

**SCIENCE CURRICULUM FRAMEWORK
AND EVALUATION CRITERIA COMMITTEE APPLICATION**

ID: 817		Submission Date: 2014-01-21 11:43:56	
Name: Mrs. Tina Cheuk		Ethnicity: Asian	
Gender: Female		Ethnicity Other:	
Position Title: Project Manager		Years Teaching: 6	
Employer: Stanford University, Understanding Language			
Address: CERAS, 520 Galvez Mall		Stanford	California 94305
Areas of Expertise: Higher Education/ Researcher		Other Expertise:	
Grade Levels Expertise: 3–5, 6–8, 9–12		Subject Taught: Integrated Science, Life Science, Physical Science, Biology	
Experience Teaching English Learners: 1999-2002, KIPP Academy, Bronx-NYC, grades 5, 7, 8. Teach for America Corps Member 2003-2005, St. Dominics Senior Secondary School, Pepease, Eastern Region, Ghana, West Africa (Peace Corps Science Education Volunteer) 2007-2008, KIPP King Collegiate High School, 9th grade, San Lorenzo, CA, Dean of Students		Experience Teaching Students with Disabilities:	
Degrees/Credentials:		Institution:	
MA in Education		Stanford University	
BS in Chemistry & Biochemistry		University of Chicago	
Knowledge of the Next Generation Science Standards: The CA NGSS, along with the CA CCSS-Math, CCSS-ELA/Literacy and CA ELP Standards have great synergies in the shift in language and literacy development of student practices for all students, especially for English Language Learners (ELLs). There is a great opportunity for the disciplinary teachers (ELA, Math, and Science) teachers to work together in advancing the learning standards for students as the student practices overlap across the disciplines. For example, the student expectation and practice of "argument from evidence" crosscuts all three disciplines. In this case, students are expected to understanding how to reason and argue within each discipline, extract and evaluate evidence to support his/her viewpoints. At the same time, the reasoning and evidence found in each discipline may differ and students will need to understand the similarities, differences, and the nuances within and across the disciplines so they can advance along the curriculum, and become college, career, and life-ready. Not only can the CA NGSS help advance the ELA and Math standards, there's an immense opportunity to leverage the STEM professional community as well as the STEM philanthropic community in supporting this policy so that a greater number of students become interested in science and engineering topics, stay motivated to continue studies in STEM, and become			

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prepared for STEM majors and careers at the post-secondary level. Successful implementation of CA NGSS will require stakeholder support system wide. Additionally, science teachers will need to understand that the shift in the CA NGSS isn't only about the focus on deeper learning-- moving away from the "mile wide, inch deep" of bits and pieces of learning that existed in the previous era of standards, but the CA NGSS shifts the student populous toward 21st century learning skills-- one that requires deeper learning skills, cross collaboration among peers, and use of media and technology tools to advance learning.

Standards-Based Instruction Experience:

In the past two years, I've been part of a development team at Understanding Language at Stanford in developing instructional resources in the areas of math and ELA. As part of my work, we've developed two sets of resources, a five week unit in ELA titled "Persuasion across Time and Space" (led by WestEd Director Aida Walqui) and annotated math lessons for ELLs based on the work of Mathematics Assessment Project (led by Berkeley Professor Alan Schoenfeld). The major difference between these developed resources and other available resources is the focus on developing ELLs' content and language development in tandem via content area classes rather than a focus on developing students' content and language as two separate and unrelated strands. The vision and principles behind the conception and development of these materials is that we believe that the new standards embody a strong expectation that students learn content through rich language practices. These practices include: (1) engaging in specific disciplinary practices of academic discussions, (2) engaging with complex texts, and (3) writing arguments from evidence and reason. This focus represents a radical departure from existing practices in how teachers focus on the "language objectives" for ELLs, frequently emphasizing discrete vocabulary and grammatical forms rather than discipline-embedded functions and practices. In the work of assessment, the attention is centered on providing rich, authentic opportunities for student discourse, analysis of writing tasks, and ways in which students can communicate across multiple modes and media. This could include science tasks that ask teams of students to carry out investigations or research questions where they need to gather and discern evidence and data from multiple sources and come up with and present to peers both the arguments and counter arguments to a specific problem in science and engineering.

Area of Expertise and Leadership:

For the past 30 months, I've worked closely with Helen Quinn, the chair of the NRC Science Framework through my work with Understanding Language (co-chaired by Stanford Professor Kenji Hakuta and Deputy Superintendent of Oakland Unified Maria Santos). This initiative, funded by the Gates Foundation and Carnegie Corporation of New York has been specifically focused on created knowledge, resources, and tools to meet the challenges of opportunities faced by English Language Learners (ELLs). I'm deeply familiar with not only the NRC Science Framework and NGSS, but also the CA-CCSS-Math and the CA-CCSS-ELA/Literacy as our team has been working with leading specialists in language and literacy development as well as content area expertise (Susan Pimental in ELA and Phil Daro in Math). Prior to my work in Understanding Language (ell.stanford.edu), I've worked at the San Francisco Field Site for Strategic Education Research Partnership for three years. In this work, I worked closely with researchers and practitioners in the areas of mathematics, literacy, and science. Here, I supported the research, design, and development work of Mark Wilson (Berkeley) and Jonathan Osborne (Stanford) in developing learning progressions and assessments in science as well as the role of argumentation practices in science. In the area of mathematics, I worked for Alan Schoenfeld (Berkeley), Phil Daro (SERP), and Hilda Borko (Stanford) in developing knowledge on how students learn and how teachers can be supported in professional learning in mathematics. All of the cross disciplinary work across the areas of ELA, math, and science led me to develop a handy Venn Diagram that highlights how the student practices relate to one another in these three sets of standards published in a recent Science 2013 issue with lead author Elizabeth Stage at the Lawrence Hall of Science (Berkeley).

Previous Committee Experience:

I've served as a consultant on the English Language Proficiency Assessment-21 (ELPA-21), a state-led consortium organized by Oregon State Department of Education Team with WestEd and CCSSO. As a

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consultant, I've provided feedback and review on the development of their ELP Standards over the course of 2013. I've also taken part in a number of curriculum and instructional materials development effort in the areas of mathematics, ELA, and science. In mathematics, I've worked with Understanding Language co-chair Judit Moschkovich in annotating CCSS-M aligned formative assessment lessons for ELLs in elementary, middle and high school grade spans. In ELA, I organized the feedback mechanism with a set of ten districts recommended by the Council of the Great City Schools to work with our Understanding Language ELA work group led by Aida Walqui (WestEd) and George Bunch (UC Santa Cruz) on a 7th grade ELA unit titled "Persuasion across Time and Space."

Relationship with Publishers: Conflict of Interest Disclosure Statement:

Question 1: Do you or a member of your immediate family have, or have you had, a business relationship at any time over the last twelve months with a publisher that produces instructional materials for California?

Question 2: Are you currently employed by or under contract to any person, firm, or organization which will do business with or submit instructional material to the California Department of Education (CDE)?

Question 3: Have you ever been employed by or had any other kind of contractual relationship with any person, firm, or organization doing business with, or submitting instructional materials to, the CDE?

Question 4: Do you expect to receive any royalty payments during your period of service on the Science CFCC?

Question 5: Were you or any member of your immediate family an author, contributor, or editor of (or consultant on) any textbook, other curriculum material, or project proposal that is likely to be submitted to the CDE?

Have you received compensation, do you expect to receive compensation, or do you have any other kind of contractual relationship with any organization that is either a subsidiary, parent organization, or "sister organization" of any entity which will do business with your advisory body or will submit materials to your advisory body?

Language Skills:
Cantonese, Speak

Professional References:

Kenji Hakuta	Professor	Stanford
Maria Santos	Deputy Superintendent	Oakland Unified
Martha Castellon	Executive Director	Stanford University

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**SCIENCE CURRICULUM FRAMEWORK
AND EVALUATION CRITERIA COMMITTEE APPLICATION**

ID: 835		Submission Date: 2014-02-11 09:13:05	
Name: Ms. Shawna L Metcalf		Ethnicity: Decline to state	
Gender:		Ethnicity Other:	
Position Title: Teacher - Science Department Chair		Years Teaching: 14	
Employer: Glendale Unified			
Address: 223 N. Jackson Street		Glendale	California 91206
Areas of Expertise: Teacher providing instruction to students in kindergarten or grades one to twelve. Note that teachers must meet the requirements for a highly qualified teacher under the No Child Left Behind Act of 2001.		Other Expertise:	
Grade Levels Expertise: 9–12		Subject Taught: Earth Science, Life Science, Biology Honors Physiology, Marine Biology, Human Biology	
Experience Teaching English Learners: I have taught English Learners for the entirety of my 14 years of teaching grades 9-12 at Glendale High School. I earned my CLAD certificate and LS1 Authorization through University of San Diego. I have also attended numerous SDAIE workshops at the site and district level.		Experience Teaching Students with Disabilities: For the 14 years I have taught 9-12 grade science courses at Glendale High School, I have had students with disabilities in my classroom. I have dealt with IEPs for ADHD, autism, auditory processing disorders, and partial deafness to name a few. While I do not have any specialized certifications, I have been to numerous site and district level training seminars on IEPs, accommodations, and teaching strategies for dealing with students with special needs. I have a great working relationship with our special education department and am often requested as a teacher for their students.	
Degrees/Credentials:		Institution:	
Master of Education, Cross Cultural Education		National University	
Bachelor of Science, Biological Sciences		University of Southern California	
CLAD Certification		University of San Diego	
Knowledge of the Next Generation Science Standards: The CA NGSS will impact instruction by increasing the rigor and relevance in the science classroom at all levels. The previous standards were written as information that students needed to know, which caused instruction to focus on a lower depth of knowledge. The standards basically became a checklist of facts. The CA NGSS are formatted in such a way that they are no longer simply a checklist of knowledge, but instead focus on the use of critical thinking skills and the application of knowledge. The Disciplinary Core Ideas (DCIs) provide teachers with overarching big ideas from which they can build units of instruction. Instead of focusing on minute details that only demonstrate what students are able to memorize and regurgitate, the			

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DCIs allow for a much more conceptual approach to the topic, resulting in a deeper level of understanding by the student. The Science and Engineering Practices increase the relevance of the DCIs by providing students with the opportunity to apply the information learned to real life situations, using skills and tasks that would be expected of them as professionals in the field. The CA NGSS Performance Expectations provide teachers with a standardized learning objective to ensure that units and lessons are meaningful and purposeful. Overall, the CA NGSS ensure that student learning will no longer be based on memorizing information that can be found through a quick Google search by instead basing instruction on a combination of knowledge and application.

Standards-Based Instruction Experience:

LS1-3 requires that students be able to plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. I would build a unit around LS1-3 by first determining what content information & skills students need to accomplish this task. Daily lesson objectives based on this information would be created using multiple depth of knowledge levels. For example, Lesson 1 Objectives would be (1) Explain homeostasis and (2) Differentiate between positive & negative feedback mechanisms. Lessons 2-4 would incorporate real examples of feedback mechanisms in organisms (such as temperature regulation, blood sugar levels, and blood calcium levels) and would require students to predict what would happen given a change in stimuli. Throughout the unit, students would be given a combination of written and illustrative texts as resources. I would modify both for my students according to their own needs. My advanced students would get texts with a higher lexile score than my ELL, SPED, and below grade level students. Each version would contain the content needed to meet the objectives, just at different levels. It is not dumbing down the content, just making it more accessible to all. The illustrative text given would also vary in complexity. The combination of words and images is a powerful tool for all students. SDAIE strategies are often just solid teaching strategies, regardless of the student, and would be used throughout. Once I felt my students had a firm grasp on the DCI from which LS1-3 was written, I would have the students work in small groups to actually plan and revise an investigation based on class discussions regarding effective investigation. As a class, we would pick one of the investigations to actually conduct. I would assess the effectiveness of the instruction based on the students' ability to meet the lesson & unit objectives. Will the investigation they planned work? Can they use the data collected to support the DCI?

Area of Expertise and Leadership:

I have been working with the NGSS since the first draft was released. I immediately began to decipher them, hoping to keep the transition from being a daunting experience by starting early. I unpacked both the LS & ESS Performance Expectations and correlated them to our current textbooks, then developed new departmental pacing guides and began developing units of study revolving around the DCIs. From the onset of my educational career, I have been involved in curriculum and assessment development at the site and district level. I have written standards-based courses from scratch and have modified existing courses to ensure they were aligned to the standards. I am currently on the instructional leadership teams tasked with the creation of staff development for both the NGSS and CCSS. I teach at a Title I school with a very diverse population. In my 14 years of teaching, I have taught Advanced Placement & Honors courses as well as science courses geared towards students who are currently below grade level or have limited English skills. I consistently have students with IEPs due to my collaborative working relationship with our Special Education department. A "normal" year for me, is one in which I am modifying my instruction daily to meet the diverse needs of my students and I wouldn't have it any other way. Because my teaching strategies are more student-centered than teacher-centered, students at all levels are able to succeed. I have always incorporated science practices into my curriculum as I see it as the best way to truly understand science. My educational background is not solely in science (BS in Biology) and education (M.Ed. in Cross Cultural Education), but I am also a thesis paper away from a degree focusing on the real world applications of science (MS in Forensic Sciences). I have a unique perspective that combines content knowledge with real world applications as well as passing that knowledge on to a diverse student population.

