

**Alameda Unified School District
Innovative Programs/Magnet Schools Request For Proposal
Franklin Elementary School Science FOCUS2 Program**

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I. Leadership Team

a. Name of Team Leader: Jo Fetterly

- i. Cell Phone: 510.316.2272
- ii. District Email Address: jfetterling@alameda.k12.ca.us
- iii. Personal Email Address: jofetterly10@gmail.com

b. Other Leadership Team Participants

- i. Names of teachers on the leadership team (required)
Barry Arbretton (K), Debby Meyer (3), Darlene Norman (5), Kelly Russi (1)
- ii. Names of any other participants on leadership team (optional)
Christine Strena (SSC), Page Tomblin (PTA)

II. Draft of Innovative Program Theme/Name: Franklin Elementary School FOCUS2 Program

FOCUS2=Facilitation Of Collaboration Using Science (and Technology) 2 support experiential learning

***“If you would not be forgotten as soon as you are dead and rotten,
write something worth reading or do something worth writing.”***

— Benjamin Franklin

Describe the proposed Mission and Vision:

The mission and vision should be focused on improving student outcomes.

Franklin Vision:

The vision of Franklin’s FOCUS2 Program is to provide a solid foundation of fundamental science concepts for students in their formative years, on which a deep understanding and interest in science and learning/exploration can be built. Having the FOCUS2 Program at our school will increase the time each student works in project based groups thereby increasing overall performance of individual students as well as increasing the community connection with parents who value targeted instruction.

Mission:

Through the Franklin FOCUS2 Program, Franklin Elementary School students (K-5) will be learning to solve problems by looking through multiple lenses; to analyze information, make connections, and apply understanding to their learning and relate it to their experience (Blooms Taxonomy). This integrated, collaborative, science based program will provide students with science instruction five (5) days a week,

developing the foundational skills needed to become innovative, flexible thinkers and problem solvers through the use of hands-on, project based experiences and integrated technological training and development.

“If everyone is thinking alike, then no one is thinking.”

— Benjamin Franklin

III. Describe the critical educational needs within AUSD that the program will address:

It is an uncomfortable fact that math skills drop as students progress through our District educational system. (A rough 5 year comparison of AUSD API Data from DATAQUEST show AUSD elementary schools have an average API 880, Middle Schools API Average 831, High School API average 746¹) It is our belief that with stronger science foundational skills and student achievement in cross-cutting concepts (Math & Literacy) we can improve and provide children with both a path to life-long learning, and an avenue to positively affect these trends in math skills. In addition we believe that supplementing and strengthening our science curricula is an essential response to the new Common Core Science Skills being implemented in California:

“The National Science Teachers Association supports the notion that inquiry science must be a basic in the daily curriculum of every elementary school student at every grade level. In the last decade, numerous reports have been published calling for reform in education. Each report has highlighted the importance of early experiences in science so that students develop problem-solving skills that empower them to participate in an increasingly scientific and technological world.” www.nsta.org/about/positions/elementary.aspx

The Franklin community overwhelmingly supports both the augmentation of increased science education & technology hours for all students. The teachers voted unanimously to support the development of the FOCUS2 Program.

Creation of the Franklin FOCUS2 Program also supports district wide initiatives like:

- AUSD Math Priority- The Mathematics Coaching Consortium (MCC)
- AUSD Literacy Priority- Inquiry By Design (IBD)
- AUSD Science Partnership- BaySci
- The Franklin FOCUS2 Program is also aligned with the AUSD guiding principals approved by the AUSD Board of Education in January 2012:
 - 1. All students have the ability to achieve academic and personal success.

¹ DataQuest; California Department of Education, <http://data1.cde.ca.gov/dataquest/>

- 2. Teachers must challenge and support all students to reach their highest academic and personal potential.
- 4. Parental involvement and community engagement are integral to the success of all students.
- 6. Allocation of funds must support our vision, mission, and guiding principles.

“Tell me and I forget, teach me and I may remember, involve me and I learn.”

