



**Santa Clara County Office of Education
Environmental Literacy
Landscape Analysis & Report
2019**

Funded by Morgan Family Foundation & Valley Water

Acknowledgments

The Santa Clara County Office of Education Environmental Initiative was led by the Innovation and Instructional Support Department within the Professional Learning & Instructional Support Division under the direction of Edith Mourtos, Assistant Superintendent. Two professional experts were contracted to facilitate the interview process and the writing of this report.

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Thanks To:



And



Supporters of Environmental Literacy in Santa Clara County

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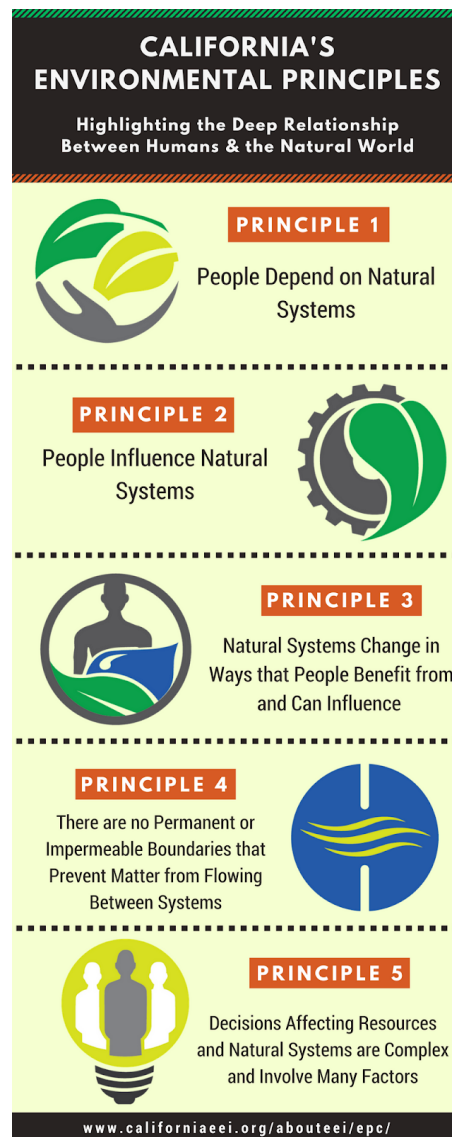


Introduction¹

In 2004 the state of California mandated the California Environmental Principles and Concepts (EP&Cs) a set of 5 principles and 15 concepts, that define human relationships with the natural world. The objective of these 5 principles, developed by over 100 scientists and technical experts, was for California to address environmental literacy for all students K-12².

By law, the EP&Cs needed to be incorporated in all future state adopted texts and instructional material. Therefore, in 2016, the EP&Cs were integrated into the new California history - social science standards, new science standards and health frameworks (2019). So subsequent state adoption textbooks would integrate EP&Cs³. Furthermore, the Common Core State Standards for state of California were to equip students with the right analytical and problem solving tools to problem solve the future environmental problems.

With the support of the Santa Clara Valley Water District and the Morgan Family Foundation a 12 week landscape study was undertaken by the Santa Clara County Office of Education (SCCOE). The objective of the study was to assess the Environmental Literacy needs of the 32 School Districts in the County of Santa Clara, within the context of their adoption of the Next Generation Science Standards and Common Core standards.



¹ California's Environmental Principles and Concepts. 'EP&Cs Infographic' Accessed October 5 2019. URL: <https://www.californiaeei.org/epc/>

² Ten Strands. 'Environmental Principles and Concepts'. Accessed on October 4 2019. URL: <https://tenstrands.org/work/epcs/>

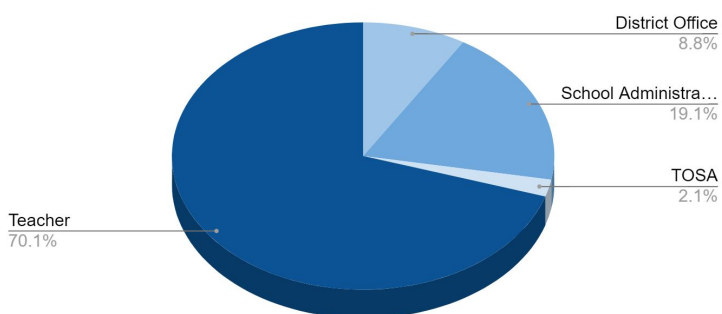
³ California's Environmental Principles and Concepts. Accessed October 5 2019. <https://www.californiaeei.org/epc/>

For the purpose of this study, the 5 Environmental Principles and Concepts (EP&Cs) and the definition of ‘environmental literacy’ from [A Blueprint for Environmental Literacy: Educating Every Student In, About, and For the Environment](#) was used to define *Environmental Literacy*:

“An environmentally literate person has the capacity to act individually and with others to support ecologically sound, economically prosperous, and equitable communities for present and future generations. Through lived experiences and education programs that include classroom-based lessons, experiential education, and outdoor learning, students will become environmentally literate, developing the knowledge, skills, and understanding of environmental principles to analyze environmental issues and make informed decisions.”⁴

With the identification of trends in environmental literacy in the County, Santa Clara County Office of Education (SCCOE) wants to learn of ways to help school districts, administrators and teachers drive adoption of the new standards that integrate the EP&Cs. The study was

SCCOE Environmental Literacy Study Composition



conducted at three tiers of management, the school district office, school administration and teacher. The research was a combination of face to face interviews (form in Appendix II) as well as online response to a survey (form in Appendix III). The researchers conducted 66 in person interviews and received 126 responses to the online survey. The details of the methodology can be found in [Appendix I](#).

In order to incentivize teacher participation on the survey, a part of the Morgan Family Foundation funds were used as an incentive. The incentive was that the Walden West Foundation decided to support attendance to Walden West Outdoor School, by providing funds to the first 25 schools that participated in the Environmental Literacy Survey. Walden West took the eight Title 1 Schools that participated in the Environmental Literacy Survey and gave them money based on the head count from those schools that are attending Walden West. The other 18 schools that are not Title 1 also received funds for participating in the Environmental Literacy Survey by receiving a \$277.77 from the SIP. LEARN. SUPPORT Fundraiser from Walden West that was held last Fall of 2018. SIP Funds are internal to Walden West usage.

⁴ California Department of Education. ‘A Blueprint for Environmental Literacy: Educating Every Student In, About and For the Environment’. Accessed October 1, 2019. URL: <https://www.cde.ca.gov/pd/ca/sc/documents/envronliteracyblueprint.pdf>

Overview

The study showed that environmental literacy is currently sporadic and mainly led by self motivated teachers, with limited support from school leadership or districts. This is resulting in an equity problem - schools and districts have varying degrees of importance given to environmental literacy. When asked if environmental literacy was a priority at their District, the teachers' responses varied significantly across districts, from 100% teachers agreeing that it was a priority at their district to none of the teachers agreeing.

Teachers understand the importance of driving environmental literacy, and a number of them are very passionate about the topic. These passionate teachers have taken up on themselves to drive this important priority through extended day learning opportunities. Some of the most common initiatives include maintaining the school garden with students, leading recycling efforts, and organizing field trips and in-class/school presentations to community / environmental organizations. During the course of this study, we uncovered a few initiatives that can serve as role models for the entire County.

Teachers are excited to do more, but feel that they are not receiving the required support from school leadership or the districts. Only 45% of teachers agree that environmental literacy is a priority for their schools. This number drops to 32% when asked about districts. They feel that support is lacking in three areas:

- Awareness of EP&Cs: This came up consistently in our in-person conversations, as well as the survey. 63% of the teachers who are not delivering EP&Cs said it was because they had not even heard of them.
- Lack of training / teaching materials: Even those who are aware of EP&Cs, don't feel equipped to teach these ideas in traditional daily standards-based instruction, especially in elementary schools. 47% of teachers asked for teaching materials to cover more environmental topics whereas 16% asked for professional development
- Lack of time: Teachers feel that that their school leadership and districts are too focused on the California Common Core State Standards (CA CCSS) adoption and corresponding test scores, leaving little or no time to pursue EP&C focused learning

The Districts' response to how they are addressing the environmental literacy gap is that they have no District led initiative other than what is covered through the adoption of the CA NGSS. During our interviews with the Districts, we consistently heard that Districts do not have any plans to undertake additional initiatives to cover EP&Cs, other than rolling out the CA NGSS. The only District led initiative that came up regularly in our conversations was the 5th grade outdoor school program (e.g. most popular was Walden West Outdoor School Program).



The challenge is that Districts are still in the early adoption stage of CA NGSS, and in many cases, the teachers feel that the transition has not been smooth or well supported. 63% of the teachers responded to our survey said that they needed professional learning on CA NGSS versus only 19% for CA CCSS.

In light of the above findings, this report proposes eight key recommendations to help drive environmental literacy for students K -12 in the County of Santa Clara:

1. Drive awareness of Environmental Principles & Concepts (EP&Cs) through campaigns at all three levels - District, School Administration, and Teachers.
2. Santa Clara County Office of Education and environmental educational support providers should support Districts in the development of an Environmental Literacy Plan and encourage LEAs to actively seek funding to support positions, such as a Teacher on Special Assignment (TOSA) for Environmental Literacy facilitation.
3. Provide support in identifying the NGSS curriculum that is EP&Cs aligned.
4. Provide professional development around EP&Cs and standard integration for traditional daily standards-based instruction learning. This professional development should highlight content integration in all content areas.
5. Develop and share grade level relevant model teaching materials that are standard aligned and integrate the EP&Cs
6. Enable best practices / learnings across schools and districts through workshops, social media, common data base
7. Take “pockets of excellence” and use them to scale systematically
8. Identify and partner with community-based organizations to help further drive extended day learning opportunities in Districts*

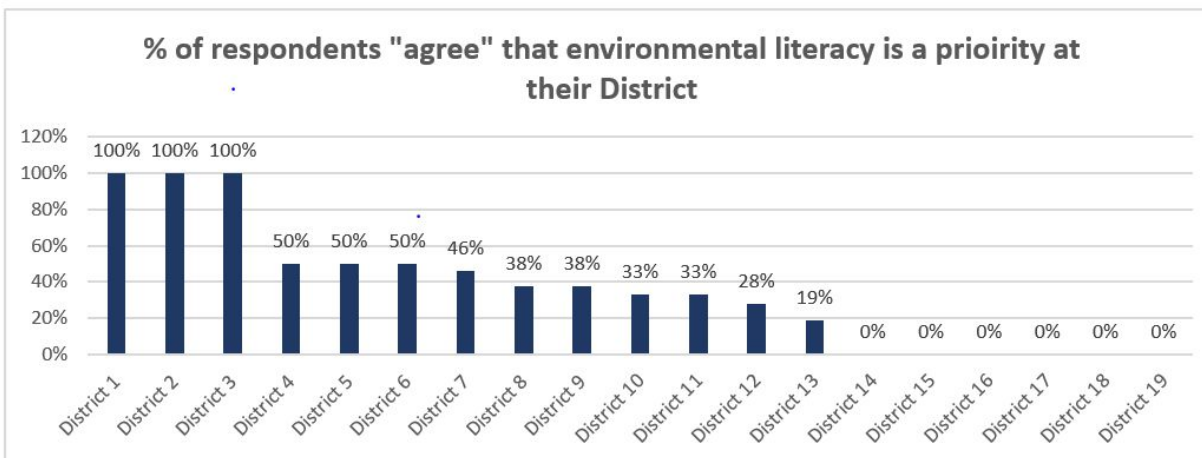
*Santa Clara County Office of Education maintains a resource website (<https://www.scc-enviro-ed.org/>) for the Santa Clara County Guide to NGSS and Environmental Education Programs, which displays community-based organizations who support LEAs, schools, and classroom educators.

