- 1 washout sink and counter with paper towels
- 3 book shelves with top space for science display/materials
- 1 TV unit and DVD
- 1 additional counter/cabinet added from Measure I Bond
- hot water configuration added from the Measure I Bond

The RBE classroom teachers will work in the LAB, which will allow students to work on hands on projects that will extend and enhance students' engagement, motivation and learning. Technology will be used to capture, extend and share learning to all students, including other Alameda Unified schools.

Resources needed for a functional lab are:

- 3D printer
- Interactive whiteboard projector
- 1 fully equipped SciTech chrome cart (32)
- robot kits and materials for engineering such as Legos and modular electronics to invent creations
- Professional development for classroom teachers on Lab operations

The Studio, room 401

The Studio, our STEAM makerspace, will house the STEAM equipment, supplies, and flex furniture as well as 1 STEAM Coordinator. At this time room 401 is currently functioning as a 4th grade. This 4th grade class will move to room 303 in the hall with the other 4th and 5th grade classes for the 2017-18 school year. Currently, room 303 houses the ELD educators; they will move to office 301A.

The Studio makerspace will have seating for students with long, rectangular folding tables to support small easels, clay projects, makers work, painting, drawing, book arts, & printmaking. The furniture can also be removed or changed to do engineering projects, large-scale community projects, robotics teams, and so on.

The Studio will be equipped with:

- 1 personnel staff office desk with lock/office chair
- 1 washout sink with paper towels and counter
- 1 kidney table and 1 rectangle table for supplies preparations
- 1 small gathering rug/2 adult chairs
- 3 book shelves with long counter for drying/storing
- 1 TV unit and DVD
- Storage cabinets
- 1 Staff computer
- 1 interactive whiteboard projector
- 1 document camera and 1 projector

Resources needed for a functional makerspace are:

- 6 long tables
- 32 folding stools
- 2 drying racks
- 1 fully equipped STEAM chrome cart (cart of 32 chrome-books)
- materials for STEAM projects

Wellness Center, room 401 A & B

The Wellness Center will house equipment and furniture as well as 2 personnel staff: Student Support Provider and Wellness Liaison, in room 401 A & B. By placing the Wellness Center between the LAB and the Studio, student access will be streamlined for maintaining behavioral wellness and referrals to the Wellness Center can be managed thoroughly. Currently, a counseling program for students in crisis is running in this space and will need to move to portable B for the 2017-18 school year provided we have the Title I funds and decide hire the counselor again.

The Wellness Center location will afford student privacy (because 401 A is self-contained) and there is access to outdoor space if necessary. The Wellness Center will have comfortable seating for students who need a break as well as stationary bicycles for students who require kinetic outlets to reduce their stress levels.

The Wellness Center will be equipped with:

- 1 personnel staff office desk with lock in 401 A
- 1 large table with 6 chairs
- 1 large rug
- 2 bookshelves
- Loveseat couch

Resources needed for a functional Wellness Center are:

- 3 stationary bicycles with book holder
- 6 small cushions & 4 plastic beanbag chairs

SCHEDULE

Daily Schedule

The school-wide daily schedule will remain the same, with dismissal at 2:50 for K-5th grades. Wednesday schedule remains the same as well with K-5 dismissal at 1:20pm.

Instructional minutes will be in compliance for grades K-5 and the Studio and LAB classes will not be a prep.

The STEAM Coordinator will build alternating schedules for the usage of the Studio and the LAB for the school year. Every other week, classes will learn in the Studio. Teachers will sign up individually for blocks in the LAB. This will allow teachers to plan weekly lessons without the hindrance of finding additional times to attend class in the Studio, see schedule attached.

Yearly Schedule

The yearly schedule will follow the 180-day calendar adopted by the Board of Education for the Alameda Unified School District. As outlined in our budget, RBE staff will take part in 1 day of STEAM implementation training in August before the start of school.

Collaboration

The regular daily schedule will continue to provide two one-hour collaboration times a month in addition to two monthly staff meetings. Collaboration will occur on two Wednesdays a month: 1:50-3:00 pm. Teacher prep will take place on the two other Wednesdays a month: 1:20-3:00 pm. Additional grade level collaboration may take place three times throughout the year to review our inquiry unit assessment results and adjust future inquiry lines based on student need.

Professional Development

Professional development will take place on the district-wide day in August prior to the beginning of the instructional calendar. The staff agenda for RBE Professional Development will include:

- STEAM Education integration
- Review schedule mandates for the LAB and the Studio use
- Mindfulness practices
- Technology updates & specialized programs

STEAM Rooms Potential Schedule

Every other week (Permanent/Whole Year)*

Classrooms will alternate rooms based on a two-week schedule, so K-1 will be in the Studio week A and then in the lab on week B with the STEAM coordinator. Hours when the rooms aren't being used by the coordinator will be made available for classroom teachers to sign up to use with their class.

(We know that we may not have 3 kindergarten and 3 first grade classes; therefore, the schedule will be adapted accordingly.)

Week A Studio

	Monday	Tuesday	Wednesday	Thursday	Friday
9:35-10:35	K-A	K-B	K-C	/	/
10:35-11:35	/	/	/	/	/
11:35-12:35	4-A	4-B	4-C	5-C	SDE
12:35-1:35	5-A	5-B	*must end by 1:20*	/	/

Week A Lab

	Monday	Tuesday	Wednesday	Thursday	Friday
9:35-10:35	/	/	/	2-A	2-B
10:35-11:35	1-A	1-B	1-C	2-C	2-D
11:35-12:35	/	/	/	/	/
12:35-1:35	/	/	*3-C 12:20 -1:20*	3-A	3-B

CURRICULUM PLANNING

RBE's STEAM curriculum will use art strategies to integrate science, technology, engineering, and math as a basis for improved instructional practices that engage students in a creative process that builds connections to other subject areas. While our curriculum themes will be developed by staff, the teachers and STEAM coordinator and Media/Librarian will be using the lesson plan design as prescribed during the STEAM education training along with their growing bank of lessons plans. Core units include, but are not limited to; electronics, robotics, mechanics, construction, programming, bookmaking, movement, and fabrication. As part of their educational experience, students will participate in authentic, real-world experiences with practicing scientists, engineers, and technical professionals at businesses and organizations all over the Bay Area. Curriculum taught in the LAB and the Studio will align with district benchmarks and the Common Core State Standards. Students will also create STEAM notebooks to collect data from lessons in both classroom settings that will be stored in 401b allowing for easy access across both rooms.

The STEAM Education training focuses heavily on educator buy-in to shifting into a facilitator role within the classroom. The training will strengthen teachers to feel empowered in teaching collaboratively and adapt learning structures for students to take the lead in learning. Within the classroom, STEAM Education states that:

> *"Embedded in the framework is a system to establish well-balanced teams among educators and students based on a variety of characteristics. All participants have ways they are advanced and are challenged. With this system, their skills are used for leading in some areas while other areas are strengthened through observing and assisting. Educators instruct within their specialty with co-planned thematic units that everyone contributes to in projects related to the required benchmark concepts and skills. There are times when various groups of educators co-teach overlapping subject areas and assignments. However, most of the time, educators still are able to work focused on their own schedule and tie to the theme when it is convenient in their plans. Special times are designated for working on projects, so that as new concepts are learned they can be applied and built upon. The classrooms and common areas become a network of specialty topics in a living and growing discovery place (STEAM Education.com).*

The LAB

Core Strands: Computer Science, Collaboration, Community, FOSS units, Mystery Science

Teachers will sign up for a slot to enter the LAB weekly. Teachers will use the lab for teaching FOSS lessons and Mystery Science as well as other complimentary lessons in the areas of science, math, and technology. Because classroom space is limited, particularly for upper grade classrooms, this LAB functions as a supportive extension of the core classroom curriculum. The LAB allows teachers to set up FOSS experiments and utilize shared materials more effectively. This will also be the main hub for our K-3 Kodable & 4-5 Code Combat coding programs as well as a parent-run club: #mediaLab. With the Measure I Bond changes, the LAB configurations will also allow for K-5 class experiments to be left and referenced back to over a series of weeks.

The LAB Lesson Examples:

1st Grade: WEATHER
Science objectives: engineering design & testing, wind tunnels, team work
Technology objectives: video on weather turbines, engineering tutorial
The Class is working on determining the performance and efficiency of wind tunnels by testing products within that tunnel. Students will draw a diagram in their STEAM notebook of their building plans and possible outcomes for their materials and reaction to the wind. Afterwards, students will use recycled materials like toilet tubes to build flyers that could show response to the wind. Then students will test their "flyers" in the LAB and collect results in their STEAM notebooks.

5th Grade: PLANT NUTRIENT SYSTEMS
Science objectives: exploration of cell tissues, light and movement of water
Technology use: video on vascular tissue of plants, microscopic examination of sample
The Class is working on complex tasks and understanding how water travels through a nutrient delivery system of celery. Students will learn about xylem and phloem, vascular tissue, and understanding light reflection and will document their findings in their STEAM notebooks. The lesson will combine science with technology standards to help students develop hypothesis skills. Through experimentation and observation, students will collect data to support or counter their hypothesis with the experiment's findings.

#medialab Club: GRAPHIC DESIGN
Parent Joe Golling created a student club, #medialab, to work with 3-5 students in graphic design, computer science, and visual arts. Students go to the Lab during lunch to create various media documents to be used for school events and to create zines that talk about current events at RBE and in our community. Media Lab for 3rd grade students ran from December to March, and will return with 4th/5th graders in April until the end of the school year. Students experiment with use of traditional media as well as a camera, scanner, and a laptop to design and create flyers, zines, and more. The students focus on communication skills, collaboration, and the technical skills involved with these hardware tools, as well as computer software like Photoshop. Mr. Joe's goal with this program is to introduce some foundational media production skills that will help students continuously in their academic career.

The Studio

Core Strands: The Arts, Engineering, Creation, Spatial Abilities, Visual Imagery

A key to supporting the well-being of the whole child is the creation of a makerspace that functions within the school and focuses on integrated learning. The Studio offers a flex space for students to be nurtured in creative practices and focuses on utilizing mindfulness, STEAM curriculum, and self-management tools. The Studio will have lessons created by the STEAM Coordinator that will be geared toward Common Core Standards and multidiscipline experiences that provide enrichment and hands-on project based learning in all grade levels.

The Studio Lesson Examples:

4th Grade: 3D CUBES
Wellness objectives: patience, perseverance, time management
Art & Math objectives: perspective, dimensional planes, form, measurement
4th Grade The Class is working on complex tasks and understanding perspective. Students will learn about perspective, perseverance, time management, and understanding through a lesson on 3D cubes in space. The lesson will combine Mindfulness with Art standards to help students develop coping skills while learning 4th grade art curriculum. Students will sketch out a basic composition plan in their STEAM notebook to work out perspective before they begin to complete their final drawing.

3rd Grade: STOP-MOTION ANIMATION
Engineering objectives: exploration of movement, light and speed
Art objectives: perspective, dimensional planes, movement, form
Technology use: web cams, chrome books
In the classroom, students will learn about and write a research paper about different animals. They will go into the LAB two times to learn how to make stop action movies on the iPads using a variety of small toys to gain an understanding of what scale works best. In their core classroom, they will write a story of a typical day about their animal using their Google doc account, which, after peer and teacher editing, they will use as the script for their movie. In order to design the movie sets, students will use books, EBooks, and the online encyclopedia to find out about their animal's habitat and make sketches and notes in their STEAM notebook. In the Studio, they will make their sets, using measurements to ensure items are to scale, and will learn how to make an origami version of their animal, which will be used in their research stop-action

movie. The movies will be shared with the class on the apple TV in the lab. The students' individual movies, script and research paper will be saved to their electronic portfolio.

2nd Grade: PENDULUM PAINTING
Science objectives: gravity, force and motion, pendulums
Art objectives: symmetry, Jackson Pollock, viscosity
Each student team will cut the bottom off a plastic soda or water bottle and screw a cap from a glue bottle on in place of the lid. Students will use a tripod and suspend the bottle from it, over a large sheet of paper. Setting the pendulum in motion creates a symmetrical splatter. Different mediums can be experimented with for viscosity testing. Students learn about the effect of gravity, the movement of a pendulum, and how different forces act. Students will try the project several times with different swinging speeds and rope lengths, graphing the results.

Wellness Center

A key to supporting the wellbeing of the whole child is the creation of a Wellness Center within the school. The Wellness Center concept is based on the well-regarded Wellness Center Model at El Dorado Elementary School in San Francisco (Stevens 2014). The Wellness Center offers a safe space for students to be supported within the Ruby Bridges community.

Ruby Bridges students come from diverse backgrounds with scaled levels of trauma that could trigger outbursts that become disruptive within the classroom environment. The goal of the Wellness Center accompanied by Ruby Bridges' mindfulness curriculum is to equip students with tools to self-regulate. Individual teachers will determine referrals to the Wellness Center. Wellness Center referrals are not disciplinary actions, but instead are interventions that help the student refocus and address his/her needs at the time. The Wellness Liaison's role will be to intervene as needed and teach students preventative or replacement tools to help them monitor their behavior.

Additionally, the Wellness Center is not exclusively for interventions for disruptive students, but for all students. The Wellness Center will also provide an outlet for students who may need additional support, but do not reveal themselves through traditional behavioral outbursts. Often, high performing students are under a great amount of pressure (internal and external) to perform and be perfect. This leads to high levels of stress which, if left unaddressed, may impact the student in the future (Jones, Greenberg & Crowley 2015). The Wellness Center will provide an outlet and safe environment for these students to discuss their feelings and concerns, but will also uncover ways to help these students address the root cause of their stress and/or feelings of isolation.

Examples:

1. *Molly is having trouble focusing in class. She is being disruptive and unable to sit still for extended periods of time during silent reading. The teacher has exhausted in-room disciplinary actions including the Wellness Corner inside the class. Teacher contacts Wellness Liaison to refer Molly to the Wellness Center. Student Support Provider picks up Molly from her room and brings her to the Wellness Center for an assessment with the Wellness Liaison and to allow Molly to take appropriate steps to refocus. Molly will write down one takeaway from today's time in the Wellness center in her STEAM journal. She returns to her classroom when she feels calm and ready to continue the school day. The Wellness Liaison documents Molly's visit.*
2. *Kamari is a model student without any significant behavioral problems. However, he is feeling increasingly isolated because he is feeling stress from his own expectations to be perfect. Kamari asks for a referral to the Wellness Center to talk to the Wellness Liaison who sets up a lunch pow-wow every other week with students like Kamari to share and support one another. In their STEAM notebooks, students draw an anchor chart to help plan strategies for coping with stress in their lives.*

Wellness Liaison Responsibilities (adapted from Center for Mental Health in Schools at UCLA research about resilience and schools)

- Assist and work in classrooms as often as possible to build relationships with staff and students
- Use strategies that support intrinsic motivation and nurture positive life-skills such as empathy, optimism, forgiveness, and self-control
- Promote well-being and feelings of competency and self-efficacy, avoid focusing on failure and negative behaviors
- Work closely with the Student Support Provider to develop classroom and school-wide daily and yearly opportunities to promote social-emotional learning, monitor and encourage use of students as assistants and leaders throughout the school
- Support implementation of PBIS and MTSS by attending COST, SST meetings and providing objective and anecdotal data regarding student's ability to apply social-emotional self-regulation skills and actions that interfere with positive growth
- Develop a list of opportunities for promoting social emotional development
- Provide professional development for staff offering replacement strategies and ways to maximize opportunities to promote positive growth
- Assist students with developing resilience: the ability to cope with and make a positive recovery from adverse conditions

Mindfulness Education

Mindfulness is incorporated into the Ruby Bridges curriculum daily. We are currently using Inner Explorer within the classroom which allows students time to self-reflect using verbal cues as well as training and curriculum from Mindful Schools (innerexplorer.org). Additionally, during Morning Meeting, students are offered a Mindful Minute to meditate silently to start the day focusing on self-awareness. Mindfulness education serves a two-fold solution: it assists in increasing focus and retention in students as well as helps deter behavioral problems such as bullying and fighting (Barnes, Bauza & Treiber 2003). Teachers use GoNoodle, Mindful Schools curriculum, and Inner Explorer to further mindfulness practices for the entire school community

CURRICULUM EVALUATION

The STEAM program will improve student achievement through two key factors: collaboration and engagement. Data suggests that students learn from peers as well as from a lead educator. Collaboration in project based lessons helps students learn from and teach each other to work together to find solutions (Boud, Cohen & Sampson 2002). Engagement is key to closing the achievement gap. If students like the activity and are engaged in the experience, they will learn and retain crucial academic information. STEAM education makes learning fun, engaging, and relevant which makes information retention easier. The achievement gap exists because there is a void for learners in enriching experiences and content (STEAM Education.com).

Grade level collaboration will also be crucial in gathering data on the effective practices of the STEAM program. Through benchmark and formative assessments, informal observations, and informal data collection, teachers will evaluate the effectiveness of STEAM in the core classroom. The STEAM Coordinator will work with grade level teams to provide further information on success of student achievement in STEAM lessons.