— Benjamin Franklin

IV. Rationale

A. Briefly describe the rationale the leadership team has used to determine the viability of the innovative/magnet program for AUSD:

Franklin Elementary School has a history of expanding science opportunities for students. With parent and community support, the Franklin community has created hands-on science opportunities for students in programs like MARE (Marine Activities, Resources & Education program by the Lawrence Hall of Science), Science Fairs supported by The California Academy of Sciences, and extended enrichment programs during and after school. For the last three years, Franklin teachers and the Franklin PTA have been piloting a science SWAP program, providing students additional science instruction time, FOSS based science labs and dedicated small group instruction with classroom teachers. This part-time program has been especially beneficial for students needing additional remediation in core subjects as well as providing more science based exploration and experimentation for all students. While this SWAP program has been beneficial to our students, we are unable to build the cross-curricular efforts we see in the FOCUS2 Program.

Each year, teachers and parents express the need to expand this program to a year-long, fully integrated program providing a dedicated science lab, and more focused time dedicated to increased & targeted instruction. Franklin teachers unanimously support the development of the FOCUS2 Program. Our parents overwhelmingly support the concepts that the FOCUS2 Program can provide and see that FOCUS2 can solidify and enhance our shared goals. In addition to the use of site funds, the Franklin Community is actively searching for corporate sponsors for the technology components we are considering. Ongoing parental support through fundraising efforts and community connections are also committed to supporting the FOCUS2 Program as it is being developed. Even with this active community support, Franklin cannot fully develop this program without District help.

We are excited by the opportunities the FOCUS2 Program provides for our students. With increased planning and resources we want to create a hands-on, project based, cross-curricular learning

experiences. With this in mind and based on preliminary planning, Franklin has been invited to apply to the *Google Gives Back* program. We would like to expand the technology component of our FOCUS2 Program to include more cross-cutting concepts in Science & Engineering practices. This could include activities in robotics, engineering or computer coding and provide opportunities for potential partnerships with organizations like Google. The Franklin Community is very excited by opportunities like MakerEd, an organization working with educators and established science and technology experts to bring more hands-on, learning to the schools site. We see a potential linkage with Wood Middle School as they too explore the opportunities of MakerEd and are in the process of developing a “Tinkering Space” based on MakerEd concepts and programs. Additional opportunities with Wood Middle School could include training and resources in Common Core Science Standards and instructional concepts. The Franklin community would like your support as we build the FOCUS2 program into a robust, inclusive, integrated, and effective cross-curriculum science & technology program.

B. Briefly describe the need(s) this program fills for AUSD students:

With the FOCUS2 Program, Franklin has the opportunity to both enrich our science teaching with a dedicated Science Lab component and to more effectively teach 21st century skills with multiple hands-on learning opportunities. In addition to the expanded and integrated science opportunities, multiple studies² show that project based science instruction improves concept synthesis and application, therefore improving scores in standardized tests. ³

It is our shared belief that stronger science foundational skills increase student achievement in cross-curricular concepts (Math & Literacy) and will improve and provide our students with the path to life-long learning thus assuring that “All students have the ability to achieve academic and personal success.”

C. Briefly describe why parents would be interested in having their student(s) participate in this type of magnet/innovative program:

Families see the part that science and technology play in putting America in a leadership role in our world. It is essential that our young people have the passion and foundation to carry this level of scientific innovation forward into the future.

² *Effective Programs for Elementary Science: A Best-Evidence Synthesis*, May 2012 John Hopkins University School of Education’s Center for Data-Driven Reform in Education (CDDRE), *Science: It’s Elementary: Year 3 Results Report*, Pennsylvania Department of Education; *Strengthening Science*, West Ed, Spring 2014)

³ Same as Footnote 1

The Franklin PTA has supported the Science SWAP as a limited pilot but the desired creation of the FOCUS2 Program is not sustainable based on PTA funds alone. We need additional support from the District and from the larger community such as the opportunity with Google. Franklin has already obtained a \$1,000 corporate grant for the development of the FOCUS2 Program.

