Environmental Solutionary Teacher Fellowship
ESTF - Program Report for 2021-22

I. PROGRAM OVERVIEW

The seventh cohort of the Environmental Solutionary Teacher Fellowship (ESTF) - *formerly known as SMELC* - builds teacher capacity for designing and delivering learning experiences that are student centered, problem/project-based, solutions-oriented, and integrate California's Environmental Principles and Concepts (EP&Cs). In this program teachers, professional learning and academic standards experts, and community based partners work together to develop solutionary units of study. These units employ local environmental justice topics, and bring students from knowledge and problem exploration, to designing and implementing solutionary action. Each unit is field tested, and the journey for teacher and students is captured in a final reflective case study and presentation.

II. TEACHER FELLOWSHIP PROGRAM REQUIREMENTS

The ESTF program has been designed based on a number of research studies that outline components of successful professional development for educators. In general, high-quality professional development needs to include efforts that are directly related to operations and instruction, engage adult learners in a collaborative community, and have elements of accountability. Furthermore, professional development efforts that combine those components and range between 30 and 100 hours (with an average of 49 hours) are most effective (Yoon et. al., 2007). The SMELC Teacher Fellowship utilizes all of this research and seeks to train fellows and provide support elements along the way. See details of this program below.

The fellowship is built around three key phases of professional learning: **Knowledge, Action, and Reflection**. These phases and requirements are detailed out in the table below.

Knowledge Phase: Content and Skills Training = *35 Hours*	
Summer Workshops August 2-3: First Time Fellows August 4-5: Return and Senior *9:00am - 4pm*	The two-day summer institute blends asynchronous and synchronous learning in master classes that provide foundational knowledge and skill building associated with Environmental Sustainability Education (ESE) and Solutionary Teaching and Learning. *First time fellows take foundational classes, and return and senior fellows take elective classes.*
Fall Saturday Workshops September 11: 9-1 October 2: 9-1	The Saturday workshops focuses on experiential learning and modeling the learning segments of a Solutionary Unit of Study for one pre-selected focus area topic: Clean Energy — Zero Waste — Sustainable Transportation Sustainable Watersheds — Sustainable Food Systems — Land-Based Ecosystems

November 6: 9-1	The November workshop offers a field based experience (may be virtual) with a local Community Based Partner that most closely aligns to the fellow's focus area topic.
Action Phase: Guided Implementation and Training = *15 Hours* *(not including teaching time)*	
Winter Saturday Workshops December 4: 9-1 January 8: 9-1	Fellows draft a Solutionary Unit of Study that integrates one focus area topic (Energy, Waste, Transportation, Watersheds, Food, and Land-Based Ecosystems) and culminates into a civic engagement solutionary action project with students. Unit drafting is spread across two workshops, and will integrate time spent with coaches, topical and grade level communities of practice, and supplemental curriculum partners.
Winter & Spring Coaching February - May	Fellows are paired with an instructional coach, who provides ongoing support through coaching sessions that emphasize planning, content knowledge development, solutionary teaching strategies, and evaluation of student outcomes.
Reflection Phase = *10 Hours*	
Spring Completion May 14: 9-12	All fellows submit a final **case study reflection** that captures the fellows' journey in this program from knowledge and skill building to implementation with students. Fellows also deliver a final five minute **capstone presentation** that highlights their experience.

III. 2021-22 PROGRAM SUMMARY

Despite ongoing COVID challenges, the program requirements were implemented as planned with almost all professional development taking place virtually, with one in-person event (the field workshop with community based partners in November). Shifts for Cohort seven compared to cohort six included the following shifts and reactions to these shifts:

- Saturday Workshops: Program feedback from Cohort Six indicated that fellows wanted more touch points throughout the school year, and for the professional learning parts of the program to be spread out through the fall. While this was successful for some fellows, other fellows felt so extremely overwhelmed with all the COVID related challenges they faced in the classroom, and struggled to feel like they could give the Saturday workshops and requirements their full attention.
- Extending Program Through Spring: Program feedback from Cohort Six indicated a strong preference for the program to extend through May so teachers could connect their units to Earth Week and other content that takes place more naturally in Spring. While this was successful for some fellows, other fellows struggled with burnout in their regular job and struggled to get over the finish line in May.