The student STEAM Notebooks will be used to document students' self-evaluation and comprehension of curriculum covered. The notebooks will guide informal observation assessments for the Core Classroom teacher. It will also help guide the direction of collaboration with the STEAM Coordinator and grade level teams to monitor lesson success and implementation. The STEAM Notebooks will also be an excellent tool to collect data and evaluate an English Learner's experience and ability to process information with visual cues.

STEAM will be integrated into our MTSS model to strengthen universal access and engage all learners. To increase access, lessons will incorporate multisensory ways of learning: visual, auditory, and tactile. Goals are set across all structures of RBE to ensure commitment and optimal success for students, teachers, and administration. In action:

Students will
Create STEAM notebooks to showcase work
Participate in Annual STEAM Carnival
Engage community in providing solutions for real world applications

Teachers will
Form cohorts to create professional learning communities
Create STEAM lessons that are multi-grade and interdisciplinary

STEAM Coordinator will
Help align all STEAM lessons to CCCS, NGSS and Incorporation of multisensory aspects
Maintain student STEAM Notebooks in use and storage

Wellness Liaison will
Help students find ways to self-regulate and practice mindfulness in difficult moments
Help teachers implement mindfulness practices within the classroom
Maintain data on Wellness Center use

Administration will

Review and provide feedback through data: Assessments, observations, classroom discipline data and student feedback

PROFESSIONAL DEVELOPMENT

Late spring 2017:

- Returning staff for 2017-18 will complete the STEAM Education online training by October 2017
- Innovative Team will introduce Road Map (*see page 24*) of RBE STEAM initiatives

Fall 2017:

- Professional development will take place in August prior to the beginning of the 180-day instructional calendar in STEAM school-wide expectations and use of the Studio and the LAB.
- Mindfulness training for all new staff
- Mindfulness Curriculum training for any returning staff not trained
- New staff each year has an intake meeting to share RBE specific initiatives
- Staff and teachers will have a presentation on trauma in schools presented by UCSF HEARTS (Healthy Environments and Response to Trauma in Schools) to ensure that teachers understand how trauma affects their students and how it can affect the teachers themselves (Center for Early Childhood Mental Health).

Winter 2018:

- Staff and teachers will review Trauma Informed Practices (AUSD support services). Trauma-informed intervention is best when paired with the PBIS framework which will continue through the District's efforts
- One district Professional development scheduled for March 2018 will be dictated by RBE staff in STEAM needs.

Ongoing professional development in the following areas:

- STEAM Implementation
- Whole-child Wellness
- 21st Century Technology
- PBIS & Mindfulness on-going training

Collaboration as professionals through:

a. Bi-monthly grade level meetings
b. Cross-grade level meetings
c. Peer-to-Peer classroom observations
d. Enhance staff meetings for optimal educator learning

COST SUMMARY & ANALYSIS

STEAM Innovative Plan Budget	YEAR					
	1 2016-17	2 2017-18	3 2018-19	4 2019-20	5 2020-21	6 2021-22
Staffing						
STEAM coordinator (1 FTE)		$85,000.00	$85,000.00	$85,000.00	$85,000.00	$85,000.00
Wellness Liaison (.6) $15k from AUSD / $15k from RBE funds		$15,000	$15,000	$15,000	$15,000	$15,000
Student Support Provider (.6) Title I	($30,000) Title I	($30,000) Title I	($30,000) Title I	($30,000) Title I	($30,000) Title I	($30,000) Title I
Professional Development						
STEAM EDU Staff PD (26 @ $225/pp)	($6125.00)	$0.00	($5000.00)	$0.00	$0.00	$0.00
Mindfulness (6 @ $87.5) *$1575*	($525.00)	0.00	$0.00	$0.00	$0.00	$0.00
STEAM & Discipline Conferences	($4107.00)	$0.00	$0.00	$0.00	$0.00	$0.00
Technology						
3D Printer, Curriculum PD, & Filament	($2599.00)	$0.00	$0.00	$0.00	$0.00	$0.00
Code Combat & Kodable Programs-yearly online subscriptions	($3950.00)	($3950.00)	($3950.00)	($3950.00)	($3950.00)	($3950.00)
Mystery Science –yearly online subscription	($999.00)	($999.00)	($999.00)	($999.00)	($999.00)	($999.00)
Inner Explorer ($100/pp) *$3000 in 2016*		$0.00	$0.00	$0.00	$0.00	$0.00
Furniture						
Drying Rack (2/$729 each)		$729.00	$729.00	$0.00	$0.00	$0.00
72”x 30” folding table (6/$85 each)		$510.00	$0.00	$0.00	$0.00	$0.00
Stackable Stool (16/$22 each)		$352.00	$0.00	$0.00	$0.00	$0.00
Uline Folding Bench (4/$65 each)		$260.00	$0.00	$0.00	$0.00	$0.00
stationary bicycle (3/$120 each)		$360.00	$0.00	$0.00	$0.00	$0.00
Materials and Books						
Science non-fiction literature K-5	($1980.00)	$0.00	$0.00	$0.00	$0.00	$0.00
makers parts (circuits, robotics, etc.)		$800.00	$500.00	$500.00	$300.00	$300.00
Storage tubs –sizes varied		$500.00	$250.00	$0.00	$00.00	$50.00
Tools (scissors, hammers, hot glue guns, sewing machines, etc.)		$250.00	$250.00	$0.00	$200.00	$0.00
Consumables (tapes, craft, glue sticks, etc., art supplies)		$1000.00	$800.00	$500.00	$500.00	$250.00
Creative Lego Ed. set ($60 each)		$00.00	$60.00	$0.00	$0.00	$0.00
Batteries		$0.00	$100.00	$100.00	$100.00	$100.00
STEAM & Wellness Content Books		$2000.00	$0.00	$0.00	$0.00	$0.00
Total	($50,285)	$106,761	$102,689	$101,100	$101,00	$100,700

PROGRAM EFFECTIVENESS

As previously mentioned, the major difference between our current teacher-directed instructional program and the implementation of STEAM and a Wellness Center is that instruction becomes student-centered. Barriers to motivation and engagement are decreased when the following practices drive instruction: student interests, recognizing individual and social emotional learning needs, promoting genuine curiosity, the desire for relevance, choice, and meaning, and the opportunity to make decisions and collaborate with and be connected to a group (Rollins . These are some of the same elements that not only enhance intrinsic motivation and authentic engagement for students but also adults. Strategies and procedures for moving toward a student-centered classroom are embedded in the training provided by STEAM Education.

We are aware that this transition requires a major shift in the mindset and style of teaching that occurs in many of our classrooms. Therefore, our plan is to move at a pace that allows teachers to exchange ideas, share strategies, and re-set goals and learning targets as needed. What is promising is that we have teachers who are already implementing student-centered lessons and using technology to do so. These teachers will be models for others and will be instrumental in facilitating discussions about student progress, data analysis, and program evaluation.

Throughout this school year, we have worked closely with district staff to determine the best use of district allocated Title I and technology funds. As a result, district office purchased 4 Brightlinks (interactive whiteboard projectors), 24 chrome books for kindergarten classes, and will be purchasing 4 additional chrome book carts for our school. In addition, our technology department recently purchased online subscriptions, such as the Encyclopedia Britannica and K-5 typing programs. These combined efforts have increased teachers' ability to integrate technology for learning across all content areas, provide more time for small group and individualized instruction, and create ways for students to learn at their own pace.

What has made a difference for students in our first and fourth grades is the use of technology, outside experts, and the integration science, engineering, art, mathematics, and social studies to complete open-ended investigations and research projects presented using Google slides. Observations showed high, on-task participation among all students, including students in our moderate to severe class, and a general understanding of complex concepts based on students' work samples. In short, some of our teachers have taken advantage of local agencies, educational technology, subscriptions, such as Mystery Science and Discovery Education, and the expertise of one of our teachers who has a Master's Degree in Art to help develop lessons that have the same characteristics of STEAM lessons, lessons that promote transference of knowledge and functional literacy across all content areas.

Given the district's support toward our efforts to eliminate barriers and increase access to learning by integrating technology, we now have the foundation we need to develop our Innovative Program, STEAM. Many of our teachers have already incorporated innovative design lessons that are fully inclusive, standards-based, and engaging to all students. We strongly believe in our staff's expertise and the support from our community that we are already using our current site funds to begin implementation next year. While we do need district support to provide one of the most crucial and sustaining requirements, we are committed to matching funds to secure our success and reach our fullest potential. Examples of current 2016-17 and anticipated 2018-19 expenditures for the STEAM program are as follows:

2016-17 School Site Budget		2018- 19 School Site Proposed Title I Budget	
Student Support Provider	$30,000	Student Support Provider	$32,000
STEAM PD (25 staff, 2 coordinators)	$ 6,125	Wellness Center (1/2 funding)	$15,000
STEAM seminars. Workshops	$ 4,107	Media tech, part-time	$15,000
3-D printer, lessons, and PD	$ 2,599	Mindfulness PD for new staff	$ 525
Kodable for K-3 coding	$ 2,950	Littlebits makers materials	$ 800
Combat Code	$ 1,000	Playworks	$18,000
Mystery Science	$ 999	Books on Wellness and STEAM	$2,000
Mindfulness PD	$ 525	Combat Code 4-5 Grades	$4,500

Addressing challenging behaviors			
Science non-fiction literature K-5	$ 1,980		
The Studio: materials			
2016-17 Total	$50,285	2018-19 Total	$ 87,825

COMPONENTS OF PROGRAM IMPLEMENTATION AND TIMELINE

Summer / 2017:

- Convert and furnish part of Wellness Center in 401a; June 2017
- Convert 401 into the Studio; June 2017
- Possible Measure I Bond Renovations in 401a&b, and 402, June/July 2017 (could be in 2018)
- Complete conversion of Wellness Center 401b & the LAB; August 2017
- Fill STEAM Coordinator & Wellness Liaison positions; Summer 2017

Year 1 / 2017-2018:

- Identify specific strategies for K-5 students to show their learning in technology
- Attend professional development to develop STEAM school-wide systems
- Begin student showcase of work around STEAM for STEAM Carnival in spring 2018
- Host STEAM Info Night in the Fall and have a display at Back to School Night
- Create classroom to classroom connection with upper and lower grades
- Fund LAB/Wellness Center/Studio with necessary materials and equipment
- Develop evaluation process for STEAM Coordinator & Wellness Liaison
- Develop understanding of student assessment data collections from STEAM Coordinator
- Establish schedule rotation for all LAB and Studio classes
- Establish system for referrals/use of Wellness Center for students and teachers
- Presentation from UCSF Hearts for all staff
- Develop self-referral process for students

Year 2 / 2018-2019:

- All staff attend professional development on technology
- Develop Science Fair event
- Improve STEAM Carnival event and STEAM Night
- Begin teacher to teacher collaboration through classroom visitations
- Further PD for STEAM Coordinator
- Facilitate parent/guardian workshops to introduce STEAM concepts

Year 3 / 2019-2020:

- Support teacher to teacher collaboration through classroom visitations
- STEAM coordinator provide PD to trained teachers: how to write a STEAM lesson plan
- Teacher showcase of cross-curriculum lessons throughout the year
- Use multiple measures to evaluate student progress: quantitatively and qualitatively
- Partner with Wood Middle School to develop annual event: STEAM competitions at the elementary level
- Develop K-5 STEAM themes & interdisciplinary project based, inquiry lessons
- Use referral data and student outcomes to evaluate effectiveness of Wellness Center

Year 4 / 2020-2021:

- Complete Program Certificate requirements to become a STEAM SCHOOL

- Facilitate program evaluation with the support of a personal visit from STEAM consultant
- Professional development update provided by S
- Implement K-5 STEAM themes & interdisciplinary project based, inquiry lesson

Year 5 / 2021-2022:

- STEAM certified teachers/coordinators write lesson plans to contribute to STEAM Education network (to receive suggestions on how to improve and create standards-based lessons)
- Professional development update provided by STEAM Education
- Facilitate program evaluation with the support of a personal visit from STEAM consultant
- Pursue funding and grant resources

PROGRAM MONITORING AND EVALUATION

Educators

The Core Teachers adhere to all AEA requirements and credential evaluations as noted by the district policies. The STEAM Coordinator adheres to all AEA requirements and credential evaluations as noted by the district policies. The RBE site administrators will evaluate the Wellness Liaison's performance.

STEAM Initiatives

Year 1:

- Teachers will have attended at least 90% of trainings on STEAM & technology.
- Teachers will have used the LAB a minimum of 10 times during the academic school year.
- Classes will have regular rotation through the Studio with STEAM Coordinator.
- Students from grades 4-5 will participate in the spring STEAM Carnival Science Fair portion.
- Teachers will visit another teacher to observe how others utilize STEAM in their classrooms.
- Teachers will share out their cohort created STEAM lesson at the end of the year.
- STEAM Coordinator will implement STEAM notebooks for teacher review.

Year 2:

- Teachers will have used the LAB a minimum of 15 times during the academic school year.
- Teachers will visit another teacher to observe how others utilize STEAM in their classrooms.
- Students from all grades will participate in the spring STEAM Carnival Science Fair portion.
- Students will maintain STEAM notebooks in the LAB and the Studio.
- STEAM Coordinator will generate ideas for a STEAM portfolio for teacher review.

Year 3:

- Teachers will share a STEAM lesson with grade levels each trimester.
- Teachers will have used the LAB a minimum of 20 times during the academic school year.
- Students from all grades will participate in the school STEAM NIGHT, Science Fair, and STEAM Carnival.
- Students will begin to be exposed to a student generated STEAM portfolio and continue use of notebooks.

Year 4:

- Grade levels will share a STEAM lesson with staff each trimester.
- Teachers will have used the LAB a minimum of 20 times during the academic school year.
- Students from all grades will participate in the school Science Fair, STEAM NIGHT, and STEAM Carnival.
- Students will generate STEAM portfolio that will include STEAM Notebooks for end the year showcase.

Year 5:

- Teachers will have used the LAB a minimum of 20 times during the academic school year.
- Students from all grades will participate in the school Science Fair, STEAM NIGHT, and STEAM Carnival.
- Students will generate STEAM portfolio for a midyear and end the year showcase.

Wellness Center

The referred student and Wellness Liaison will keep a log of the number of sessions and time spent in the Wellness Center. The student, Core teacher, and student's parent/guardian will provide an assessment of the efficacy of the program and provide feedback for future program adjustments. School wide discipline data will be used to monitor the progress of all students.

COST team will evaluate the use of Wellness Center and the effectiveness of teacher usage of the Wellness Center referrals. The evaluations will be reviewed on a monthly basis by the COST team and adjustments made based on need.

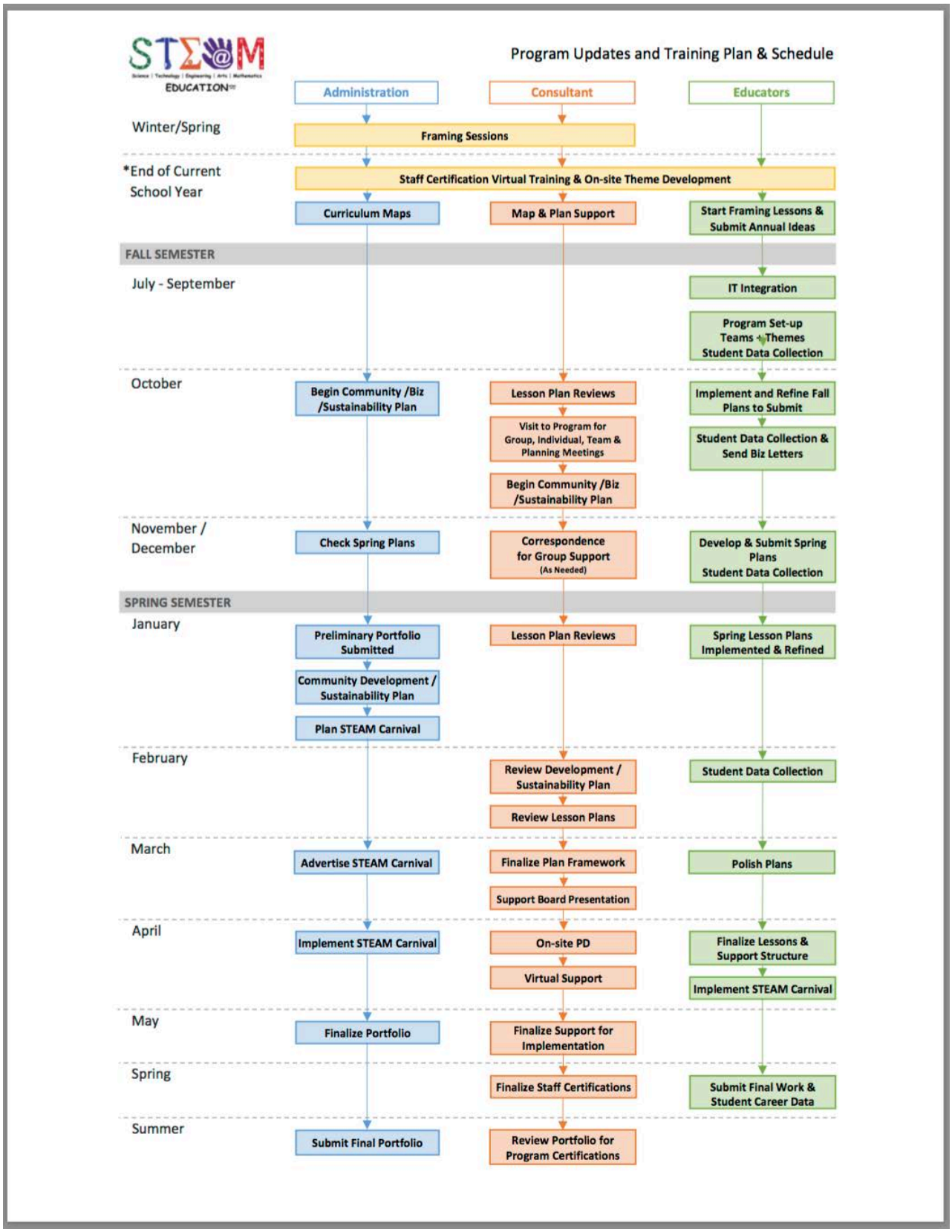
Program Monitoring and Evaluation continued

Administrators, the STEAM coordinator, and other Teachers on Special Assignment will help develop the following evaluation and internal accountability system that requires consistent assessment of instructional practices and students' progress based on district and assessment data, observations, student interviews, and surveys from staff, parents/guardians, and students. Teachers will be using one collaboration period per month to not only discuss and share their successes but also examine routine data to support their own professional growth and improve student achievement.