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Previous Committee Experience:

I have been a member of the Science Curriculum Study Team for Glendale Unified for many years. The Science CSC is tasked with approving curriculum and textbooks to submit to district administration. I have also served on committees that developed the pacing guides and standards correlation guides for new science courses, as well as both textbook selection committees for GUSD since I was hired. These committees provided a unique collaborative experience between the middle schools and high schools where I honed my ability to work well with others. It is rare for all members of a committee to agree, which can become contentious. Serving on curriculum committees so early in my career, I learned how to ensure that all voices were heard prior to a decision being made and how to pull information out of the reluctant speaker. It was a great experience that has helped me in the classroom as well.

Relationship with Publishers: Conflict of Interest Disclosure Statement:

Question 1: Do you or a member of your immediate family have, or have you had, a business relationship at any time over the last twelve months with a publisher that produces instructional materials for California?

Question 2: Are you currently employed by or under contract to any person, firm, or organization which will do business with or submit instructional material to the California Department of Education (CDE)?

Question 3: Have you ever been employed by or had any other kind of contractual relationship with any person, firm, or organization doing business with, or submitting instructional materials to, the CDE?

Question 4: Do you expect to receive any royalty payments during your period of service on the Science CFCC?

Question 5: Were you or any member of your immediate family an author, contributor, or editor of (or consultant on) any textbook, other curriculum material, or project proposal that is likely to be submitted to the CDE?

Have you received compensation, do you expect to receive compensation, or do you have any other kind of contractual relationship with any organization that is either a subsidiary, parent organization, or "sister organization" of any entity which will do business with your advisory body or will submit materials to your advisory body?

Language Skills:

Professional References:

Monica Makiewicz	Principal	Glendale High School
Mary Boger	Vice President, Board of Education	Glendale Unified
Katherine Thorossian	Superintendent	Monrovia Unified

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**SCIENCE CURRICULUM FRAMEWORK
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ID: 839	Submission Date: 2014-02-17 10:35:00		
Name: Mr. Robert C Sherriff	Ethnicity: White		
Gender: Male	Ethnicity Other:		
Position Title: Middle School Science Teacher	Years Teaching: 23		
Employer: San Juan Unified School District			
Address: 4900 Whitney Avenue	Carmichael	California	95608
Areas of Expertise: Teacher providing instruction to students in kindergarten or grades one to twelve. Note that teachers must meet the requirements for a highly qualified teacher under the No Child Left Behind Act of 2001., Parent, Community Member, Other Areas of Expertise	Other Expertise: Member Science Expert Panel for NGSS		
Grade Levels Expertise: 6–8	Subject Taught: Integrated Science, Earth Science, Life Science, Physical Science Introductory Mathematics for 7th Grade		
Experience Teaching English Learners: I have the a ELD/SDAIE Certificate which certifies me to teach English learners in my classroom. At various times in the last 23 years, I have taught varying numbers of English learner students in an inclusive mainstream format. I have had mainstreamed English learners in my 6th, 7th and 8th grade science classes.	Experience Teaching Students with Disabilities: As a father with a child diagnosed as being Autistic with Asperger's syndrome who was in special education throughout his time in public school, it has given me a unique appreciation for the needs of teaching children with a similar disability. As a result, I have attended several individual trainings in this area to both help my own son and the students with disabilities in my classroom. I have had mainstreamed disabled students in my 6th, 7th and 8th grade science classes at various times in my 23 year career.		
Degrees/Credentials:	Institution:		
Master in Arts, Educational Leadership	University of LaVerne, LaVerne, CA		
Bachelor in Science, Biology	Humboldt State University, Arcata, CA		
Single Subject Life Science Credential	Humboldt State University, Arcata, CA		
Multiple Subject Credential	Humboldt State University, Arcata, CA		
Knowledge of the Next Generation Science Standards: As a member of the Science Expert Panel that reviewed and recommended to the State Board of Education to adopt the Next Generation Science Standards, their importance and significance will have a positive impact on the students science education. The NGSS are a new way of transmitting the ideas of science, giving greater depth and requiring a much greater degree of student participation in their own learning. With the integration of disciplinary core ideas, crosscutting concepts, engineering practices and human impact, the new standards go far beyond the memorization of science facts and helps to prepare our students for the			

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skills they need in the 21st century. These skills include the ability to develop and evaluate models, the difference between engineering and science processes and the application of educated thoughtful insights on our culture and society. The new standards and frameworks will guide instructional practices with connections between common core and the NGSS.

Standards-Based Instruction Experience:

Inquiry and student centered activities that I use are examples of techniques that meet the needs of a diverse population. Monthly exploration of the creek by our school is an excellent example. Students go to the creek and rotate through stations that are focused on the health of the creek. Long term data is gathered to see how scientists gather data over time. Each station has a detailed explanation including drawings to help those with low reading levels. Parents and high school students join in so that each station has an adult to help guide the instruction. Students are expected to just make a rough draft of the task in their science notebooks. The next day students share their data with other students who were at their stations in order to complete any missing data or information. This portion of the activity is graded strictly on completion of the various portions of each station lab write up, not on the quality of the work. Finally students are given several days to choose one of the stations to write up as a final draft, which is graded for quality and effort. This allows students to choose the station that most closely matches their best ability and time is given to start this work in class and to have input from their peers. Each station varies to match diverse learning styles as for instance one station is an art/science station, other is more math/science based and of course a pure science lab based station. The final grade is on this quality work that students turn in and is based upon a rubric which students are given at the start of the process so that they clearly know the expectations. Being able to see the change from the rough draft to the final helps me to evaluate the effectiveness of this instruction for a diverse group of students.

Area of Expertise and Leadership:

Through my various appointments and committee work such as being on the Science Expert Panel for NGSS and the short lived Science Framework committee of 2009, I have developed the experience to know what is involved in revising the new Science Framework. With over 23 years of science teaching experience and working in two different geographical locations, I have taught a diverse group of students. In my eleven years of teaching in Redding, California, I had many students who were below grade level and most of these were from a low socio-economic and many with a Cambodian background. Teaching in Sacramento, I've had 11 years of teaching in an advanced program with high achievers. I've also had three years of teaching disadvantaged minority students as part of an AVID (Advancement Via Individual Determination) program which exposed me to African as well as Mexican-American vernacular English. The International Baccalaureate program has attracted a very culturally diverse group of students (Russian, East Indian, Pakistani, Chinese, Vietnamese) many who have English as a second language. Finally, my own son has Asperger's Syndrome and that as well as the many mainstreamed disabled students I've had in my classes over my 23 years of teaching has helped me to understand the diverse needs of disabled students and the importance of accommodation within a classroom. As a member of the Science Expert Panel I have been uniquely situated to begin implementation of some of the NGSS standards into my classes this year and I've helped students to understand the connections between engineering and science as well as the human impact strand running through the NGSS.

Previous Committee Experience:

2013 Appointed Science Expert Panel for the Next Generation Science Standards 2013 Participant in the California Science Projects exploration of NGSX a pilot professional development program to engage teachers in ideas of NGSS. 2013 Appointed NASA MAVEN Ambassador examining NASA curriculum 2012 Review committee for the Next Generation Science Standards 2009-12 Presenter for the California Science Teachers Association Conferences often engaged in helping teachers with curriculum development 2008-09 Reviewer for Education in the Environment Initiative, Calif. DOE 2009 Appointed Science Curriculum Framework and Evaluation Criteria Committee, California Department of Education

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Relationship with Publishers: Conflict of Interest Disclosure Statement:		
Question 1: Do you or a member of your immediate family have, or have you had, a business relationship at any time over the last twelve months with a publisher that produces instructional materials for California?		
Question 2: Are you currently employed by or under contract to any person, firm, or organization which will do business with or submit instructional material to the California Department of Education (CDE)?		
Question 3: Have you ever been employed by or had any other kind of contractual relationship with any person, firm, or organization doing business with, or submitting instructional materials to, the CDE? In 2007-2008 I was a science teacher reviewer for Glencoe Science California Textbook for Middle School. This was a one time opportunity.		
Question 4: Do you expect to receive any royalty payments during your period of service on the Science CFCC?		
Question 5: Were you or any member of your immediate family an author, contributor, or editor of (or consultant on) any textbook, other curriculum material, or project proposal that is likely to be submitted to the CDE?		
Have you received compensation, do you expect to receive compensation, or do you have any other kind of contractual relationship with any organization that is either a subsidiary, parent organization, or "sister organization" of any entity which will do business with your advisory body or will submit materials to your advisory body? In 2007-2008 I was a science teacher reviewer for Glencoe Science California Textbook for Middle School. This was a one time opportunity for which I was paid approximately \$300.		
Language Skills:		
Professional References:		
Kathy DiKathy DiRanna	California Statewide Director	K-12 Alliance/WestEd
Phil Lafontaine	Director Professional Learning Support Division	California Department of Education Professional Learning Support Division
Anne Stephens	Education Program Consultant and Statewide Coordinator for CREEC	California Department of Education

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**SCIENCE CURRICULUM FRAMEWORK
AND EVALUATION CRITERIA COMMITTEE APPLICATION**

ID: 840	Submission Date: 2014-02-19 14:56:40		
Name: Dr. Helen Quinn	Ethnicity: White		
Gender: Female	Ethnicity Other:		
Position Title: Professor Emerita	Years Teaching: 15		
Employer: Retired Stanford University, SLAC National Accelerator Laboratory			
Address: none	none	California	94025
Areas of Expertise: Other Areas of Expertise	Other Expertise: Science Education advisor, physicist		
Grade Levels Expertise: K–2, 3–5, 6–8, 9–12 University	Subject Taught: Physics graduate level physics courses		
Experience Teaching English Learners:	Experience Teaching Students with Disabilities:		
Degrees/Credentials:	Institution:		
Ph.D. Physics	Stanford		
<p>Knowledge of the Next Generation Science Standards: I was the chair of the NRC committee that developed "A Framework for k-12 Science Education", the key document that underlies the NGSS. I am very familiar with NGSS. I believe there are three major shifts demanded by NGSS for CA schools: 1) more consistent science in elementary school starting from Kindergarten, more students taking 3 or more years of high school science. 2) engagement of students in the full range of science and engineering practices at all grade levels will require significant shifts for many teachers in how they organize their teaching of science 3) full inclusion of earth and space sciences standards as well as the engineering, technology and applications of science standards will require significant course redesign at the high school level as well as attention to these areas in earlier grades.</p>			
<p>Standards-Based Instruction Experience: I am not a teacher at the k-12 level, however I have supported teachers to engage in this work. As a primary author of the "Framework for k-12 Science Education" I submit that document as a good example of my philosophy of science teaching --students must model systems and use those models to develop explanations of phenomena that include established science ideas as well as system-specific details of how those ideas apply in context. For each topic area I would start with an interesting phenomenon that requires some understanding of the science in question in order to explain what is going on -- using techniques similar to those discussed by Mark Windschitl on his website http://tools4teachingscience.org/</p>			
<p>Area of Expertise and Leadership: Most of my work around NGSS involves working with teachers to introduce them to the science and engineering practices and the cross-cutting ideas in the Framework and consider how these can become part of the way they teach science. I have some expertise with regard to language learners in science and have published a paper in the AERA journal Education Research (together with Okhee Lee from NYU and Guadalupe Valdez from Stanford) on inclusion of language learners NGSS-aligned science instruction. I am a member of the Stanford "Understanding Language" coalition see the website ell.stanford.edu</p>			

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<p>Previous Committee Experience: I was a volunteer member of the consulting group that developed the previous CA science standards, my specific contribution was to lead the development and argue for inclusion of the "Investigation and Experimentation skills" element of those standards. I am a member of the National Academy of Sciences and have been Chair of the NRC Board on Science Education for the past six years and was a member of it prior to that. In this role I participated in a number of NRC studies related to science education including "Taking Science to School" as well as the Framework. I served on the CA Science Expert Panel to advise on adoption of NGSS.</p>		
<p>Relationship with Publishers: Conflict of Interest Disclosure Statement:</p>		
<p>Question 1: Do you or a member of your immediate family have, or have you had, a business relationship at any time over the last twelve months with a publisher that produces instructional materials for California?</p>		
<p>Question 2: Are you currently employed by or under contract to any person, firm, or organization which will do business with or submit instructional material to the California Department of Education (CDE)?</p>		
<p>Question 3: Have you ever been employed by or had any other kind of contractual relationship with any person, firm, or organization doing business with, or submitting instructional materials to, the CDE? I have been a member of the Advisory Board for the Lawrence Hall of Science program "Roots of Reading, Seeds of Science" which develops science and reading-related curriculum materials. I received some small consulting fees for attending two advisory board</p>		
<p>Question 4: Do you expect to receive any royalty payments during your period of service on the Science CFCC? Royalties for sales of my popular (ADULT GENERAL PUBLIC) physics book "The mystery of the missing antimatter" published by Princeton University press. This is not a text book.</p>		
<p>Question 5: Were you or any member of your immediate family an author, contributor, or editor of (or consultant on) any textbook, other curriculum material, or project proposal that is likely to be submitted to the CDE? See above --consultant (advisory member for "Roots of reading, sees of science"</p>		
<p>Have you received compensation, do you expect to receive compensation, or do you have any other kind of contractual relationship with any organization that is either a subsidiary, parent organization, or "sister organization" of any entity which will do business with your advisory body or will submit materials to your advisory body? see above: Roots of Reading, Seeds of Science Advisory Board. No ongoing contract, remuneration of approximately \$1000 for advisory board meeting attendance --I may or may not have any future involvement with them.</p>		
<p>Language Skills: Spanish, Speak, Read German Read</p>		
<p>Professional References:</p>		
Heidi Schweingruber	Associate Director	Board on Science Education, NRC