While there were some challenges with retention, the structure of having guided implementation support was more critical than ever, and coaches were able to help a number of fellows who would not otherwise have made it through the program get to the end.

IV. PROGRAM PARTICIPATION AND STUDENT IMPACT FOR 2021-22

A) Overall Participation Numbers in Teacher Fellowship

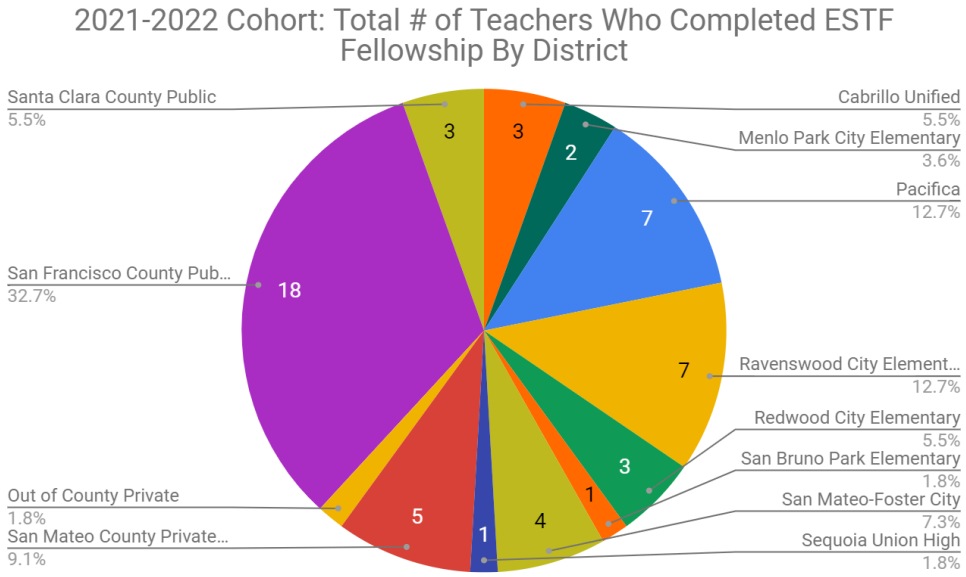
In its first six years (2015-2021), the Teacher Fellowship Program worked with a cumulative total of **350 Teachers** (unduplicated for repeating fellows) across the following districts and counties:

- San Mateo County: **307** from 21 out of 23 Districts, Private Independent, and Private Parochial
- Santa Clara County - Partners since 2015-16: **12**
- San Francisco County (SFUSD) - Formal partnership started in 2020-21: **23**
- Alameda County - No formal partnership: **3**
- Contra Costa County - No formal partnership: **1**
- Humboldt County - No formal partnership: **4**

In 2021-22, the Solutionary Teacher Fellowship worked with **55 fellows*** - 21 return fellows, and 34 First Time Fellows, from three counties**.

- San Mateo County: 19 First Time Fellows and 14 Return Fellows = **33 Fellows**
- Santa Clara County: 3 First Time Fellows and 1 Return Fellow = **4 Fellows**
- San Francisco County (SFUSD): 12 First Time Fellows and 6 Return Fellows = **18 Fellows**