Detailed Findings

Equity & Environmental Literacy Plan

Equity

We asked teachers whether environmental literacy was a priority at their District. The responses, varied significantly, from all teachers agreeing that it was a priority at their district to none of the teachers agreeing. This shows that we have an equity problem i.e. all students are not being offered similar opportunities to gain environmental literacy. To address this problem, SCCOE recommends supporting Districts to design and execute an environmental literacy plan, to ensure learning opportunities are pursued consistently and systematically across all districts.



We further explored this problem by testing if socioeconomic status of districts was contributing to the huge variance in priority. For the purpose of this study, the percentage of Socioeconomically Disadvantaged from the California Department of Education Dashboard⁵ website were used to classify each Districts low, mid or high socioeconomic status (SES). Any District that had 50% or more socioeconomically disadvantaged were categorized as low SES and any district that had between 25 - 50% of socioeconomically disadvantaged were categorized as mid SES and any district that had less than 25% of socioeconomically disadvantaged were categorized as high SES.

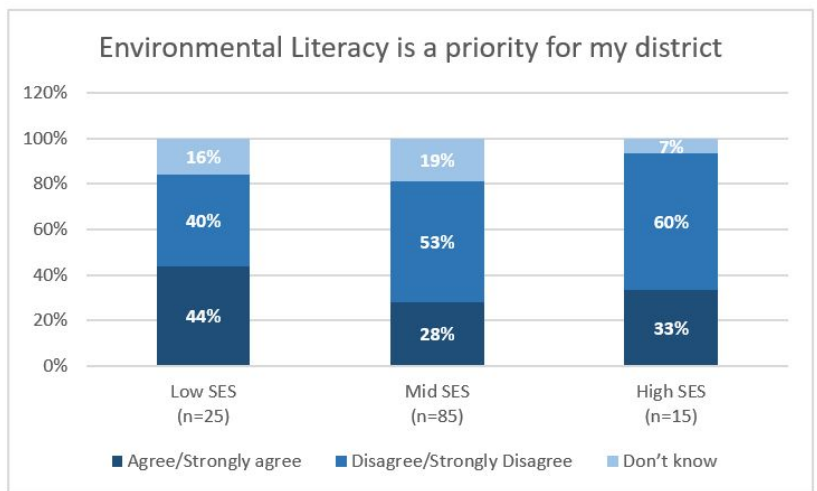
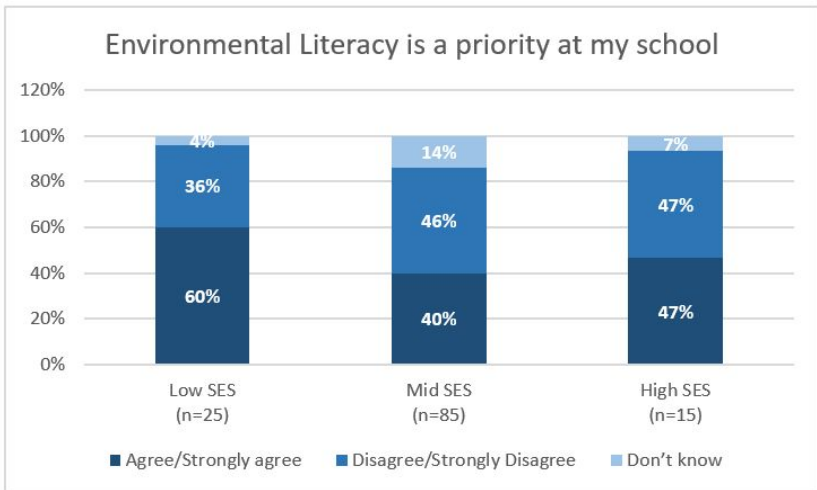
⁵ California School Dashboard. Accessed October 7-12 2019. URL: <https://www.caschooldashboard.org/>

Category	Definition	Number of responses		
		Total	In-person	Online Survey
Low SES	Districts with more than 50% enrollment comprising of socio economic disadvantaged students	38	13	25
Mid SES	Districts with 25-50% enrollment comprising of socio economic disadvantaged students	117	30	87
High SES	Districts with less than 25% enrollment comprising of socio economic disadvantaged students	37	23	14
Total		192	66	126

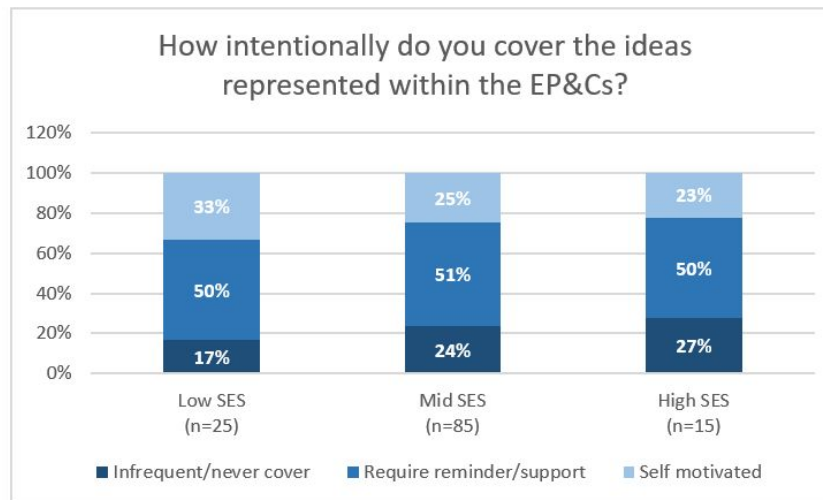
The aggregation of in person interviews (66) and online survey responses (126) led to a total of 192 responses. The table above shows that the majority 117 (66%) of the aggregated responses came from the middle tier of school districts. That being said, the researchers also believe that the survey size is too small to make broad assumptions.

From the in person interviews (66), it was clear that all efforts in environmental literacy were at school site level and through extended day learning opportunities. Within extended day learning opportunities, a leading trend for K-8 Districts interviewed was that their 5th graders attended an outdoor school program/science camp, with the exception of 2 school districts, that happened to be from low SES Districts.

From the online survey data, that was filled by teachers (126), the two charts on the right show that according to the teachers, environmental literacy is more of a priority at schools and districts in the low SES category, and less important in mid or high SES schools and districts.



The online survey data also shows (below) that teachers in low SES school districts (33%) are self motivated compared to their counterparts in mid (25%) and high (23%) SES school districts. But regardless of SES status, the chart below also shows that teachers (approximately 50%) need more help and support in covering ideas represented within the EP&Cs.



In the light of this data the study recommends supporting the Districts in developing an Environmental Literacy Plan. The idea behind that would be to encourage Districts to take that lens and consciously start moving their District in that direction.

Environmental Literacy Plan

The following list includes suggestions, based on the interviews, for the District to include in their Environmental Literacy Plan:

- Teacher on Special Assignment at the District level that would facilitate in integrating the EP&Cs in the CA CCSS, History - Social Studies & CA NGSS. The TOSA would also help schools tie in traditional daily based standard learning with extended day learning programs. It would be helpful to have a TOSA for Environmental Literacy at each school. The schools could designate a teacher or parent volunteer (or both can split the responsibilities) who are already championing the cause in some way at the school site.
- The Districts could facilitate their schools in setting up, a school garden, a recycling initiative run by students, and/or hydration stations. These three initiatives were all useful stepping stones for schools that were doing more in environmental literacy than others, for more details refer to [Appendix IV](#).
- The Districts can encourage and promote outdoor school programs or grade level appropriate field trips. They could help set up partnerships with organizations such as Living Classrooms, that can cover some aspects of the standards within the context of EP&Cs. Also look for partnerships with Tech companies, as a lot of them match or donate to the schools based off the hours volunteered by their employees.

This list is just a recommendation to give the District a starting point. There is so much more work being done and a lot more resources to be used. The neighboring Counties San Mateo and Santa Cruz could also be a helpful resource for Districts.

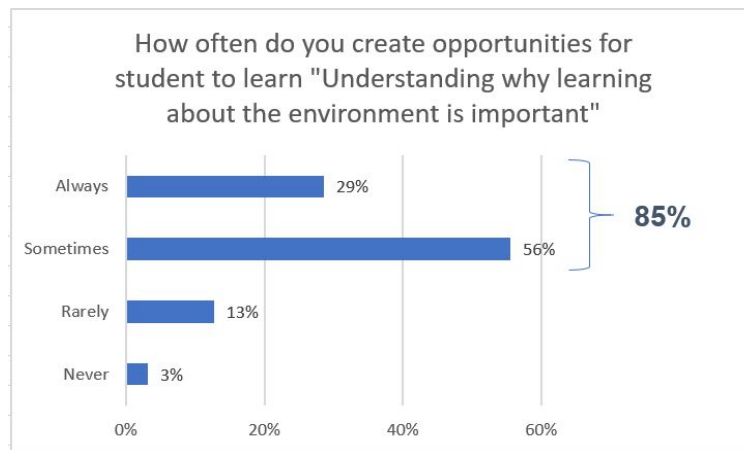
Teachers' approach to driving Environmental Literacy

Teachers understand the importance of driving environmental literacy. They were appreciative of our outreach (survey, in-person meetings) and thought it was a good reminder of how they should be prioritizing this work in their instruction.