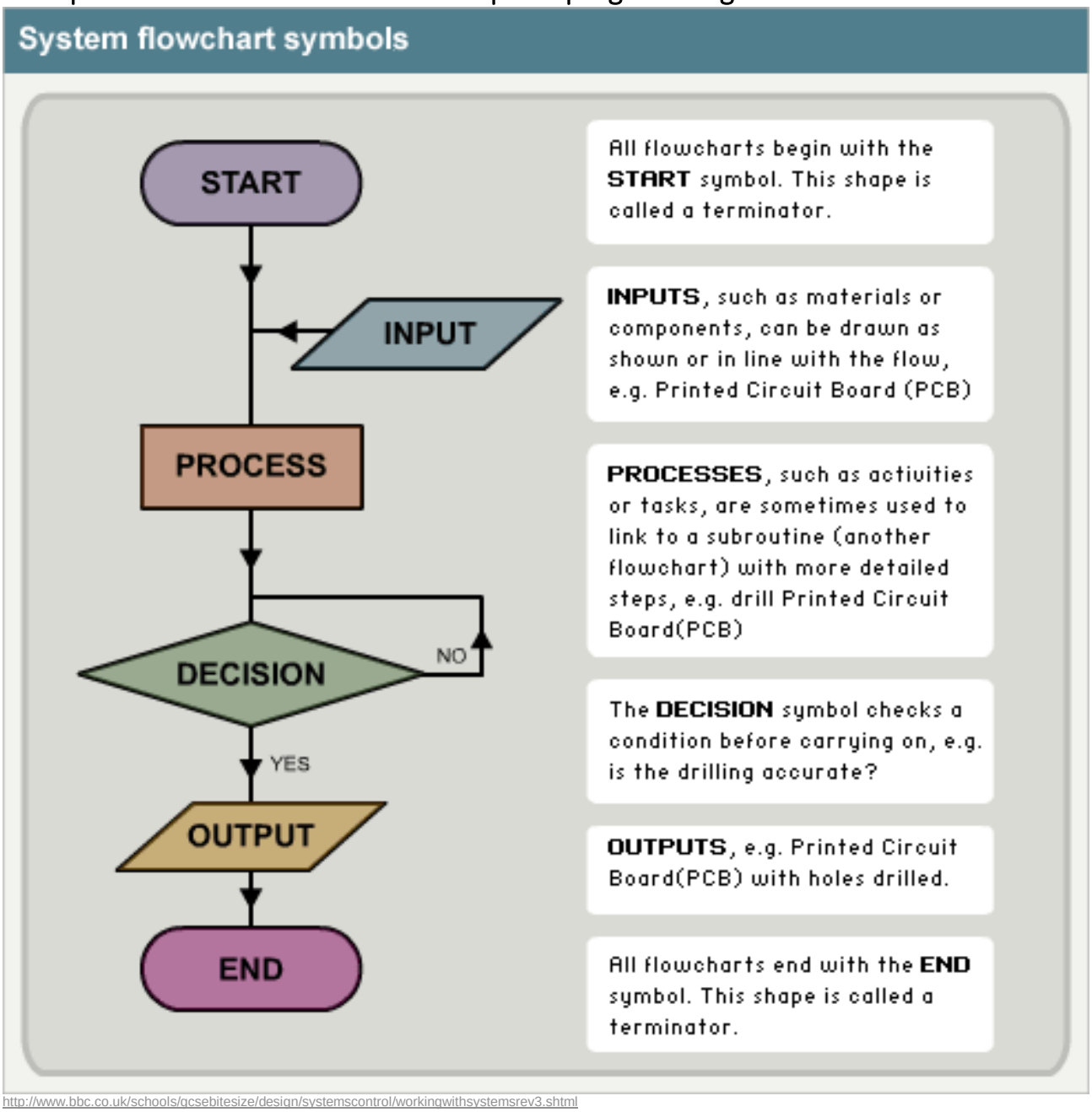
Evaluation Guidelines: Focused system of collective analysis and study
ORGANIZE FOR COLLABORATIVE WORK: Develop timeline for staff to meet and analyze data Collect data related to student engagement, attendance, discipline, and work samples
CREATE DATA OVERVIEW What is the data telling us about learning and teaching STEAM lessons and students' achievement based on Common Core State Standards? What questions do you have and what data might help us answer those questions?
DIG INTO STUDENT DATA Determine the "learner-centered problem" the problem is about learning, not that learners are the problem p. 90 Data Wise. "Learning centered problems are within school's control; it is a statement about student learning, not a question; it is specific and small p. 104." Example: Students have problems completing STEAM projects with their teams, some are participating and are more productive than others.
OBSERVE AND EXAMINE INSTRUCTION: engage teachers in analysis of their own practice. Peer interaction is the *social glue* of focus and coherence (Fullan p. 36). The goal is to link instruction to practices and identify potential practices that would increase student learning. Reframe learning-centered problem as a "problem of practice" if solved it will mean progress toward larger goals for students. "Problem of practice is the gap between current practice and effective practice for addressing learner-center problem p. 118." What questions do teachers have about effectively implementing STEAM lessons? What data will help teachers answer these questions? How does instruction have an impact on what students learn? What is instructional data should be analyzed? What might effective instructional data look like, what makes it effective?
DEVELOP ACTION PLAN/Professional Development System: How will our action plan address problem of practice? What are we doing and why are we doing it?
Answer the questions: What exactly do we expect all students to learn as a result of completing a STEAM one week unit? How will we know if and when they've learned it? How will we respond when some students don't learn? How will we respond when some students have already learned?
What are the desired outcomes? Potential impact and feasibility of each step
How will we plan achieve desired results?
How many people effected by the change?
What is the timeline?
What are the required resources? What professional development support is required?
What are the implementation requirements/indicators for teachers, students, classrooms, and student work
PLAN TO ASSESS PROGRESS/Progress Monitoring
What internal and external assessments will be used to measure progress?
When will each type of short and long term assessment data be collected? (classwork, homework, classroom observations, student interviews, informal and formal teacher created assessments, student engagement/participation, benchmark or interim assessments, state-wide assessments
Who is responsible for collecting and keeping track of the data?
What are the set goals for student improvement and proficiency?
CHECK PROGRESS
Are we achieving the desired outcomes and impact on student achievement? Are our students learning more?
Are we doing what we said we would do?
Are our timelines reasonable?
How are we using our resources?
Have referrals to special education decreased?
Are we applying learning from professional development, do we need further PD?

RUBY BRIDGES INNOVATIVE PLAN SCHOOL MAP • 2017-18

Playground	Grade 5 304	Grade 5 305		Grade 3 404	Preschool 405/405A		Grade 1 504	Resource 505
Red Benches	Grade 4 303	Grade 4 306		Grade 3 403	Grade 3 or 4 406		Grade 1 or Title I 503	Counseling
Multipurpose Room	Grade 5 302	K-2 307 Mod. - Severe		The Lab 402	Grade 3 or 4 407		Grade 1 or Title I 502	Grade 2 506
	301A Intervention Lib.	Speech 308A		Wellness Center 401A			Speech 501A	ELD 507
	Grade 3-5 301 Mild-Mod.	Title I 308		The Studio Makerspace 401	Grade 2 408		Grade 2 501	Grade 1 508
	Administration			K-1	K-2	K-3		K-4 Preschool


STEAM EDUCATION
Program Updates and Training Plan & Schedule
Administration
Consultant
Educators
Winter/Spring
Framing Sessions
*End of Current School Year
Staff Certification Virtual Training & On-site Theme Development
Curriculum Maps
Map & Plan Support
Start Framing Lessons & Submit Annual Ideas
FALL SEMESTER
July - September
IT Integration
Program Set-up Teams + Themes Student Data Collection
October
Begin Community /Biz /Sustainability Plan
Lesson Plan Reviews
Visit to Program for Group, Individual, Team & Planning Meetings
Begin Community /Biz /Sustainability Plan
Implement and Refine Fall Plans to Submit
Student Data Collection & Send Biz Letters
November / December
Check Spring Plans
Correspondence for Group Support (As Needed)
Develop & Submit Spring Plans Student Data Collection
SPRING SEMESTER
January
Preliminary Portfolio Submitted
Community Development / Sustainability Plan
Plan STEAM Carnival
Lesson Plan Reviews
Spring Lesson Plans Implemented & Refined
February
Review Development / Sustainability Plan
Review Lesson Plans
Student Data Collection
March
Advertise STEAM Carnival
Finalize Plan Framework
Support Board Presentation
Polish Plans
April
Implement STEAM Carnival
On-site PD
Virtual Support
Finalize Lessons & Support Structure
Implement STEAM Carnival
May
Finalize Portfolio
Finalize Support for Implementation
Spring
Finalize Staff Certifications
Submit Final Work & Student Career Data
Summer
Submit Final Portfolio
Review Portfolio for Program Certifications

Example of STEAM introduction to computer programming and assessment



http://www.bbc.co.uk/schools/gcsebitesize/design/systemscontrol/workingwithsystemsrev3.shtml

Assignment: Pretend that you are instructing a robot on how to make a peanut butter and jelly sandwich. – Do this on your own paper(s), you can staple multiple sheets together – put your name on it.

For EACH tiny step of the way, you have to tell the robot when to start, how to get what items and how much to use (inputs - nouns), what to do with them in the proper order (processes - verbs) and then after each little step, ask if that step is done right (output – noun - quality control) before it moves on to the next stage. All the steps have to be completed using the symbols and categories on the chart above.

Grading: A = detailed, few mistakes, B = detailed, one significant element forgotten, C = a good rough sketch of the process, D = a very broad sketch of the process, E = not a logical progression of steps.

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ARTS INTEGRATION

1) Catterall, James S. (2012). The arts and achievement in at-risk-youth: findings from four longitudinal studies / James S. Catterall, University of California Los Angeles with Susan A. Dumais Louisiana State University and Gillian Hampden-Thompson, University of York, U.K. pages cm (Research report; #55) Retrieved from https://www.arts.gov/sites/default/files/Arts-At-Risk-Youth, pdf

2) Smyth, L. & Landon, J. *National Association of Principals* (Sept/Oct 2016). Meet Title I Goals Using the Arts. pp. 6-8

COMMUNITY OUTREACH

Thirty-one Ruby Bridges teachers completed surveys 3/11/2016, Innovative Plan Needs.

Discussions and introductions to the plan were held during the following meetings: School Site Council Meeting, Sept. 27, 2016 February 28, 2017, March 28, 2017, PTA Meeting, Feb. 7, 2017

Family surveys were completed January 2017, 59 online responses

CURRICULUM and PROFESSIONAL DEVELOPMENT

3) Jacobs, H. H., & Association for Supervision and Curriculum Development. (1989). *Interdisciplinary Curriculum: Design and Implementation*. Alexandria, VA: Association for Supervision and Curriculum Development. Chapter 1.

4) STEAMedu.com; this is the organization that will be providing the training for RBE staff.

EFFECTIVE PEER TO PEER LEARNING

5) Boud, D., Cohen, R. & Sampson, J. (ed.) (2002). Chapter 1, Introduction: Making the move to peer learning, in Peer Learning in Higher Education: Learning From and With Each Other, edited. Pentonville Road, London. Quicksilver Drive Sterling, VA 20166-2012, USA. Retrieved from https://web.stanford.edu/dept/CTL/Tomprof/postings/418.html

MINDFULNESS & THE REDUCTION OF NEGATIVE SCHOOL BEHAVIOR

6) Barnes, V. A., Bauza, L. B., & Treiber, F. A. (2003). Impact of stress reduction on negative school behavior in adolescents. *Health and Quality of Life Outcomes, 1*(10), 1–7. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC155630/

7) Inner Explorer.org; this program was purchased for school-wide implementation in 2015-16 school year as a trial for possible Innovative plan inclusion. The program was a success so it was purchased with a lifetime membership for RBE to be implemented in phase 1 in 2016-17 school year

8) Mindfulschools.org: 11 RBE teachers in 2015-16 school year completed Mindful Educator Essentials

9) Olson, K. (2014). *The Invisible Classroom, Relationships, Neuroscience & Mindfulness in School.* W.W. Norton & Company, New York

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10) Adelman, H. & Taylor, L. (ed.) (May 2012). Engaging and Re-engaging Students and Families, Unit I: Motivation: Time to Move Beyond Behavior Modification. Center for Mental Health in Schools at UCLA Retrieved from http://smhp.psych.ucla.edu/pdfdocs/engagei.pdf and Unit II: Strategic Approaches to Enhancing Student Engagement and Re-Engagement. Retrieved from http://smhp.psych.ucla.edu/pdfdocs/engageii.pdf

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Posnick-Goodwin, S. & Buschman, S. *California Educator* (Nov/Dec 2016, Vol. 21, Issue 4). Real-World Science. pp. 30-32

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19) Sousa, D. & Pilecki, T. (2013). *From STEM to STEAM, Using Brain-Compatible Strategies to Integrate the Arts.* Corwin, A Sage Company, Thousand Oaks, CA

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21) Jones, D. E., Greenberg, M., & Crowley, M. (2015). Early Social--Emotional Functioning and Public Health: The Relationship between Kindergarten Social Competence and Future Wellness. *American Journal of Public Health, 105*(11), 2283–2290. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4605168/

22) Posnick-Goodwin, S. & S. Buschman, S. *California Educator* (Nov/Dec 2016) Managing Our Inner Selves. Kids Learn Compassion, Self-Control with Social-Emotional Learning. Vol. 21, Issue 4. pp. 20-24

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Appendix 1: Research

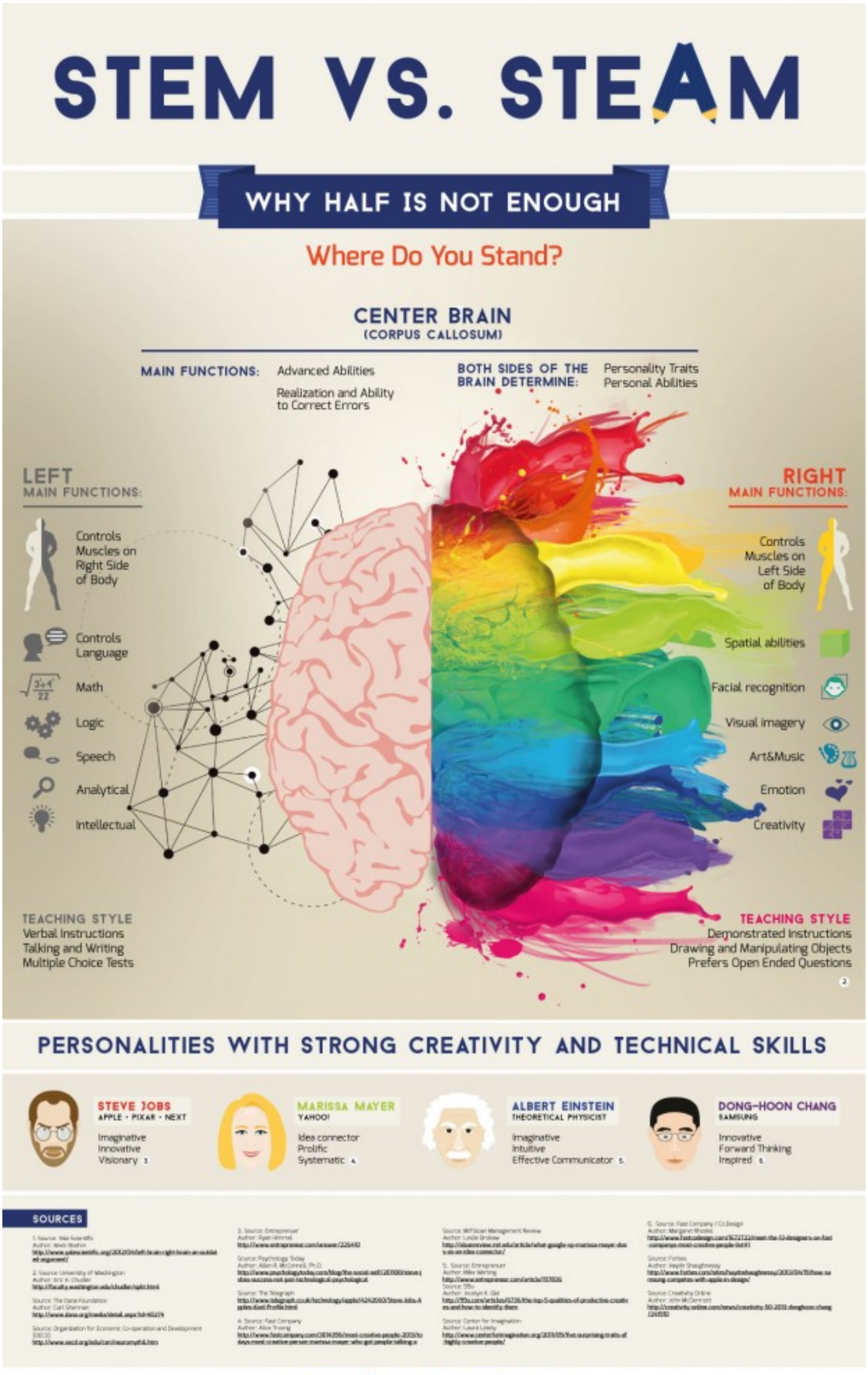
a: STEAM & Achievement in At-risk Youth & Girls