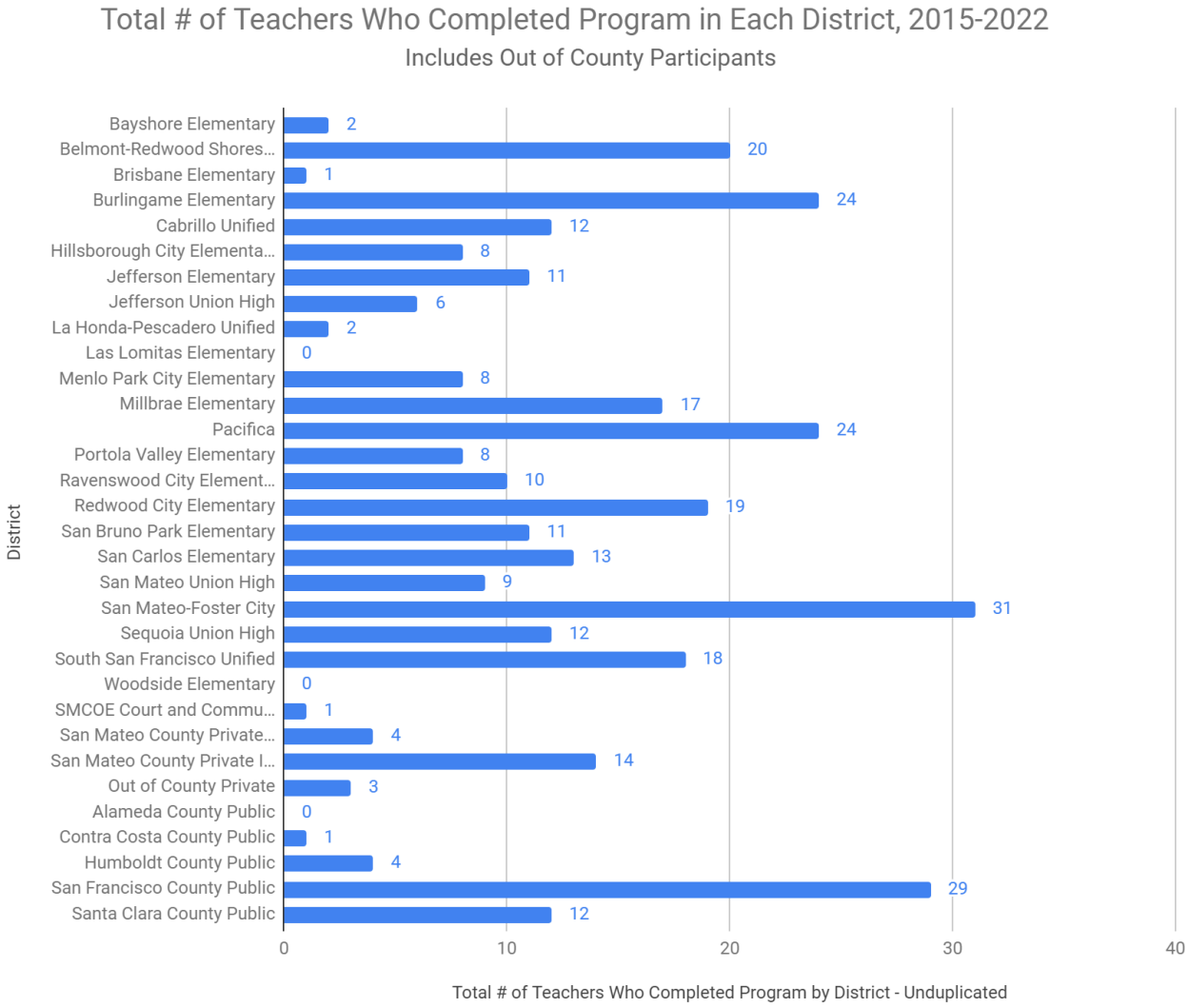
**Fellows who attended the summer institute but did not complete the program included the following: San Mateo County = 9; Santa Clara County = 10; and San Francisco = 3*
***Program funding was only available for these three counties*



As of **2021-22, cumulative participation** in the Teacher Fellowship Program from 2015-2022 = **384 Fellows**. This is broken down by districts and counties as follows:

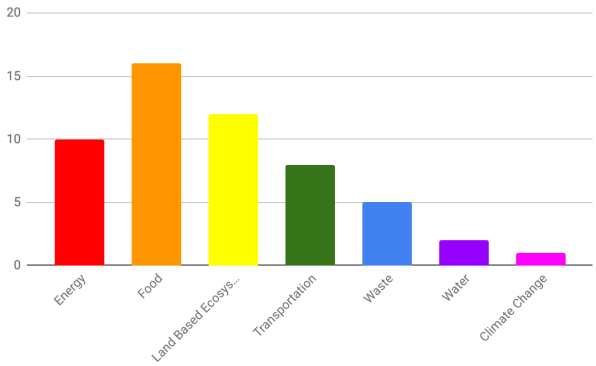
- San Mateo County: **326** from 21 out of 23 Districts, Private Independent, and Private Parochial