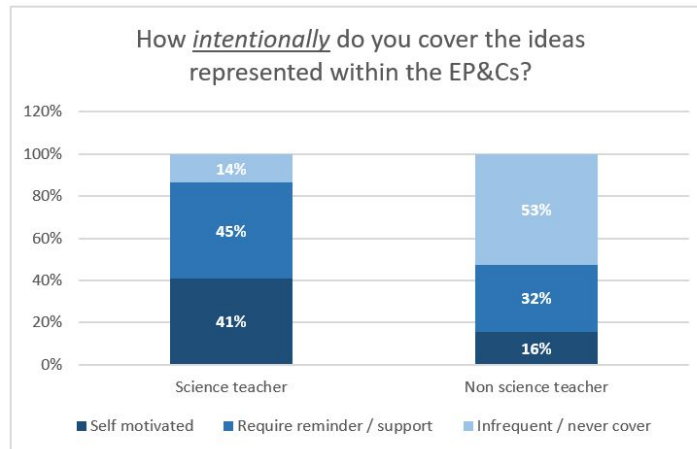
“This survey was a valuable reminder of what we already do and what more we can do” - Middle School Science Teacher

“I love that you are asking to help get this literacy into the classroom!” - Elementary Classroom Teacher

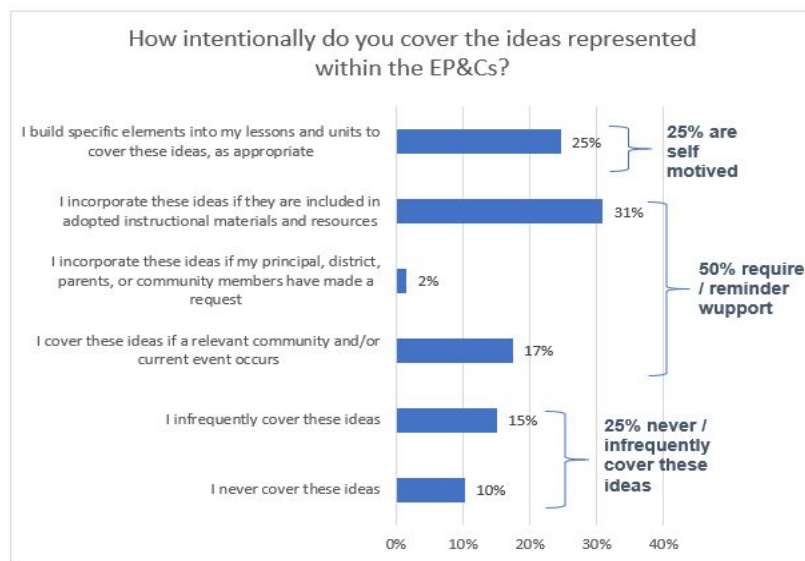
Additionally, 85% of the teachers responded that they create opportunities for students to understand why learning about the environment is important.



Science teachers seem more self motivated to drive environmental literacy with only 14% saying they never or infrequently cover EP&Cs compared to 53% for Non-Science teachers.

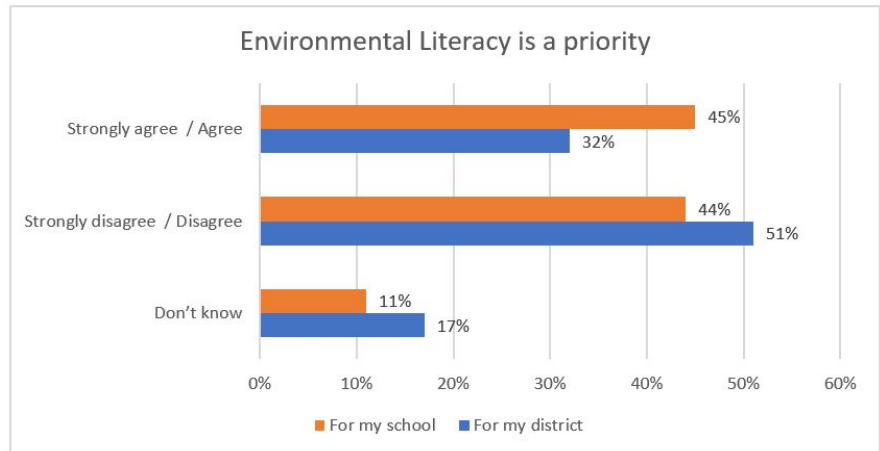


The aggregated responses in the chart below, without the grade level segmentation, shows that 50% of teachers will intend to cover EP&Cs if they are a part of the instructional material, or if there is an outside push from district, school administration, parents, community, or an event. There it is integral to have the EP&Cs integrated within the Standards and pushed by the District and School Administration through an Environmental Literacy Plan.



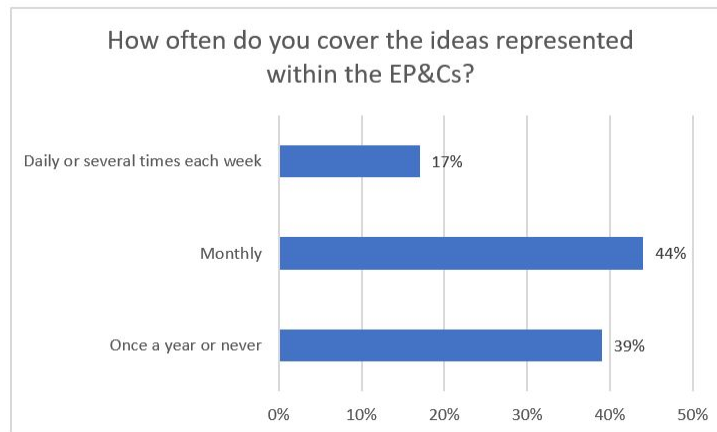
Typically, a teacher's personal awareness around environmental concerns motivates them to create opportunities for their students through different Clubs such as Garden Club or Green team. With these clubs, teachers either provide opportunities to students to work in the garden and learn from the different natural processes, or they facilitate the trash management and awareness and education at the school sites (42% of our interviews mentioned gardens, and 59% mentioned recycling).

Teachers are eager to drive environmental literacy systematically, but they feel that they are not getting adequate support from their school leadership or district. Less than half of the teachers who responded to our survey agree that environmental literacy is even a priority for their school leadership and district.

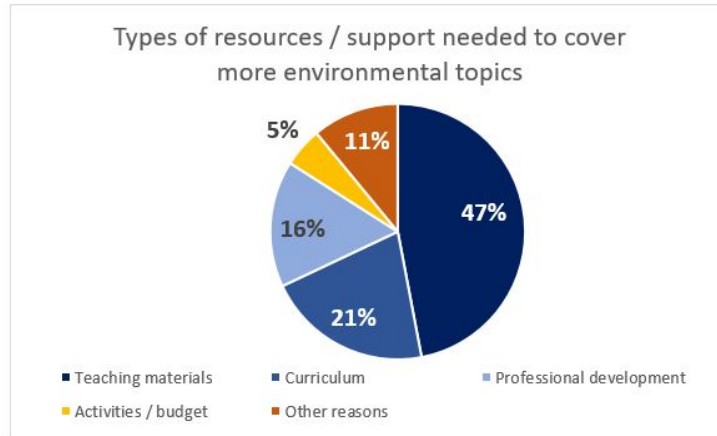


Teachers feel that they lack support in three areas:

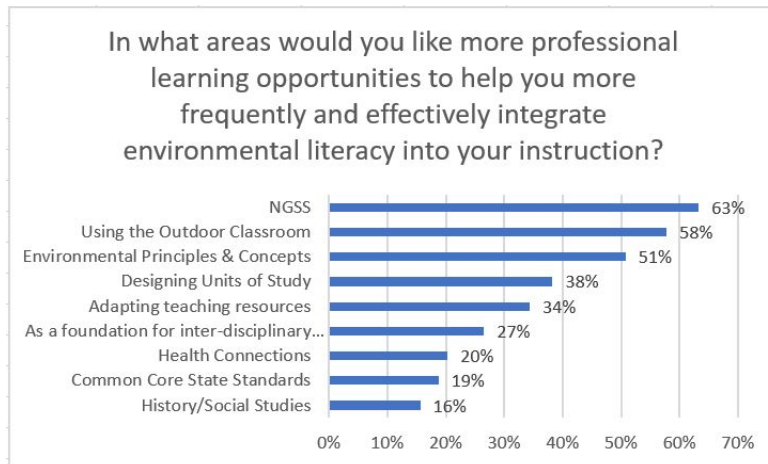
1. Awareness of EP&Cs: When teachers were asked how often they covered the ideas represented within the EP&Cs, 39% responded “never or once a year / semester”. The top reason provided was that they were not aware of the EP&Cs (63% respondents).



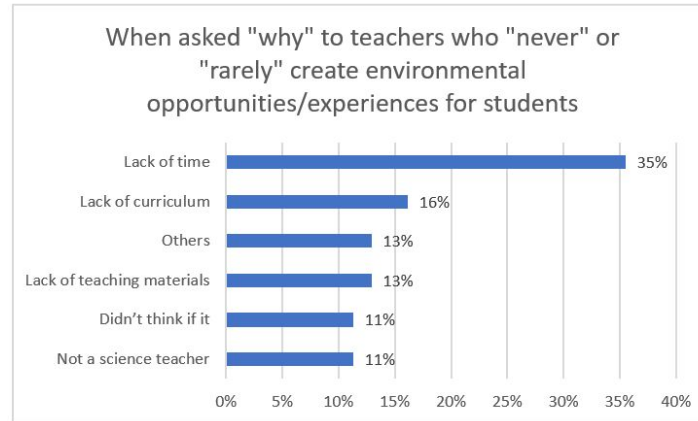
2. Lack of training / teaching materials: 47% of teachers felt that they need teaching materials to cover more environment topics, while 16% asked for professional development opportunities.



Separately, 63% of the teachers responded that they needed professional development on NGSS to effectively integrate environmental literacy into their instruction.



- Lack of time: Teachers who said they “never” or “rarely” create environmental opportunities for students mentioned “lack of time” as their top reason for not doing so.



Teachers elaborated that with their school's focus on Math and ELA, it was difficult to find time with students to teach anything else. Also, given the lack of teaching materials, they feel that they do not even have the time to put together a high quality lesson.

“There is the lack of time plus the need to focus on mathematics more than other things for class time's sake” - Middle School Teacher.

“Time is the biggest obstacle. Even when you make the time, designing the lesson, gathering resources, and making it meaningful can prove to be difficult and exhausting” - Elementary School Classroom Teacher

Districts' and School Administrations' approach to driving Environmental Literacy

The in person interviews with Districts and School administration confirmed that most environmental literacy efforts were at the school level and led by self motivated teachers or parent volunteers. The researchers interviewed 19 people in 18 Districts, and met with 37 school administrators.

For the majority of the Districts, the term “Environmental Literacy” was new and there were no district led initiatives in environmental literacy. The districts are currently prioritizing CA NGSS adoption and alluded to the environmental concepts within it to be the only initiative they are taking.