Catterall, James S. (2012). The arts and achievement in at-risk youth : findings from four longitudinal studies / James S. Catterall, University of California Los Angeles with Susan A. Dumais, Louisiana State University and Gillian Hampden-Thompson, University of York, U.K. pages cm -- (Research report ; #55) Retrieved from https://www.arts.gov/sites/default/files/Arts-At-Risk-Youth.pdf

Prottsman, Kiki (2014). Helping Computer Science Gain STEAM with Girls / Kiki Prottsman, The Huffington Post, US Edition, Blog; Retrieved from http://www.huffingtonpost.com/kiki-prottsman/helping-computer-science-_b_4406696.html

Son, Angela (2015). Encouraging STEM/STEAM Education for Girls / Angela Son, Michigan State University. Retrieved from http://www.msuk12connect.org/articles/culture-climate/216-encouraging-stem-steam-education-for-girls

b: STEAM visual representation of the left & right brain functions


STEM VS. STEAM
WHY HALF IS NOT ENOUGH
Where Do You Stand?
CENTER BRAIN
(CORPUS CALLOSUM)
MAIN FUNCTIONS:
Advanced Abilities
Realization and Ability to Correct Errors
BOTH SIDES OF THE BRAIN DETERMINE:
Personality Traits
Personal Abilities
LEFT
MAIN FUNCTIONS:
Controls Muscles on Right Side of Body
Controls Language
Math
Logic
Speech
Analytical
Intellectual
RIGHT
MAIN FUNCTIONS:
Controls Muscles on Left Side of Body
Spatial abilities
Facial recognition
Visual imagery
Art&Music
Emotion
Creativity
TEACHING STYLE
Verbal Instructions
Talking and Writing
Multiple Choice Tests
TEACHING STYLE
Demonstrated Instructions
Drawing and Manipulating Objects
Prefers Open Ended Questions
PERSONALITIES WITH STRONG CREATIVITY AND TECHNICAL SKILLS
STEVE JOBS
APPLE • PIXAR • NEXT
Imaginative
Innovative
Visionary
MARISSA MAYER
YAHOO!
Idea connector
Prolific
Systematic
ALBERT EINSTEIN
THEORETICAL PHYSICIST
Imaginative
Intuitive
Effective Communicator
DONG-HOON CHANG
SAMSUNG
Innovative
Forward Thinking
Inspired
SOURCES
UF UNIVERSITY of FLORIDA
http://education.arts.ufl.edu/

c: Excerpt from Interdisciplinary Curriculum

Relevance of Curriculum

If we are trying to devise a means of driving students out of school, we obviously are succeeding. Recent estimates suggest that, nationally, 25 percent of students drop out every year and in urban areas as many as 40 percent. Something is very wrong. A common concern of students is the irrelevance of their course work in their lives out of school. They find it difficult to understand why they need math when most of their instruction is based on a textbook used in isolation from its applications. The fragmentation of the day only compounds the dilemma as students never have the chance to explore a subject in depth.

The relevancy issue also strikes a deeper chord. Only in school do we have 43 minutes of math and 43 minutes of English and 43 minutes of science. Outside of school, we deal with problems and concerns in a flow of time that is not divided into knowledge fields. We get up in the morning and confront the whole of our lives. It is here that relevancy comes into play. It is not that schools should avoid dealing with specific disciplines; rather, they also need to create learning experiences that periodically demonstrate the relationship of the disciplines, thus heightening their relevancy. There is a need to actively show students how different subject areas influence their lives, and it is critical that students see the strength of each discipline perspective in a connected way.

Out of this concern for relevance arises another key area that has been the subject of debate for the past few years: the ignorance of the American public and the lack of cultural literacy (Hirst 1987, Bloom 1987). Some argue that there should be a body of knowledge that is passed on from one generation to the next that deals with our classics and with the basics of our culture: its history and its arts and sciences. The danger in this line of reasoning is to fall prey to the polarity problem. Discounting interdisciplinary efforts as attempts at relevancy at the expense of the classics is simplistic and only heightens the polarity.

The attempts at interdisciplinary work that seem to be most successful are those that address the polarity question in a different way. The question here isn't whether we should teach the classics (though that is a question worthy of genuine discussion); rather, we are considering a larger point: No matter what the content, we can design active linkages between fields of knowledge. We can teach the works of Shakespeare with an eye to the history of the times, the arts, the values, the role of science, and the zeitgeist rather than simply sticking with specific passages. The student who does not possess a literary bent may encounter *King Lear* in another subject area. Integrated curriculum attempts should not be seen as an interesting diversion but as a more effective means of presenting the curriculum, whether you wish to teach Plato or feminist literature. The curriculum becomes more relevant when there are connections between subjects rather than strict isolation.

Jacobs, H. H., & Association for Supervision and Curriculum Development. (1989). *Interdisciplinary Curriculum: Design and Implementation*. Alexandria, VA: Association for Supervision and Curriculum Development. Chapter 1.

d: Excerpt from The STEAM Journal

Conclusion and Discussion

Although STEM is important for progress in today's society and global competition, the omission of the arts from the educational system would clearly be a colossal mistake. Well over half the students in the study indicated in the survey that they would be more interested in STEM careers if they were able to use creativity in the job itself. Most of the students indicated a belief that STEM careers required creativity, but the number of those who believed problem solving required artistic solutions increased after the STEM camp experience. The individual comments showed that the students were well aware of their use of creative and artistic solutions in a variety of ways. One might expect students who chose to attend a STEM camp to have a more realistic idea of STEM careers than the general population. However, often parents elected to send students to the camp; students did not necessarily choose a STEM camp. The experiences at the STEM camp gave students opportunities to design products and solve problems using STEM content knowledge and creativity combined, experiences not often gained in formal school settings. The implications for education are twofold: 1) the arts should preserve or regain their prominence in the educational system, and 2) opportunities should be provided in formal school settings for students to use both creativity and logical thought processes in solving problems.

Oner, Ayse Tugba; Nite, Sandra Bonorden; Capraro, Robert M.; and Capraro, Mary Margaret (2016) "From STEM to STEAM: Students' Beliefs About the Use of Their Creativity," *The STEAM Journal*: Vol. 2: Iss. 2, Article 6. DOI: 10.5642/steam.20160202.06

e: Excerpt from p21.org

At the end, what we are really interested in is that students get exposure to hands-on learning that challenges them to think critically and creatively, and lets them apply important content knowledge in meaningful ways. The focus is on higher-order thinking skills, the same ones that show up in the ESSA legislation, particularly when dealing with assessments. ESSA encourages multiple modes of assessment that allow for greater flexibility, personalization, and more accurate ways to capture what students know and are able to do through portfolios, projects, and more.

STEAM provides a great way to get there, as well as a vehicle for exploring the 4Cs and yet another way to connect to our Framework for 21st Century Learning, which outlines the content knowledge and themes, learning and life skills, and various supports that all students need to succeed in today's world.

We don't need every child to grow up to become a scientist, engineer, or designer, but we need every one to grow up knowing how to think like one. With STEAM, we can really make sure that students are ready for many of the challenges they will face, and to create a world where "Every Student Succeeds" is not just an aspiration.

Soule, Helen (2016) "Why STEAM is Great Policy for the Future of Education," *Partnership for 21st Century Learning (P21)*: Vol. 3: Iss. 3, Number 14.

f: Excerpt about El Dorado Elementary

In most schools in the U.S., it's likely that Martin would have been suspended, expelled, or shunted into special education classes. In fact, during the 2010-2011 school year 150,349 out of 3,042,670 – nearly five percent — of elementary school students were suspended or expelled in California.

Instead, because El Dorado Elementary has integrated HEARTS, Martin's life is on a completely different trajectory than it was a year ago.

So are the lives of many of its other 275 students. The numbers tell the story: In 2008-2009, the year before HEARTS was introduced at El Dorado, there were 674 referrals – students sent to the principal's office for fighting, yelling, or some other inappropriate behavior.

During the last school year – 2012-2013, there was a 74% drop, to only 175. This year, only 50 referrals have occurred.

There were 80 suspensions in 2008-2009. And although suspensions increased for four years to 150 in 2011-2012, last year they dropped 89%, to only 17. So far this year, only three students have been suspended.

As El Dorado Elementary School Principal Silvia Cordero thought when she first heard about trauma-informed practices: "Why don't all schools have this?"

Kids who throw chairs in class – that's a public health issue

"Childhood trauma is a public health issue," says Dorado as we sit in a coffee shop in Berkeley, CA, late one afternoon to talk about the HEARTS program. "It's really common, and the way kids react to it gets them into trouble in school."

In fact, serious and chronic childhood trauma is so common that most people in the U.S. have experienced at least one type out of ten measured by the CDC's Adverse Childhood Experiences Study. These include physical, sexual or verbal abuse; physical or emotional

Stevens, Jane. (2014, January 28). *San Francisco's El Dorado Elementary uses trauma-informed & restorative practices; suspensions drop 89%* [Blog post]. Retrieved from https://acestoohigh.com/2014/01/28/hearts-el-dorado-elementary/

g: Social Competence and Achievement

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4605168/

Jones, D. E., Greenberg, M., & Crowley, M. (2015). Early Social--Emotional Functioning and Public Health: The Relationship Between Kindergarten Social Competence and Future Wellness. *American Journal of Public Health, 105*(11), 2283–2290.

h: Mindfulness & the Reduction of Negative School Behavior

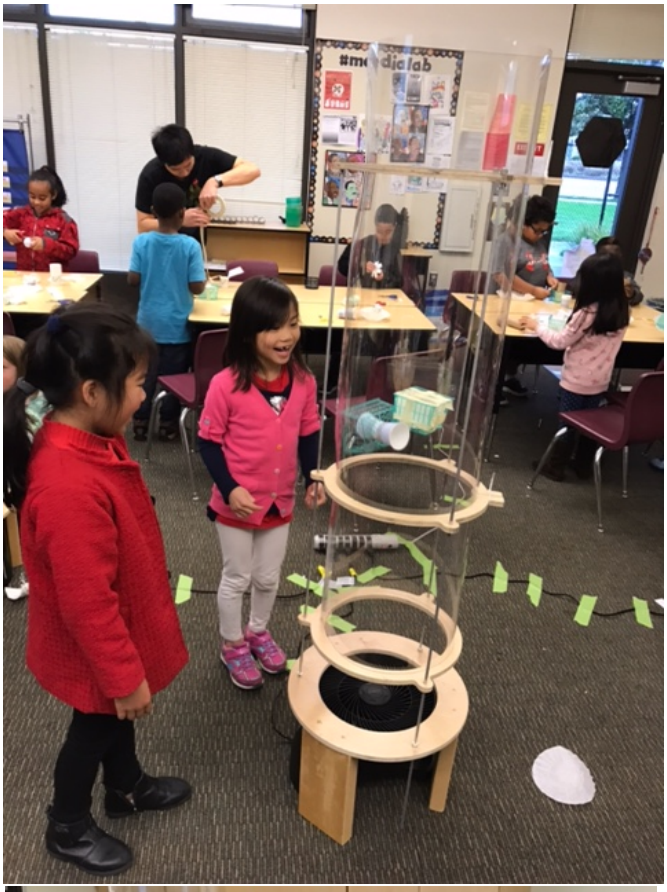
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC155630/
Barnes, V. A., Bauza, L. B., & Treiber, F. A. (2003). Impact of stress reduction on negative school behavior in adolescents. *Health and Quality of Life Outcomes, 1*(10), 1–7.

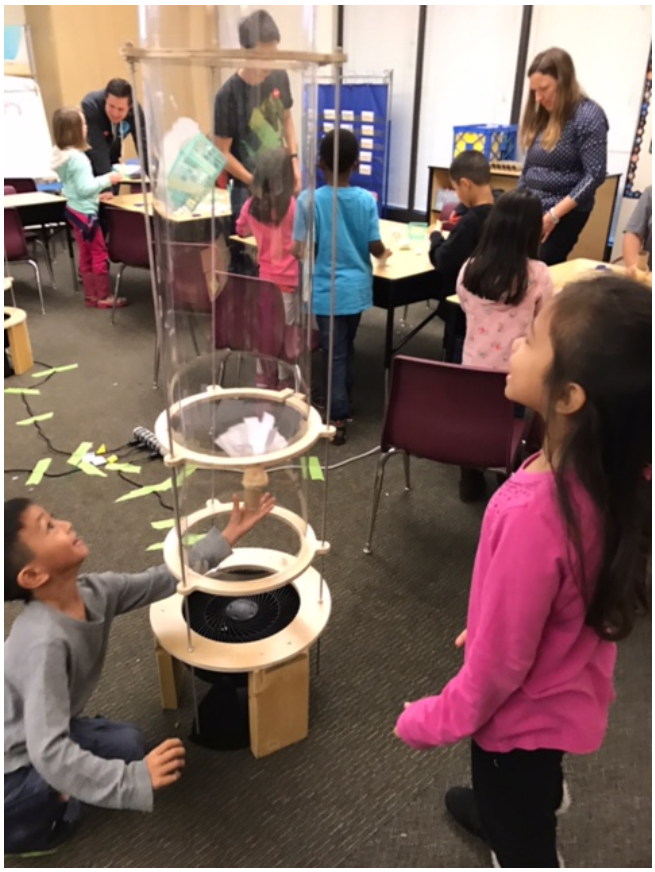
i: Effective Peer to Peer Learning

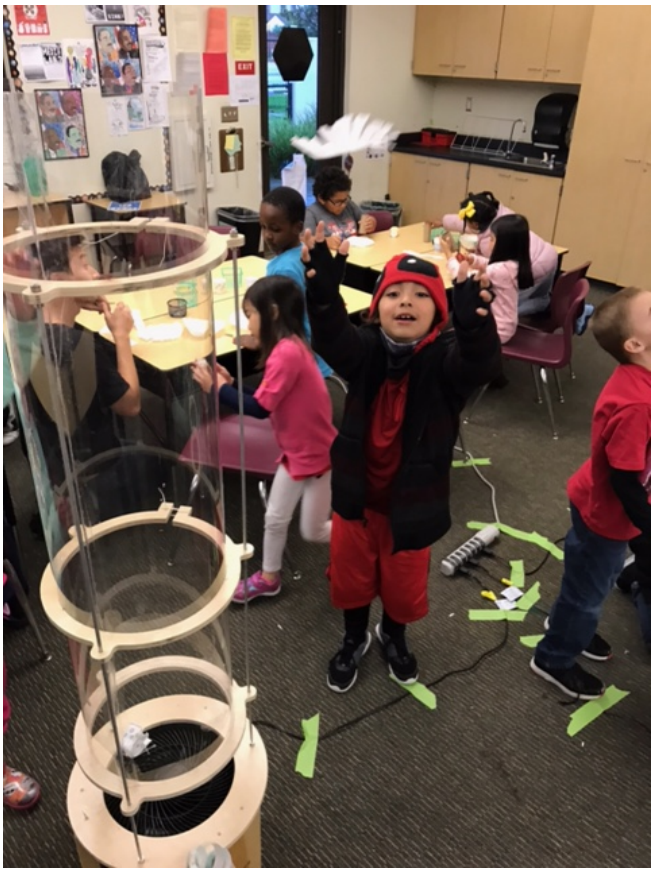
https://web.stanford.edu/dept/CTL/Tomprof/postings/418.html
Chapter 1, Introduction: Making the move to peer learning, in Peer Learning in Higher Education: Learning From & With Each Other, edited by David Boud, Ruth Cohen & Jane Sampson. Published by Kogan Page Limited 120 Pentonville Road, London N1 9JN, UK and Stylus Publishing Inc. 22883 Quicksilver Drive Sterling, VA 20166-2012, USA. http://www.styluspub.com/ Copyright © David Boud, Ruth Cohen, Jane Sampson and individual contributors, 2002.