- Santa Clara County - Partners since 2015-16: **15**
- San Francisco County (SFUSD) - Formal partnership started in 2020-21: **35**
- Alameda County - No formal partnership: **3**
- Contra Costa County - No formal partnership: **1**
- Humboldt County - No formal partnership: **4**



B) Topical Participation and Student Impact Data

There were six topics included in the 2021-22 Fellowship; however, it should be noted that one fellow requested to do their topic as climate change. The most common topic in 2021-22 was Food (16), and then Land Based Ecosystems (12), Energy (10), Transportation (8), Waste (5), and finally Water (2).



The table below shows topical breakdown by county, including student impact.

Topical Track	SMC Fellows	SMC Students	SCC Fellows	SCC Students	SFUSD Fellows	SFUSD Students	Total Students by Topic
Climate Change	1	25	0	0	0	0	25
Energy	6	577	1	130	3	114	821
Food	13	642	1	130	2	50	822
Land Ecosystems	6	560	2	260	4	310	1,130
Transportation	4	455	0	0	4	242	697
Waste	1	95	0	0	4	205	300
Water	2	68	0	0	1	26	94
Totals	**33**	**2,422**	**4**	**520**	**18**	**947**	**3,889**

Total Students Impacted in 2021-22 across all three counties = 3,889

IV. PROGRAM SURVEY AND IMPACT DATA FOR 2021-22

A) Survey Data and Testimonials from Summer Institute

Overall Satisfaction with Institute	**First Time Fellows**: 85% very high to extreme satisfaction with the summer institute **Return/Senior Fellows**: 90% very high to extreme satisfaction with the summer institute
Comments on Virtual Learning	• I really liked it. I feel like we were able to mix it up and converse a lot more than we would in person. I also really liked being in my own space - especially for some of those super alarming statistics. • Overall, I actually think virtually learning actually enhanced my learning. It seemed easier to enable talking with different people and hearing colleague's perspectives, experiences, and ideas. Facilitators were incredibly organized and put together some engaging presentations with a superb balance of presenting and participant engagement. Love the "Step up/step back" • The virtual meetings seemed to be more one-to-one with any physical distance. I felt all my questions that I asked were answered. I believe virtual meetings are more convenient , effective, and suit everyone's schedule. • I don't mind the virtual format. I liked the change from 4 days to 2 days on Zoom this year, it helps with Zoom fatigue and allows more time for the topical classes. • The institute was so well done and I learned a ton! The Zoom aspect definitely makes the experience more tiring/more distractible, but the leaders of the institute did a great job of providing breaks, instituting breakout rooms, and encouraging participation.

	• Not as many interesting table talks with folks as I had when in person, but still had some of this in breakout rooms. • I struggle to follow at home with distractions but our facilitator had my attention and explained things with patience • I think the virtual learning impaired my ability to make true connections with the other attendees.
Most Excited About	• I am most excited about this idea of empowering my students as solutionaries from the get go. We are going to get really real about a lot of things this year but if we are looking at things as solutionaries, it feels empowering and positive. • I'm excited to help encourage more critical thinking in my classroom, and a more worldly mindset to my students. • I'm really excited to use these ideas to not only inform my students, but to also create a more meaningful connection to the concepts we are learning in all areas of the curriculum. • I'm excited about helping students learn to take control of their learning with PBL and solutionary teaching strategies. • Spicing things up and talking about a lot more current events! I am excited to make the environment and our global crises a big part of our ELA reading and writing too. • I'm excited about getting my students more involved, engaged, and invested in what they are learning and doing. Since it's more student focused and hands-on, I think it will be a great way for them to find meaning and purpose in their education and I can't wait to see what solutions they think of. Also, it will be a nice change from last year where many became disengaged. • As a humanities teacher, I am most excited about teaching environmental social justice through novels in English and look at multicultural practices in nature during Social Studies studies of Ancient Civilizations.
Most Worried About	• I'm most concerned about the time required to complete the work and juggling everything else that goes on during the school year. • I'm a bit worried about the time, but I know that the more I plan, the more I can figure out how to weave it into my day. • I am still worried about the pushback from families who question climate change
Final Thoughts: First Time Fellows	• I was astonished by how many like minded educators there were like me! • I think that the facts about the crisis were really hard to see and jarring, I feel like I have been actively avoiding actually seeing them. But I feel the urgency and now feel more hope. • My enduring understanding is that everything can be made accessible to any age group or children, even complex environmental problems and issues, and even something as challenging as climate change. • The environmental crises are an urgent matter and we all needed to start making changes yesterday… • My enduring understanding is that environmental solutionary teaching feels right. I have been really torn about how to bring the environment to my students in the past. I can see now that the facilitators modeled doing this through honesty, compassion, and an opportunity to take action. • The environment and climate change can very easily fit into my day, and can give the students more empowerment and purpose than I initially thought. • There are a lot of contributors to these global crises, but there are also a ton of people doing their best to remedy this. Even if I am just one person I can have a big impact!