“All of our efforts in science right now are going towards our staff and teachers to learn and understand NGSS and to begin piloting new science materials in the fall”. - District Official

“At District level -everyone has a personal awareness of it (environmental literacy), but no district level program, most people fall back on NGSS as guiding principles.” - District Official

For this purpose, a number of Districts had a Teacher on Special Assignment (TOSA) that was facilitating the science teachers in training and adopting the NGSS curriculum.

Even though Districts are not undertaking environmental literacy proactively, there is some work being done in this sphere. A regular district-led initiative is that almost all elementary schools participated in an outdoor school program in grade 5. There were 4 school districts that have partnered with Living Classrooms, an organization that provides experiential learning for K-8 through lessons in and around a school garden. In these 4 districts students have a monthly lessons in a garden facilitated by the Living Classroom coordinator, this has helped relieve the burden off teachers. There are also two school districts that have a District policy on recycling.

Furthermore, another initiative by Districts that does not fall into the traditional daily standards-based instruction learning or the extended day learning programs was that their Business and Operations departments were moving school site facilities to be more energy efficient. A number of school site leaders mentioned the Districts push to make school facilities energy efficient:



“ We are transitioning to a new school site, the District was purposeful in ensuring that the new buildings are environmentally friendly in order to meet or exceed the State requirements”. - Principal Middle School

“ We have put in a turf field, have solar panels and installed a new HVAC system, the District moving towards green/ efficient energy use.” - Assistant Principal Middle School

Within K-12, the High Schools and High School Districts seem to be further ahead in the CA NGSS adoption, and the integration of environmental concepts, than elementary or middle schools.

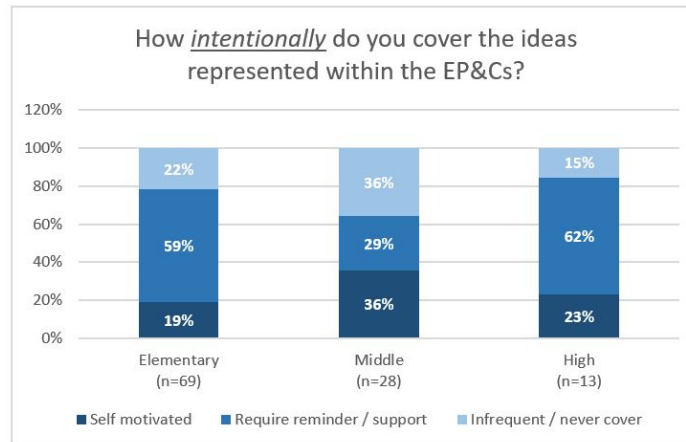
“Environmental Literacy has been incorporated into our high school Biology, Chemistry and Physics integrated curriculum. The elementary and middle schools are in the adoption process and are looking at books that include these concepts”. - District Official

There is a high school curriculum available that supports NGSS, and this may have propelled the adoption. The high school districts are using Project Based Learning as well as participation in science competitions with projects around the theme of environment to give their students awareness and real life skills of problem solving environmental problems.

“We have Environmental Science courses. We push for environmental themes through project based learning - we do that through the Water Grant from Valley Water, the science PALOOZA through Synopsis. The science PALOOZA it goes to many of our science courses in participating schools, it has a heavy environment emphasis, we get a couple of thousand participants. We have partnered with Water District and Community colleges to create CTE (Career Technical Education) pathways emphasizing water. There is a teacher on special assignment (TOSA) that is integrating the environment in other science courses”. - High School District Official

The table below shows that the instance of EP&Cs infrequently or never being covered is the lowest in high schools at 15%, and the intent to cover ideas represented in the EP&Cs is highest at high schools, 62%⁶. The high percentage of intent shows that it is being done more in high schools because it is part of the NGSS curriculum and there is a push from the high school community to incorporate environmental concepts through PBLs and science competitions.

⁶ Require reminder/ support : has the following 3 answers options aggregated 1) I incorporate these ideas in my lessons and units if they are included in adopted instructional materials and resources, 2) I incorporate these ideas in my lesson and units if my principal, district office, parents and community members made a request, 3) cover these ideas if a relevant community/or current event occurs



The interviews with school administration (37) the recurring answer was that they are not doing anything in environmental literacy. As the interview progressed there were initiatives such as a garden club, school recycling led by student club, installing of hydration stations and studies of conservation or campaigns around it that would come up. There were a number of field trips for varying grade levels to different outdoor programs, yet the school administration felt they were not doing anything.

“Not been a focus area for us. The district has had a number of initiatives- NGSS science curriculum adoption and our teachers have done some training on it. There are activities for certain grade levels - kindergarten has a gardening projects, 5th grade goes to science camp, classrooms recycle, we have hydration stations, creating awareness in students for recycling and reusing water bottles”. - Principal Elementary School

The primary reason for this response is that there is no awareness of the EP&Cs at the school administration level and most school site initiatives are led by self motivated teachers or parents that have a passion for the environment. All school administrators welcomed more opportunities for professional development around grade level specific curriculum and materials that is Standard aligned and has the EP&Cs integrated.

In addition to more professional development Districts and School administration shared some interesting insights into how they would like environmental literacy to be supported by SCCOE.

Resources for School Garden: Having a school garden helped schools initiate and continue conversations regarding the environment especially at the elementary and middle school level. A lot of the school leaders were looking for help in terms of funding and master garden resources to help set up a garden.

“ The garden upkeep challenge for most schools has three parts; first is financial resources, second you need the expertise e.g. garden mentor and third and final challenge is up keep during the summer, finding volunteers to keep garden going.” - Principal Middle School

Helping identify local recycling providers: In recycling, especially for plastics, teachers that were involved had a hard time figuring out the right people agency working in the area to take the items to. Furthermore a lot of the students were interested in collecting plastics and recycling them at their school site, but there were no volunteers to take the recycling items to the right spot.

“We are recycling paper as a school, but with bottles and cans we tried to do it, students showed an interest, but it is logistically hard to do as no one in the PTA can take out time to empty recycling containers for bottles and plastics and take it for recycling.”- Principal Elementary School

“ ... it was hard to figure out who is recycling for us, so we would love support from the County office in setting up contacts in such areas. ” - Science and Technology Coach Elementary School

Opportunities and Contacts for students to showcase their work: For schools, especially at higher grade levels, high school and middle school, that were doing Project Based Learning around environment, the school administration wanted support from District or SCCOE in creating a space for students to showcase their work.

“We are constantly searching for ways to interact with real life scenarios...for example the Water filtration system project, f our students go through the trouble of doing the research and developing this tool and wanting to sell their campaign. If we held the event at the San Jose Water Company instead of our school and employees of Santa Clara Water just came through during their break or lunch and talked with our students or worked with our students, that takes the project to another level. There is only so many times that they can present to me as the principal”. - High School Principal

Redefining the ‘outdoor’: Revisit the definition of ‘outdoor’ environmental literacy from a destination field trip to a location that is local to the students such as their neighborhood or school.

“One of the barriers of outdoor education is rooted in the idea that it is somewhere far away in a forest as opposed to around you. Students could do water sampling or air quality sampling between schools and have conversation among different schools around it, this is something all our kids can experience and communicate pretty easily. This shift will make it more accessible to students, it will be less magnificent but more realistic interaction with nature and understanding the complexity of it”. - District Office

“For me as a teacher, more information about the County to share with students, maps of the watershed, more resources available to teach them about where they live would be very useful. A lot of the information in books is about locations that are not local, there would be more buy in from students if they could relate to the locations that were discussed. So learning more about creeks, or providing local contacts for civic engagement activities”. - Science and Technology Coach

Being mindful of diversity in the student body: Environmental literacy that is mindful of the diverse backgrounds and needs.

“Biggest challenge faced by the District here, is that parents are struggling to address their families basic needs. With the amount of trauma experiences that the students are going through here, the environment is not a big focus for them. We need environmental literacy material that is digestible to the community, even when it is translated to Spanish, so a visual approach is preferred. The material should be mindful of how a middle class family can be environmentally friendly compared to families from lower middle class”.

-Assistant Principal Elementary School

Exemplars from the County

Exemplary Initiatives by Teachers and Parent Volunteers

During the course of this study, we uncovered several initiatives at school sites, that can serve as role models for the entire County. There was one common theme across all these initiatives. There was a local champion spearheading the effort, who was most often than not either a science coach, or a self motivated teacher, or an active parent volunteer. This served as another reminder that environmental literacy efforts in the County are currently fueled by self motivation rather than through systematic initiatives by the districts or school leadership.

“The district doesn’t do anything to promote environmental literacy. Most of the events or programs related to this have been started by teachers or students at the local schools.” - Elementary School Teacher

We are sharing an overview of three initiatives to serve as examples.

Example 1: Science and Technology Coach Run Recycling Program

There is a Science and Technology Coach in an elementary STEAM school that is leading the students in civic engagement with their drive to reducing plastics. The teacher helped run the student club that focuses on awareness around plastics and recycling efforts for the school. The club initiatives and the interest in it by students has turned it into a 6th grade specialty class. They are creating partnerships with organizations for more environment themed opportunities for the students. They participate annually in the Plastic Pollution Summit in Monterey in the late spring, with the main goal to reduce plastics. They listen to guest speakers that are experts in their fields. In the fall, they work with the students on projects around reducing plastics and then the group of students travel to Monterey in late spring to present what they have done to make an impact. As a part of their projects the students wrote to the manager of their neighborhood Chipotle to call them out on their use of small plastic cups for small mandarins or tangerines with the peel on them. The teacher is also part of the California Education and Environment Institute and does lessons with them.

Example 2: Classroom Teacher Run School Garden

There is a classroom teacher, in an elementary school, that has created an exemplary garden for the school with the support of several partnerships and filled it with native, drought-resistant plants. The plants are also natural habitats and food for many of the area’s native species.



Some of the partnerships the teacher has developed are with the California Native Plant Society, so that the garden has been featured on their tours. The teacher also partnered with The Audubon Society, which is supporting the building and placement of bird houses and with the city of Cupertino through their Parks Department.



The staff and students at School use the garden for a variety of educational purposes. Fifth grade uses it to support the learning of observational skills and to create art. Fourth grade utilizes it for the students to study food webs. Third grade uses it to study the structures of life, they write Haiku and Weathervane Poetry. They also use the plants to identify rotational and bilateral symmetry. Second grade and the rest of the primary classes use it to teach drawing and even to create beautiful Mother's Day cards.

The school has a Garden Club which has been in existence for about ten years and students plant, weed and do other chores to maintain the garden. The garden is also being used as a learning space under the Living Classroom initiative by a neighboring district.

The two newest partnerships are with Happy Hollow Park and Zoo, which have provided UV resistant signs and fence for the plant's identification. This year the Eagle Scouts will be building a meeting center for all of the classes to sit to study, in the shade, while they have lessons or discussions about the garden. The teacher is keen on mentoring and establishing partnerships with schools to help them set up their school garden.