Appendix 2: Academic Samples

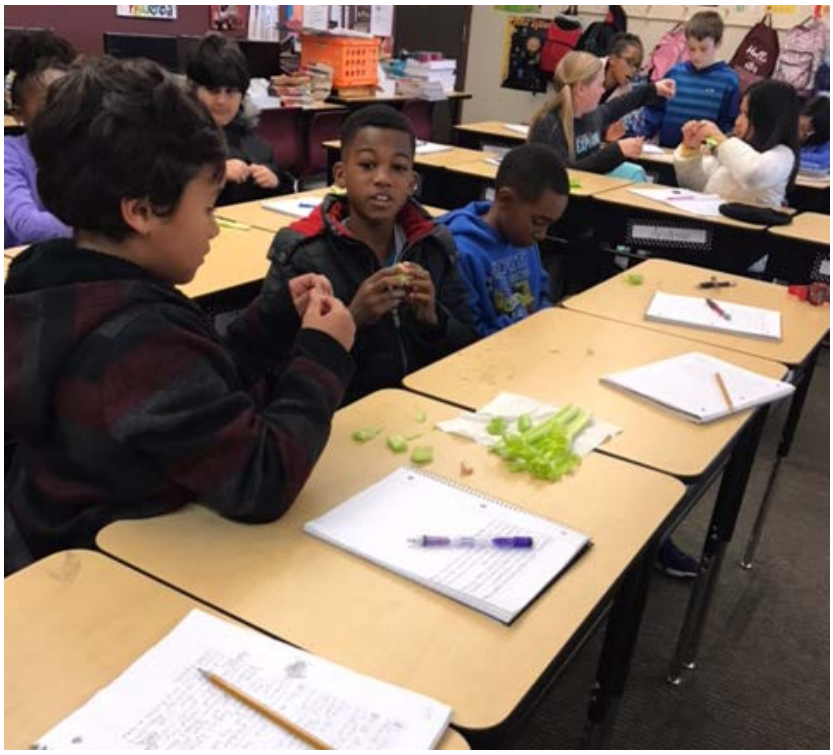
a. 1st Grade Students in the LAB for Wind Tunnels Lesson



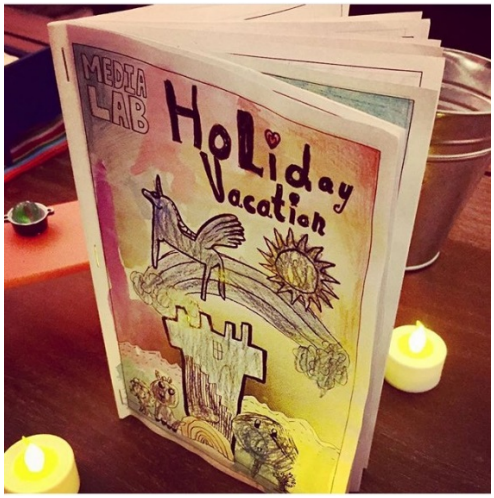




b: 5th graders Plant Nutrient Systems



c: #Medialab Ephemera



Appendix 3: Outreach Documents

a: Teacher Survey Results—Survey 3/11/2016; 31 respondents; Innovative Plan Needs

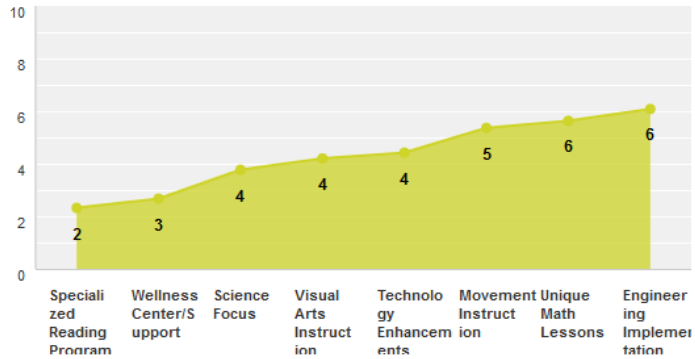
PAGE 1: Innovative Plan Needs

Q1

Customize Export

Please rank the following components in order of highest to lowest priority:

Answered: 31 Skipped: 0



	Highest Priority:1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	Lowest Priority:8 (8)	Total	Weighted Average
Specialized Reading Program	39.29% 11	28.57% 8	10.71% 3	14.29% 4	0.00% 0	3.57% 1	3.57% 1	0.00% 0	28	2.32
Wellness Center/Support	59.26% 16	7.41% 2	7.41% 2	3.70% 1	0.00% 0	7.41% 2	7.41% 2	7.41% 2	27	2.67
Science Focus	3.85% 1	19.23% 5	15.38% 4	30.77% 8	23.08% 6	3.85% 1	3.85% 1	0.00% 0	26	3.77
Visual Arts Instruction	0.00% 0	24.00% 6	24.00% 6	4.00% 1	16.00% 4	20.00% 5	12.00% 3	0.00% 0	25	4.20
Technology Enhancements	4.17% 1	12.50% 3	8.33% 2	29.17% 7	29.17% 7	0.00% 0	8.33% 2	8.33% 2	24	4.42
Movement Instruction	0.00% 0	7.14% 2	21.43% 6	7.14% 2	14.29% 4	14.29% 4	14.29% 4	21.43% 6	28	5.36
Unique Math Lessons	4.17% 1	8.33% 2	4.17% 1	0.00% 0	12.50% 3	41.67% 10	16.67% 4	12.50% 3	24	5.63
Engineering Implementation	4.17% 1	0.00% 0	16.67% 4	8.33% 2	4.17% 1	4.17% 1	25.00% 6	37.50% 9	24	6.08

Comments (1)

Responses (1) Text Analysis My Categories

Categorize as... Filter by Category Search responses

Showing 1 response

I suspect that Wellness and movement should actually be together

3/14/2016 11:13 AM View respondent's answers

Basic Statistics

	Minimum	Maximum	Median	Mean	Standard Deviation
Science Focus	1.00	7.00	4.00	3.77	1.40
Wellness Center/Support	1.00	8.00	1.00	2.67	2.46
Unique Math Lessons	1.00	8.00	6.00	5.63	1.84
Engineering Implementation	1.00	8.00	7.00	6.08	2.16
Visual Arts Instruction	2.00	7.00	4.00	4.20	1.79
Technology Enhancements	1.00	8.00	4.00	4.42	1.78
Specialized Reading Program	1.00	7.00	2.00	2.32	1.56
Movement Instruction	2.00	8.00	5.50	5.36	2.02

Survey 9/15/2016, 21 respondents, STARS Innovative Plan

RESPONDENTS: 21 of 21 | Export All | Share All

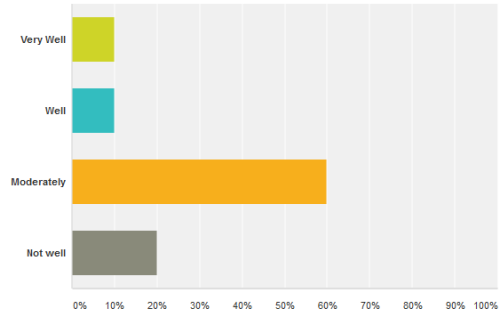
Question Summaries | Data Trends | Individual Responses

PAGE 1

Q1 | Customize | Export

How well do you currently Implement Science lessons in the classroom?

Answered: 20 Skipped: 1

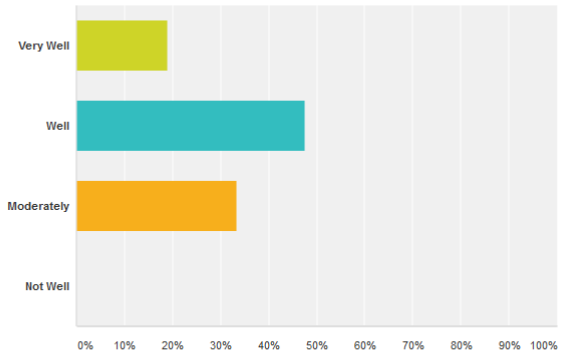


Answer Choices	Responses	
Very Well	10.00%	2
Well	10.00%	2
Moderately	60.00%	12
Not well	20.00%	4
Total		20

Q2 | Customize | Export

How well do you utilize technology in your classroom?

Answered: 21 Skipped: 0

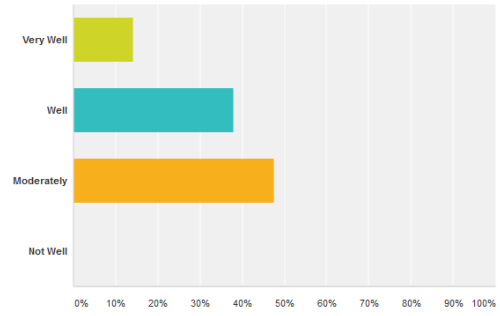


Answer Choices	Responses	
Very Well	19.05%	4
Well	47.62%	10
Moderately	33.33%	7
Not Well	0.00%	0
Total		21

Q3 | Customize | Export

How well do you currently implement specialized, targeted reading?

Answered: 21 Skipped: 0

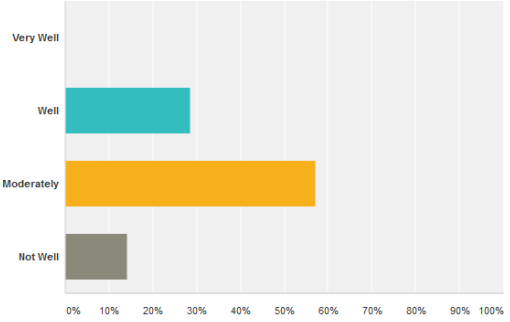


Answer Choices	Responses	
Very Well	14.29%	3
Well	38.10%	8
Moderately	47.62%	10
Not Well	0.00%	0
Total		21

Q4 | Customize | Export

How well does the school support your academically at-risk students?

Answered: 21 Skipped: 0

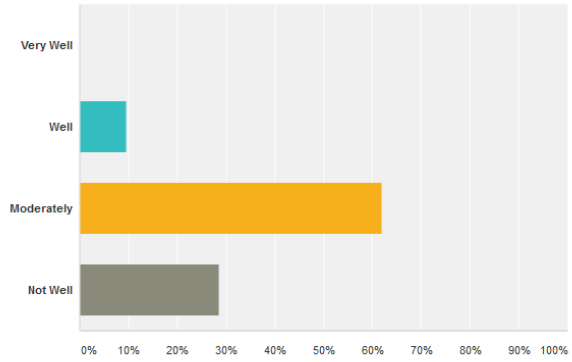


Answer Choices	Responses	
Very Well	0.00%	0
Well	28.57%	6
Moderately	57.14%	12
Not Well	14.29%	3
Total		21

Q5 Customize Export

How well does the school support you academically advanced students?

Answered: 21 Skipped: 0

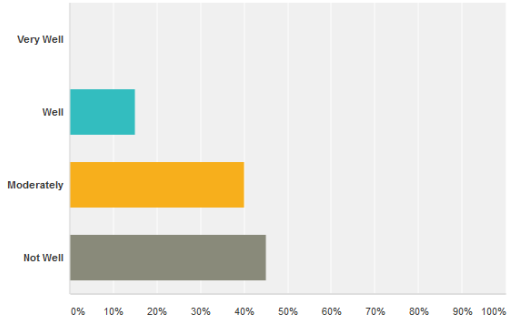


Answer Choices	Responses	
Very Well	0.00%	0
Well	9.52%	2
Moderately	61.90%	13
Not Well	28.57%	6

Q6 Customize Export

How well does the school support your emotionally at-risk students?

Answered: 20 Skipped: 1

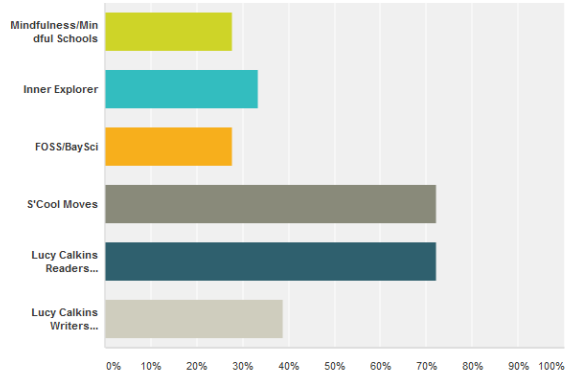


Answer Choices	Responses	
Very Well	0.00%	0
Well	15.00%	3
Moderately	40.00%	8
Not Well	45.00%	9
Total		20

Q7 Customize Export

Which trainings do you need to align with the STARS Innovative Plan:

Answered: 18 Skipped: 3



Answer Choices	Responses	
Mindfulness/Mindful Schools	27.78%	5
Inner Explorer	33.33%	6
FOSS/BaySci	27.78%	5
S'Cool Moves	72.22%	13
Lucy Calkins Readers Workshop	72.22%	13
Lucy Calkins Writers Workshop	38.89%	7

Total Respondents: 18

Comments (4)

Responses (4) | Text Analysis | My Categories

PRO FEATURE
Use text analysis to search and categorize responses; see frequently-used words and phrases. To use Text Analysis, upgrade to a GOLD or PLATINUM plan.

Upgrade Learn more »

Categorize as... | Filter by Category | Search responses

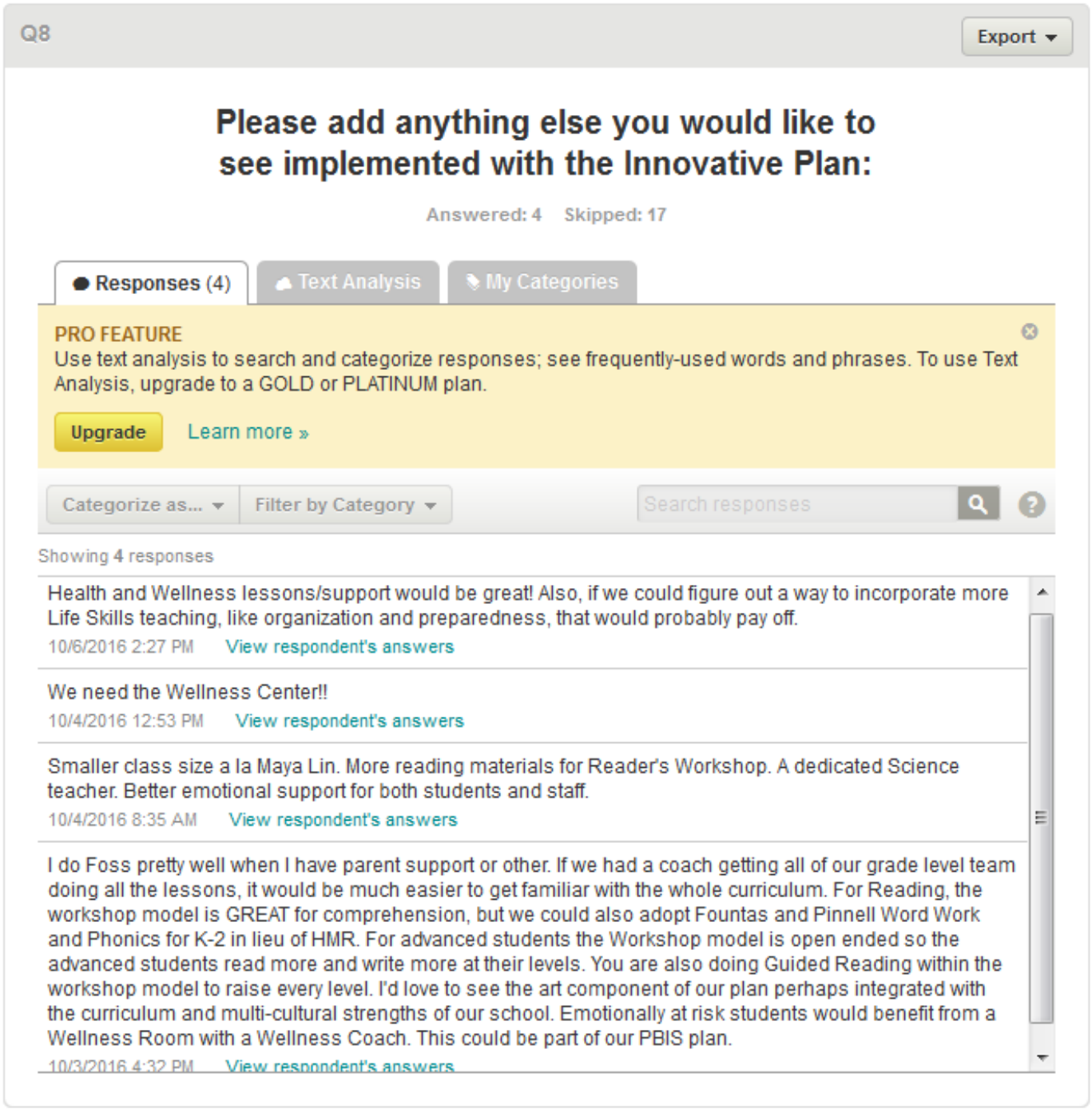
Showing 4 responses

I have had all of these except one
10/4/2016 3:15 PM View respondent's answers

PlayWorks, Google
10/3/2016 5:30 PM View respondent's answers

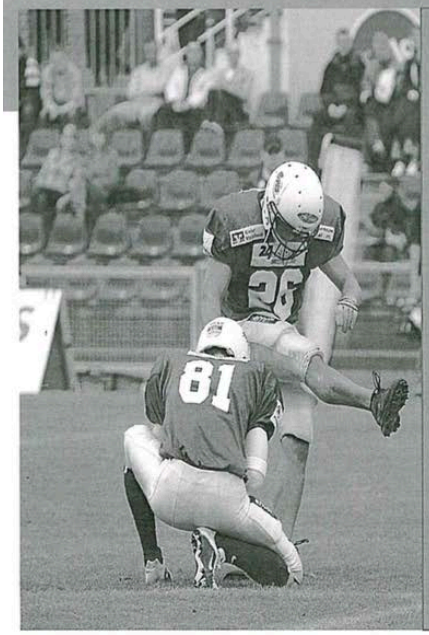
We need week long trainings for Reading and Writing Workshop and then we need a Coach who comes into our classrooms.
10/3/2016 4:32 PM View respondent's answers