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**SCIENCE CURRICULUM FRAMEWORK
AND EVALUATION CRITERIA COMMITTEE APPLICATION**

ID: 870	Submission Date: 2014-03-21 12:27:23		
Name: Mrs. Laura N O'Dell	Ethnicity: Hispanic/Latino, White		
Gender: Female	Ethnicity Other:		
Position Title: Science Teacher- Burke Middle School	Years Teaching: 22		
Employer: El Rancho Unified School District			
Address: 8101 Orange Avenue	Pico Rivera	California	90660
Areas of Expertise: Teacher providing instruction to students in kindergarten or grades one to twelve. Note that teachers must meet the requirements for a highly qualified teacher under the No Child Left Behind Act of 2001., Parent	Other Expertise:		
Grade Levels Expertise: 6–8	Subject Taught: Integrated Science, Earth Science, Life Science, Physical Science, Biology English Language Development		
<p>Experience Teaching English Learners: I have taught science at the 7th and 8th grade levels for 17 years. Prior to that, I taught fifth grade for one year. In the interim, I substitute taught in grades k-12. At present, I teach both life and physical science concurrently with providing services to Option 1 and 3 English Learners I hold a CLAD and BCLAD (Spanish) for the state of California along with Single Subject in General Science and Biology. Additionally, I have a supplemental credential in chemistry. I have considerable experience in SDAIE and associated language development imbedded learning. In addition to public school teaching experience, I have worked as an instructor for Johns Hopkins University's Center for Talented Youth from 2012 to present. As an instructor for the course, Inventions, I developed and implemented curriculum and activities that provided a hands-on STEM related module for exceptional 9-10 year-olds. Inventions is a three-week, highly focused course that integrates an introduction to physical sciences with a culminating engineering project.</p>	<p>Experience Teaching Students with Disabilities: I have taught science at a full-inclusion school for 17 years. Students mainstreamed into my class range from RSP (now Specialized Academic Instruction), to Asperger's Syndrome, and throughout the autism spectrum. In past years, I have also adapted science curriculum for blind and/or hearing impaired students. My expertise is along the lines of hands-on experience with tailoring instruction, implementing IEP accommodations and/or adaptations, and development of appropriate assessments in middle school science.</p>		

Note: Information in this application was captured directly from input submitted by the applicant and may contain typographic and data errors.

Degrees/Credentials:	Institution:
Master of Arts: Education	Whittier College, Whittier CA
Bachelor of Science: Biology	California State University San Bernardino
Eleanor Roosevelt Teacher Fellow	American Association of University Women
<p>Knowledge of the Next Generation Science Standards: The integrated learning model will facilitate and compliment the implementation of Common Core in college-career readiness. The NGSS focus on the processes of science and engineering ensures that students will not only have a degree of knowledge in science but also a grasp on the processes that will help them be successful in STEM related careers. It is critical to college-career readiness that students be competent writers in science; they must also have the ability to apply mathematical concepts and processes with those of science and engineering. The Crosscutting Concepts component of NGSS will greatly facilitate the process of applying science with math and language arts. For teachers, indications are not only for providing full access to basic science curriculum but to also successfully integrate knowledge and literacy skill across all subject areas. Well-implemented NGSS programs will require all teachers to collaborate with colleagues to help students use content knowledge and skills. The NGSS differentiation of Core Ideas and Science and Engineering Practices will help teachers reach a modicum of balance between concepts and practice-based instruction.</p>	
<p>Standards-Based Instruction Experience: Below describes a standards-based assignment given to 8th grade physical science students this year: Essential Question: What is the impact of radioactive isotopes on environmental, societal, and scientific domains? Activating Prior Knowledge: Students produce posters/models of basic atomic structure including all subatomic particles. Explicit Direct Instruction: Isotopes, half-lives, and how they affect the reactivity and stability of larger atoms via multimedia and depth of knowledge instructional methods. Guided/independent Practice: Research and present half-lives of known radioactive materials using electronic and textual resources. Collaboration of Interdisciplinary Components: Social Studies- Use of atomic weapons in WW 2; math- calculating and graphing half-lives of radioactive isotopes. Culminating Product: A minimum five paragraph position paper in collaboration with the language arts teacher on the pros and cons of radioactive isotope use in weaponry, medicine, and/or energy production. Language arts teacher will use Google Docs for the final written assignment. Assessment: Interdisciplinary rubric for essay. Each teacher will focus on self-designated criteria (science-concept accuracy and use of science terms; social studies- historical accuracy; math- graphic and analytical support visuals; language arts- writing mechanics and conventions) In reference to assessment and instruction, specificity of tools and techniques would largely depend on IEP goals; conventions SDAIE teaching techniques will facilitate the assignment for ELs. Advanced learners participate in a formal debate on the topic or create a presentation on the topic via technology resources.</p>	
<p>Area of Expertise and Leadership: As a holder of a bachelor of science degree in biology and a graduate degree, I fully understand the rigor of instruction required for students to be prepared for post-secondary science. My years of educational experience and graduate training have prepared me to help students succeed in science. Experience with Gifted and talented have given me an ability to help students access the depth and complexity of science. Experience with ELD instruction will help me tailor literacy assignments for ELs via NGSS Crosscutting design. Experience with creating pacing guides and curriculum coordination at the prior California Science Content Standards adoption gave me an overview of how to revise content and instruction to coordinate with a new framework. In terms of school site leadership, I authored an LEA directed proposal to implement a seven-period day at my school. This process provided procedural experience with developing and implementing a teacher-led revision of our instructional day. With the support of colleagues and administration we were able to restructure our school to provide content-rich electives from a six-period instructional day.</p>	

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<p>Previous Committee Experience: I have served in the following committees at my school-site and/or LEA: Technology Committee, Leadership Team, Science Department chair, BTSA Induction Support Provider, school-site DAIT representative, Textbook Adoption Committee, GATE school-site coordinator. Yearly, I conduct an update and revision of our pacing guide. This year, in addition to standard revision, I will work with my fellow science teachers to create a framework for coordination of NGSS and Common Core projects with language arts, math and social studies teachers at my school site. In the 1998-1999 school year, my science department piloted Prentice-Hall's Focus on Physical Science middle school program. In the subsequent textbook adoption, the pilot program provided the depth of insight needed for the adoption of a new program at the district level. In the 2007 adoption, I served on the science textbook adoption committee for my school district and worked to draft an evaluative instrument.</p>		
<p>Relationship with Publishers: Conflict of Interest Disclosure Statement:</p>		
<p>Question 1: Do you or a member of your immediate family have, or have you had, a business relationship at any time over the last twelve months with a publisher that produces instructional materials for California?</p>		
<p>Question 2: Are you currently employed by or under contract to any person, firm, or organization which will do business with or submit instructional material to the California Department of Education (CDE)?</p>		
<p>Question 3: Have you ever been employed by or had any other kind of contractual relationship with any person, firm, or organization doing business with, or submitting instructional materials to, the CDE?</p>		
<p>Question 4: Do you expect to receive any royalty payments during your period of service on the Science CFCC?</p>		
<p>Question 5: Were you or any member of your immediate family an author, contributor, or editor of (or consultant on) any textbook, other curriculum material, or project proposal that is likely to be submitted to the CDE?</p>		
<p>Have you received compensation, do you expect to receive compensation, or do you have any other kind of contractual relationship with any organization that is either a subsidiary, parent organization, or "sister organization" of any entity which will do business with your advisory body or will submit materials to your advisory body?</p>		
<p>Language Skills: Spanish, Speak, Read, Write</p>		
<p>Professional References:</p>		
Mark Matthews	Director of Human Resources	El Rancho Unified School District
Alma Garcia	Counselor	Burke Middle School
Sam Genis	Principal	Durfee Elementary School

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**SCIENCE CURRICULUM FRAMEWORK
AND EVALUATION CRITERIA COMMITTEE APPLICATION**

ID: 873		Submission Date: 2014-03-24 11:42:55	
Name: Ms. Jo M Topps		Ethnicity: White	
Gender: Female		Ethnicity Other:	
Position Title: Regional Director		Years Teaching: 40	
Employer: WestEd/K-12 Alliance			
Address: 4665 Lampson		Los Alamitos	California 90720
Areas of Expertise: Higher Education/ Researcher, Other Areas of Expertise		Other Expertise: Professional Developer	
Grade Levels Expertise: K–2, 3–5, 6–8, 9–12, University		Subject Taught: Integrated Science, Earth Science, Life Science, Physical Science, Engineering	
Experience Teaching English Learners: As a professional developer, I have provided instruction to the teachers of English learners as part of an extensive lesson study project, funded by CPEC. This project spanned four years. The focus of the project was to teach English Language Development through the context of science. Oral language was the focus of ELD experiences. Students in the treatment group, primary grades, made significant gains in oral language development as compared to the control group, who did not receive the intervention. I have presented the strategies and findings of this work at CSTA and NSTA.		Experience Teaching Students with Disabilities:	
Degrees/Credentials:		Institution:	
Master of Science		CSU Fullerton	
Bachelor of Science		UC Irvine	
Multiple Subject Credential		UC Irvine	
Knowledge of the Next Generation Science Standards: The CA NGSS will have a profound impact on teachers and students in grades K-12 in California. The Performance Expectations found in the CA NGSS require that students be assessed on three dimensions simultaneously, i.e., science and engineering practices, disciplinary core ideas, and cross-cutting concepts. To meet this rigorous level of achievement, instruction will need to be different. Teachers will need to move away from teaching each dimension in isolation and be capable of designing and enacting instruction via a more integrated approach. Instruction and assessment will require more inclusive and motivating strategies that address the needs of all students. Students will need to be able to reason from evidence and express			

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that reasoning in high quality oral and written responses consistent with the CaCCSS-ELA. Students will need opportunities to learn and receive adequate instruction to demonstrate proficiency in both science and engineering. While the CA NGSS identifies Performance Expectations and the foundations from the Framework for K-12 Science Educations (NRC, 2012), it does not address curriculum. Teachers and support providers will need to carefully craft course(s) of study, instruction, and assessments to meet the three dimensionality of the CA NGSS. Unlike the former CA Science Standards, where many standards were presented, the CA NGSS will require an understanding by teachers of how to help students to "go deeper" in their understanding of fewer standards. This will include an understanding of the Appendices of the CA NGSS.

Standards-Based Instruction Experience:

The Boston Museum of Science: Engineering is Elementary (EiE), unit of instruction, entitled Alarming Circuits, is an instructional material that provides access to all students and is consistent with the CA NGSS. In this unit of instruction students are introduced to an engineering design problem via children's literature. In the subsequent lessons students actively learn about energy transfer and transformation in a series of lessons that engage students in individual models of electric circuits and eventually to the schematics used by electrical engineers. Students learn about conductors, insulators, switches, parallel and series circuits through actual experience with the materials. This approach is appropriate for all learners because it involves concrete learning experiences in the "here and now" before more abstract representations of that learning are expected in writing and reading. Students draw their observations and designs, Students use oral language, a central feature of this unit, which helps to build scientific understanding. The use of models, a signature practice of the CA NGSS, is also a key component of the unit. This unit achieves the three dimensionality of the CA NGSS by: 1) addressing the Performance Expectation 4-PS3-2, the science and engineering practices of asking questions, planning and carrying out investigations, constructing explanations and designing solutions; 2) providing instruction in the disciplinary core ideas of definition of energy, conservation of energy and energy transfer, and defining engineering problem; and 3) including the cross-cutting concept of energy and matter.

Area of Expertise and Leadership:

My experience as a professional developer, in California and the nation, since 1992, has prepared me to participate in the CFCC to the revise the Science Framework. I am expertly knowledgeable of the CA NGSS. I have served as facilitator for the Science Expert Panel, in California, as it was engaged in the process that recommended the NGSS for adoption by the CA State Board of Education. I am currently facilitating the state panel to inform the CA Strategic Plan for Implementation of the NGSS. I am also a member of the Carnegie Foundation Design Team, at the American Museum of Natural History, in New York City, to develop the tools needed by teachers to implement the NGSS. These tools will be available to California and to a national audience as additional states adopt the NGSS. On a local level, I am the professional development provider for several schools and school districts in Los Angeles and Santa Barbara Counties. These schools and school districts serve minority-majority populations. In this capacity, I have provided the professional development necessary to prepare teachers for implementation of the NGSS in curriculum development, instruction, and assessment for all learners.