Example 3: Parent Run Environmental Program and Life Lab

There is an elementary school that has set up a Program with multiple green initiatives led by a parent volunteer and then they are also in the process of setting a Life Lab in their school

garden, which is led by a second parent volunteer. The school leader has been with the school for the past 20 years and she mentioned that school historically always had a Green Team (a voluntary student club). Also prior to the renovation of the school campus they had a



greenhouse and garden. The school had a Life Lab aide and every class would visit the Lab for half an hour a week, it was a highlight for some kids and for kids that are not into sports would be keen to go into that space, but during the renovation they lost the space, so it was a personal wish of the school leader to bring back the Life Lab and the Green team to the school. Two parent volunteers took the initiative to help the school leader realize their vision, and have been working for the past 3-4 years in school



The Programs multiple green initiatives are run by student driven Green Team (voluntary students club open to K-5, that meets twice a week at lunch) and the parent volunteer. They spearhead various “clean campus initiatives” and manage the garden. On campus they maintain the vegetable garden and worm compost bin, run trash sorting and trash free lunch program twice a week, along with teaching students how to support eco-goals through civic engagement. Another goal that they are focusing on is having waste free lunches or 100% compostable hot lunches. The zeal of that one parent running the program, is leading the District in piloting waste free hot lunches. Previously the parent and the Green Team were successful in eliminating plastic straws and “spork packets” from their School District cafeterias.

The Program sends a weekly newsletter highlighting current environmental problem, how students at the school are taking action, or using the set up programs and garden.

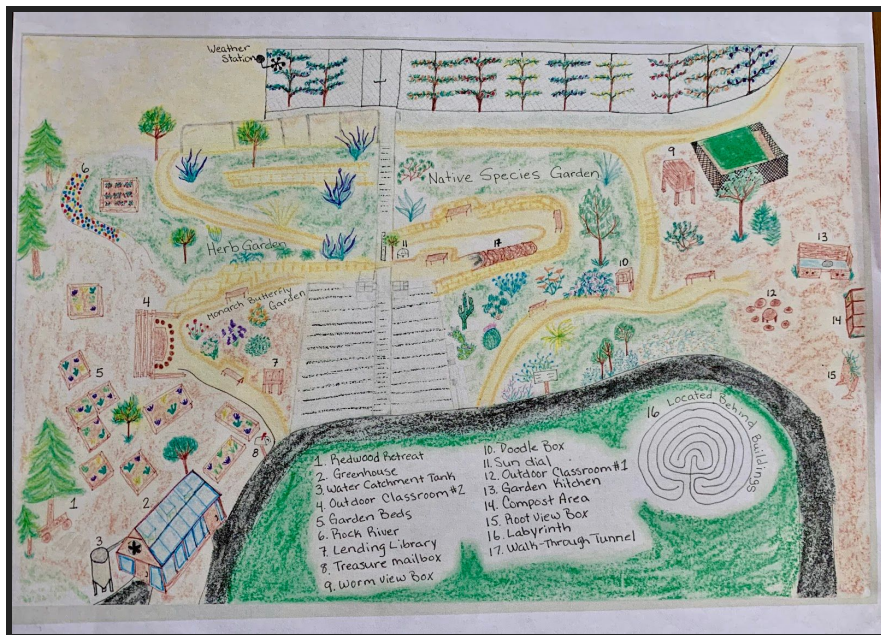
The Green Team and parent volunteer run an excellent trash sorting program, the key is using visual examples of items above the three different trash bins to remind the school community of proper trash disposal. There are a lot of conversations

about single use plastics, plastic waste in the oceans and how they can take action to help clean it up.

Off campus, the Program has encouraged parents from the school community to sign up to Ohmconnect a free program, where parents pledge to turn off or reduce their usage of electricity for one hour a week. This gives families a chance to reduce electrical use during peak hours when power is sourced from high polluting plants. The families receive points that translate into donation to the school. The money generated from this program is used to fund the purchase of classroom educational materials related to ecology and preservation of the environment.

Another off campus initiative is the Crayon Initiative and Crayola Color cycle - they encourage classrooms and school families to collect old, broken crayons and used/dried markers. The volunteer parent sends them to respective organizations; the crayons are turned into new crayons and shipped to hospitals for use by pediatric patients, while the markers are turned into clean fuel.

The Life Lab is another big project spearheaded by a different parent volunteer. A hand drawn Life Lab vision plan is in the picture below:



Their garden currently has the colored rock river for kindergarten, 7th grade monarch butterfly garden now a Pollinator garden, last year they broke ground and completed the Native Garden for ecological awareness and sustainable plants education. To integrate the use of the garden

traditional daily standards-based instruction , each class will adopt a plant, draw a picture of the plant, learn the Latin name and colloquial name, in English and Spanish.

They have fruit trees that they harvest fruit from, the parent volunteer was keen on introducing different preservation methods such as canning to the students. The idea was to talk about food chain and how to conserve food. They have composting bins right now that are made of plastic, but they want to expand them to something much more larger so kids can visibly see the changes taking place in different stages of composting. They also have worm composting bins but want to make it bigger and eventually use the soil to make their garden soil richer. Eventual goal is for all composting needs of the school to be met in the Life Lab composting stations. The garden currently has an outdoor classroom and they want to add a second classroom in the future. In their vegetable garden all produce is organic and they have harvested kale, tomatoes, basil, and have had school wide food tastings for students to learn and enjoy different vegetables. The long term goal for the Life Lab space is for it to be used by other schools in their School District for field trips to learn about the environment.



Exemplary School

San Martin/Gwinn Environmental Science Academy is a K-8 school in the Morgan Hill Unified School District. Ms. Claudia Olacireguic is the school leader that has led the transition of the school into an Environmental Science Academy. The school adopted the EP&Cs two years ago and have trained all their teachers in the EP&Cs in 2018-2019.



The school started establishing itself as an Environmental Science Academy 5 years ago. Prior to that there was a fourth grade teacher that was passionate about the environment and was maintaining the garden with a voluntary students club. The school has 4 labs, 2 indoor and 2 outdoor, a Teacher on Special Assignment was brought on 4 years ago, through District funding. The TOSA helped in adopting

of the NGSS and aligning it with the EP&Cs, and also led hands on projects by students, at every grade level, in the lab around the theme of the environment.

The funding for the TOSA ran out a year ago so then they trained the teachers and transferred the responsibility on to them, for aligning the CA NGSS with environmental principles, so it is an ongoing integration with different subjects. They have also participated in a training from the California Education and Environmental Initiative (EEI), a statewide program leading the EP&C integration in the standards. Since the school had the science curriculum integrated with EP&Cs they only took the Social Studies curriculum from EEI. At the time the District had TSI curriculum for CA CCSS but the District has now adopted the TWIG curriculum for K-5 in 2019-2020. Currently their science and social studies curriculum have EP&Cs integrated, for math it varies by grade level and in ELA some non fiction text are aligned with environmental sciences. Each classroom has the EP&Cs displayed.

“I would like my teachers to constantly use the environmental sciences principles as reflection with their students throughout the different classes”. - Principal San Martin/Gwinn

However, Principal shared that it is challenging and it varies from teacher to teacher, depending on their background, some are very good at it, others need reminders. But they are moving in the right direction.

“Our mission and vision for all of our students is for them to be stewards of the environment and be mindful of the affect people make on the environment and how they can prevent it”. - Principal San Martin/Gwinn

The school uses Project Based Learning for hands on environmental knowledge. Each trimester there is a project by grade level that supports educating the community (school community or city community) about the environment. In 2018-2019 school year they were in year one of EP&Cs formal adoption so the projects were around the theme of Principle 1 ‘People depend on natural systems’ next year the projects will have principle 2 as the theme. An example of projects by grade level are; 1st grade had conservation of water project, so they got rain barrels used for droughts to collect water, and then used that water to water the garden, 2nd grade project also around conserving water, they looked at the wastage of water when students drink from faucets, so



they created a new plan with graphing and math to show how to reduce the wastage, 4th grade created and engineered a project on how to prevent animals from extinction when they get killed on freeways, so they proposed possible ways to create the bridges on highways for animals to use, 6th grade works with recycling, their project was about educating the school community on the appropriate use of straws. They make sure that each grade level presents to another grade so that there is an expansion of knowledge.

The school has four gardens, when they started the environmental sciences academy Kinder through second grade shared a garden. But now Kinder has its own garden, and every grade level have their own planters. The lower and upper grade works together as buddies in the garden projects. There are two gardens for projects, every year each classroom has a project, around awareness of how to protect the environment, how to take care of a plant, how to support the planet.

Other initiatives that push environmental literacy at the school, is that there is an environmental fact shared during the morning announcements (K-8). The Principal's goal from fall 2019 is in addition to the environmental fact being shared in the morning, she will have the teachers go over it in the classrooms.

The school leader feels they are ready to take their work to other schools in the District and then take it to the San Martin and Morgan Hill communities. She is excited to share the work done by her students through videos, to the wider community for greater awareness of environmental issues. Despite all these efforts the school leader is still eager for more support around professional development for her staff in doing different projects, or finding environmental projects that are standard aligned.

The District in March 2019, has formally adopted a policy to ensure that all schools in the Districts look into integrating EP&Cs in the standards. The District Science TOSA, Julia Cook, is leading the initiative.

Exemplary District

Santa Clara Unified School District is a district that that seems to be further ahead in environmental literacy. This assessment was made through interviews held in this District and there were many instances when Environment Literacy was addressed by the district, schools, and individual teachers.



The EP&C's were being integrated into science as well as with Project-Based Learning, and the teaching and learning of persuasive writing. An example of a PBL students worked on was about identifying the problems caused by human impact on the Arctic. Students were to respond with their ideas for solutions and then design or engineer a product to help solve the problem.

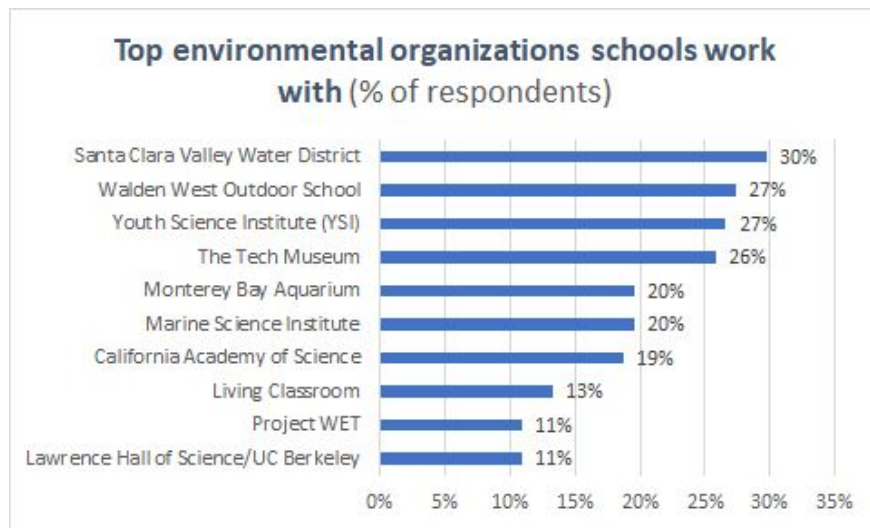
Literature books, both fiction and non-fiction have been purchased and include the subjects of caring for the environment and how humans impact, the Earth, both positively and negatively.