Tool Box or an Emotional Regulation Program
10/3/2016 4:19 PM View respondent's answers


Q8
Export
Please add anything else you would like to see implemented with the Innovative Plan:
Answered: 4 Skipped: 17
Responses (4)
Text Analysis
My Categories
PRO FEATURE
Use text analysis to search and categorize responses; see frequently-used words and phrases. To use Text Analysis, upgrade to a GOLD or PLATINUM plan.
Upgrade
Learn more »
Categorize as...
Filter by Category
Search responses
Showing 4 responses
Health and Wellness lessons/support would be great! Also, if we could figure out a way to incorporate more Life Skills teaching, like organization and preparedness, that would probably pay off.
10/6/2016 2:27 PM View respondent's answers
We need the Wellness Center!!
10/4/2016 12:53 PM View respondent's answers
Smaller class size a la Maya Lin. More reading materials for Reader's Workshop. A dedicated Science teacher. Better emotional support for both students and staff.
10/4/2016 8:35 AM View respondent's answers
I do Foss pretty well when I have parent support or other. If we had a coach getting all of our grade level team doing all the lessons, it would be much easier to get familiar with the whole curriculum. For Reading, the workshop model is GREAT for comprehension, but we could also adopt Fountas and Pinnell Word Work and Phonics for K-2 in lieu of HMR. For advanced students the Workshop model is open ended so the advanced students read more and write more at their levels. You are also doing Guided Reading within the workshop model to raise every level. I'd love to see the art component of our plan perhaps integrated with the curriculum and multi-cultural strengths of our school. Emotionally at risk students would benefit from a Wellness Room with a Wellness Coach. This could be part of our PBIS plan.
10/3/2016 4:32 PM View respondent's answers

b: Community Outreach Meeting Agendas

AGENDA



Welcome
Review 5/2016 Agenda

What are our 2016-17 Innovative plan **goals;** how might we attract families who are within our community?

How did our students perform on the CAASPP?

How are we using our budget to achieve those **goals and improve achievement?**

How do our actions serve the needs of all students, what might we do differently?

Notes:

Minutes approved

*Earthquake Drill - October, 2016

*K-5 use the Mystery Science to highlight implementation of science instruction. Recommendations for Innovative Plan: include community advisory group who can share ideas about what might make our school more attractive to community members. Wotk with our IP committee to develop a survey that will be issued to community members to get their feedback--what are they looking for in a school?

See CAASPP website: casspp.cde.ca.gov for the data; 3rd grade: 47%, 24%, 20%, 8%, 4th grade: 35%, 25%, 22%, 18%; 5th grade: 32%, 16%, 33%, 20% (not met, nearly met, met, and exceeded the standard)

AGENDA

Ruby Bridges PTA General Association Meeting
February 7, 2016 (6:15 PM)

Members Present:	Exec Board + General Association; Quorum present

Time	Item	Owner
6:15-6:18	Welcome/Call Meeting to Order * Introduction of new Board Mbrs	Pres
6:18-6:25	Principal's Report	Principal
6:25-6:35	Treasurer's Report • Recoup remaining TA funds • Release NTE $500 for piano repairs (Vote)	Treasurer
6:35-6:45	Fundraising Review/Upcoming Events • 1st Annual RB Civil Rights Dinner (Vote to release funds) • RB meet & greet potluck	Josh Cottrell Pres/Sec
6:45-6:55	RB Innovation Plan	Secretary
6:55-7:00	Upcoming Elections	Pres
7:00-7:15	Open Forum	All
7:15	Next Meeting/Adjourn	VP

RUBY BRIDGE SCHOOL SITE COUNCIL/TITLE I ADVISORY COUNCIL MEETING
Tuesday, Feb. 28, 2017
4:15 – 5:45PM

Present	Cheryl Wilson (Principal), Eric Leung (Assistant Principal), Tracy Tucker (Parent), Tatiana Maribel (Parent), Karen Bane (Parent), Sarah Bo-Linn (Teacher), Rassamee Hayes (Teacher)		
Time	**Content**	**Person/s Responsible**	**Process and Desire Outcomes**
4:15 – 4:25	**Introductions** **Review Dec. 20, 2016 Minutes for approval based on attendees of the 12/20 meeting- (JANUARY 24 meeting was canceled because only one parent attended)**	Principal Wilson	New members were introduced Goal to approve minutes – 12/20/16 minutes approved
4:25 – 4:40	**What is a waiver?** - Issued a copy of the waiver agreement - Explained that teacher collaboration occurs every other Wednesday (2x a month) - Answered questions about possible half-day collaboration days.....collaboration day clarified - Waiver request proposed for next school year – members approved the waiver, chairperson signed the waiver	Principal Wilson	Understand the goal of providing time for teacher collaboration
4:40 – 5:00	**What is our School Family Involvement Policy?** -remove part under Section E about paying for refreshments—this is no longer allowed -clarify role of Student Study Team it's the same as the Student Success Team -change the date of adoption, plan adopted Feb. 28, 2017	Principal Leung	Review to determine amendments, changes, before approval
5:00 – 5:20	**What is our school budget 2017-18? What are the tentative allocations?** Participants reviewed all budget allocations: Title I, General Fund, LCFF Discussion about how funds can be used – can funds be used for gardening, art supplies, etc. Explained how funds allocated for each position. Explained how subs can be paid for SST meetings, collaboration...etc.	Principal Wilson	Agree upon tentative budget allocations
5:20 – 5:45	**General updates:** **Board Presentation –** Principal Wilson briefly presented her slides for the board meeting **Cultural Voices Assembly –** will occur tmrw at 9:30...parents are welcome to come **Scholar Dollars –** explained that we could win a $10,000 grant, but we need lots of parents to vote. How about someone stands outside of each classroom with a computer, asking parents to vote right away? Voting starts March 1-27. The more people vote, the more chances we have of winning the grant. **Newsletter –** Should the school newsletter come out 2x a month or weekly? Maybe students should earn star cards for having parents sign and return showing the parents read it. Another idea: put a secret word in the newsletter and if you find it, then the student gets a star card or pick from the prize/treasure box The newsletter is signed in Kindergarten, why does it stop from grades 1-5? Should the newsletter be sent out on a different day, such as Monday instead of Thursday? **Title I Conference –** Title 1 teachers + Principal Wilson went. Parents from other districts attended. Mindfulness was spoken about- important to continue to include throughout the school day. **Innovative Program Proposal –** meeting with DO tomorrow to talk about STEAM. How do we make our school more attractive and enrich our enrollment? DO is concerned about cost of the plan. There is PD and curriculum for STEAM already made for teachers to attend, read, and use. Innovative program will enhance enrollment, but what about the materials that are needed to run an efficient program? DO is going to purchase another Chrome cart- so there will be 6 Chrome carts on campus. Talk of needing a possible coordinator for STEAM program. DO might be purchasing more "smart" boards for the classrooms. 4 of them are being piloted right now. Talk of possibly having isolated technology in the media room such as iPads or apple TV for teachers to use....will allow use of flexibility with different technology. **Will be discussing the School Site Plan next meeting 3/28/17.**	Staff	
ANNOUCEMENTS:			

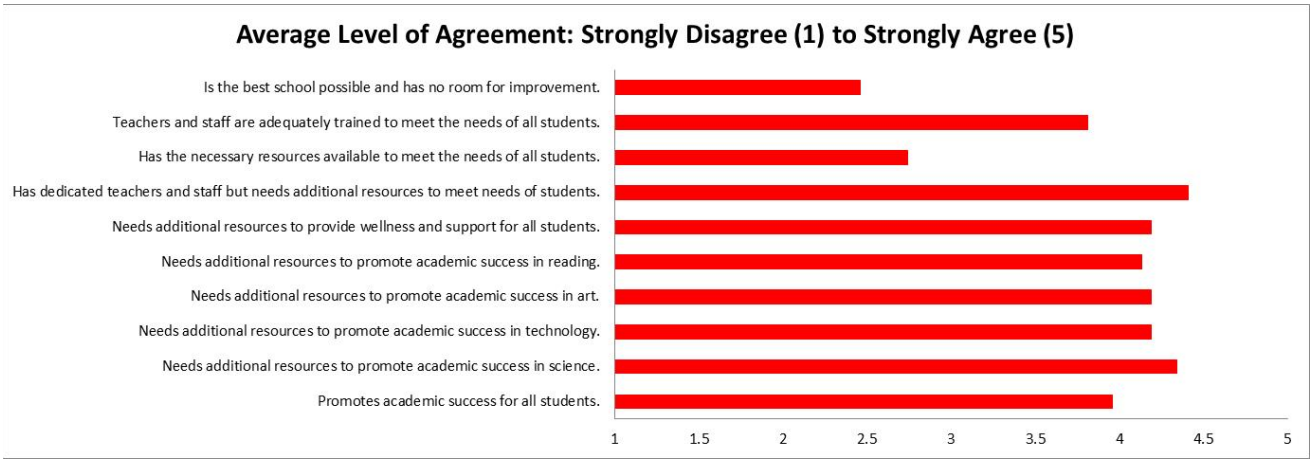
RUBY BRIDGE SCHOOL SITE COUNCIL/TITLE I ADVISORY COUNCIL MEETING
Tuesday, March 28, 2017
4:15 – 5:45PM

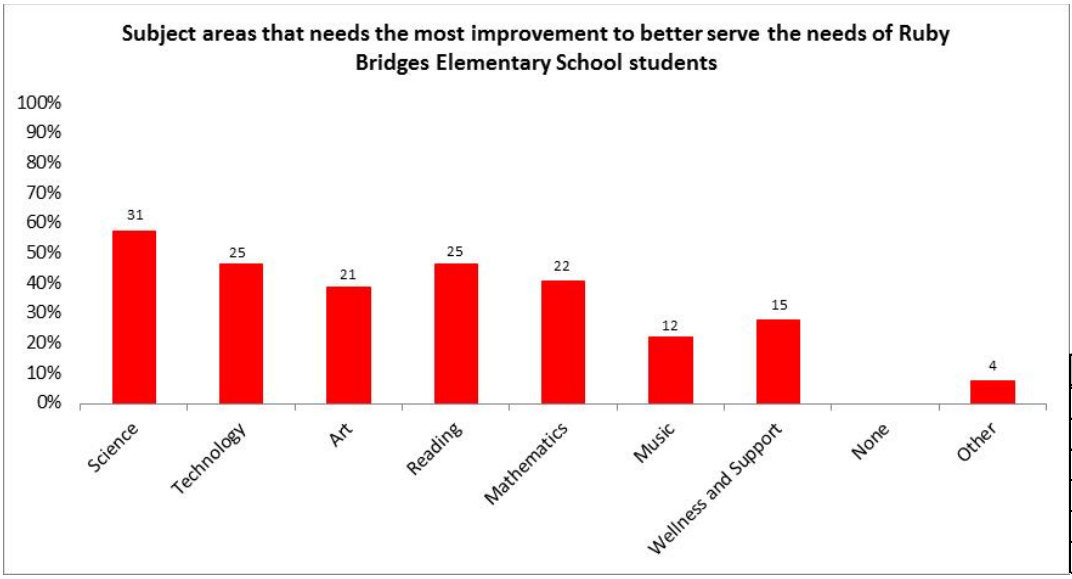
Present	Cheryl Wilson (Principal), Eric Leung (Assistant Principal) Rasssamee Hayes, Samuel Rubin, Sarah Bo-Linn, Karen Bane, Tracy Tucker		
Time	**Content**	**Person/s Responsible**	**Process and Desire Outcomes**
4:15 – 4:25	**Introductions** **Review Feb. 28, 2017 Minutes for approval based on attendees of the February 28, 2017 – minutes approved**	Principal Wilson	New members were introduced Goal to approve minutes – 2/28/17 minutes approved
4:25 – 5:00	**What are the major components and status of our Innovative Plan and how does it impact our School Plan for Student Achievement (SPSA)?** • **Review one page description and examples of STEAM in action** It would be great to have families (adults and children) attend the School Board when the IP is presented. Staff will be visiting other schools to see STEAM in action (San Jose, Cupertino, Contra Costa County Schools, etc.) Teachers will be integrating core concepts based on STEAM lessons—lesson planning that they have learned how to develop as a result of the STEAM training. Explained examples of STEAM lessons in process at our school. What is the level of work and on-rapping to become a STEAM school? (Participants are welcome to read the final proposal) Discussed the steps to fulfill a five year plan for full implementation of STEAM. We will have two STEAM coordinators: Mandie and Susan. Parents' quotes: ***"English learners can show what they know and will have more time to talk about it"*** ***"We can guarantee multi-sensory learning."*** ***" Students will have more than one way to learn, some students learn better by looking something."*** ***"STEAM gives students a hook, they can figure out how to put things together...we can build on students' strengths...if students are engaged, behavior problems decrease."*** ***"If you give students something innovative, they can see connections."*** ***"STEAM gets students into school, increases attendance."*** • **Review SPSA goals re/how are SPSA goals and Innovative Plan goals aligned** There are goals that have to be addressed that are directed by the district. Goal 1 = Eliminate barriers to student success and maximize learning time How is Ruby Bridges going to address this goal? What actions will be taken so that we can reach this goal? How does STEAM help us reach this goal? (ex: practice of mindfulness, wellness center..etc) STEAM guarantees that more students will be getting multi-sensory learning, allowing more students to be engaged.. Think: If your students are engaged, than the misbehavior reduces. Goal 2: Support all students in becoming college and work ready It will give students opportunities and activities that they may not have access to outside of school. It requires students to plan out their projects and become self-motivated. STEAM provides interdisciplinary learning. Goal 2B: Support English Learners (EL) in becoming college and work ready There should be opportunity for ELD coordinators/coaches to work with the STEAM coordinator. Goal 3: Support parent/guardian development as knowledgeable partners and effective advocates for student success. How do we reach the parents that don't want to be reached or involved? What is preventing these parents from being more involved? How do we improve our communication between the school and the parents? Maybe coffee and breakfast with the principal? Maybe offer parent classes? Maybe have a parent support group? How do we help parents help each other to support each other and their children? Maybe have a room parent for all of the classes? • **Review STEAM budget, current expenditures and proposed expenditures related to 2017-18 school budget and SPSA** In relation to STEAM budget -Some expenses for computer coding programs for K-5, 3D printer, Mystery Science..etc were briefly discussed. STEAM PD = $6200 Mystery Science = $1000 K-3 Coding - Kodable = $3000 4-5 Coding – Coding Combat = $1000 Makers' Empire (3D printer, PD, lessons) = $2600 Non-Fiction Books to support lesson plans = $2000 • **Proposed changes re/use of Title I funds** What kind of data do we have to show that we still need 2 Title 1 teachers? We are getting new ELA curriculum – how will this affect our students? Will we still need 2 Title 1 teachers? We want to be able to find funds for Playworks during recess. Where and how do we find this money? Do we only have one Title 1 teacher and use the other funds toward Playworks? We would also like to have a Wellness Coordinator and a part-time media center teacher....where and how do we find this money? • **Questions and answers** Should we have a Coast Guard parent night to welcome new families and provide an informational night? Yes Karen asked if she could see a copy of the Innovative Plan regarding STEAM? Yes, she can get a copy after March 31, 2017. Karen asked about the STEAM budget -Are you asking the Board to cover this entire budget? How much are you really asking the Board to cover? We are asking the board for $85,000. Ruby Bridges can match $25,000 - $30,000.	Principal Wilson
5:00 – 5:20	**What is your school experience as a parent and what would you like to see included the school plan, e.g., parent/guardian workshops, outreach and communication, specific resources for students?**		
5:20 – 5:45	**General updates** • CAASPP assessments -Grades 3-5 will take this in May • Alameda Education Foundation Salute to Education, Fri., April 21 • Silent Auction and STEAM Event, Fri., April 28, 2017, 6:15PM • Room Parent/Volunteer • Next meeting, Tuesday, April 25, 2017	Staff	

c: family survey results

54 Total responses	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Weighted Average (Range 1-5)
Ruby Bridges Elementary School promotes academic success for all students.	2 (3.7%)	4 (7.4%)	9 (16.7%)	17 (31.5%)	21 (38.9%)	3.96
Ruby Bridges Elementary School needs additional resources to promote academic success in science.	1 (1.9%)	0 (0%)	5 (9.3%)	21 (38.9%)	26 (48.2%)	4.34
Ruby Bridges Elementary School needs additional resources to promote academic success in technology.	0 (0%)	1 (1.9%)	8 (14.8%)	25 (46.3%)	20 (37%)	4.19
Ruby Bridges Elementary School needs additional resources to promote academic success in art.	1 (1.9%)	2 (3.7%)	9 (16.7%)	15 (27.8%)	26 (48.2%)	4.19
Ruby Bridges Elementary School needs additional resources to promote academic success in reading.	1 (1.9%)	3 (5.6%)	6 (11.1%)	22 (40.7%)	22 (40.7%)	4.13
Ruby Bridges Elementary School needs additional resources to provide wellness and support for all students.	0 (0%)	0 (0%)	14 (25.9%)	16 (29.6%)	24 (44.4%)	4.19
Ruby Bridges Elementary School has dedicated teachers and staff but is in need of additional resources to meet the needs of all students.	0 (0%)	1 (1.9%)	4 (7.4%)	21 (38.9%)	28 (51.9%)	4.41
Ruby Bridges Elementary School has the necessary resources available to meet the needs of all students.	8 (14.8%)	14 (25.9%)	21 (38.9%)	6 (11.1%)	5 (9.26%)	2.74
Ruby Bridges Elementary School teachers and staff are adequately trained to meet the needs of all students.	2 (3.7%)	5 (9.3%)	10 (18.5%)	21 (38.9%)	16 (29.6%)	3.81
Ruby Bridges Elementary School is the best school possible and has no room for improvement.	8 (14.8%)	25 (46.3%)	12 (22.2%)	6 (11.1%)	3 (5.6%)	2.46

