The Master Plan (adopted by the Board of Education on February 23, 2010) provided for the establishment of "attractive school options to provide desirable choices and deepen student, family and community engagement in the youth's lives and education." To meet this goal, any group of teachers and administrators may form a program leadership team in an effort to create an innovative or magnet program.

Ruby Bridges School Innovative Plan Proposal
***STEAM**: **S**cience, **T**echnology, **E**ngineering, the **A**rts, and **M**athematics and Wellness Education:*
21st Century Designers and Innovators

Instructional Theory of Action

If we:
- Eliminate barriers to student engagement, motivation and wellness and the systemic barriers which have historically resulted in inequitable outcomes for students based on ethnicity and or socioeconomic status
- Provide content and standards aligned instruction that shows a direct link and where subjects overlap to help students remember, understand, apply their learning
- Support all students, including English learners, to become college and career ready
- Engage parents/guardians as knowledgeable partners and effective advocates for student success

Through the following:
- Using Title I funds to support implementation of STEAM and a Wellness Center
- Providing staff the training required to implement the STEAM Education program
- Designing STEAM lessons based on the Common Core standards and developing lessons that address the unique needs of all students, particularly students who are advanced, special education, and English learners
- Utilizing a STEAM coordinator to organize further staff PD re/lesson planning and implementation and develop classroom schedule for the makerspace and science lab
- Providing all materials required for STEAM and makerspace activities
- Creating a Wellness Center as an outlet for students who need additional emotional and self-regulation support to control their bodies and emotions
- Educating our community about STEAM and providing parent/guardian workshops

We will achieve the following:

- Students will be more motivated and engaged to learn and apply new skills as they use their hands to creatively build, manipulate, design, and invent structures and products.
- Students' confidence and competence will increase through open ended problem based learning that allows for multiple solutions as opposed to one "right" answer.
- Students will learn that they can become producers of new knowledge.
- Students' will develop the ability to collaborate, solve conflicts, and learn from their peers.
- STEAM lessons will empower students to become curious, critical thinkers who can communicate their ideas and challenge the ideas of others.
- Students will develop a growth mindset and intrinsic motivation to persevere as they research student-centered questions based on real-life application.
- STEAM content integration will improve transference of knowledge and skills resulting in improvement of academic outcomes as measured by district and state required assessments.
- Students will develop the self-regulation, resilience, and social-emotional skills required for life-long success.
- Student daily attendance will improve.
- Parent/guardian involvement as volunteers and workshop participants as they observe students' increased motivation to learn and attend school.

Process Background

At their regularly scheduled board meeting in May 2016, the AUSD School Board made a determination that Ruby Bridges Phase I: Initial Planning and Program Development could move forward. This document is a description of this Planning and Development phase and our request to move to Phase II: Program Implementation in the 2017-2018 school year.

We, the faculty, staff, families and students at Ruby Bridges, see the Innovative Program as an important opportunity to come together to implement a specialized program to benefit children and families at our site.

- Currently, AUSD has funded 7 Innovative/Magnet Schools: Earhart, Bay Farm, Haight, Franklin Maya Lin, Wood Middle and Encinal 6-12. .
- This year there are 2 proposals for Innovative Plans, one from Ruby Bridges and one from Paden.

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STEAM NIGHT: Students attempted to build the tallest, free-standing structures.
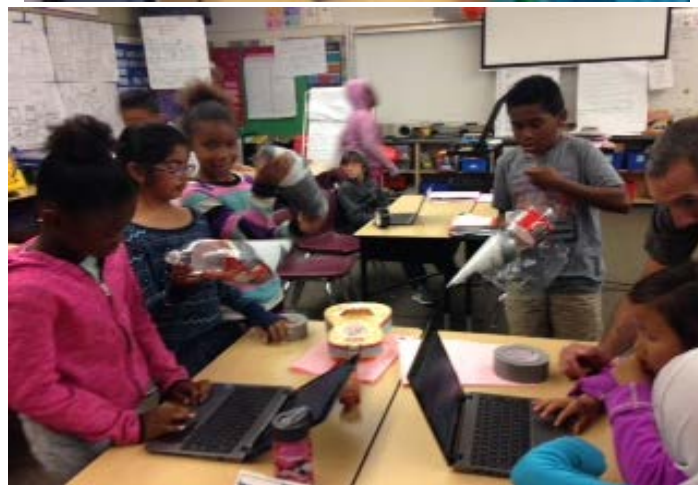
3rd graders designing and building rockets

Ruby Bridges Innovative Proposal Plan

Who We Are

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. Approximately 24% of our students are Asian, 20% White, 19% Latino, 17% Black, and 10% Multi-racial.