One of the goals of this pilot has been to work with teachers to identify extended integrated learning opportunities and sustain a dedicated science lab. Although the Franklin PTA is actively looking for additional funding sources and is committed to supporting additional science opportunities for our students, the PTA is at the limit of what can be provided without District support. The FOCUS2 Program builds off PTA and community support efforts to build more science opportunities into the school day for all our students.

The Franklin PTA conducted a survey earlier this year and 95% of respondents indicated “additional science programs and opportunities” for Franklin students as the top priority for PTA funding. With the introduction of the Common Core Standards, Franklin parents see science as the opportunity to provide more hands-on learning of these cross-curricular Common Core concepts.

“If a man empties his purse into his head, no one can take it away from him.

An investment in knowledge pays the best interest.”

— Benjamin Franklin

V. Proposed Logistics

a. Facilities and Key Resources to be employed by the program

b. Briefly describe the type of facility necessary for this innovative/magnet program. For a “school within a school” this can be the amount of space within an existing facility that would be necessary for the program.

- i. Dedicated class room for Science Lab
- ii. Classroom and Campus set up for all grades per AUSD Facilities ed specs
- iii. Capitol items such as a refrigerator and freezer

c. Describe any Key resources known at this time that are necessary for the implementation of this innovative/ magnet program.

- i. Expanded FOSS kits for all grades (K-5) to meeting current AUSD and Common Core Standards
- ii. Curriculum & materials for science & small group instruction i.e. writing with science

d. Approximately how many students do you anticipate will be served by this program each year?

1st -5th grade, possibly K- 320 students

e. Please indicate the grade levels that will be served by this innovative program/magnet program?

Elementary (Kindergarten-Fifth Grade)

f. What type of leadership structure does this innovative/magnet program anticipate?

Teacher Leadership- PLC- distributive leadership

g. Given the anticipated number of students that will be served...

How many teachers do you anticipate needing to ensure the success of this program?

- Teacher staffing of 25:1 primary and 32:1 grades 4-5 (as currently staffed) with supports added below

How many and what type of other AUSD staff (teachers, paraprofessionals, etc...) do you anticipate needing for this innovative/magnet program to be successful?

- In addition to basic classroom staffing, the FOCUS2 Program would require:
- 1 science specialist to team teach with teachers
- Paraprofessional with technology training to support tech
- Paraprofessional to support FOSS and additional science program set-up

VI. Background and Research

a. Is the leadership team aware of any examples of this type of innovative program in any other district(s)? Yes No

i.If yes, please indicate which district(s) and give a brief synopsis of the benefits that each individual district realized through the implementation of this type of innovative/magnet program.

Multiple studies** support increased science education at the elementary school level. The WestEd Study *High Hopes- Few Opportunities: The Status of Elementary Science Education in California (2011)* reports that one of the strongest hurdles faced by teachers is administration support of improving and expanding science learning opportunities in elementary schools. The Oakland Unified School District has found success in aligning district & school practices with policies requiring additional science instruction time, professional development to support science

instruction and funding allocation increasing science opportunities for students and families. Franklin would like to explore programs in the Oakland Unified School District as well as expand participation in the Science Consortium, BaySci, that AUSD is currently a member.

Another program the Franklin Team would like to investigate is a state wide effort by the Pennsylvania Department of Education- Science: It's Elementary. Forty-eight school districts across southwest Pennsylvania, in partnership with the Bayer Foundation-funded ASSET, Inc., outperformed their peers throughout the world on science tests by transforming how elementary school teachers teach science to their students. The Franklin Team has been encouraged by the multi-year increases in performance of all sub-groups in the Science: It's Elementary program and would like to explore the program elements in more detail to identify applicable program elements for our FOCUS2 Program.

ii. If no, please describe the theory behind and/or any data that supports this type of program.