Previous Committee Experience:

I have served as member of the last two Instructional Materials Evaluation Panels (IMEP) for the adoption of instructional materials in California for grades K-8. I am also co-developer of the AIM (Assessing Instructional Materials) Process, a product of the National Academy for Curriculum Leadership, funded by the NSF. The AIM process assists secondary teachers with the adoption of instructional materials. I am also co-author of Assessment-Centered Teaching (Corwin, 2008). This work is the product of CAESL (Center for Assessment and Evaluation of Student Learning), also funded by the NSF. The premise of this initiative was to view assessment and instruction simultaneously, thus designing appropriate curriculum and assessment for all learners.

Relationship with Publishers: Conflict of Interest Disclosure Statement:

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Question 1: Do you or a member of your immediate family have, or have you had, a business relationship at any time over the last twelve months with a publisher that produces instructional materials for California?		
Question 2: Are you currently employed by or under contract to any person, firm, or organization which will do business with or submit instructional material to the California Department of Education (CDE)?		
Question 3: Have you ever been employed by or had any other kind of contractual relationship with any person, firm, or organization doing business with, or submitting instructional materials to, the CDE?		
Question 4: Do you expect to receive any royalty payments during your period of service on the Science CFCC?		
Question 5: Were you or any member of your immediate family an author, contributor, or editor of (or consultant on) any textbook, other curriculum material, or project proposal that is likely to be submitted to the CDE?		
Have you received compensation, do you expect to receive compensation, or do you have any other kind of contractual relationship with any organization that is either a subsidiary, parent organization, or "sister organization" of any entity which will do business with your advisory body or will submit materials to your advisory body?		
Language Skills:		
Professional References:		
Laura Henriques	Professor	CSU Long Beach
Susan Gomez-Zwiep	Professor	CSU Long Beach
Jim Short	Director Gottesman Ctr for Science Teaching and Learning	Americna Museum of Natural History

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**SCIENCE CURRICULUM FRAMEWORK
AND EVALUATION CRITERIA COMMITTEE APPLICATION**

ID: 884		Submission Date: 2014-03-25 16:42:42	
Name: Mrs. Tatiana Lim-Breitbart		Ethnicity: Asian, White	
Gender: Female		Ethnicity Other:	
Position Title: Lead Science Teacher at California College Preparatory Academy		Years Teaching: 13	
Employer: Aspire Public Schools			
Address: 2125 Jefferson Avenue		Berkeley	California 94703
Areas of Expertise: Teacher providing instruction to students in kindergarten or grades one to twelve. Note that teachers must meet the requirements for a highly qualified teacher under the No Child Left Behind Act of 2001.		Other Expertise:	
Grade Levels Expertise: 9–12		Subject Taught: Integrated Science, Chemistry, Physics	
Experience Teaching English Learners: I have 13 years of experience working with high school English Language Learner (ELL) students grades 9 through 12. My science teacher credential has a CLAD emphasis. All of my experience with students has been through inclusive education where roughly a third of the class is designated ELL with the other two-thirds of the class designated standard English speaking. Currently, I work in a school with a population of approximately 60% Hispanic students with the majority of them having English as a second language. They range in ability from predominately English speakers to recently moved here from Mexico just beginning to be introduced to the English language.		Experience Teaching Students with Disabilities: I have 8 years of experience working with students with disabilities (designated having an Instructional Education Plan, IEP) in high school grades 9-12.	
Degrees/Credentials:		Institution:	
M.S. Chemistry		UC Berkeley	
M.Ed. Curriculum Development		UC San Diego	
Single Subject Teaching Credential: Chemistry & Physics		CTCC	
B.S. Chemistry		UC San Diego	
Knowledge of the Next Generation Science Standards: The biggest shift in NGSS is the integration of science content and practice and contextualizing it within the			

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broader ideas across all science. This shift marks major changes in the way content will be delivered in classrooms and will require major supports for teachers in both curricular materials and professional development. There needs to be a shift away from verification labs that follow lectures to inquiry-guided labs where students collect evidence to make meaning of science for themselves. Another major shift in NGSS is the reorganization of the science disciplines and bringing earth and space sciences up to the forefront. Integrating the standards at the middle school grades is also a shift away from the discipline-specific separations. Decisions made around curriculum adoptions and state testing design will make significant statements and alter the way science is organized at the secondary level. I am looking forward to seeing earth and space sciences brought up to the same rigor as biology, chemistry and physics. Currently in California, these subjects are largely overlooked and not taught as rigorous secondary subjects. The new organization in standards is going to shift what counts as rigorous, lab-based science in high schools. A third major shift in the implementation of NGSS is the focus on vertical alignment. In order to have a successful implementation of NGSS, there must be a focus at elementary level science. Science is an excellent context for math and English instruction to be supported, especially with the heavier focus on nonfiction text in Common Core. If science curriculum could be adopted that is aligned to NGSS (which is already aligned to Common Core Math and ELA) and professional development was provided to support elementary school teachers, the vertical development of science content will be logical, coherent and spiraled kindergarten through twelfth grade.

Standards-Based Instruction Experience:

I serve a diverse population inclusive of students with IEPs and reading levels ranging from 3rd grade to high school. My key question in lesson planning is: What data will my students grapple with in order to make sense of the content for themselves? In this lesson, students construct a model of heat transfer. The lesson opens by asking them to observe a demonstration water with dry ice in it. They observe smoke, bubbles, and condensation. Students are asked, Is this hot or cold? I assess prior knowledge of their experience with dry ice and hot and cold objects by listening to their reasoning. After students share ideas, I tell them that by the end of the lesson, they will find out they are all correct and will have evidence to support their argument scientifically. Students explore dry ice. They measure temperature changes, push spoons to hear whistling and feel vibrations, compare to ice to see it travel faster and not leave a water trail, and design an experiment. They place their right hand in hot water and left in cold. Then they place both hands in room temperature water and feel cold to their right hand and warm to their left. I circulate and look for student responses to the prompt, Is this evidence of hot or cold? Explain. and ask follow up questions about what it means to feel hot or cold. As I ask questions, I validate ideas by asking students to share that idea in the whole group discussion as we define heat. We construct a definition of heat as a process of energy transfer. Each student then picks the perspective of dry ice or water from the demo and construct an argument for whether they feel hot or cold. They construct a diagram and use a scaffolded claim-evidence-analysis graphic organizer to write their argument using the definition of heat and observations from two of their experiments. In the end, I formally assess understanding of heat from their ability to integrate the formal definition with the evidence collected in their labs.

Area of Expertise and Leadership:

In my thirteen years of teaching, I have taught in a variety of classroom situations. I spent the first three years of my career in a large urban high school teaching chemistry when I was invited to study with Professor Angelica Stacy at UC Berkeley, the author of the Living by Chemistry curriculum. At UC Berkeley, I earned my M.S. in chemistry and taught undergraduate chemistry courses with Professor Stacy, Cal Teach courses preparing undergraduates for STEM education, and graduate students in the MACSME (Masters and Credential) program for science educators. In 2009, I returned to high school education at an Aspire charter school, Cal Prep, where I have been the lead science teacher since 2010. As a lead teacher, I advise the science coach at Aspire and, due to my involvement with the state's Science Expert Panel, have become the NGSS expert within the organization. I've delivered professional development introducing NGSS and its underpinnings to other lead teachers and principals across the organization as well as professional development focused on inquiry-based lesson planning using the 5E model to teach the NGSS standards. In addition, I've been helping to author instructional guidelines focused on the science and engineering practices outlined by NGSS. In the last two years, I've begun aligning my curriculum to the

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NGSS standards while still using the California State Standards as my students will be taking the CSTs this spring. In addition to aligning my units to NGSS performance expectations, I have been focusing on the scientific practice of Engaging in argument from evidence this year because it cuts across both NGSS and Common Core Math and ELA. I have also been explicitly incorporating engineering standards by creating engineering projects for students. With teachers that I mentor, we have been looking at the labs they currently use and brainstorming how to emphasize the scientific practices, cross-cutting concepts, or engineering standards.

Previous Committee Experience:

I remain teaching in the classroom because I am dedicated to direct teaching with students, but I am interested in conversations in the larger science education community. In order to stay active in the broader state and national conversations, I present at state and national conferences (California Charter Conference and NSTA), provide professional development for universities and teachers, serve as a member on the Teacher Education Advisory Group at UC Berkeley, contribute to global efforts to address NGSS implementation (Energy Summit with University of Massachusetts), and serve as a member of the State Review Team , Science Expert Panel, and Strategic Leadership Team for CDE.

Relationship with Publishers: Conflict of Interest Disclosure Statement:

Question 1: Do you or a member of your immediate family have, or have you had, a business relationship at any time over the last twelve months with a publisher that produces instructional materials for California?

I have worked with the publishers of the Living By Chemistry curriculum (BFW) do an initial alignment of the curriculum to the NGSS performance expectations and they are currently requesting me to help them author some engineering focused experiments with

Question 2: Are you currently employed by or under contract to any person, firm, or organization which will do business with or submit instructional material to the California Department of Education (CDE)?

Question 3: Have you ever been employed by or had any other kind of contractual relationship with any person, firm, or organization doing business with, or submitting instructional materials to, the CDE?

Question 4: Do you expect to receive any royalty payments during your period of service on the Science CFCC?

Question 5: Were you or any member of your immediate family an author, contributor, or editor of (or consultant on) any textbook, other curriculum material, or project proposal that is likely to be submitted to the CDE?

As a graduate student at UC Berkeley, I contributed to the development of the Living by Chemistry curriculum (currently published by BFW) and was a pilot teacher for the curriculum during the development of the first edition. I did not receive any compenss

Have you received compensation, do you expect to receive compensation, or do you have any other kind of contractual relationship with any organization that is either a subsidiary, parent organization, or “sister organization” of any entity which will do business with your advisory body or will submit materials to your advisory body?

Language Skills:

Professional References:

Javier Cabra	Principal	Aspire California College Preparatory Academy
Sharon Parker	Aspire Science Coach	Aspire Public Schools
Angelica Stacy	Professor of Chemistry	UC Berkeley

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**SCIENCE CURRICULUM FRAMEWORK
AND EVALUATION CRITERIA COMMITTEE APPLICATION**

ID: 905		Submission Date: 2014-03-31 23:59:36	
Name: Dr. Susan M Gomez Zwiep		Ethnicity: Hispanic/Latino	
Gender: Female		Ethnicity Other:	
Position Title: Associate Professor		Years Teaching: 21	
Employer: CSU Long Beach			
Address: 1250 Bellflower Blvd, HSCI 204		Long Beach	California 90840
Areas of Expertise: Teacher not providing instruction to students in kindergarten or grades one to twelve (e.g., mentor teacher or certificated teacher employed by school districts or county offices of education who is not in a position that requires a service credential with a specialization in administrative services), Parent, Higher Education/ Researcher, Community Member		Other Expertise:	
Grade Levels Expertise: K–2, 3–5, 6–8		Subject Taught: Integrated Science, Earth Science, Life Science, Physical Science	
<p>Experience Teaching English Learners: I taught middle school science from 1993-2005 in Bell Gardens, CA (Montebello Unified SD). Our student population was about 68% English learners in the 6-8-grade span, primarily ranging from beginning to intermediate proficiency. However, the majority of my students who were proficient in English had been recently reclassified and still needed language specific support. I had mixed-proficiency groups in my classroom by design. Instruction included the use of realia and real world context within inquiry instruction, student-to-student discourse, and formal language supports such as graphic organizers and sentence frames to support students' ability to access the science textbook and content as well as to develop their oral and written language skills. This was all done within a rigorous, standards-based curriculum. From 2007-2012 I co-developed and directed an integrated Science and ELD program in Montebello Unified SD. This elementary program created a blended inquiry science and ELD curriculum within a</p>		<p>Experience Teaching Students with Disabilities: During my 14 years as a middle school science teacher (grades 6-8), students receiving special education services (approximately 20% of our population) were mainstreamed into my classroom when appropriate. The majority of my special education students were services on via a pull out basis from classes other than mine. These included students who received 1-2 hours of support from the Resource Specialist Program, hearing or speech services or adaptive PE. Other students were in a full time special education placement whose part-time inclusion time was in Art and my class. These students had emotional disturbances, autism or other severe impairment. On rare occasion, a full time aide accompanied a student.</p>	