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.

Why the Innovative Plan is Important

For several years, 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 wellbeing 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 teamwork help to build on students' strengths, interests, and curiosity, promote critical thinking and problem solving skills, and increase students' competence, confidence, and capacity for lifelong learning. In addition, the STEAM framework helps all levels of learners (special education, advanced, English learners, and socio-economic 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.

Our school is using the STEAM framework as our vision and mission toward implementation. The STEAM curriculum and our Wellness Program will...

1. 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,
2. develop a dynamic, real-world learning community where all students and adults are valued, respected, and celebrated in a nurturing, global learning environment.
3. help students not only acquire the skills for college & career readiness but also learn to value themselves, and take pride in their accomplishments through rigorous, school-wide STEAM instruction
4. develop students' academic, interpersonal knowledge, and social-emotional skills necessary for optimal success in lifelong learning through a diversified curriculum
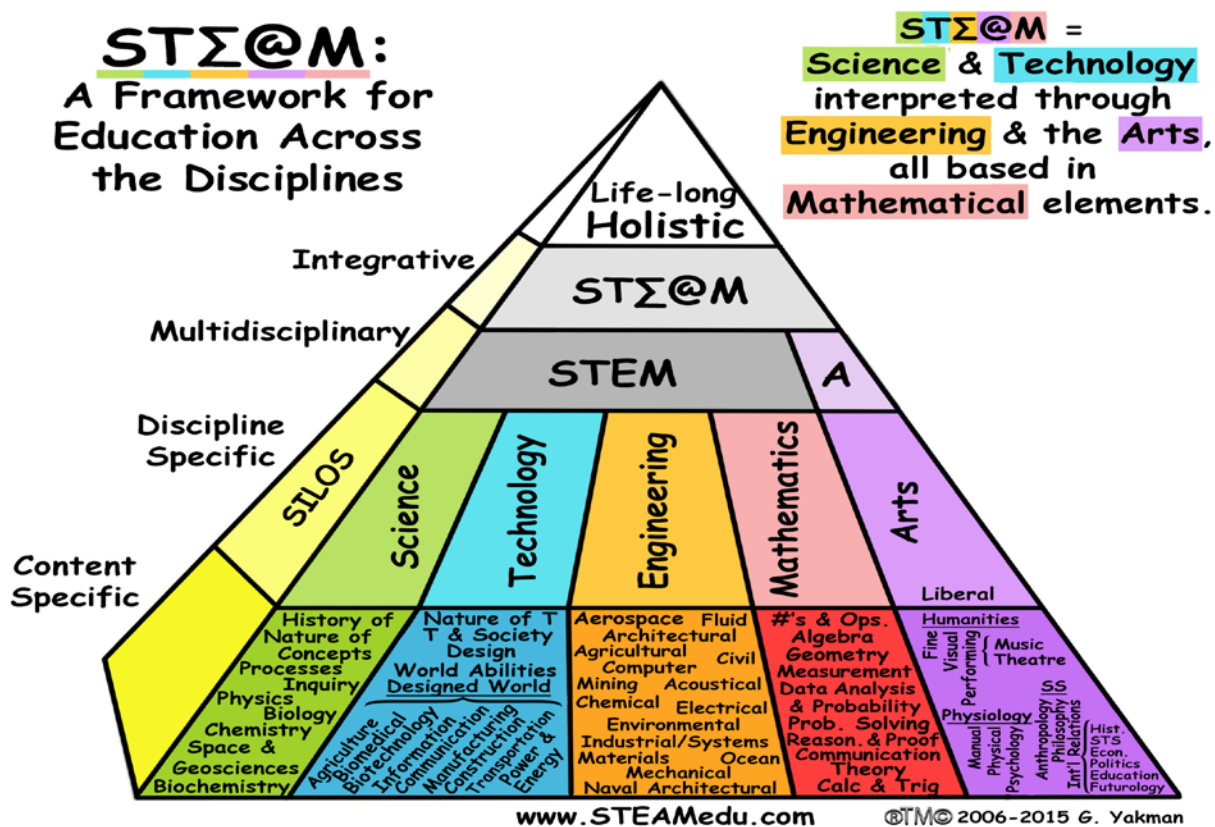
What is steam?