N/A

VII. Curriculum

A. Describe the unique curriculum that this program will offer students. *For Phase I submissions, a general overview of the curriculum is what is required. This should be detailed enough to give the AUSD School Board sufficient information to make an informed decision about your program; however, a complete, in-depth, and detailed description will not be required until Phase II.*

The FOCUS2 Science & Technology Program will align and support Common Core Science Standards. It will support literacy standards, informational text and written expression, a key to critical thinking. FOCUS2 will also support math and science skills & concepts. Using District adopted curriculum in math & science, specific cross curriculum critical thinking skills will be identified and taught. Curriculum will include research based programs and teacher designed materials. Teachers will use strategies for total engagement and build on student success through critical thinking, discovery and problem solving.

Cross curriculum science based programs we are currently investigating include:

- *MARE - Marine Activities, Resources & Education program by the Lawrence Hall of Science*
- *MakerEd-Inventions- playground physics, rollercoasters physics, project based producing multiple grade specific, leveled invention/projects done at school*
- *Science Curriculum to enhance FOSS and increase science experiences*

- *Science: It's Elementary*

As FOCUS2 is further developed, the Teacher Team will work to identify specific cross-curriculum approaches to integrate into the program. Development work will include:

- Staff Development Day to work with Google Staff on Google Apps training
- Site visits to schools identified as having similar programs
- Site visits to AUSD sites to identify potential program linkages

(i.e. Wood STEAM- MakerEd, MARE work or Earhart Science and technology work)

B. Briefly describe the anticipated progressions of your program through all grade levels that will be served. For an elementary program, show the progression from kindergarten through fifth grade.

One goal of the FOCUS2 Program is to provide experiential learning that will build each year, providing grade appropriate concepts and projects that build off previous years where students demonstrate their expanding depth of knowledge.

Foundational science and technology skills and experiences will be identified for each grade level. At Kindergarten, the vocabulary will be identified and aligned with the Common Core Next Generation Science Standards and science supports. Technology will be linked to each standard and expanded to include additional science and computer science foundations. Each grade level will work horizontally to ensure consistent delivery of all program instructions. Grade levels will also work vertically to link the depth of the learning experience from grade level to grade level. As the FOCUS2 Program is fully developed, the integration of hands-on experimentation and grade appropriate exploration and creation of inventions may be included.

VIII. Outcomes

a. What unique outcome(s) is/are expected for each student and his/her family as a result of participation in this program?

Each student will receive robust instruction in science on a daily basis. Science instruction will be based on cross-curricular Common Core integration and will include, but not be limited to, vocabulary of the discipline, structures, concept development, procedures and problem solving. Students will have access to a state of the art science lab for inquiry based investigation and hands on discovery. The integration of technology will further support learning and enhanced student motivation. Growth will be easily measured in math and ELA yet science will need additional assessment, as will the students ability to integrate technology to support learning.

Additional outcomes being built into the FOCUS2 Program:

- i. Grade specific Invention they get to take home
- ii. Students become innovative thinkers
- iii. Connected to the community with an understanding of how they are a part of the local and global technology landscape.
- iv. Nurture the interest to pursue science as a career
- v. Base for success in Secondary school and beyond
- vi. Tech aware and prepared
- vii. Writing strengths, solid skills in science & technology concepts
- viii. Family participation in science based activities: Tech training, eduCreation, Mini Maker Faire, Student led Family night science lessons
- ix. Program levels the playing the field and opens door to students w/o daily access to science and tech- equity

IX. Needs Assessment for Phase II Assistance

- a. Describe any support and/or resources that you anticipate you will need from the district should this proposal move from Phase I to Phase II. *Please note that the end result of Phase II will be a comprehensive document that will detail all aspects of this innovative/magnet program.*

When the FOCUS2 Program moves into Phase II, it will be essential to further research programs that incorporate this design. The Teacher Team will require time and support to complete our research. We will need to visit similar programs in order to further develop and integrate successful elements. We will also need to include and leverage all AUSD programmatic support. (BaySci partnership, ACOE professional development opportunities in science and small group instruction, etc.).