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<p>professional development design that used science as the context for formal ELD instruction. This was a very successful and well-respected, award-winning program. Research findings from the project showed significant increases in student CELDT and CST achievement for students who received the blended curriculum. In Fall 2012, I taught 3rd and 5th grade science in Escondido to a very similar population to my Bell Gardens students. During this time I taught two classes of each grade level each week. The instruction integrated formal ELD strategies into inquiry science lessons. Although I was the science teacher, I coordinated my lessons with the teacher of record in the classroom to use the science instruction to support the new CCSS ELA. I hold a valid CA Single Subject Teaching Credential (Life Science) and a CLAD certificate.</p>	
<p>Degrees/Credentials:</p>	<p>Institution:</p>
<p>Ph.D. Science Education</p>	<p>University of Southern California</p>
<p>Master's in Education</p>	<p>Whittier College</p>
<p>Single Subject Life Science Teaching Certificate</p>	<p>Whittier College</p>
<p>BA Integrative Biology</p>	<p>UC Berkeley</p>
<p>Knowledge of the Next Generation Science Standards: Over the last 15 years, science instruction in California was best described as disconnected. We often focused on science facts that were disconnected from each other and from bigger ideas in science. While we had investigation and experimentation standards, they were rarely taught in conjunction with the concepts assigned to the grade level. Science was also disconnected from other core subjects. Math and ELA integrations were limited to data display, reading a textbook or writing a report, if they existed at all. The main impact of CA NGSS is that it will provide a connected vision of science for both teachers and students. The integration of the disciplinary core ideas, cross-cutting themes and science and engineering practices in NGSS means teachers will no longer have to struggle to create meaningful instructional sequences. Students will now have opportunities to develop an understanding of how science the verb (doing science) and science the noun (knowing science concepts) are connected and directly impact the world they live in. Equally important is the inclusion of the performance expectations, providing a clear assessment statement about what students should understand at the end of instruction. To accomplish this instruction will need to look and feel different. Classrooms will need to have less focus on teachers, facts and vocabulary and more focus on students engaged in discussion and argument as they engage in open-ended problems, designing solutions and using models to explain and predict the world. Articulation within/across grade levels is necessary now, more than ever, since student understanding of content, practices and cross cutting themes build in deliberate instructional learning progressions K-12. Finally, NGSS is for all students, not just the ones traditionally targeted for STEM careers. English learners, special education students and girls should have equal opportunities to experience even the highest levels of the NGSS curriculum.</p>	

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Standards-Based Instruction Experience:

This is the 3rd lesson in an 8th grade unit on Forces affect the motion of objects. The lesson described follows one on a force is a push or a pull and forces can be measured. Students are told that they will be investigating the amount of force needed to pull a brick. Although they will all be using the same type of brick, each group will investigate a different question. Spring scales were used in the previous lesson. Is it easier to drag a brick on its fat side or its skinny side? Is it easier to pull a brick on carpet or a smooth surface? Is it easier to pick up a brick or pull a brick? Is it easier to pull a brick with or without wheels? The same question can be assigned to two different groups so students can compare results later. Students are instructed to develop a plan to collect sufficient data to answer their question. Materials are available but students decide what they need and how to complete their investigation. The teacher monitors their progress, assisting as necessary. On the next day, students are told that all of their experiments involved friction. They will now need to figure out what friction is and how it affected their bricks to explain their results. Indicate the textbook pages that describe friction and let groups begin. Additional diagrams and simplified text can be used as well. Tell students that when they can explain how friction affected their bricks, they will get chart paper and can prepare to explain their experiment design, results and explanation. The teacher facilitates students' progress. If students say friction is a force that opposes motion when two surfaces touch the teacher might ask; why do the surfaces have to touch? or what does opposes motion mean? When ready, groups present their findings using the chart paper to display their information. The teacher uses the presentations to build consensus about friction and how it affects an object's motion, i.e. more touching/thicker material means more bumps.

Area of Expertise and Leadership:

I have 20+ years experience in science education teaching science at the elementary, middle and university levels. I have experience teaching science to diverse learners and have generated a promising new approach to making science accessible to English learners. I have helped to develop the professional development training for the CA NGSS rollouts. I will lead several sessions at the CA NGSS rollout sessions and have helped train other facilitators to conduct these training. I am part of the statewide NGSS study group coordinated by the county offices of education in conjunction with CDE and WestEd. I will be leading two CaMSP projects that specifically focus on introducing NGSS into middle and high school science classrooms. I believe that students come to the classroom with unique experiences that they use to make sense of the world. Instruction needs to build upon and expand that existing knowledge. To do that, instruction needs to draw out what students already know (both for the student and the teacher) and then provide opportunities for the development of new learning through the manipulation of materials, structured debate, and the revision and application of that knowledge. In this way, science instruction can parallel science practices and students should learn science content while they simultaneously develop an understanding of the nature of science. However, the blending of content and practice requires that content be sequenced in a meaningful way, both within and across grade levels, and facilitated by teachers who understand how to support students with inquiry, meaningful feedback and the purposeful use of strategies. I have personally witnessed the realization of this goal in my own teaching and have helped thousands of other teachers to do the same through my preservice and master teacher courses and professional development programs. This was often done with student populations that are often underserved and underrepresented.

Previous Committee Experience:

I served on the science subject matter panel overseen by the California Commission on Teacher Credentialing from 2000-2003. Our committee developed the program standards for secondary teaching programs in the area of general science and each sub discipline. The panel also developed the content standards for the California Subject Examinations for Teachers in general science, biology, chemistry, earth science and physics. I was also involved in the Center for Assessment and Evaluation of Student Learning (CAESL) project from 2005-2006. In this project I assisted in the development, field-testing and revision of 5th and 8th grade benchmark science assessments aligned with California science content standards.

Note: Information in this application was captured directly from input submitted by the applicant and may contain typographic and data errors.

Relationship with Publishers: Conflict of Interest Disclosure Statement:		
Question 1: Do you or a member of your immediate family have, or have you had, a business relationship at any time over the last twelve months with a publisher that produces instructional materials for California?		
Question 2: Are you currently employed by or under contract to any person, firm, or organization which will do business with or submit instructional material to the California Department of Education (CDE)?		
Question 3: Have you ever been employed by or had any other kind of contractual relationship with any person, firm, or organization doing business with, or submitting instructional materials to, the CDE? I was a Science Task Force member for Macmillian/McGraw Hill's elementary science textbook in 2002 and a FOSS Curriculum consultant in 2009.		
Question 4: Do you expect to receive any royalty payments during your period of service on the Science CFCC?		
Question 5: Were you or any member of your immediate family an author, contributor, or editor of (or consultant on) any textbook, other curriculum material, or project proposal that is likely to be submitted to the CDE?		
Have you received compensation, do you expect to receive compensation, or do you have any other kind of contractual relationship with any organization that is either a subsidiary, parent organization, or "sister organization" of any entity which will do business with your advisory body or will submit materials to your advisory body?		
Language Skills: French, Speak		
Professional References:		
Kathy DiRanna	Statewide Director	K12 Alliance
Laura Henriques	President	California Science Teachers' Association
Dean Gilbert	Science/STEM Coordinator	Orange County Office of Education

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**SCIENCE CURRICULUM FRAMEWORK
AND EVALUATION CRITERIA COMMITTEE APPLICATION**

ID: 914		Submission Date: 2014-04-04 16:07:48	
Name: Mrs. Juanita A Chan		Ethnicity: Asian, Black or African American	
Gender:		Ethnicity Other:	
Position Title: CaMSP Science Lead		Years Teaching: 11	
Employer: Rialto Unified School District			
Address: 324 N. Palm Ave		Rialto	California 92376
Areas of Expertise: Teacher providing instruction to students in kindergarten or grades one to twelve. Note that teachers must meet the requirements for a highly qualified teacher under the No Child Left Behind Act of 2001., Teacher not providing instruction to students in kindergarten or grades one to twelve (e.g., mentor teacher or certificated teacher employed by school districts or county offices of education who is not in a position that requires a service credential with a specialization in administrative services), Parent, Community Member		Other Expertise:	
Grade Levels Expertise: K–2, 3–5, 6–8, 9–12		Subject Taught: Integrated Science, Life Science, Physical Science	
Experience Teaching English Learners: I have provided instruction to English Learners for 11 years. The district in which I teach has an English Learner population of about 28.9%. My elementary classrooms usually had a 1:3 English Learner- English Only student ratio. In addition, I taught Sheltered English Immersion at the middle school level. I have also had Guided Language Acquisition Design training, and work collaboratively with the English Language Strategists while planning and disseminating professional development workshops in my district.		Experience Teaching Students with Disabilities: I have taught students with disabilities for 11 years. My first year, I long term substitute taught in a Severely Emotionally Disturbed (SED) classroom. My years as an elementary school teacher I worked collaboratively with the RSP teacher in planning for the pull out program. I also worked as a math/ science coach and worked with Dr. Austin Buffum and Elementary Principals on planning school-wide Response to Intervention (RtI) plans for three elementary schools. At the middle school level, I worked with the SED and RSP teachers to mainstream students into both my Life and Physical Science classroom. I also worked as a member of the Leadership team to plan and facilitate a Tier 2 school-wide RtI program. At the District Level I designed a Tier 2 RtI plan for Grades 2-5 in math.	
Degrees/Credentials:		Institution:	
M.Ed. Educational Leadership		Brandman University	
M.Ed. Curriculum and Instruction		Chapman University	
BA Liberal Studies major conc. Entomology		University of California, Riverside	

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Knowledge of the Next Generation Science Standards:

The NGSS targets to ensure that ALL students will become science literate 21st century citizens. They are built on a foundation of more than 20 years of research in the most effective strategies for teaching and learning science. Their goal is to fundamentally change science instruction to focus on the interconnected nature of science, which moves coherently throughout K-12. There is a shift to ensuring understanding of the "big ideas." In addition, they support the goals of CCSS in the areas of literacy and math.

Standards-Based Instruction Experience:

I recently wrote and submitted student work for a vignette for the ELA framework describing an experimental design lesson. Students worked in groups to investigate a "popper" collecting both qualitative and quantitative data, as they saw fit. Students were encouraged to participate in 'Accountable Talk' to identify variables that could be changed, and what was measured, or could be measured. Students kept data, non-linguistic representations, observations, questions and reflections about the investigation in 'Science Notebooks.' At the conclusion students synthesized their findings to create a testable question. Then students reflected about the lesson design process and how it could be generalized to support scientific inquiry of any natural phenomena. This lesson incorporated speaking, listening, reading and writing at each student's instructional level, as it was self-directed. It required students to use collaboration, communication, and critical thinking which further supported diverse student populations. Assessment took place throughout the lesson through evaluation of written and oral responses.

Area of Expertise and Leadership:

During my undergraduate career, I worked in an entomology lab, with doctoral candidates and postdoctoral students on research. I have worked as an elementary teacher, middle school science teacher working with diverse students; and I hold a high school biology credential. I have served as a teacher leader at both an elementary and secondary capacity providing strategies for effective instruction. I have worked at the district level as a math and science coach collaboratively co-planning and co-teaching with science teachers from K-12. Finally, I have served on professional development teams for science teachers at the local County Offices of Education, university and district level helping teachers explore NGSS. In my current capacity, I develop curriculum and assessments that align with CCSS and NGSS that are accessible to diverse student populations.

Previous Committee Experience:

I have served on multiple science committees. Most recently, I was on the Science Framework Focus Group Panel in Orange County. I have also served on the science committee in my district which assists district administration with standards based curriculum development as well as the development of assessments. I am also a professional developer for the district with a focus on science and math, and am on the professional development team for the State NGSS Roll Out. Furthermore, I was on the last district science textbook adoption committee.

Relationship with Publishers: Conflict of Interest Disclosure Statement:

Question 1: Do you or a member of your immediate family have, or have you had, a business relationship at any time over the last twelve months with a publisher that produces instructional materials for California?

Question 2: Are you currently employed by or under contract to any person, firm, or organization which will do business with or submit instructional material to the California Department of Education (CDE)?

Question 3: Have you ever been employed by or had any other kind of contractual relationship with any person, firm, or organization doing business with, or submitting instructional materials to, the CDE?

Question 4: Do you expect to receive any royalty payments during your period of service on the Science CFCC?

Note: Information in this application was captured directly from input submitted by the applicant and may contain typographic and data errors.

Question 5: Were you or any member of your immediate family an author, contributor, or editor of (or consultant on) any textbook, other curriculum material, or project proposal that is likely to be submitted to the CDE?

Have you received compensation, do you expect to receive compensation, or do you have any other kind of contractual relationship with any organization that is either a subsidiary, parent organization, or “sister organization” of any entity which will do business with your advisory body or will submit materials to your advisory body?