STEAM is the exploration of the field of **S**cience and **T**echnology interpreted through **E**ngineering and the **A**rts, based in **M**athematical elements that build on the foundation of interdisciplinary 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, chromebooks, 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 chromebook 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

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	$85,000	$85,000	$85,000	$85,000
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 1 Funding	($30,000)	($30,000)	($30,000)	($30,000)	($30,000)	($30,000)
Professional Development						
STEAM EDU Staff PD (26 @ $225/pp)	($6125)	$0.00	($5000.00)	$0.00	$0.00	$0.00
Mindfulness (6 @ $87.5) *$1575*	($525)	0.00	$0.00	$0.00	$0.00	$0.00
STEAM & Discipline Conferences	($4107)	$0.00	$0.00	$0.00	$0.00	$0.00
Technology						
3D Printer, Curriculum PD, & Filament	($2599)	$0.00	$0.00	$0.00	$0.00	$0.00
Code Combat & Kodable Programs- yearly online subscriptions	($3950)	($3950)	($3950)	($3950)	($3950)	($3950)
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)	$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, sewing machines, etc.)		$250.00	$250.00	$0.00	$200.00	$0.00
Consumables (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		$0.00	$0.00	$0.00	$0.00	$0.00
Total	**-$50,285**	**$105, 011**	**$102,689**	**$101,100**	**$101,00**	**$100,700**

Program Monitoring, Evaluation and Sustainability

<u>STEAM Initiatives</u>

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.

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.

Program Evaluation

We will use qualitative and quantitative data to evaluate the effectiveness of the program.
> *Qualitative Review*
> - Student and parent/guardian interviews, attitude, motivation, engagement
> - Observations of students' ability to collaborate
> - Observations and videos of English learners' interaction and all students use of academic language/ and vocabulary, ability to persevere
> - Parent/guardian workshop written evaluations
> - Teachers' and coordinator's feedback about lesson implementation, classroom management, and instructional practices
>
> *Quantitative Review*
> - Percentage of students completing products and analysis of the quality of products and artifacts produced
> - PBIS data analysis of office referrals
> - Analysis of student portfolios: written and visual representations
> - Percentage and outcome of students referred to and supported by Wellness Center Liaison
> - STEAM rubrics used to evaluate student work
> - Percentage of families attending STEAM Carnivals, grade levels and ethnicity
> - Analysis of student achievement data, district benchmark and state assessments
> - Rubrics and assessments that are tailored to demonstrate what students learned and what they have not learned
> - Comparison of daily attendance rates across years

Sustainability

In addition to staff's support of the proposal and their goal to begin the STEAM training this summer, our PTA, School Site Council, and English Learner Advisory Committee members are very eager to have their children learn the skills and content proposed. Our school has already invested over $20,000 to provide the professional development and materials to begin implementation in the fall, such as technology that is integral to success (a 3-D printer, 4 additional chromebook carts, 6 robotics kits, 6 ipads, etc.). By October 2017, Twenty-three teachers will learn how to implement lessons and two staff will be certified to create and implement lessons. One of the coordinators is our Media/Librarian who will use the online coding subscriptions to teach computer programming K-5 and the other proposed coordinator has a master's degree in art making it possible for arts integration.

The STEAM education program provides a step-by-step process for full implementation along with resources that teachers can copy for future reference. School funds will be used for the cost of training for new staff and the online subscriptions. Many of the teachers are adept at applying for and receiving grants from DonorsChoose. With the help our PTA, a DonorsChoose campaign will be started along with seeking grants at the local (AEF, Kiwanis, and Rotary clubs), state, and national level to support the cost of supplies, competitions, and STEAM Carnivals. All aspects of learning, K-5, will be documented through photography, lesson plans and videos as a method of advocacy and to seek partnerships and experts willing to present and financially support our school.

Teachers will use monthly collaboration time to manipulate and tinker with robots, electronic devices, snap together magnets, and other raw materials so they can learn more about how the making products support standards-based instruction. District-wide and state assessment results will be used to evaluate students' academic progress and to evaluate how use of STEAM lessons and thematic units support measurable achievement. Provided funds are available, representatives from STEAM Education will be invited to observe and evaluate the program.

Teachers will use the following evaluation cycle/plan to analyze instruction and outcomes;

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 affected 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, statewide 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?