The District had partnerships with the Santa Clara Water District, Walden West Science Camp along with Science TOSA's to support classroom teachers and students. This District has a hands-on Nature Center and a Maker Space that was used throughout the school year by hosting field trips from both middle and elementary schools. There were also field trips set to do Creek Studies and Marshland studies.

Many of the schools in this district have teachers on campus have taken the lead position to support PBL's, STEAM and NGSS.

Partnerships

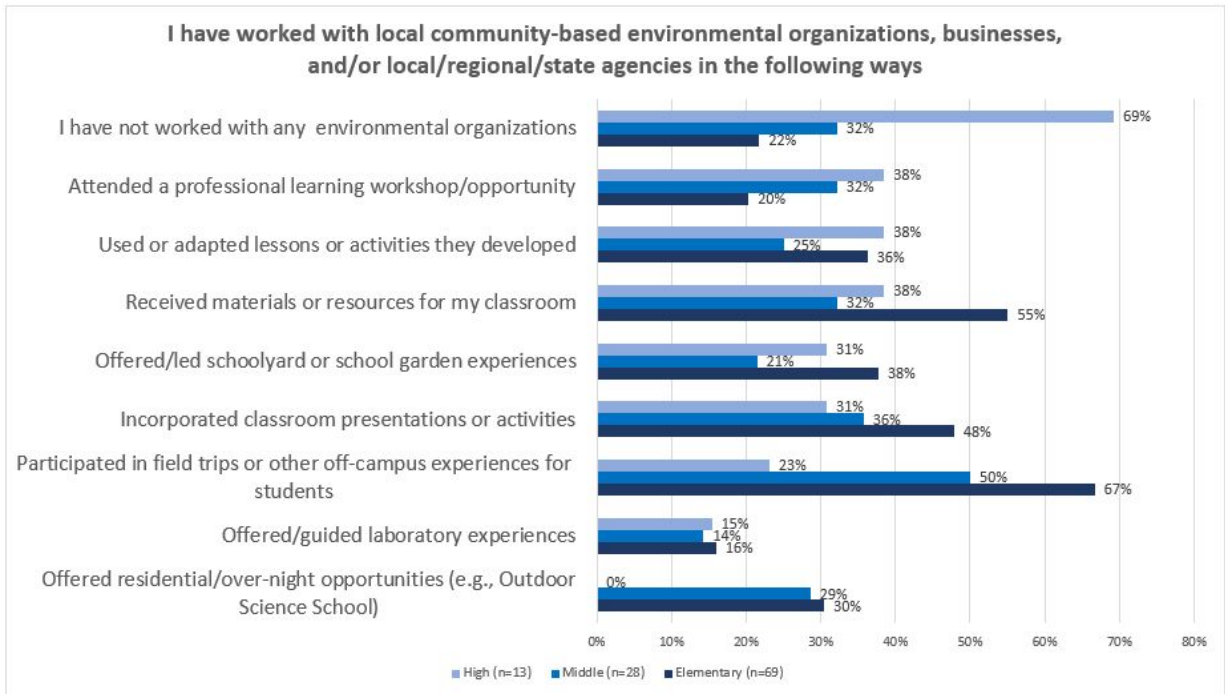
Our survey also provided an insight on which organizations teachers and school districts work with to pursue environmental literacy through extended day learning opportunities. Santa Clara Valley Water District, Walden West Outdoor School and Youth Science Institute (YSI) were named as the top 3 in the survey. In our qualitative discussions, Camp Campbell was also a popular program for outdoor school.



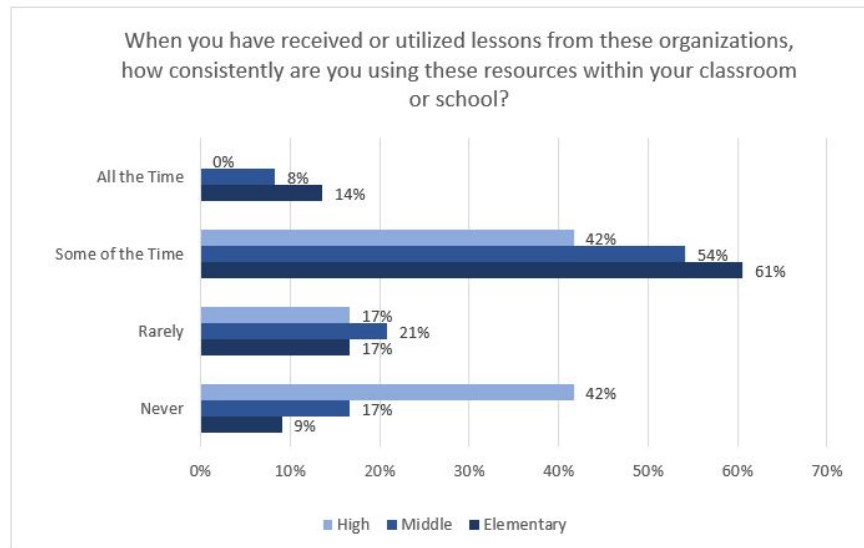
In terms of support from these environmental organization, high school teachers (69%) rely the least on these organizations and elementary school teachers (22%) rely the most when compared with middle and high school teachers responses.

The top three types of support that elementary school teachers took from these environmental organizations, was field trips or off campus experiences (67%), teaching material for their classroom (55%), and in class presentations or activity (48%). For middle school teachers, the spike in support is for field trips or off campus activities (50%), followed by in class presentations or activity (36%) and then the responses even out at 32%, for not working with them, receiving

material and resources for their classroom and attending professional training.



The elementary school teachers are the highest users of resources from environmental organizations, only 14% use the material all the time and 61% utilize the resources 'some of the time'. This could be because the major support is for field trips and the content is not used in class. The middle school teachers, 54%, are also using the resources 'some of the time'.



Recommendations

1. Drive awareness of Environmental Principles & Concepts (EP&Cs) through campaigns at all three levels - District, School Administration, and Teachers.
2. Santa Clara County Office of Education and environmental educational support providers should support Districts in the development of an Environmental Literacy Plan and encourage LEAs to actively seek funding to support positions, such as a Teacher on Special Assignment (TOSA) for Environmental Literacy facilitation.
3. Provide support in identifying the NGSS curriculum that is EP&Cs aligned.
4. Provide professional development around EP&Cs and standard integration for traditional daily standards-based instruction learning. This professional development should highlight content integration in all content areas.
5. Develop and share grade level relevant model teaching materials that are standard aligned and integrate the EP&Cs
6. Enable best practices / learnings across schools and districts through workshops, social media, common data base
7. Take “pockets of excellence” and use them to scale systematically
8. Identify and partner with community-based organizations to help further drive extended day learning opportunities in Districts*

*Santa Clara County Office of Education maintains a resource website (<https://www.scc-enviro-ed.org/>) for the Santa Clara County Guide to NGSS and Environmental Education Programs, which displays community-based organizations who support LEAs, schools, and classroom educators.



Appendix I : Methodology

The survey was initiated in May 2019. There were two professional experts that randomly divided the 32 school districts in the County. The survey was undertaken at three levels; district, school administration, and teachers.

The experts reached out to all 32 school districts and conducted in person or over the phone interviews based on a six question open ended survey form. The form can be found in [Appendix II](#).

First Level the District: The professional experts started by contacting the District Offices via phone and email to set up a time to meet with either the Superintendent or the Director of Curriculum and Instruction. In most Districts, an NGSS roll out was on going, they had a Teacher On Special Assignment (TOSA) with the District office. The Directors would delegate the meeting to their TOSAs that were helping them roll out the CA NGSS adoption, as they felt they were better informed to comment on the environmental literacy piece.

The following two questions were added to the survey questions:

1. Can you identify any specific person/sites to visit in your District that is leading the way in Environmental Literacy efforts?
2. What kind of support do you need from SCCOE to support your efforts in Environmental Literacy?

Out of the 32 Districts the experts were able to meet with officials from 18 District offices.

Second Level School Site Administrators or Teachers: Meet with site administrator or teacher to know what is happening with regards to environmental literacy at their respective school site/class?

There were two approaches to site identification

- A. Snowball sampling – Contact school site administrator identified during the first phase of survey interviews at district offices. Meet with the school site administrator and use the same 6 question survey for the interview.
- B. Convenience/ opportunity sampling – Meet with whichever school site administrator or educator that are willing to meet and undertake the survey. The researchers called or emailed all school site leaders in districts where no snowball contacts were identified

The researchers were able to meet with 37 site administrators and 9 educators and used the same 6 question survey, in Appendix II.

Third Level Teachers: For the teacher level survey a detailed form, in [Appendix III](#), with approximately 25 questions was shared through survey monkey. The link was disbursed through the County Offices communication department to the District Offices and they were expected to share it with their school sites. The online teacher survey was taken by 126 teachers in the County.

The survey took place in two phases, first phase, was the beginning of May 2019 until the end of June 2019. The second phase started in the middle of August 2019 until the middle of September 2019, a total of 12 weeks. Both the phases were in the busiest time of the year for District Offices and school sites, therefore it was challenging to speak with or set up a time to meet with different stakeholders due to the end of the year and the beginning of the year responsibilities. With the exception of one District the three levels of surveying was successful in garnering responses from 31 of the 32 Districts in the County.