*All responses presented as total sleceted and percent selected N (%)





Grade	N (%)
Kindergarten	10 (18.5%)
1st	11 (20.4%)
2nd	14 (25.9%)
3rd	12 (22.2%)
4th	11 (20.4%)
5th	8 (14.8%)

*Parents/guardians instructed to select up to 3 areas

*54 participants responded
**Other responses included "Art activities science reading writing activities", "Foreign Language", "Sports and Fitness", and "English for those who English is second language."

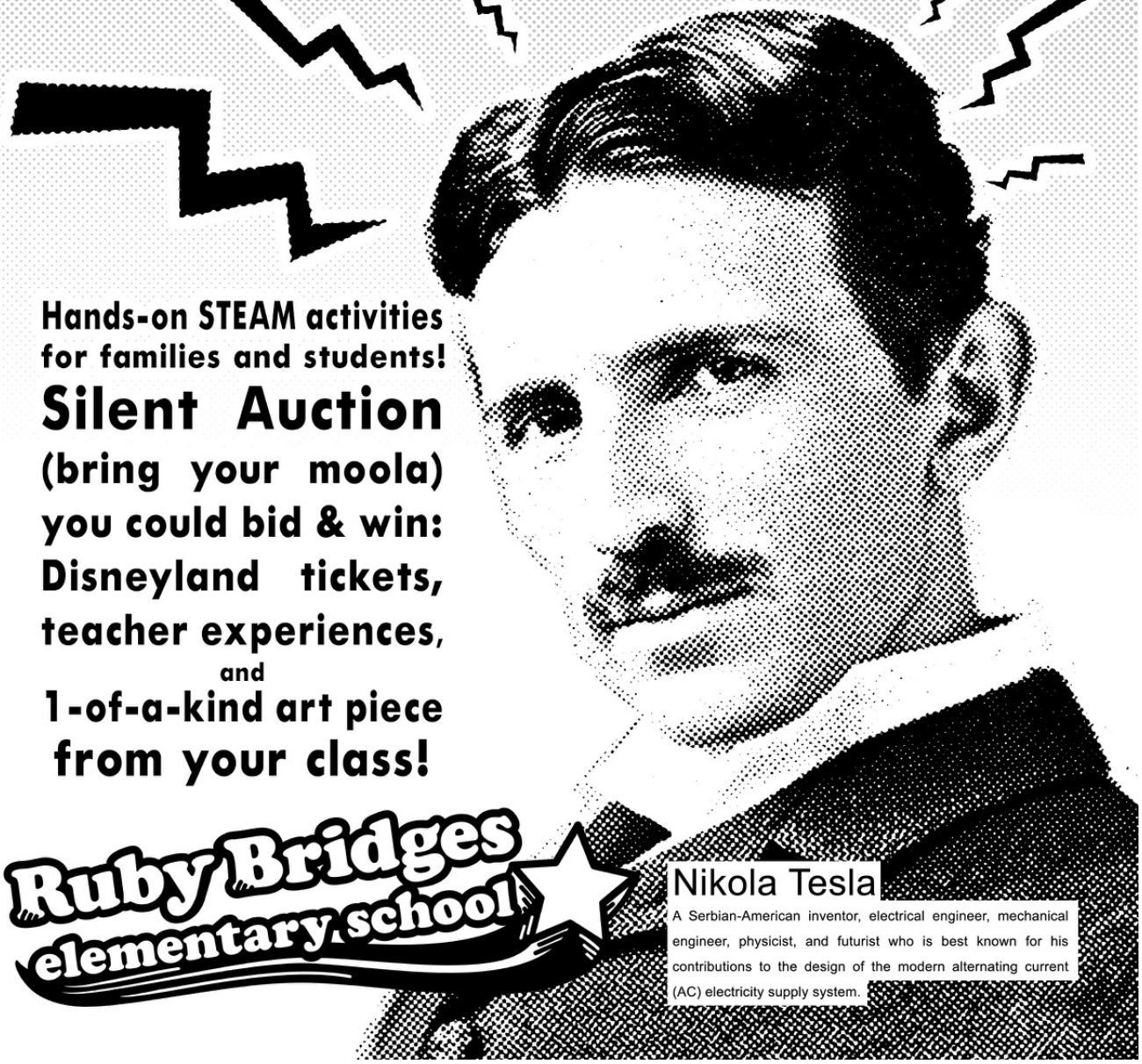
d: Auction & STEAM Night flyer

STEAM Showcase

Friday, April 28th
multipurpose room
6:15 to 8:00pm

AND

Silent AUCTION



Hands-on STEAM activities for families and students!

Silent Auction

(bring your moola) you could bid & win: Disneyland tickets, teacher experiences, and 1-of-a-kind art piece from your class!

Ruby Bridges elementary school

Nikola Tesla

A Serbian-American inventor, electrical engineer, mechanical engineer, physicist, and futurist who is best known for his contributions to the design of the modern alternating current (AC) electricity supply system.

Appendix 4: Professional Development

a: STEAM Education program

STEAM Education Program Description

STΣ@M: Science & Technology, interpreted through Engineering & the Arts, all based in Mathematical elements.

A framework for teaching that is based on natural ways of learning, customizable for ALL types of students and programs and is FUNctional!

Students learn to organize with math, while they research as scientists and historians by using technology, so that they can understand global development and communicate about what is needed, wanted and possible in engineering for universal sustainability.

STEAM Framework Definition: Science and Technology are understood as the basis of what the world has to go forward with, to be analyzed and developed through Engineering and the Arts, with the knowledge that everything is based in elements of Mathematics.

It is a contextual curriculum where the subjects are coordinated to support each other under a formal educational structure of how science, technology, engineering, mathematics and the broad spectrum of the arts all relate to each another in reality. This framework not only includes the art of aesthetics and design, but also the divisions of the liberal, language, musical, physical and manual arts.

The STEAM structure explains how all the divisions of education and life work together; therefore it offers a formal place in the STEM structure for the Language Arts, Social Studies, and the purposeful integration of the exploratory subjects including the Arts, Music, CTE and Physical Education divisions of public education.

It has been implemented in PK-12, college classes, museums, after-school programs and with rehabilitation and dementia patients. STEAM Education has a framework for lesson plans that show how it is adaptable, benchmarked and easily reinforces the standards in unique and engaging ways.

STEAM ties ALL the subjects to each other in an interdisciplinary way as well as to the full spectrum of the rapidly changing business and professional world. It is a life-long career and life-readiness way of educating and learning that is adaptable to the rapidly changing global world we live in.

Shifting to a STEAM perspective means understanding learning contextually; not only in terms of having a framework that illustrates where the subjects overlap, but also in providing a living and adaptable learning structure for ever-changing personal and unpredictable global development.

S-T-E-M with the A includes

- Sharing knowledge with communication and language arts, "voice" – impact, power, legacy
- A working knowledge of manual and physical arts, including how-to and fitness
- Better understanding past and present cultures and aesthetics through the fine arts
- Rhythmic and emotional use of math, physics, physiology and often language with the musical arts
- Understanding sociological developments, human nature, and ethics with the liberal arts

Programs

STEAM is being used in schools all around the world to teach academic and life skills in a standards-backed, reality-based, personally relevant exploratory learning environment. It is adaptable, benchmarked, cross-curricular alignment for multi-disciplinary student assessments, and reinforces NCLB and state standards and has been used with teachers required to integrate with the Common Core, all done in unique and engaging ways. It is backed with a variety of well-recognized and adopted educational philosophies, classroom management and assessment strategies. It promotes deeper understanding and transference of knowledge across the subjects. It is used for developing model educational programs to create functionally literate people by increasing the depth and breadth of proficiency in all students and educators and the communities they influence. It works by expanding a program's current lesson plans into STEAM plans for more realistic discovery and innovation for all types of learners and support from and interaction with local and global community.

STEAM can help make good education better. The STEAM framework, like steam itself, can fit anywhere and take innumerable shapes, and, if used purposefully, can be a very powerful and enjoyable tool for teaching and learning any level of any topic. It delivers high quality team-based education to all students. Preparing children for a growing variety of careers is important to advance the global society and its economies. Careers past, current and potential are organized to be taught with STEAM. Students are taught to evaluate needs, wants and opportunities in order to be informed users, responders and innovators. It prepares students to be life-long learners in pursuit of college, skilled trade programs, potential yet unknown career paths and well-balanced lives. STEAM is a whole-learner, community-involved and influenced learning environment. It has a living-curriculum structure that is representative of the surrounding culture and aware and tolerant of all types of diversity and perspectives.

Classrooms

Embedded in the framework is a system to establish well-balanced teams among educators and students based on a variety of characteristics. All participants have ways they are advanced and are challenged. With this system, their skills are used for leading in some areas while other areas are strengthened through observing and assisting. Educators instruct within their specialty with co-planned thematic units that everyone contributes to in projects related to the required benchmark concepts and skills. There are times when various groups of educators co-teach overlapping subject areas and assignments. However, most of the time, educators still are able to work focused on their own schedule and tie to the theme when it is convenient in their plans. Special times are designated for working on projects, so that as new concepts are learned they can be applied and built upon. The classrooms and common areas become a network of specialty topics in a living and growing discovery place.

Educators

STEAM Educators report feeling rejuvenated by richer living work environments. They have the ability to use more diversification of teaching methods and be more of a facilitator to learners. It empowers educators to meet the guidelines in a variety of unique and engaging ways and to meaningfully cross-reference concepts and vocabulary. They have the opportunity to teach collaboratively, exchange ideas, have easier preparations for substitutes and have more productive common planning times. The teachers report feeling the positive shift from ME to WE in the staff as well as with students.

They state that through the structure of rubric-based portfolios and process work, they have a better (broader and deeper) understanding of what their students prove they know in different ways including what they can tangibly accomplish. Educators can better match their learning objectives and goals to the

variety of learners they encounter. They can cater the themes to those of interest to the local students and community.

Students

STEAM asks students to evaluate local to global career, hobby and life opportunities and developments in historical, current and potential contexts. Students are challenged to learn and apply the breadth and depth of content and skill sets across the disciplines through reality-based projects using up-to-date research from the fields. Students are asked to perpetually evaluate their points of interest, experiences and talents with ongoing portfolio development, which becomes useful for applying to extra-curricular and post-graduation pursuits.

STEAM educators have reported to us that, when students are introduced to the framework and shown how to create academically and socially balanced teams and are tasked with working on reality-based thematic concepts, the following things have been noticed:

- Students soon start using knowledge and skills from across the subjects to back up their work and have deeper understanding and recall of concepts when reminded of related activities.

- Students develop an ability to recognize and respect their own and others' varying skill sets and intelligences. They learn how to best fit into teams based on roles that they have a predisposition to do well at, and learn how they and others create society.

- They more naturally use team dynamics help solve conflicts and conversations are reported as being more on-topic.

- Students look forward to these activities and take more measures to prepare for missing work during these times. When the projects align well with the curricular concepts of that time frame, then the students have more of a direct reason to learn the content for optimal application in their project.

- Participants feel more group identity and pride with fellow students and the school, something that is often under-cultivated. They feel a shift from ME (the singular student) to WE (an active participant in the global community.)

- Classroom and SPED teachers report that students with IEPs and 504s are more engaged. Special, ESL and advanced learners get more of what they need academically and interactively from the team-based approach and need fewer specialized pull-out sessions.

Communities

STEAM promotes a structure of community and business partnerships with schools. Programs that are well-supported by their communities have a record of higher engagement among educators and all levels and types of students and families for better overall program sustainability. Our plans promote adding in ecological and cultural sustainability, too, including having rotating displays in the common areas of the schools and having community meetings and program information nights. Educators report parent engagement and donations are increasing.

Themes Commonly Used

STEAM Education is how ALL subjects and people are recognized and can contribute. All effort is encouraged. It is hoped to be a factor in diminishing the drop-out, unemployment and poverty rates, having to teach to the test instead of the individual, and the disproportionate percentage of women and minorities in leadership positions.

Many programs choose to revolve their STEAM curriculum framework around themes such as:

- Power & Energy
- Elements & Processes
- Life & Movement
- Transportation
- Communication
- Music
- Inventions

It is necessary to have many varied experiences for students to be successful in this rapidly developing technological world, but it can still be done inexpensively.

Courses Offered

WHAT'S YOUR POINT? - The first example MS/HS Introductory STEAM Course with a sample portfolio

Students start at the point of the pyramid, based on their perspective as a person who learns holistically. The course teaches them to evaluate their skills and interests within a structure for investigating the educational discipline fields to learn more about the breadth and depth of career, hobby and life options. It exposes students to a large range of skill sets and career choices through projects that include research and development. Students perpetually evaluate their points of interest, experiences and talents with ongoing portfolio development that become useful for applying to extracurricular and post-graduation pursuits. Students evaluate local to global career path opportunities and developments in historical, current and potential contexts, and investigate a spectrum of careers and the related discipline skills needed to pursue them.

STEAM Education Certification Packages

We provide professional development for individuals and educational programs to assist and support the transition to a STEAM platform. We offer three types of training packages- one for individual **Educators**, one for **Staff**, and one for whole **Program**s. The focus of these professional development sessions are to learn about Integrated Science-Technology-Engineering-Arts & Math Education: why it's being done, how it works, how it affects you, your school, your community. These sessions are geared for school administrators and educator and are appropriate for museum affiliates and out-of-school program facilitators.

What is covered in a STEAM training?

Learn about Integrated Science-Technology-Engineering-Arts & Math Education: why it's being done, how it works, how it affects you, your school and your community.

STEAM Training includes 24 video segments totaling about 7 1/2 hours training with supporting documents which covers theory, program and classroom establishment instructions and help writing custom STEAM lesson briefs. Training results in being prepared to write and submit a vetted STEAM Lesson Brief to become a STEAM Certified Educator. Certification requires about another 4 hours for completing a lesson plan and the process, less if training with a team.

Both STEAM Trained and Certified educators will have access to the training and teaching documents, as well as the live bank of STEAM lesson plans for a year after their training, including updates made and new documents added during that time.

Staff Educator Training and Certification

Our Staff Educator Certification offers a full teaching staff an introduction to STEAM and allows them to take it in their own direction. The training includes an introduction to STEAM theory, program and classroom establishment, as well as help in creating personalized STEAM lesson plans and student portfolios. All staff members will receive online accounts to complete their video supported virtual training based on the membership level purchased by the Program. Our Tier 4 Membership level allows educators to become trained in STEAM theory, development and practicum through our full set of training videos (about 7 1/2 hours total runtime) plus transcripts, program documents, and one-year access to our STEAM Lesson Plan Bank. Tier 5 Membership includes additional help writing custom STEAM lesson briefs which result in having a STEAM Certified Staff.