	• Getting started is the hardest part, but with the skills offered in this institute, it makes it more manageable. • My understanding is that we need voices that can inform with honesty and urgent, and one of the best groups to do that are teachers. • That we are in the time of taking action, that our students are living in the climate future we learned about, and that they have so many ideas for how to create a better world. Our job as educators is to give them tools, information, and space to connect and be creative. • My enduring understanding is that it is possible to break down huge problems into parts that children can digest; that solutionary teaching is a multidimensional approach to solving problems that is based in data • That teaching students about climate change is part of the moral and philosophical fabric of education; indeed, their future depends on it.
Final Thoughts: Return and Senior Fellows	• Solutionary Teaching is critical and necessary. There are so many ways to incorporate it into the curriculum that do not detract from our other curriculum. Our students CAN create real and lasting change. • This foundational professional development has been excellent. Thank you for all the effort that went into making this a wonderful information based experience on environmental essentials to save our planet that I will not soon forget. • It's so much easier to focus on this kind of work when SMCOE is providing an institute and coordinating folks across communities. I couldn't do this on my own!

B) Survey Data and Testimonials at the Completion of the Program

1) The following table includes before and after data for core professional development outcomes.

Prompt	Comfort Before	Comfort After
Using problem or project based learning strategies	75% feel low to moderate comfort	78% feel high to very high comfort
Integrating environmental literacy into my teaching and learning practice	70% feel low to moderate comfort	78% feel high to very high comfort
Building a sense of urgency for environmental stewardship with students	86% feel low to moderate comfort	86% feel high to very high comfort
Working with Community Based Partners	84% feel low to moderate comfort	100% feel moderate to very high comfort
Integrating Trauma Informed Practices	72% felt low comfort or familiarity	88% feel high to very high comfort
Confidence with solutionary teaching practices	80% feel low to moderate comfort	90% feel high to very high comfort

2) Which solutionary teaching practices were you able to integrate into your teaching practice in 2021-22?

Strategy	% of Fellows
Role Play Simulation	54%
Modeling and Diagramming	91%
Case Studies	51%
Field Experience: research or field trip	67%
Systems Thinking	70%
Engineering and Design	74%
Student Directed Research (WebQuests, Hyperdoc, etc.)	70%

3) When surveyed about the effectiveness of different phases of the professional development process, teacher fellows reported the following statistics about the effectiveness of the program.

Summer Institute	Saturday Workshops	Guided Implementation	Case Study Reflection	Capstone Presentation
92% very effective	75% very effective	95% very effective	80% very effective	85% very effective

4) 97% of teacher fellows said they would teach their solutionary unit again or some version of it in the next school year. The following are sample testimonials of the impact of this program on their educational philosophy:

- The program has provided me with myriad resources that will make my teaching more enriching and solutionary.
- The program changed me as an educator and human being in this world so the impact has been huge.
- I now feel comfortable calling myself a soulutionary teacher. This fellowship has given me guided experience and provided fundamental background and resources to make me confident in the process.
- This program has transformed my teaching practice because now my goals are to plan my future units to be solutionary. I'm not sure how I will accomplish this for all of them, but I'm confident that it's possible. Following my students' sense of responsibility, learning and commitment has inspired me to do the same by being a Solutionary based teacher.
- The program cemented my belief that solutionary or project-based teaching raises the level of student engagement so much, and even though it takes a lot of work, the payoffs are huge.