- Specialists in the District- Google, other PD
- Partnerships- BaySci, ACOE professional development opportunities in science and small group instruction, Contra Costa DOE- Phil Gonsalves Math Coach, CSUEB, other AUSD sites like Wood Middle School.
- Tech resources and expertise
- District personnel may have additional contacts to explore

Research:

Need for more Science in Elementary Schools

Harvard Graduate School of Education : Project Zero
[http://projectzero.gse.harvard.edu/assets/Final_Revised%20_PZ_Brochure\(1\).pdf](http://projectzero.gse.harvard.edu/assets/Final_Revised%20_PZ_Brochure(1).pdf)

WestEd : High Hopes, Few Opportunities: The Status of Elementary Science Education in California
<http://www.wested.org/resources/high-hopes-few-opportunities-summary-report-recommendations-the-status-of-elementary-science-education-in-california/>

National Science Teachers Association
<http://www.nsta.org/about/positions/elementary.aspx>

PBS Newshour: Can DIY Movement Fix a Crisis in U.S. Science Education? (6/29/11)

NY Hall of Science: 2010 report: "[Innovation, Education, and the Maker Movement](#)"

Effective Programs for Elementary Science: A Best-Evidence Synthesis
http://www.bestevidence.org/word/elementary_science_Jun_13_2012.pdf
(case for inquiry-oriented instructional processes- Examples of this approach are science kits such as FOSS (Full-Option Science System) and STC (Science and Technology for Children).) OR Technology based (web-labs)

Benefits of Small Group Instruction

Effective and Promising Practice for Closing Achievement Gaps
http://sites.edvantia.org/pdta/pdf/t DOE_effective_practices_achievement_gaps080812.pdf
Page 7, 9& 10

What Research Says About Small Group Instruction for ELL's
http://www.ascd.org/publications/educational_leadership/apr09/vol66/num07/Small-Group_Intervention_for_ELLs.aspx

Critical Elements of Classroom and Small-Group Instruction Promote Reading Success in All Children
http://stage.fcrr.org/publications/publicationspdf/critical_elements.pdf

The Power of Small Group Instruction
http://teachersnetwork.org/ntny/nychelp/Professional_Development/groupinstr.htm

Small Group Instruction and Academic Achievement at Los Angeles Court
http://books.google.com/books?id=lvs4yIZCPGIC&pg=PA39&lpg=PA39&dq=benefits+of+small+group+instruction+in+elementary+school&source=bl&ots=3xjwDDyjpP&sig=HQ7vI3FtizxWvA1U3YByME2WeTc&hl=en&sa=X&ei=FMlzU_KqBIKlyATD_YGAAg&ved=0CEQQ6AEwAzgU#v=onepage&q=benefits%20of%20small%20group%20instruction%20in%20elementary%20school&f=false

Science/Inventions Curriculum

US Patent & Trademark Office:
http://www.uspto.gov/kids/icreatm_guide_es.pdf

Sonoma County Office of Education- Inventors & inventions
<http://www.scoe.org/pub/htdocs/inventions.html>

Lemelson-MIT Program: Celebrating Invention and Innovation
<http://web.mit.edu/invent/>

Invention Convention in the Classroom
<http://www.just-think-inc.com/documents/LessonGuide2012.pdf>

Science is Elementary

<http://elementaryschoolscience.org/>

Making Sense of Science (MSS)- Partnership between WestEd & Discovery Place Education Studio
<http://www.wested.org/discovery-place-education-studio-helping-teachers-make-sense-of-science/>

Successful Elementary Science programs to investigate:

Pennsylvania Department of Education- Science: It's Elementary Program
<http://www.horizon-research.com/science-its-elementary-year-three-evaluation-report-executive-summary/>

Maker Education Initiative
www.MakerEd.org

These California partners are serving as Maker Hubs throughout the state:

- Da Vinci Center, Stockton, CA- serves several charter schools, San Joaquin County Office of Education web site at <http://sjcoe.org>
- Lighthouse Community Charter High School, Oakland, CA
- SAM Academy, Inc. (part of the Community Science Workshop network), Fresno/Sanger, CA
- The Exploratory: Maker Guilds, Los Angeles, CA
- THINK Together, Santa Ana, CA