Appendix II: In- Person Survey Form



Environmental Literacy Survey for SCCOE School Districts Interview Questions (one on one)

School District: _____ Name: _____ Date: _____

1. Describe your awareness of Environmental Literacy.
2. What steps have you taken to support the implementation of Environmental Literacy initiatives in your school district? AND/OR
3. At what capacity has your school or District been able to implement Environmental Literacy initiatives? (Answer “Not in Place”, “Partially in Place”, or “Fully in Place”) if partially or fully in place, describe how this is happening.
 - a. We have an established program leader for environmental education.
 - b. We have an integrated program infusing environmental concepts into appropriate curricular areas.
 - c. We have regular communication among staff responsible for environmental education curriculum and program implementation.
 - d. We have a support system in place that enables teachers and administrators to engage in high quality professional development in content knowledge, instructional materials, and methodology related to environmental education.
 - e. We have a plan to ensure opportunities for all students to engage in meaningful environmental education experiences at the elementary, middle, and high school levels. (Depending on the type of District if it’s a K-5, K-8, K-12 or 9-12)
4. Have you established any partnerships with local organizations that promote Environmental Literacy? If so, what partnerships have you formed with these organizations and how long have you had these partnerships? What grade levels do these programs involve? What types of programs are being offered through these partnerships? (School site visits, field trips, online lessons or webinars, etc.?)
5. Does your District participate in an Outdoor School program? If yes, which program do they participate in? What grade level participates? Is there involvement in the program by any other grade levels (e.g.: high school counselors)? If no, what are the barriers that prevent your district from participating in an Outdoor School program?
6. Is there anything else you would like to let us know about your school’s or district’s work with environmental literacy initiatives?

Some Questions above have been adapted from the Chesapeake Bay Program’s Environmental Literacy Indicator Tool (ELIT)



Appendix III: Online Survey Form

Dear Santa Clara Educator,

The Santa Clara County Office of Education (SCCOE) has a current initiative to support Environmental Literacy. SCCOE has a goal to support and strengthen your efforts to integrate environmental literacy into classroom instruction. The purpose of this survey is to allow us to learn if and how we can better assist you in implementing the Next Generation Science Standards (NGSS) and Common Core State Standards (CCSS) in the context of environmental literacy.

For this survey, please think of instruction based on California's State Board of Education adopted **Environmental Principles and Concepts (EP&Cs)** as California's official definition of Environmental Literacy. The State's Environmental Principles are:

EP&C I: The continuation and health of individual human lives and of human communities and societies depend on the health of the natural systems that provide essential goods and ecosystem services.

EP&C II: The long-term functioning and health of terrestrial, freshwater, coastal, and marine ecosystems are influenced by their relationships with human societies.

EP&C III: Natural systems proceed through cycles that humans depend upon, benefit from, and can alter.

EP&C IV: The exchange of matter between natural systems and human societies affects the long-term functioning of both.

EP&C V: Decisions affecting resources and natural systems are based on a wide range of considerations and decision-making processes.

We are only asking for your contact information so that we can follow-up with you, if we have additional questions; however, we will remove all identifying information and report the data in aggregate. Your responses will remain anonymous. Please be as thorough as possible since it is necessary to gather as much information as possible. It is estimated that the survey will take up to but no more than 20 minutes to complete thoroughly.

Thank you in advance for sharing your valuable perspective with us. The Walden West Outdoor School Foundation is offering to the first 25 schools that respond, a \$1,000 scholarship for students to attend during their schools' scheduled Walden West Outdoor School experience.

OK



1 Please tell us about yourself.

First and Last Name

Email Address

Street Address

Suite/Office

City

State

Zip

2 What is your School District and School? *

District:

School:

* 3 What is your current role(s) in the 2018-19 school year? (Check all that apply)

- Classroom teacher
- Department chair
- School science specialist/coach
- District science specialist/coach
- Teacher on special assignment
- Special Education Teacher
- Afterschool Instructor
- Other (please specify)

4 How long have you been in your current role?

- 2018-19 is my first year
- 1 or 2 years
- 3 or 4 years
- 5 to 10 years
- 11 to 16 years
- 17 or more years

5 If you are a classroom teacher in the **2018-19** school year, what grade(s) do you teach? (Check all that apply)

- N/A, I am not a classroom teacher in the 2018-19 school year
- Pre-K
- Kindergarten
- 1st grade
- 2nd grade
- 3rd grade
- 4th grade
- 5th grade
- 6th grade
- 7th grade
- 8th grade
- 9th grade
- 10th grade
- 11th grade
- 12th grade

6. If you are teaching grades 6-12 in the **2018-19** school year, what subject area(s) do you teach?
(Check all that apply)

- Middle School Life Science
- Middle School Earth Science
- Middle School Physical Science
- Middle School Integrated Science
- High School Life Science and/or Biology
- High School Earth Science
- High School Physical Science
- High School Integrated Science
- High School Chemistry
- High School Physics
- Environmental Science or related (e.g., Marine Biology)
- AP Environmental Science
- English-Language Arts
- Mathematics
- History-Social Science
- Student club advisor

* 7. Which of the following roles, if any, have you had within your district during the previous three school years **2015-16, 2016-17, 2017-18**? (Check all that apply)

- Classroom teacher
- Department chair
- School science specialist/coach
- District science specialist/coach
- Teacher on special assignment
- Special Education Teacher
- Afterschool Instructor
- Other (please specify)

8 If you were a classroom teacher in the **2017-18** school year, what grade(s) did you teach? (Check all that apply)

- N/A, I was not a classroom teacher in the 2017-18 school year
- Pre-K
- Kindergarten
- 1st grade
- 2nd grade
- 3rd grade
- 4th grade
- 5th grade
- 6th grade
- 7th grade
- 8th grade
- 9th grade
- 10th grade
- 11th grade
- 12th grade

9 If you taught grades 6-12 in the **2017-18** school year, what subject area(s) did you teach? (Check all that apply)

- Middle School Life Science
- Middle School Earth Science
- Middle School Physical Science
- Middle School Integrated Science
- High School Life Science and/or Biology
- High School Earth Science
- High School Physical Science
- High School Integrated Science
- High School Chemistry
- High School Physics
- Environmental Science or related (e.g., Marine Biology)
- AP Environmental Science
- English-Language Arts
- Mathematics
- History-Social Science
- Student club advisor

10 How **intentionally** do you cover the ideas represented within the EP&Cs? (Environmental Principles & Concepts)?

- I build specific elements into my lessons and units to cover these ideas, as appropriate
- I incorporate these ideas in my lessons and units if they are included in adopted instructional materials and resources
- I incorporate these ideas in my lessons and units if my principal, district office, parents, or community members have made a request
- I cover these ideas if a relevant community and/or current event occurs
- I infrequently cover these ideas
- I never cover these ideas



* 11 If you answered, "I infrequently or never cover these ideas," in question 10, please let us know why. (Check all that apply)

- I was not aware of California's EP&Cs
- I don't understand the EP&Cs
- I don't know how to integrate the EP&Cs with my content or instruction
- I don't think that the EP&Cs deserve the time that would be required
- My school and/or district doesn't provide professional development, resources, or funding to support my teaching
- of the EP&Cs
- Other (please specify)

12 How **often** do you cover the ideas represented within the EP&Cs?

- Daily
- Several times each week
- Monthly
- Once a year or semester
- Never

* 13 If you answered "Never or once a year or semester," in question 12, please let us know why. (Check all that apply)

- I was not aware of California's EP&Cs
- I don't understand the EP&Cs
- I don't know how to integrate the EP&Cs with my content or instruction
- I don't have time
- My school and/or district doesn't provide professional development, resources, or funding to help me teach the EP&Cs
- Other (please specify)

14 In the **2017-18** school year, how often did you connect environmental literacy with the following subject areas?

Note: If you answered Question 12, "I infrequently or never cover these ideas," please skip to Question 15.

Please rank the following subjects in order from the most number of times to the least number of times you connected them with environmental literacy.

⋮	<input type="text"/>	English/Language Arts
⋮	<input type="text"/>	Mathematics
⋮	<input type="text"/>	History
⋮	<input type="text"/>	Civics
⋮	<input type="text"/>	Economics
⋮	<input type="text"/>	Geography
⋮	<input type="text"/>	Life Science/Biology
⋮	<input type="text"/>	Earth Science
⋮	<input type="text"/>	Physical Science/Chemistry-Physics

15 Select up to 5 of the environmental literacy-related activities or topics that you have recently taught or are planning to teach this school year. If an activity or topic is not listed below, please identify it in the space provided below in Question 16.

☰	<input type="checkbox"/>	Air Quality
☰	<input type="checkbox"/>	Climate change
☰	<input type="checkbox"/>	Energy
☰	<input type="checkbox"/>	Environmental justice
☰	<input type="checkbox"/>	Environmental sustainability
☰	<input type="checkbox"/>	Fish and wildlife resources
☰	<input type="checkbox"/>	Forestry
☰	<input type="checkbox"/>	Integrated pest management
☰	<input type="checkbox"/>	Oceans
☰	<input type="checkbox"/>	Pollution prevention
☰	<input type="checkbox"/>	Public health and the environment
☰	<input type="checkbox"/>	Resource conservation, waste reduction, and recycling
☰	<input type="checkbox"/>	Toxics and hazardous waste
☰	<input type="checkbox"/>	Water
☰	<input type="checkbox"/>	Wildfire Ecology and Management

16 Other environmental literacy-related activities or topics that you have recently taught or are planning to teach this school year.

- 17 What types of resources and support would you need to cover more of these environmental topics from Questions 15 & 16 in your grade or subject areas? (up to 300 characters)

- * 18 In what areas would you like more professional learning opportunities to help you more frequently and effectively integrate environmental literacy into your instruction? (Check all that apply)

- Next Generation Science Standards
- Common Core State Standards
- History/Social Studies
- Health Connections
- As a foundation for inter-disciplinary instruction
- Environmental Principles & Concepts
- Using the Outdoor Classroom
- Designing Units of Study
- Adapting teaching resources
- Other (please specify)

19 How often do you attempt to create the following types of opportunities/experiences for your students?

	Always	Sometimes	Rarely	Never
Understanding why learning about the environment is important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participating in highly engaging lessons about the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling more connected to their community when they learn about issues related to the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Applying what they learn to solve environmental problems or issues they find on campus and in the community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Applying the ideas within the engineering design process to solving real environmental problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling empowered when they learn about issues related to the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning about other subject areas and content through environmental literacy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gaining important academic skills (science, history-social science, ELA, math) in connection with environmental literacy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20 If you answered "Rarely or Never" to any statements in the previous question, please let us know why. (up to 300 characters)

21 Please rate the extent to which you agree with the following statements about the context within which you work:

	Strongly Agree	Agree	Disagree	Strongly Disagree	Don't Know
Environmental literacy for all students is a priority at my school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environmental literacy for all students is a priority for my district.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22 a) If you answered "Disagree or Strongly Disagree" to either statement in the previous question, please let us know why. (up to 300 characters)

23 Please rate whether Environmental Literacy contributes to, competes with, or is unrelated to instruction in the following subject areas.