Language Skills:

Professional References:

Edward D'Souza	Senior Director of Professional Development	Rialto Unified School District
Kathy DiRanna	K-12 Alliance Director	WestEd
Maria Simani	California Science Project Executive Director	University of California, Riverside

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**SCIENCE CURRICULUM FRAMEWORK
AND EVALUATION CRITERIA COMMITTEE APPLICATION**

ID: 927		Submission Date: 2014-04-09 10:50:16	
Name: Mrs. Maria K Blue		Ethnicity: White	
Gender: Female		Ethnicity Other:	
Position Title: Teacher		Years Teaching: 28	
Employer: Emblem Academy			
Address: 22635 W. Espuella Drive		Saugus	California 91350
Areas of Expertise: Teacher providing instruction to students in kindergarten or grades one to twelve. Note that teachers must meet the requirements for a highly qualified teacher under the No Child Left Behind Act of 2001.		Other Expertise:	
Grade Levels Expertise: K–2, 3–5		Subject Taught: Integrated Science, Earth Science, Life Science, Physical Science, Engineering	
Experience Teaching English Learners: I have provided instruction to English Learners every year of my 28 years of teaching experience. I have a Language Development Specialist certificate and served as bilingual coordinator at Raymond Elementary.		Experience Teaching Students with Disabilities: I currently teach for the Saugus Union School District which is known for their programs for autistic students. I have had at least 1 autistic student in my class for the past 22 years. I currently teach at the Emblem Academy which has a Regional Autistic Program. All of our teachers have received training on autism. I have a Bachelor's degree in Psychology which included many classes in learning disabilities.	
Degrees/Credentials:		Institution:	
Masters of Education, Instructional Leadership		National University Los Angeles	
Bachelor of Science - Psychology		UCLA	
Knowledge of the Next Generation Science Standards: The CA NGSS will have tremendous impact on instruction and student learning. It is exciting to see the shift of instruction from what students KNOW to what they can DO. The content of the standards will appeal to a child's curious mind. The challenge will be to look beyond the Performance Expectations to determine what foundational skills need to be taught in order to successfully understand the new content. Teachers will need to fully understand the content and any underlying concepts. Teachers will need to understand the engineering process. The inclusion of engineering practices allows for a range of student abilities within the guidelines of the engineering process. Common Core connections in ELA and literacy are natural within the engineering process; students begin identifying the problem and can use reading strategies to accomplish this. Students end by communicating results of their investigations using speaking and literacy strategies. The NGSS fits smoothly into a primary teacher's daily instruction and will help students achieve higher in science, technology, engineering and math, and also English language arts and literacy. The challenge will be to provide a framework of understanding for the primary teacher who does not naturally have a science focus.			
Standards-Based Instruction Experience: I am teaching a NGSS unit on light waves for 1st grade. I begin with a Common Core reading lesson to ask and			

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answer key details about information in a text about how light travels. I have only 1 book, so I use a document camera to project the text onto the SmartBoard and together we find the key details on a page. Students turn to an elbow partner to ask and answer questions about these details. Together we determine that light travels in a straight line. Next we conduct investigations using light waves. We shine a variety of lights through water in partially covered mason jars: flashlights, LED lights and lasers, to see if each travels in a straight line. I introduce a mirror to the investigation to see if the straight line beam can be moved. Finally I challenge the students to construct a device to send a series of numbers from one place to another using light waves. They work in teams and follow the engineering design process. Teams are designed with a mix of abilities and allow students to work at their best to achieve a group purpose. Once their plan is approved they can build their device. I assess the effectiveness of instruction from the way the devices are constructed and how each student communicates their results. Standards include: NGSS 1-PS4-3, and 1-PS4-4, and CCSS.ELA-Literacy.RI.1.1.

Area of Expertise and Leadership:

I have a Masters degree in Instructional Leadership in Education, with an emphasis on Curriculum and Development. I have been a California educator for the past 28 years, primarily in grades K-1. For the past few years I have worked with NASA during the summer. I started with the AREE (Airborne Research Experiences for Educators) program. As we designed curriculum to be used nationwide we worked with the national standards. Next I was an instructor for NASA's Pre-service Teacher Institute. I am considered a NASA master teacher. I led elementary through high school teachers through standards based lesson design using California and national standards. We designed lessons to be used with diverse populations because these teachers came from all across the western states. I am currently a 1st grade teacher at the Emblem Academy in Santa Clarita. We are an ESTEEM school (Ethics, Science, Technology, Engineering, Entrepreneurship and Math). I provide NASA lessons to our entire staff (including the Regional Autistic Program) twice a month, and have facilitated training for NASA's BEST (Beginning Engineering, Science and Technology) program. I feel the BEST program is a great introduction to the engineering component of the NGSS. I have science experience beyond most of my primary educator peers, the practical experience of working with educators from elementary to high school, and the classroom experience of 28 years. I see the potential of the NGSS and the importance of preparing the multiple subject elementary educator to its implementation.

Previous Committee Experience:

I am proud to be part of NASA's AREE (Airborne Research Experiences for Educators) program. I was the only primary teacher working on a committee with middle and high school teachers to learn about NASA education resources. We searched through NASA materials, met with scientists and flew on a NASA flight to investigate earthquakes. Over a summer we put together a standards based curriculum with activities that is now an online course for educators. I presented our unit at CSTA and NCTM conferences. When the VAPA standards were released I served on a committee to put together a website for arts resources for educators in our state called Teachingarts.org. I worked with educators from across our state; from kindergarten to 12th grade.

Relationship with Publishers: Conflict of Interest Disclosure Statement:

Question 1: Do you or a member of your immediate family have, or have you had, a business relationship at any time over the last twelve months with a publisher that produces instructional materials for California?

Question 2: Are you currently employed by or under contract to any person, firm, or organization which will do business with or submit instructional material to the California Department of Education (CDE)?

Question 3: Have you ever been employed by or had any other kind of contractual relationship with any person, firm, or organization doing business with, or submitting instructional materials to, the CDE?

Question 4: Do you expect to receive any royalty payments during your period of service on the Science

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CFCC?		
Question 5: Were you or any member of your immediate family an author, contributor, or editor of (or consultant on) any textbook, other curriculum material, or project proposal that is likely to be submitted to the CDE?		
Have you received compensation, do you expect to receive compensation, or do you have any other kind of contractual relationship with any organization that is either a subsidiary, parent organization, or "sister organization" of any entity which will do business with your advisory body or will submit materials to your advisory body?		
Language Skills:		
Professional References:		
Joan Lucid	Superintendent	Saugus Union School District
Christine Hamlin	Assistant Superintendent of Curriculum and Instruction	Saugus Union School District
Jon Baker	Principal	Emblem Academy

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SCIENCE CURRICULUM FRAMEWORK AND EVALUATION CRITERIA COMMITTEE APPLICATION

ID: 942		Submission Date: 2014-04-14 21:56:45	
Name: Mrs. Lisa Hegdahl		Ethnicity:	
Gender: Female		Ethnicity Other:	
Position Title: 8th Grade Science Teacher		Years Teaching: 23	
Employer: Galt Elementary School District			
Address: 1018 C Street		Galt	California 95632
Areas of Expertise: Teacher providing instruction to students in kindergarten or grades one to twelve. Note that teachers must meet the requirements for a highly qualified teacher under the No Child Left Behind Act of 2001.		Other Expertise:	
Grade Levels Expertise: 6–8		Subject Taught: Life Science, Physical Science, Chemistry, Physics	
<p>Experience Teaching English Learners: In March 2000, I received my ELD/SDAIE Certification. I attended staff development training in methods of SDAIE and ELD. The assessment contained a written test which included writing prompts based on student case studies and a portfolio containing two ELD and SDAIE Lessons. During all of my 23 years of teaching 8th grade science, ELLs have been in my class I have worked with ELL specialists who have advised me on ways to create and modify curriculum to meet their needs. Although my experience with these students has been primarily in science class, I have also instructed them in math and an elective course. In 1998, I taught a reading intervention class for RFEP students who were enrolled to strengthen their reading comprehension skills. They read a variety of subject matter and completed lessons in a workbook. This proved to be of little interest to the students, so the vice-principal purchased a class set of Chicken Soup for the Teenage Soul . The students were highly engaged in the topics of which they could relate. Many improved their reading skills and saw growth in their other classes. In science, language is often paired with</p>		<p>Experience Teaching Students with Disabilities: Students with disabilities have been in my 8th grade science classes since 1991. My Single Subject Science Credential and my Multiple Subject Instruction Authorization required coursework in teaching students with disabilities. I have taught students designated as RSP, ED, SDC as well as deaf students and students with physical disabilities. Science curriculum lends itself to cooperative learning groups which engage students in helping each other through collaboration. RSP students attend my class with and without teacher aide support. Communication with the resource specialist allows me to keep up with the needs of each student and discuss individual modifications. One challenge these students have is completing the coursework that requires math. My resource students are required to show the process they use to solve the problems, but they can use calculators to find the answer. With this modification, RSP students complete the same academic course work as the other students. The ED students are always accompanied by a teacher's aide. Generally, their academics are strong and they do not require individualized modified instruction. Science class provides a safe, supervised environment where they can work with other students. The classroom aide and I work closely to ensure that these students are provided with the structure that meets their unique needs. SDC students come to my room with a Special Education Teacher who works with them one-on-one. The lab activities are especially helpful to them because</p>	

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<p>demonstrations and lab activities. Observing science phenomena helps students make the connection between vocabulary and concepts. For example, while exploring friction, students use a spring scale to move a mass across different surfaces. Students can see the force measurements changing on the spring scale as the surfaces change. In January 2014, as President-Elect of CSTA, I held a review session for the draft of the ELA/ELD Framework. Reviewer comments were compiled along with those made at other CSTA review sessions and were provided to the IQC and SBE. Since the ELA/ELD Framework was designed to provide assistance to all teachers who teach ELLs, including science teachers, it was important to look at the document through the eyes of professionals who teach science to them on a regular basis.</p>	<p>they have the opportunity to see and experience the science even when they cannot articulate the concepts. Often, the SDC students can tell me their observations verbally and some can tell me in simple terms conclusions they can make from their observations. During an activity where students layer different liquids based on their their densities, my SDC students can tell me which liquids are the least dense and which liquids are the most dense.</p>
<p>Degrees/Credentials:</p>	<p>Institution:</p>
<p>Clear Single Subject Teaching Credential:Life Science,Supplemental Authorization-Chemistry</p>	<p>University California, Davis</p>
<p>Multiple Subject Instruction Authorization</p>	<p>University of Phoenix</p>
<p>Bachelor of Science, Zoology</p>	<p>University California, Davis</p>
<p>Associate of Science, Exotic Animal Training & Management</p>	<p>Moorpark College</p>
<p>Knowledge of the Next Generation Science Standards: The NGSS will provide the science processing skills that will prepare students for an unimaginable future. The NGSS acknowledges that science is not just a list of facts. It is about the applications scientists use to understand our world. The NGSS are written as Performance Expectations (PE) made of 3 components - Disciplinary Core Ideas (DCI), Cross Cutting Concepts (CCC), and Science and Engineering Practices (SEP). The CCC give understanding to the rest of the NGSS parts. Teachers can use these ideas to organize subject matter. The CCC are not intended to be taught in isolation, but will give the context to the content. Instructors should be intentional in their teaching of the CCC so that, with each grade level, students gain a deeper comprehension of them. The SEP provide opportunities to teach students how scientists come by their knowledge. They enable students to develop their own understanding of the world which makes it more meaningful. Students fluent in the practices will have the ability to apply them to unfamiliar situations. Students will collaborate with others to generate questions, formulate hypotheses, and create investigations. Teachers will guide students to be critical of data before drawing conclusions. The DCIs are the actual science topics to be taught. The usual disciplines are present - Life Science, Physical Science, and Earth & Space Science. New is Engineering, Technology, and Applications of Science. It is natural that when teaching about how science knowledge is acquired, included is information about its use in the real world. All parts the NGSS PEs, in particular the SEP and the CCC, will help students focus on a bigger picture of Science. While teachers will want students to be free to learn in their own way, teachers will help focus student discovery down a productive path.</p>	

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The independent skills of exploring and learning will ultimately translate into students that are more confident and independent learners.

Standards-Based Instruction Experience:

The goal of the Destroying Water Lab (electrolysis of water) is to gather additional evidence for, or against, the idea that the properties of reactants are different than the properties of the products they form. Student prior knowledge includes the particle model of matter, the organization of the periodic table, the structure of atoms, and the structure of chemical formulas. Recent labs have shown that most chemical reactions involve energy leaving or entering the reaction and that chemical reactions yield new products that have different properties than the reactants. Ideally students observe that the water changes into two gases, twice as much of one gas is collected than the other, the gas with the greater volume is collected over the negative battery terminal, and the gas with the least volume is collected over the positive battery terminal. Student conclusions based on the data and prior learnings should include - the products are different than the reactant because the reactant was a clear liquid and the products were clear gases, the reactant was not flammable and at least one of the products was flammable, the gas of which there is twice as much is hydrogen and the gas of which there is half as much is 'oxygen' (a 9V battery is used so oxygen is not the 2nd gas) because the chemical formula of water is H₂O. The Destroying Water Lab meets the needs of a diverse student population because it produces data that can be seen and measured. Because the students work in groups, they have opportunities to talk to, and process information with, their classmates. Students with higher abilities can make further inquiries about the two battery terminals and their correlation to the gases they produce. The Destroying Water Lab has the potential to be an activity used to teach NGSS Performance Expectation MS PS1-2. Rich Hedman, Director of MASE and Co-Director of SASP, and I are discussing a possible collaboration to present it as a SIRC Workshop.

Area of Expertise and Leadership:

As President-Elect, I have represented CSTA at several meetings where the NGSS was a topic. I attended the September and November 2014 SBE meetings when the NGSS was adopted and the preferred Integrated Model for Middle School was chosen. In January 2014, I attended a NGSS Study Group at SCCOE. The goal of the meeting was to create a unified message from leaders in California science education that would be passed along to school districts. In March 2014, I attended a training at SJCOE that prepared me to present two sessions at the State Rollout Symposium in April 2014. I will co-present NGSS 102 and Middle School Progressions to school district leaders from across California. In February 2014, I sat in on the NGSS Curriculum Framework Focus Group in Sacramento. In the capacity of 8th grade science teacher, I participated in the public review sessions of the NGSS drafts. I was science department chair at my school for 12 years. Our department recently chose the preferred NGSS Integrated Model for Middle School. In preparation, we are attending NGSS trainings at SCOE, SIRC, SASP, and several of us will attend the NSTA Area Conference on Science Education in Collaboration with CSTA in December 2014. I am also enrolled in a series of three NGSS trainings by Phil Romig, Science Curriculum Specialist at SCOE. Our science department is beginning to implement the Science and Engineering Practices and the Cross Cutting Concepts into activities and note the successes and areas needing improvement. For example, students are collaborating to find patterns in data and forming hypotheses for the patterns. Students are creating their own investigations to test their ideas. A density activity from SIRC based on the particle model was particularly successful, with students articulating their conclusions to each other using the language of science. Last month, our science department had input into our district's LCAP. We requested that the NGSS and STEM be in the plan.