- This experience has inspired me to continue to learn how to be a Solutionary and also make immediate changes in my life, family life and community. I now have language, research and resources to continue on this journey toward transforming our world into what we need it to be.
- This kind of problem and project based unit design really allows the students to make connections, empowers them with knowledge and enables them to see themselves as changemakers and activists.
- If it were up to me now, this would be the only thing I teach and it would be the central foundation of my entire curriculum.
- The program encouraged me to reexamine my teaching practices to make it more student centered.
- By the end of this program I now believe that students can be change-makers. I am inspired to use solutionary learning and PBL more frequently in my classroom.
- I now feel strongly about embedding this teaching into my curriculum EVERY year and I feel more comfortable giving my students the reins to take ownership of their own learning
- The program definitely helped shift my mindset to be more solutionary instead of only focusing on all the problems.
- The fellowship has caused me to be more reflective about HOW and WHAT I'm teaching

5) To what extent has this program empowered you and/or your students to make a difference towards a sustainable future?

Empowerment to lead change in my personal life	82%
Empowerment to lead change in my school	74%
Empowered my students to lead change in their personal life	80%
Empowered my students to lead change in the school	70%

6) Some of the challenges that teachers faced during the program include:

- Limited planning time
- Need for more skills and training
- Limited time due to other curricular priorities
- Limited resources and/or funding to implement experience with the community based partners

7) 92% of fellowship participants would recommend this program to colleagues. A few testimonial quotes to support why include the following:

- I highly recommend this program to all teachers at any grade level and across content areas because our students need to have a Solutionary- mindset in order to be true change makers and thrive in the world.
- I loved participating in this super informative program. It also made me feel comfortable discussing these ideas and our reality with others. I would love to be a part of the program again!

- It is a very valuable program because it holds you accountable for doing this important work. TIme and other district expectations have always gotten in the way before but setting aside the time for the workshops and connecting with other like-minded teachers makes it all possible.
- I would recommend the program because of the high quality professional learning experience, the opportunity to build a solutionary force of teachers who will have impact on their students, families and communities, and on themselves. For future, I would recommend chunking the information, as it was informational overload. Presentation of information was often too fas without enough time to process and apply to our units. I would also recommend time to build out units throughout the year.
- I feel like this program guides teachers to more authentic and action based teaching. I love the passion that the fellows have - this is an inspirational group to be a part of.
- If someone wants to push their teaching to its maximum, this is the way. If personal connection to content is important, this is the way. I can't teach "traditionally." I literally am not good at it. This program was a huge breath of fresh air and was so validating for me as a teacher and human.
- I truly thought this was wonderful and well balanced.
- It stretches your mindset and its deadlines encourage you to try teaching in a way you might desire to but haven't made the time to.

VI. Community Based Partners and Supplemental Curriculum Partners

Community Based Partners (CBPs) and Supplemental Curriculum Partners were integrated into the program in a number of different ways in 2021-22 ranging from a more traditional "tabling" experience that was done virtually, to extended half-day field experiences. See details below for each type of partner.

A) Local Community Based Partners (CBPs):

Local CBPs had two touchpoints with fellows during the program, one in the summer through a virtual tabling experience, and also one in the November where a number of partners worked together to create a field experience for fellows from that topic. Seventeen partners worked with SMCOE in this program, and those who participated in one or more of these activities include the partners in the table below:

Topical Track	Partners
Clean Energy	Peninsula Clean Energy (PCE)
Sustainable Watersheds	Flows to Bay, Silicon Valley Clean Water, San Mateo County Office of Sustainability, Marine Science Institute
Sustainable Food Systems	Center for Ecoliteracy, Heal Project, Pie Ranch
Land Based Ecosystems	Environmental Volunteers

Sustainable Transportation	Safe Routes SMCOE, Santa Clara County Public Health, Walk Bike Cupertino, Silicon Valley Bicycle Coalition
Zero Waste	Rethink Waste, San Mateo County Office of Sustainability, Recology Golden Gate, S.F. Environment, The HEAL Project