	Contributes to	Competes with	Is Unrelated to
Common Core State Standards (CCSS)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Next Generation Science Standards (NGSS)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
History-Social Science Standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A foundation for inter-disciplinary instruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 24 I have worked with local community-based environmental organizations, businesses, and/or local/regional/state agencies in the following ways: (check all that apply)

- I have not worked with any local community-based environmental organizations, businesses, and/or local/regional/state agencies
- Attended a professional learning workshop/opportunity
- Used or adapted lessons or activities they developed
- Received materials or resources for my classroom
- Participated in field trips or other off-campus experiences for students
- Offered residential/over-night learning opportunities or field trips (e.g., Outdoor Science School)
- Incorporated classroom presentations or activities
- Offered/guided laboratory experiences
- Offered/led schoolyard or school garden experiences
- Other (please specify)

* 25 Which community-based environmental organizations, businesses, and/or local/regional/state agencies have you worked with? (Check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Bay Area Wilderness Training | <input type="checkbox"/> Midpeninsula Regional Open Space District |
| <input type="checkbox"/> BioSITE Program at Children's Discovery Museum | <input type="checkbox"/> Monterey Bay Aquarium |
| <input type="checkbox"/> California Waste Solutions | <input type="checkbox"/> O'Neill Sea Odyssey |
| <input type="checkbox"/> Canopy of Palo Alto | <input type="checkbox"/> Pie Ranch |
| <input type="checkbox"/> City of Palo Alto Junior Museum and Zoo | <input type="checkbox"/> Point Blue Conservation Science |
| <input type="checkbox"/> City Environmental Programs (Campbell, Cupertino, Los Altos, Milpitas, Morgan Hill, Sunnyvale, Santa Clara, San Jose, etc.) | <input type="checkbox"/> Project Learning Tree |
| <input type="checkbox"/> California Academy of Science | <input type="checkbox"/> Project WET |
| <input type="checkbox"/> Coyote Point Museum / CuriOddyssey | <input type="checkbox"/> Project Wild |
| <input type="checkbox"/> Creeks Come to Class | <input type="checkbox"/> Santa Clara County Creeks Coalition |
| <input type="checkbox"/> ChangeScale | <input type="checkbox"/> Santa Clara County Parks Department |
| <input type="checkbox"/> Deer Hollow Farm | <input type="checkbox"/> Santa Clara Valley Open Space Authority |
| <input type="checkbox"/> Don Edwards SF Bay NWR, Environmental Education Center (Alviso) | <input type="checkbox"/> Santa Clara Valley Water District |
| <input type="checkbox"/> Emma Prusch Farm Park Foundation | <input type="checkbox"/> Santa Clara Valley Audubon Society |
| <input type="checkbox"/> Environmental Volunteers | <input type="checkbox"/> Santa Cruz Predatory Bird Research Group |
| <input type="checkbox"/> Food 4 Thought | <input type="checkbox"/> Save The Redwoods League |
| <input type="checkbox"/> Friends of Huddart & Wunderlich Parks | <input type="checkbox"/> Save Our Shores |
| <input type="checkbox"/> GreenWaste (of Santa Clara County) | <input type="checkbox"/> Saved by Nature |
| <input type="checkbox"/> Garden City Sanitation (San Jose) | <input type="checkbox"/> SavedNature.org |
| <input type="checkbox"/> GreenTeam of San Jose/West Valley | <input type="checkbox"/> Save The Bay |
| <input type="checkbox"/> Gilroy Gardens | <input type="checkbox"/> Shoreline Park at Mountain View |
| <input type="checkbox"/> Guadalupe River Park Conservancy | <input type="checkbox"/> South Bay Clean Creeks Coalition |
| <input type="checkbox"/> Grassroots Ecology | <input type="checkbox"/> Sprout Up |
| <input type="checkbox"/> Green Ninja/San Jose State | <input type="checkbox"/> Ten Strands |
| <input type="checkbox"/> Happy Hollow Park & Zoo | <input type="checkbox"/> The Tech Museum |
| <input type="checkbox"/> Hidden Villa | <input type="checkbox"/> UCCE Santa Clara County Composting Education Program |
| <input type="checkbox"/> High school students or teachers | <input type="checkbox"/> University faculty (San Jose State, Santa Clara U., Stanford, etc.) |
| <input type="checkbox"/> Junior Explorers at Friends of Edgewood Natural Preserve | <input type="checkbox"/> Veggielution (Eastside Explorers) |
| <input type="checkbox"/> Keep Coyote Creek Beautiful | <input type="checkbox"/> Vida Verde Nature Education |
| <input type="checkbox"/> Lawrence Hall of Science/UC Berkeley | <input type="checkbox"/> Walden West Outdoor School / Abby Sobrato Science and Sustainability Center |
| <input type="checkbox"/> Living Classroom | <input type="checkbox"/> Wildlife Center of Silicon Valley |
| <input type="checkbox"/> Local businesses | <input type="checkbox"/> Wildmind Science Learning (formerly Wildlife Associates) |
| <input type="checkbox"/> Local City parks | <input type="checkbox"/> Wildlife Education and Rehabilitation Center |
| <input type="checkbox"/> Local History group | <input type="checkbox"/> Youth Outside |
| <input type="checkbox"/> Local Utility agencies | <input type="checkbox"/> Youth Science Institute (YSI) |
| <input type="checkbox"/> Marine Science Institute | |
| <input type="checkbox"/> Other (please specify) | |



26 When you have received or utilized lessons from these organizations, how consistently are you using these resources within your classroom or school?

	All the Time	Some of the Time	Rarely	Never
Consistent use / Implementation of Resources:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

27 How interested are you in having access to the following instructional resources activities that integrate with EP&Cs and environmental literacy?

	Very Interested	Interested	A Little Interested	Not At All Interested
NGSS-focused activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ELA-focused activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Math-focused activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
History-Social Sciences-focused activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Health-focused activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

28 Other thoughts or suggestions about integrating the EP&Cs and environmental literacy into your classroom instruction. (up to 300 characters)



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Appendix IV: School Garden, Recycling and Hydration Stations

During the in- person interviews with school administration the following three initiatives; school garden, recycling and hydration stations, came up regularly at most sites. The objective of sharing the details around the three initiatives is to make Districts and partners aware of the possibilities and the challenges with these initiatives.

For all three initiatives, there was a champion i.e. a teacher or parent volunteer that was leading the initiative along with interested students. The initiatives were not without their own challenges, a few have been mentioned below.

School Garden: Having a school garden helped schools initiate and continue conversations regarding the environment at elementary and middle schools. Even if the conversation was centered around science or led by a science teacher, there was effort put into educating students about basic things like the food cycle, pollination and bees, the butterfly life cycle and building habitat for monarch butterflies, the process of planting a seed and tending to it and seeing the fruit or vegetables thrive and then eventual tastings. Having a garden also gave schools an option of using the garden as a space for an outdoor lesson. However, setting up and maintaining a garden comes with its challenges, and not all schools had a garden.

There were a lot of school sites that were actively looking for funding to set up their gardens. A school leader, faced with the garden challenge, defined the garden problem for most schools very succinctly,

“ The garden upkeep challenge for most schools has three parts; first is financial resources, second you need the expertise e.g. garden mentor and third and final challenge is up keep during the summer, keeping garden going.” - Principal Middle School

Since a majority of this survey was undertaken after the summer months, a lot of the schools faced the challenge of resetting their garden.

“ We have a school garden- there are beautification days, its located at the back of the STEAM lab, but currently full of weeds as summer just ended and teachers are busy. We have been looking for a community member to take over, the garden, but no one is available. Previously we had a full time STEAM lab teacher that managed the garden, but in the past two years we switched from a STEAM school to PLC mode of learning as it is cost effective. So the garden has fallen into disrepair as the lab closed.” - Principal Elementary School

Schools that had a thriving garden either had a teacher passionate about the garden or active parent volunteers that would support the garden. Active parent volunteers were typically found



in schools with the affluent neighborhoods that had the time and corporate support to volunteer their time and be matched by their employer. A Principal in one of the schools recommended looking for partnerships with tech companies or getting volunteers from the tech companies that would donate or match their employees hours with a donation.

“This is a high socioeconomic area, so many of them are stay at home, they have flexible hours, and many of them work in tech companies that often pay them for their volunteer hours. So if some schools face a shortage of volunteers they should reach out to local tech companies. Many of the tech companies will make a donation to schools where their employees volunteer, employees can submit their hours and then some of them will contribute 20/50 per hour dollars directly to school. Great way to get volunteers and funds for the school. Examples of few organizations that do that are Apple, Google, Microsoft, Genetech, Starbucks and Gap.” - Principal Elementary School

Recycling: Fifty nine percent of the respondents mentioned a recycling program as one of the initiatives in environmental literacy. Children are educated around the concerns of trash and different types of trash and how to sort it with the help of teachers or a teacher leading the voluntary school club around the environment. In some districts it is a district led initiative, while in other districts there is no district policy and the initiative varies from site to site. For example in one school District, there is an elementary school that has a very active recycling and school composting program led by parent volunteers and then there is another school in the same District that had no recycling, and the students were keen on starting a Green Club and setting up the recycling program.

Most of the recycling programs at school sites were led by student groups typically a Green Team. A number of school administrators shared how there are is project based learning around managing trash for example in one school:

“Few students in Green Team did research and presentation to the Board about plastic waste from utensils packets in the cafeteria this year. We are a pilot school for single use napkins and forks, as opposed to the whole packet that leads to more waste in the cafeteria.” - Principal Elementary School

Another school, through education and awareness of their students, the student body pushed to remove the use of styrofoam in their cafeteria.

Almost all the school sites interviewed were recycling paper, but the recycling of plastics and bottles were a challenges at some sites. The collection would be undertaken by the students however when it came to transporting the recycled items from the school site to a designated city place, the schools were often unable to find a parent volunteer to undertake this task. As one administrator shared

“We are recycling paper as a school, but with bottles and cans we tried to do it, students showed an interest, but it is logistically hard to do as no one in the PTA can take out time to empty recycling containers for bottles and plastics and take it for recycling.” - Principal Elementary School

Another educator shared as they set up their plastics recycling program at school:

“ ... it was hard to figure out who is recycling for us, so we would love support from the County office in setting up contacts in such areas. ”- Science and Technology Coach Elementary School

A lot of the school administrators shared that their struggle with educating or making students follow through with the different trash sorting rules, this is a consequence of their age and then the different rules between neighboring cities, so it can get confusing even for educators.

So an exemplary school site program that is doing well could be shared with districts and then their school sites.

Hydration Stations: Having a hydration station at school sites is another way that schools are reducing waste at their sites.

“We have two hydration stations, we sell reusable bottles. The Club strongly advocates for students to use reusable bottles. The hydration stations have a counter so the students every quarter will present how many people used them, graph the numbers and undertake different activities around the hydration stations.” - Science and Technology Coach at Elementary STEAM School

A lot of the school leaders talked about how their students have campaigned for reducing single use plastic water bottles. Students have projects around measuring the usage of the hydration station and share that data with the school community to advocate the use of reusable water bottles.

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