Previous Committee Experience:

I was on my district's last 2 textbook adoption committees. The first committee in the mid-1990s was tasked with choosing the textbooks for the Middle School. We compared the publishers texts side by side looking at, among other things, glossaries, explanations of concepts, graphics, and support materials. In the end, we chose Prentice Hall. Prentice Hall did not print all the curriculum in one

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textbook. Instead, they published smaller, individual textbooks by topic. Districts were able to buy just the topics they needed. During our most recent textbook adoption, we used a similar process. We created a survey that asked teachers to rank specific features of the textbook packages. When the results of the surveys were tallied, one publisher, Glencoe, stood out as being more favorable overall to the majority of the teachers. The textbook has proved to be a useful tool, but by no means substitutes for the expertise and knowledge of the teachers.

Relationship with Publishers: Conflict of Interest Disclosure Statement:

Question 1: Do you or a member of your immediate family have, or have you had, a business relationship at any time over the last twelve months with a publisher that produces instructional materials for California?

Question 2: Are you currently employed by or under contract to any person, firm, or organization which will do business with or submit instructional material to the California Department of Education (CDE)?

Question 3: Have you ever been employed by or had any other kind of contractual relationship with any person, firm, or organization doing business with, or submitting instructional materials to, the CDE?

Question 4: Do you expect to receive any royalty payments during your period of service on the Science CFCC?

Question 5: Were you or any member of your immediate family an author, contributor, or editor of (or consultant on) any textbook, other curriculum material, or project proposal that is likely to be submitted to the CDE?

Have you received compensation, do you expect to receive compensation, or do you have any other kind of contractual relationship with any organization that is either a subsidiary, parent organization, or “sister organization” of any entity which will do business with your advisory body or will submit materials to your advisory body?

Language Skills:

Professional References:

Rick Pomeroy	Supervisor Science Teacher Credential Program	University California, Davis
Ron Rammer	Principal	McCaffrey Middle School
Phil Romig	Science Curriculum Specialist	Sacramento County Office of Education

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**SCIENCE CURRICULUM FRAMEWORK
AND EVALUATION CRITERIA COMMITTEE APPLICATION**

ID: 946		Submission Date: 2014-04-15 11:44:15	
Name: Mrs. Anna M Gaiter		Ethnicity: Black or African American	
Gender: Female		Ethnicity Other:	
Position Title: Teacher, Science Coordinator		Years Teaching: 20	
Employer: Plainview Academic Charter Academy			
Address: 10819 Plainview Avenue		Tujunga	California 91042
Areas of Expertise: Teacher providing instruction to students in kindergarten or grades one to twelve. Note that teachers must meet the requirements for a highly qualified teacher under the No Child Left Behind Act of 2001.		Other Expertise:	
Grade Levels Expertise: K–2, 3–5		Subject Taught: Integrated Science, Earth Science, Life Science, Physical Science, Engineering	
Experience Teaching English Learners: I have taught English Language Learners (ELL) the majority of my teaching career. If I had to specify an number of years, I would say I've taught ELL's for 17 years, in grades 1 through 5. I have a Language Development Specialist Credential and have taken numerous workshops and inservices in an effort to remain current on the latest educational trends, strategies and techniques.		Experience Teaching Students with Disabilities:	
Degrees/Credentials:		Institution:	
Masters of Educational Administration		Pepperdine University	
Advanced Management Program		University of California, Los Angeles (UCLA)	
B.A. Multicultural Education		California State University, Los Angeles	
Knowledge of the Next Generation Science Standards: Incorporating the CA NCSS in the classroom will provide a new emphasis: one that will be about thinking about things, not just doing fun experiments, thus emulating the practices that scientists engage in. Kids are natural born scientists--they are curious and ask questions. With CA NGSS, science learning will be more engaging, interesting and meaningful if it is done right. Because NGSS concentrate on a limited number of core ideas and build student understanding from grades K-12, students will learn more complex ideas and move away from learning disjointed, isolated facts. In addition, because NGSS are correlated to the CCSS, they become a vehicle for mastering those standards as well. Science and Engineering provides a content area for applying ELA and Mathematics skills. With NGSS, project based learning can more easily blend with			

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Integrated Language Arts, Math and and Science performance expectations. So instead of teaching language separately, students can be given a real, authentic reason to listen, speak, read and write. This is a big paradigm shift and a better way to ensure true understanding and student achievement and progress.

Standards-Based Instruction Experience:

While studying habitats, I conducted a series of lessons that focused on the following learning objectives: Students will know what a habitat is and describe in writing the components necessary for an animal to survive in said habitat; Students will observe a living organism that lives in a specific habitat and record their observations and wonderings in their science observation journals or on related data sheets, either student or teacher created. Students will create and design a temporary habitat for a living organism and keep a record of their observations. To achieve these goals, the living organism introduced to students were earthworms! They were given the opportunity to freely explore and observe earthworm behavior while I circulated around the classroom providing open ended and specific questions and suggestions to focus their excitement. Students were encouraged write notes and wonderings in their science journals and challenged to design a temporary habitat for their worm, both on paper and 3 dimensional. Multiple resources such as books, computer websites, etc. were provided for students as one way to provide differentiated learning opportunities. After the habitat was built, students monitored and observed the behavior of their earthworm, created charts, graphs and displays and made presentations to other classes about what they learned. The later being one of the ways I assessed the effectiveness of the instruction. Being able to teach other students what they have learned is an excellent way to determine exactly what students have truly mastered. In addition, students conducted mini research projects/experiments to determine earthworm behavior such as whether or not they preferred light or darkness. My students enjoyed this unit and to this day many of them still have their worms and have enhance the living space!

Area of Expertise and Leadership:

Providing quality, broad-based academic direction, instruction and leadership remains one of the core catalysts to success in educational institutions today. In my professional career, I have demonstrated the ability to develop complete curricula for a variety of topics as well as influence student improvement through providing high quality instruction, workshops, seminars and institutes. In my current position as an elementary teacher and science coordinator I use Science as the vehicle to teach all subjects, engage my students in problem and project based experiences that foster a deeper understanding of the content and subject matter, and incorporate the NGSS principles, especially engineering in all aspects of the curriculum. What I bring to the committee that may be unique among the many candidates is my extensive background as an elementary teacher, a teacher advisor and an administrator/director. I have a plethora of experience in teaching and developing curriculum, and facilitating and coordinating professional development workshops, in-services and conferences for students, teachers, parents and administrators. In addition, I have a strong background in elementary education, the ability to assimilate new ideas and concepts, and strong communication, organizational and management skills, both in and out of the classroom. I feel this experience augments my instructional background and would provide a unique perspective when working with different educational audiences.

Previous Committee Experience:

I served on the California Department of Education STEM Task Force (2012-2013), and the Next Generation Science Standards Advisory Panel. In addition, in 1998, I was selected to serve on the California State Textbook Adoption Committee, Instructional Materials Adoption Committee (IMAP) in Science.

Relationship with Publishers: Conflict of Interest Disclosure Statement:

Question 1: Do you or a member of your immediate family have, or have you had, a business relationship at any time over the last twelve months with a publisher that produces instructional materials for California?

Question 2: Are you currently employed by or under contract to any person, firm, or organization which

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will do business with or submit instructional material to the California Department of Education (CDE)?		
Question 3: Have you ever been employed by or had any other kind of contractual relationship with any person, firm, or organization doing business with, or submitting instructional materials to, the CDE?		
Question 4: Do you expect to receive any royalty payments during your period of service on the Science CFCC?		
Question 5: Were you or any member of your immediate family an author, contributor, or editor of (or consultant on) any textbook, other curriculum material, or project proposal that is likely to be submitted to the CDE?		
Have you received compensation, do you expect to receive compensation, or do you have any other kind of contractual relationship with any organization that is either a subsidiary, parent organization, or "sister organization" of any entity which will do business with your advisory body or will submit materials to your advisory body?		
Language Skills:		
Professional References:		
Jacques Bordeaux	Education Manager	The College Board
Debra Dillard	District Coordinator, Gifted and Talented Instruction	Los Angeles Unified School District
Kenneth Johnson	Principal	Plainview Academic Charter Academy

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**SCIENCE CURRICULUM FRAMEWORK
AND EVALUATION CRITERIA COMMITTEE APPLICATION**

ID: 948	Submission Date: 2014-04-15 16:17:17		
Name: Ms. Nicole E Hawke	Ethnicity: White		
Gender: Female	Ethnicity Other:		
Position Title: 5th Grade Classroom Teacher	Years Teaching: 9		
Employer: Coachella Valley Unified School District			
Address: 82225 Airport Blvd.	Thermal	California	92274
Areas of Expertise: Teacher providing instruction to students in kindergarten or grades one to twelve. Note that teachers must meet the requirements for a highly qualified teacher under the No Child Left Behind Act of 2001., Parent	Other Expertise:		
Grade Levels Expertise: K–2, 3–5	Subject Taught: Earth Science, Life Science		
Experience Teaching English Learners: I have taught English learners in 1st, 2nd, and 5th grades for a total of 9 years. Due to the fact that my district services mainly ELL students, all professional development we due must have an ELL component. I have a CLAD certification.	Experience Teaching Students with Disabilities: For the past 9 years, I have serviced special education students in grades 1st, 2nd, and 5h grades, when they are mainstreamed into my classroom.		
Degrees/Credentials:	Institution:		
Masters of Education	Western Governor's Universtiy		
Bachelors of Science	Oakland University		
Knowledge of the Next Generation Science Standards: The adoption of the CA NGSS will greatly impact both instruction and the resulting student learning because science is no longer the rote memorization of content, but it is now part of a more inquiry based processing of the natural environment. Under the new standards concepts are not taught in isolation, so instruction will provide opportunities for students to see how ideas they are exploring fit into the larger understanding of our world. The Disciplinary Core Ideas will allow for teachers to make sure that the investigations they are arranging for their students bring to light the real heart of what students should begin to understand, while at the same time the Crosscutting Concepts help show where their understanding fits into the larger puzzle. Through the inclusion of the Science and Engineering Practices, science instruction and learning will be centered on the practices that truly elicit scientific thinking and problem solving, or in other words students will be doing science.			
Standards-Based Instruction Experience: Using the 5-PS1-1, where students are asked to develop a model to describe that matter is made up of particles too small to be seen, you could walk students through process of separating mixtures and solutions. In the past I have walked students through the process of identifying what a mixture is, what a solution is, and ways to separate mixtures. Students are then challenged when salt is added to the water. Once the group adds the salt and stirs, they soon realize that the salt dissolves. Once the salt is no longer visible, a			

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discussion is had about did the salt really leave, or is it there and just can't be seen. In order to clarify this point for students, the groups are asked to design a process to remove the salt from the water. While many groups automatically try the screen and filter from earlier in the investigation, they soon discover that it does not work. Through a process of discussion, the idea of evaporation comes up and is tried out. After a few days of observations salt crystals are left behind. Then the point is revisited that the salt never indeed left the water, but instead the particles that made up the salt dissolved becoming too small to see. This is then linked to other types of matter they are familiar with that have particles too small to see, like air and water vapor. The effectiveness of this lesson is best assessed through the process of note booking. Through using the four types of note booking entries, prior knowledge, data collection, making sense of data, and metacognition, the instructor is able to see the thought process of how student's ideas and reasoning are developing. Additionally, the idea can be transferred over to a sugar water solution, where students are asked to add sugar and explain where the sugar goes, and then develop a model to explain how they would prove the sugar is still in the water.

Area of Expertise and Leadership:

I believe that my past experience provide me with many tools that will prove handy when revising the Science Framework. To begin, through the use of the FOSS science modules, I have had the unique opportunity to always teach inquiry based science. Much like is required in the NGSS standards; FOSS required my instruction to center around student investigation of scientific ideas, not isolated scientific facts. Five years ago, through my work with FOSS I was able to participate in the FOSS Leadership Academy. This involved many unique opportunities to not only understand the foundation of inquiry science and note booking, but also provided me with opportunities to work with other professionals in my district to engage them in becoming involved in teaching inquiry based science to their students. Following that experience, I participated in a Science Drives Literacy Grant, through which we used intensive summer institutes during which I was a teacher leader providing professional development to my colleagues. During the school years of this grant, I was given the privilege to not only work on lesson studies, but also to facilitate lesson studies. Through this wide range of lesson study experiences, I was able to become a more effective instructor through the use of student note books and collaborative teaching. Lastly, I was able to work extensively with a leadership team on designing writing prompts for students, along with scoring rubrics. Through this detailed process and reflection, my teaching became more honed in on the true science, my questions during lessons became of a higher level, and my overall interconnected picture of student learning was strengthened. (I also have some experience becoming a Trainer of Trainers for Engineering is Elementary kits)

Previous Committee Experience:

I am currently sitting on my district's Common Core Leadership Team. We are working with the RCOE to bundle Common Core standards and create units of instruction and assessments around our bundles. Additionally, through my work with the K-12 Alliance on the Science Drives Literacy Grant, I worked extensively on developing science writing prompts with associated common core rubrics.