B) Supplemental Curriculum Partners: SMCOE worked with seven (7) Supplemental Curriculum Partners during the program:

- Youngzine
- Subject to Climate
- Stone Soup
- SEI
- Green Guardans
- EcoRise
- Center for Ecoliteracy

C) Rotations and Field Experience Documentation

Support documentation for different partnership experiences can be found here:

- Summer Institute Rotations: Tuesday August 3rd CBP Rotations and Thursday August 5th CBP Rotations
- Saturday Nov 6th Field Experience Day: Energy, Food and Waste, Transportation, Water and Waste,
- December 4th Supplemental Curriculum Partner Rotations

D) Summer Institute Survey Question - What Experiences do Teachers Want the Most:

Community Based Partners are used to providing in person field trips or in-classroom programs; however, during last school year, many partners made adjustments to programming to be able to offer virtual and COVID-19 friendly programs. What kind of learning support in general do you think would be most useful for you to receive from a Community Based Partner in the 2021-22 school year?

Percent	Type of Offering
60%	Asynchronous activities I could assign to students that connect to specific topics (i.e. waste, water, energy, land based ecosystems, transportation, food, climate change, etc.)
75%	Virtual Field Trips (either synchronous or asynchronous)
85%	Synchronous/Live Stream Workshop or Guest Speaking with Students
75%	In-Person learning opportunities for students and families that are willing to do in-person enrichment programs

VII. BUDGET AND EXPENSES

The following table outlines the main expenses associated with the Environmental Solutionary Teacher Fellowship Program, and how funders have contributed to the program. Multiple funding sources for 2021-22 include the following:

- Ten Strands External Grant (Sand Hill Foundation (up to $55,000)
- Peninsula Clean Energy (PCE) (up to $160,000)
- CalTrans/C/CAG Safe Routes Grant
- San Mateo County Office of Sustainability (SMCOOS) 4Rs Grant (up to $25,000)
- SFUSD completed funded their own stipends and coaches

Item	Description	External Funders	SMCOE
Program Administration	Marketing and outreach, registration and paperwork	$12,000	$10,000
Materials	Educational materials such as books and supplies	$10,000	$5,000
Program Planning and Facilitation for Summer and Saturday workshops Full Day = 1,500 per coordinator Partial Day = $1,2000 per coordinator	• Planning: 4 Days for 2 Coordinators = $12,000 • Summer: 4 Days for 4 Coordinators = $24,000 • 3 Saturdays for 6 Coordinators = $21,600 • 2 Saturdays for 2 Coordinators = 4,800 • 1 Saturday for 4 Coordinators = $4,800	$25,000	$42,200
Guided Implementation Coaching	Coaching at workshops and coaching calls: • Robyn: $4,000 • Nico: $6,500 • Julie: $3,000 • Stephanie: $7,000 • STEM4Real: $12,000 **Total = $32,500**		-
Fellow Stipends	San Mateo County • Zero Waste: 3 @$750 = $2,250 • Energy: 4 @ 2,000 = $8,000 • Transportation: 4 @ 1,000 = $4,000 • LBE, Food, Water, Climate Change: 19 @ 1,250 = $23,750 SMC Total = $38,000		-

	Santa Clara: 5 @ 1,250 = $6,250		
Community Based Partner Stipends	Stipends for 3 CBPs • Environmental Volunteers • The Heal Project • Marine Science Institute	$3,000	-
Supplemental Curriculum Partner Stipends	Stipends for 7 Supplemental Curriculum Partners • Youngzine • Subject to Climate • Stone Soup • SEI • Green Guardans • EcoRise • Center for Ecoliteracy	$3,500	-
Program Evaluation	Program Evaluation for 2021-22 and Longitudinal Study for 2015-2022	$14,000	-
	Totals	$144,250	$57,200

VI. RESOURCES AND CITATIONS

- "Reviewing the Evidence on How Teacher PD Affects Student Achievement" (Yoon et. al., 2007): Institute of Education Sciences; U.S. Department of Education
- Teaching the Teachers: 50-80 hours of PD and Support
- Learning Policy Institute: Components of great PD