General Educator Training includes:

- Virtual Training - Theory and Reasoning
  - Introduction to the STEAM framework
  - Review of epistemology and pedagogy of STEM/STEAM
  - Learn about the commons of the subjects
  - Class management tactics –behavioral & interdisciplinary
  - Meeting extensions for all types of learners
  - Review of previous examples of STEAM projects and programs
  - Developing Curriculum Maps
- Virtual Training - Practicum & Plan Creation – **Personalized for Optional On-Site Training**
  - Reasoning for and how to create STEAM Teams for educators and students
  - Examples of STEAM themes& interdisciplinary PBL projects –hands-on
  - Program sustainability considerations and tactics
  - Partnerships, sponsorships and grants advice
  - Community Outreach structure and STEAM school events
  - Lesson plan creation/expansion based on benchmarks

What are STEAM Educator Certification Training Camps for Individuals?

We offer **Certification Educator Camps** where an administrator , curriculum coordinator, informal educator or teacher can come to learn to use the STEAM framework and to see if the program is a good fit for their whole program's needs. This is a Virtual & On-Site Hybrid Training. Administrators and individuals or small groups of teachers, museum curators, camp directors and home-schoolers are the primary attendees at these camps. We offer these STEAM Training Camps throughout the year and try to rotate the locations around larger cities in the different regions of the continental U.S. You can check our **Store Page** for upcoming camps. If you'd like to receive our new camp announcements and other STEAM news, you may sign up for our newsletter on our homepage.

What is the difference between being STEAM trained and STEAM certified?

Educators who attended a full STEAM training may state that they are STEAM trained on how to deliver and teach with STEAM lesson plans and practices. Educators who have completed a lesson plan and been certified may state that they are STEAM certified and have proven that they know how to write a STEAM lesson plan. Educators with STEAM certification and experience are becoming sought after in the global market. Both STEAM Trained and Certified staff will have access to the training and teaching documents as well as the live bank of STEAM lesson plans for a year after their training, including updates made and new documents added during that time.

What are some more details on certified STEAM lesson plans?

There is a growing bank of STEAM lesson plans that are contributed by teachers with a similar philosophy – integrating meaningful reality-based STEAM education. The first sets of teachers in the network helped to frame the lesson plan template and, as things develop in the educational world, the template is adaptable to accommodate shifts. The lesson plan template is a device for educators to have a structure that helps coordinate ideas across the spectrum of subjects and is adaptable for all educational levels. Once the lesson plans are inclusive across the subject areas for a specific educational level and are certified, they are uploaded and offered to the network.

The point of having educators write STEAM lesson plans to contribute to a commons is two-fold: the first is to verify that they understand how to build a STEAM lesson plan after the training and to receive suggestions on how to make them more well-rounded and polished, the second is to give voice to the educational experts, the teachers in the field, to create a standards-based, live curriculum better than any individual educational program or company can alone. By having STEAM certified teachers contribute at least one lesson plan to the commons, the plans become searchable by the network and everyone is submitting work that can be used, tweaked, updated and supported by similarly minded teachers around the world. With the rate of people now contributing, it is hoped that soon educators can pick and choose variations of lessons to build a full personalized curriculum that works for their students.

In order to maintain the structure that supports impassioned educators to collaborate freely and without biases towards funders, we have to charge to have access to and be a part of the network that shares ideas and lesson plans.

Most states offer professional development points for educational publications, so educators would have the added benefit of being able to apply for additional PD points for any approved lesson plans that they submit.

Program Certification

We offer a transition support Program Certification to implement the paradigm shift to become a STEAM school as a supplement to a STEAM certified staff. It generally takes 3-5 years to transition a school program to fully adopt and use a new paradigm. The first year of a school's transition is key to building the foundation and some schools prefer more support during that time. We now offer a fully virtual Program Certification package. However, most of our programs have traditionally chosen to bring the STEAM Education staff on-site for the benefit of customized professional development, as well as curricular help and support. While we highly recommend on-site visits, they are no longer required for Program Certification. The virtual Program Certification package is available for programs who are unable to accommodate on-site visits and instead requires the Program to provide photos and videos of the program as well as potentially schedule Skype time with the STEAM Education staff for support during first-year implementation.

90% of school staff must be certified as a pre-qualifier to the Program Certification completion, including at least one administrator, one guidance officer, all extension teachers and 90% of the professional staff in each site program. If necessary, additional staff training can be accomplished by having individuals receive the training at a STEAM training camp or through the on-line training site.

Details on international STEAM training

All domestically offered services are available for international requests including Staff Training, Program Certification, Keynotes & Presentations and Consulting. Please go to our 'Certifications & Trainings' page for a link to our international programs document. The most economical way to receive training is to sign up for the membership that includes the video training. This training is currently offered in English; please contact us to give us feedback on what other languages would be most useful to have a translation in.

Fees

Consulting for schools and institutions is contracted on an individual basis. Please contact us at bookings@steamedu.com for a complete list of current programs and pricing. Many schools are getting sponsorships using grants, Title I funds or local businesses to reduce their direct costs.

Does our school need special equipment to get started with STEAM?

It can be quite helpful to have a STEAM lab with work tables and open spaces that classes can use for constructing things, but it is not necessary. As STEAM labs are unique to each school, we offer help in designing them. No special space or equipment is required to be a STEAM school, but highly recommended are: a STEAM room for building things, a grade level appropriate technology education shop/lab and a clean room for robotics equipment, some garden beds and greenhouses with a hydroponics lab, and a 3D printer. If the district is capable of offering electronics to students, we suggest laptops, not tablets and iPads. Laptops provide the ability for students to go much deeper with their studies. We do hope that programs are able to at least offer a 1:4 ratio of laptops for their students.

What do the additional program certification PD visits look like?
From the contract: Professional development visits to assist administration and staff in implementation, deeper learning about STEAM, program support and individual meetings with staff members are available upon request. This may include scheduled time for Consultant's observations in each building and to have time to talk with teachers during their planning periods and the entire staff after school.

In reality: A personal visit can be made to spend time in each school walking through halls, doing quick observations of classes and looking at examples of STEAM projects that are being worked on. There may be brief meetings with staff during their planning times to address issues at their grade levels. After school in the group meeting, we can provide a recap and talk about program updates that have happened since your school's training and will address general concerns and questions from the teachers. These visits are meant to be supportive, not critical. We are not there to look at what isn't being done, but what is, and to offer help to grow the program. It takes time to meet the requirements of the program and we want the teachers to feel that we're there to help them, answer questions, learn from their experiences and work out issues together by brainstorming as experts together. They know their students and your structure and have their favorite programs and lessons. We'd like to know what is working, what needs support, and what is not clear. We'll offer help pulling together the strengths from your team and offering suggestions from what we see other teams doing to extend on what your team is doing.

Program Certification Portfolio creation and approval process: During the summer break at the end of the school year, the portfolio will be finalized by July 1st to complete the program certification process by August 15th.

Program Certification

- Portfolio requirement completion = certificate of Program Certification for completing the requirements in that year - can get annual update certifications.

*Programs meeting certification requirements are eligible for PD update and renewal package for each subsequent continuous year at a reduced price from Year One. This primarily involves updating and submitting an annual portfolio and the option of requesting an on-site PD update.

A STEAM Coordinator is suggested for school and/or district wide programs.

Staff Packages Offered for Access to the STEAM Network

Staff Educator Certification: Virtual Training

Our Staff Educator Certification offers a full teaching staff an introduction to STEAM and allows them to take it in their own direction. The training includes an introduction to STEAM theory, program and classroom establishment, as well as help in creating personalized STEAM lesson plans and student portfolios.

This contract provides a discounted rate based on the number of educators in your group. All staff members will receive online accounts to complete their video supported virtual training based on the membership level purchased by the Program. Our Tier 4 Membership level allows educators to become trained in STEAM theory, development and practicum through our full set of training videos (about 7 1/2 hours total runtime) plus transcripts, program documents, and one-year access to our STEAM Lesson Plan Bank. Tier 5 Membership includes additional help writing custom STEAM lesson briefs which result in having a STEAM Certified Staff.

General Educator Certification Training for all the packages above includes:

- Virtual Training - Theory and Reasoning
  - Introduction to the STEAM framework
  - Review of epistemology and pedagogy of STEM/STEAM
  - Learn about the commons of the subjects
  - Class management tactics –behavioral & interdisciplinary
  - Meeting extensions for all types of learners
  - Review of previous examples of STEAM projects and programs
  - Developing Curriculum Maps
- Virtual Training - Practicum & Plan Creation – **Personalized for Optional On-Site Training**
  - Reasoning for and how to create STEAM Teams for educators and students
  - Examples of STEAM themes& interdisciplinary PBL projects –hands-on
  - Program sustainability considerations and tactics
  - Partnerships, sponsorships and grants advice
  - Community Outreach structure and STEAM school events
  - Lesson plan creation/expansion based on benchmarks

*Please contact us at bookings@steamedu.comfor pricing.
*Additional On-Site consulting days can be added to this contract.

STEAM On-Site Training = Tier 3: Granted to all those attending a STEAM On-Site Training. This tier is not for sale, but is included in the price of our STEAM Staff Training Packages listed here.

Program Certification

We offer a transition support Program Certification to implement the paradigm shift to become a STEAM school as a supplement to a STEAM certified staff. It generally takes 3-5 years to transition a school program to fully adopt and use a new paradigm. The first year of a school's transition is key to building the foundation and some schools prefer more support during that time. We now offer a fully virtual Program Certification package. However, most of our programs have traditionally chosen to bring the STEAM Education staff on-site for the benefit of customized professional development, as well as curricular help and support. While we highly recommend on-site visits, they are no longer required for Program Certification. The virtual Program Certification package is available for programs who are unable to accommodate on-site visits and instead requires the Program to provide photos and videos of the program as well as potentially schedule Skype time with the STEAM Education staff for support during first-year implementation.

This contract provides the option to add-on to a staff training package to become a STEAM Certified Program through a Program Portfolio Review, which proves excellence in implementing the STEAM Education framework. The program must meet the requirement of a 90% certified educator minimum and the program objectives outlined by the STEAM Education Staff. Programs have the option of choosing a fully virtual training package or requesting additional on-site days.

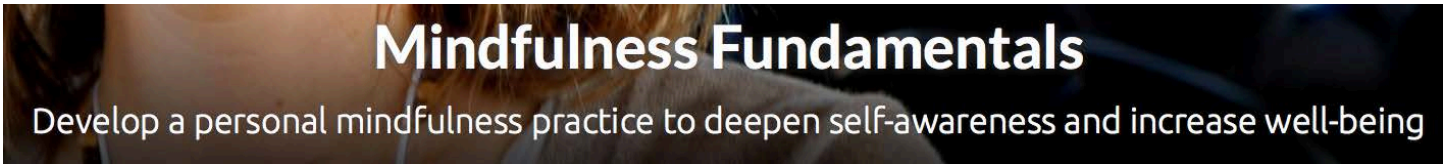
For those schools that have already completed our Program Certification, see **Program Certification Renewal** details below.

*Please contact us at bookings@steamedu.com for pricing.

Please visit our website at http://steamedu.com/programs/certification-training for detailed information on our trainings.

For more information on site licensing, please see this document: http://steamedu.com/wp-content/uploads/2015/07/STEAMlicenseAgreement-SingleSite.pdf

b: Mindful Schools completed Training



18 RBE teachers in 2015-16 school year completed Mindfulness Fundamentals

6 RBE teachers in 2016-17 school year completed Mindfulness Fundamentals

About this course

Mindfulness means maintaining a moment-by-moment awareness of our thoughts, emotions, bodily sensations, and surrounding environment. It has a variety of research-backed impacts, including a reduction in toxic stress, and an improvement in job satisfaction, emotional regulation, focus, and executive functioning.

The central objective of this course is to introduce you to mindfulness meditation and help you cultivate a personal mindfulness practice. If you are interested in integrating mindfulness with youth, this course is a prerequisite for our other courses. Both beginners and those with significant experience find this course extremely worthwhile.

In this six-week self-paced online class, you will learn:

- The basics of mindfulness meditation
- How to work with thinking that arises while practicing mindfulness
- Techniques for meeting and navigating intense emotions
- Practices that cultivate positive states of mind like gratitude, kindness, joy & compassion
- The role mindfulness plays in communication and interaction
- Support for developing a daily sitting practice

11 RBE teachers in 2015-16 school year completed Mindful Educator Essentials

About this course

Learn how to integrate mindfulness into your work with youth using our **research-backed** K-12 Mindful Schools Curriculum. Our curriculum – used by thousands of educators, mental health professionals, social workers, and parents in 50 states and over 100 countries – is adaptable for classrooms, after-school programs, clinical settings, and home. It uses developmentally appropriate language for explaining key mindfulness concepts and practices to youth. **See a sample module**.

Course graduates report **strong improvements** in job satisfaction, connecting with youth, delivering school curriculum, and student behavior (attention, self-regulation, engagement, compassion).

Recommended by 98% of participants, this course includes:

Training Kit

- K-5 Curriculum (30 modules for ages 5-12)
- Middle & High School Curriculum (25 modules for ages 12-17)
- Student workbooks
- Manual on facilitation & classroom management
- Summaries of neuroscience concepts
- Program evaluation tools

Science

- Accurately presenting the research on mindfulness and youth
- The basic neuroscience of attention and emotion

Connecting with Youth

- Working with youth at different developmental stages
- Group facilitation and classroom management skills

Stakeholder Presentations

- Presenting to administrators, school, and agency staff

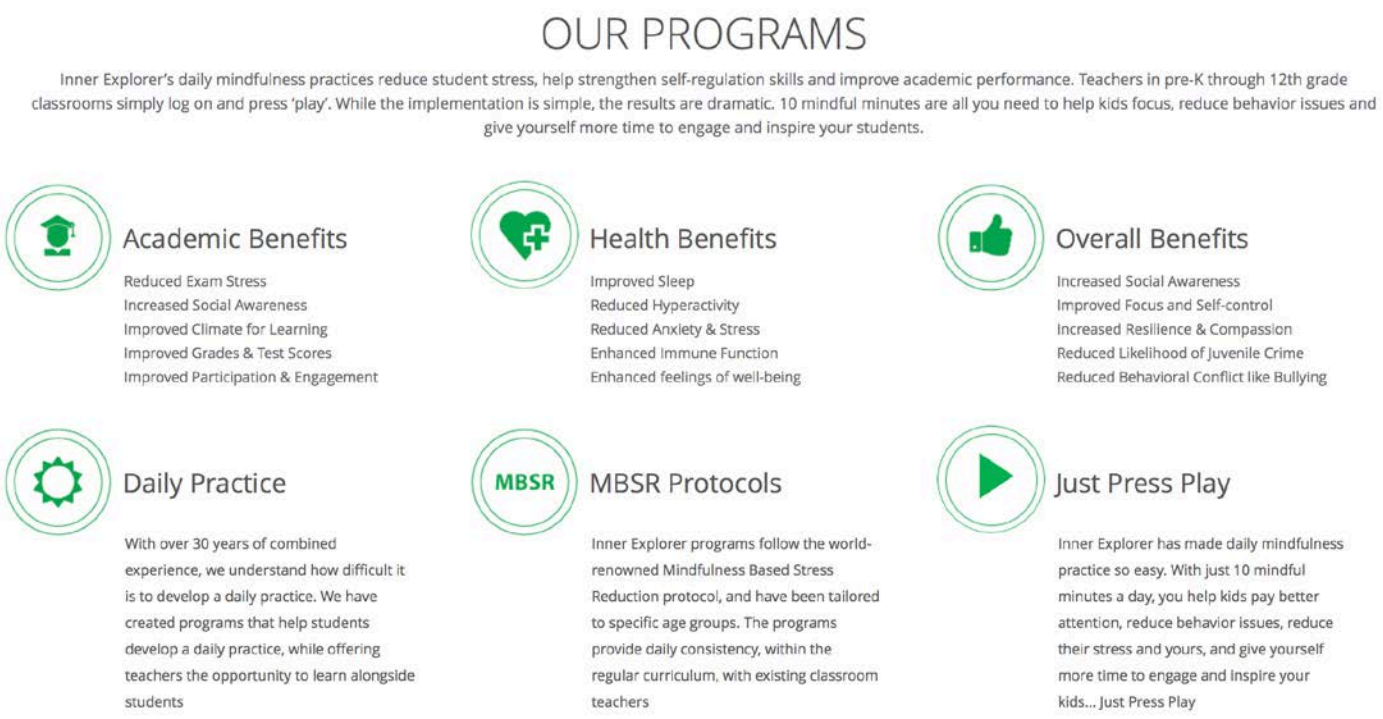
Graduate Support

- Join our vibrant, supportive private community of graduates
- Unlimited future access to course content

Prerequisites

Teaching mindfulness techniques to youth is exponentially more effective when it stems from a base of personal practice. For this reason, participants must establish a personal mindfulness practice prior to this training by completing our **Mindfulness Fundamentals** course or any one of the approved trainings listed **here**.

c: Inner Explorer program



This program was purchased for school-wide implementation in 2015-16 school year as a trial for possible Innovative plan inclusion. The program was a success so it was purchased with a lifetime membership for RBE to be implemented in phase 1 in 2016-17 school year.