Relationship with Publishers: Conflict of Interest Disclosure Statement:

Question 1: Do you or a member of your immediate family have, or have you had, a business relationship at any time over the last twelve months with a publisher that produces instructional materials for California?

Question 2: Are you currently employed by or under contract to any person, firm, or organization which will do business with or submit instructional material to the California Department of Education (CDE)?

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Question 4: Do you expect to receive any royalty payments during your period of service on the Science CFCC?

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Question 5: Were you or any member of your immediate family an author, contributor, or editor of (or consultant on) any textbook, other curriculum material, or project proposal that is likely to be submitted to the CDE?

Have you received compensation, do you expect to receive compensation, or do you have any other kind of contractual relationship with any organization that is either a subsidiary, parent organization, or "sister organization" of any entity which will do business with your advisory body or will submit materials to your advisory body?

Language Skills:

Professional References:

Kathy DiRana	Statewide Director	WestEd
Karen Cerwin	Regional Director	WestEd
David Budai	Science Teacher and Coordinator	Coachella Valley Unifed School District

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**SCIENCE CURRICULUM FRAMEWORK
AND EVALUATION CRITERIA COMMITTEE APPLICATION**

ID: 951		Submission Date: 2014-04-15 19:39:01	
Name: Mrs. Stefanie A Pechan		Ethnicity: American Indian or Alaska Native, White	
Gender: Female		Ethnicity Other:	
Position Title: 5th Grade Teacher		Years Teaching: 12	
Employer: Pacific Grove Unified School District			
Address: 435 Hillcrest Avenue		Pacific Grove	California 93950
Areas of Expertise: Teacher providing instruction to students in kindergarten or grades one to twelve. Note that teachers must meet the requirements for a highly qualified teacher under the No Child Left Behind Act of 2001.		Other Expertise:	
Grade Levels Expertise: K–2, 3–5, 6–8		Subject Taught: Integrated Science, Earth Science, Life Science, Physical Science	
Experience Teaching English Learners: Professional Clear Multiple Subject teaching credential Single Subject/authorization: Computer science and applications Grades taught: *Kindergarten, 2 years *5th grade: 6 years *4th grade / 5th grade combination class: 4 years Summer school grade levels taught: *Kindergarten as well as a Pre-Kindergarten summer school class *1st grade *2nd grade *3rd grade *4th/5th grade combination class *4th-6th grade combination class		Experience Teaching Students with Disabilities: I have taught students with special needs throughout my career in all grade levels mentioned above. Most common: *students with autism *ADD and ADHD *first exposure to mainstream into a general education setting *variety of learning disabilities (dyslexia, auditory processing impairment, visual impairment, tactile and/or sensory sensitivities, etc.	
Degrees/Credentials:		Institution:	
Professional Clear, CLAD Multiple Subject credential		CSU Sacramento	
Single Subject auth: Computer science and applications		CSU Sacramento	
BA in Liberal Studies with a minor in computer science and technology		CSU Monterey Bay	
Associate of Arts		San Joaquin Delta College	
Knowledge of the Next Generation Science Standards: The NGSS will most definitely impact instruction and student learning in a positive way. These standards take teaching science to the next level by incorporating the Core Idea with Engineering and Cross-Cutting concepts and inquiry based learning. These three woven together give students a deeper understanding of the concepts by providing hands-on learning experiences to bolster the students' comprehension.			

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Standards-Based Instruction Experience:

Lesson Title: Ooey Goey Animal Guts Grade level: 5th grade Standards Focus: Life science: producers, consumers, decomposers. Background: Students have already learned the roles of producers, consumers, and decomposers (food webs). This lab activity is meant to provide a hands-on learning experience for students as well as give the students an informal assessment of their learning (to drive future instruction). Students were placed into small groups and given an animal stomach (surgical glove with jello and "prey cards" cut into pieces). Within their small group, students "dissected" the animal stomachs and took out all of the prey cards. Once the prey cards were reassembled, students completed a data chart to graph how many of each prey the "predator" had consumed.

Area of Expertise and Leadership:

My knowledge of the NGSS is fostered by my love of teaching, particularly science. I believe in life-long learning and the Multiple Intelligences theory, which drives me to constantly research how to improve upon and create engaging lessons for my students. Upon joining PGUSD 4 years ago, I wrote a grant for \$2,000 and created a school-wide science closet to provide science materials to the staff. This year, I won another grant of \$2,000 and was able to increase the inventory of the school science closet with supplemental materials to reach all grade levels from K-5. I want to ensure all staff have the materials they need to make science happen in their classrooms! Aside from teaching, I provide professional development for teachers in a variety of subject areas. I have presented for CUE (computer using educators), the Monterey Bay Aquarium's technology conference, and serve on my own school district's Instructional Leadership Team (providing inservices in ELA over the past two years). I am a member of the Monterey Bay Aquarium's Education staff, helping to provide education in implementing science and technology in the classroom, through summer teacher institutes and follow-up days throughout the school year. While teaching for Manteca Unified School District, I gave a teacher inservice on instructional strategies for English Learners. This year, I am the elementary school representative for my district to initiate the professional development series of the NGSS for our staff. I will be attending the CSTA/NSTA conference in Long Beach this December in order to strengthen my knowledge of the NGSS. I believe these experiences, and serving on a variety of collaborative teams, have prepared me for serving on the CFCC Science framework committee.

Previous Committee Experience:

Yes, as a member of my school district's Instructional Leadership Team, I help design the material to be presented to staff at our inservices throughout the year. We are currently adopting a new math curriculum and our staff is reviewing several different programs to determine the one that would best serve our student population. Another goal this year has been to take our current language arts curriculum and align it with the common core standards. This entails taking time to create text-dependent questions for the stories in our anthology, finding new resources to support the vocabulary, spelling, grammar, and writing components and analyze data to ensure students are progressing towards meeting the standards. I will be piloting a new writing program (Lucy Caulkins) starting this week to see if it would be relevant to purchase for the entire intermediate grade levels. Science will be next on the list (hence the forming of a science committee for our district).

Relationship with Publishers: Conflict of Interest Disclosure Statement:

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Question 4: Do you expect to receive any royalty payments during your period of service on the Science CFCC?		
Question 5: Were you or any member of your immediate family an author, contributor, or editor of (or consultant on) any textbook, other curriculum material, or project proposal that is likely to be submitted to the CDE?		
Have you received compensation, do you expect to receive compensation, or do you have any other kind of contractual relationship with any organization that is either a subsidiary, parent organization, or “sister organization” of any entity which will do business with your advisory body or will submit materials to your advisory body?		
Language Skills: Spanish (Intermediate level), Speak, Read, Write		
Professional References:		
Ani Silva	Director of Curriculum and Instruction	Pacific Grove Unified School District
Linda Williams	Principal	Pacific Grove Unified School District
Christine Revelas	Teacher	Pacific Grove Unified School District

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SCIENCE CURRICULUM FRAMEWORK AND EVALUATION CRITERIA COMMITTEE APPLICATION

ID: 966		Submission Date: 2014-04-17 15:26:58	
Name: Mr. David R Tupper		Ethnicity:	
Gender:		Ethnicity Other:	
Position Title: Middle School Science Teacher		Years Teaching: 14	
Employer: Lakeside Union School District			
Address: 9611 Petite Lane		Lakeside	California 92040
Areas of Expertise: Teacher providing instruction to students in kindergarten or grades one to twelve. Note that teachers must meet the requirements for a highly qualified teacher under the No Child Left Behind Act of 2001., Other Areas of Expertise		Other Expertise: Prior CaMSP Project Director	
Grade Levels Expertise: 3–5, 6–8		Subject Taught: Integrated Science, Earth Science, Life Science, Physical Science, Forensics Elective	
Experience Teaching English Learners: 14 years- 4 years in Elementary Grades (4th and 5th) 10 years in grades 6-8 My student population has always included English Learners. During my elementary teaching, I worked on the district team that administered the CELDT Assessment each year. I currently hold a Clear Multiple Subject Credential with CLAD (Crosscultural, Language & Academic Development) Emphasis		Experience Teaching Students with Disabilities: 14 years- 4 years in Elementary Grades (4th and 5th) 10 years in grades 6-8 My student population has always included students with disabilities (both Resource and Special Day Students) I am frequently the science teacher that our SPED teachers prefer to place their students with when mainstreaming or transitioning to Regular Ed.	
Degrees/Credentials:		Institution:	
M.Ed. Curriculum and Instruction		Chapman University	
Single Subject Science Credential (Biological Sciences)		California Commission Teacher Credentialing	
Multiple Subject Teaching Credential with CLAD		Chapman University	
B.S. Kinesiology		San Diego State University	
Knowledge of the Next Generation Science Standards: NGSS is poised to have a large and needed impact on science instruction and student learning. While the 3 dimensions of learning (the DCI, Science and Engineering Practices, and Cross Cutting Concepts) in the NGSS will be new for everyone involved, it is the correct move to make if we want our students to become critical thinkers and decision makers, as well as help to develop a more scientifically literate citizenry. As a Middle School science teacher, I am encouraged by the California SBE's decision to make "Integrated" the preferred model for science instruction in grades 6-8. Middle school student's can often struggle to see the connection between Earth, Life, and Physical Science			

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concepts; especially when we continue to teach them in isolation. The opportunity to provide opportunities for students to understand more deeply at a conceptual level rather than a more fact-based approach is refreshing and the right thing to do for kids. The overt inclusion of Engineering Standards will also have an impact on instruction and learning as teachers may have limited experience and perhaps some trepidation in implementing them effectively; students love engineering and the iterative process that comes with it. It is all science and students need to be DOING science rather than read about science. NGSS can get us there if we do it well. Additionally, the NGSS alignment with Ca. Common Core State Standards, will not only provide more and better structured opportunities to help use literacy to deepen student understanding, it can help to pave the way for more cross curricular integration between all content areas, including P.E. and elective courses. Lastly it seems that with any shift of this scope, teachers and students will need effective instructional materials and sustained high quality professional development to realize the potential of NGSS. We need a strong plan and effective California Framework to help us make it happen.

Standards-Based Instruction Experience:

Prior to developing a unit/activity/lesson. I generally work with our grade level team to create a "conceptual flow" that can help us to determine which concepts are critical to student understanding and what may be the best order of instruction to get at the deep understanding we are looking for in our kids. Once we have our Conceptual Flow worked out, we can then use the "flow" to determine how a lesson fits into the learning sequence and how it addresses the standards and concepts we want the students to understand. At the lesson level, we like to use the 5E lesson design model because it promotes student-centered learning and allows for the use of learning tasks that have multiple entry points so that all students can access the learning. We aim to (E)ngage our students by piquing their interest while accessing their prior knowledge. We then provide one or a series of (E)xplore/(E)xplain activities in which the students are messing around with a concept and then explaining/ processing their understanding in any number of ways. The (E)xtend phase of the lesson provides options for advanced learners to continue growing their learning. The (E)valuate phase of the 5E lesson design is generally embedded in all of the other phases; as teachers we have discussed our Expected Student Responses and have developed pre-planned questions, prompts and other Explore activities to help get students back on track if necessary. Finally we review and assess the authentic student work to help us formatively determine how best to proceed with or adjust instruction.

Area of Expertise and Leadership:

My work as a CaMSP Project Director has prepared me in several ways: -As a Project Director I had to select materials and design Professional Development that would help move teachers from where they were and to become more effective in their practice. Our project worked to improve both teacher science content knowledge and pedagogical strategies. Pedagogy emphasis was on student sense-making notebooks, questioning strategies, 5E Lesson design, Project Based Learning, technology integration. We have been looking at and commenting on the NGSS since their inception. Working with NGSS and helping teachers in grades 3-8 to become familiar with them has helped provide much needed insight into the needs of classroom teachers and how we can help them to understand and effectively implement NGSS for their students. Successfully implementing the Science & Engineering Practices and Cross-Cutting Concepts while incorporating content can be a challenge for instruction, however that has been a part of our instructional strategies all along. -As an SDSU NOYCE Master Teacher Fellow and Middle School Teacher, my work with SDSU's Center for Research in Math Science Education (CRMSE) has centered around the NGSS Practices. We have dissected many of the practices, collected student work, interviewed students, video recorded and analyzed lessons, all in the name of increasing our effectiveness with NGSS and student understanding. -Finally as a participant in the San Diego NGSS Focus Group, I was able to review, and provide input related to concerns about what the Ca. NGSS Framework may need to address.

Previous Committee Experience:

I recently served on one of the Focus Groups for NGSS held at the San Diego County Office of

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Education. (January 30, 2014) With a team of Middle School Science Teachers, I helped to develop a Unit of Study/Curriculum for the Lakeside River Park Conservancy. The Curriculum was called "RiverKeepers" and centered around a local River Park near our school. I served on our LEA District Science Committee for the selection of inquiry based science kits for grade levels K-6. As a committee we reviewed kits from numerous vendors, determined which kits best suited the current standards for each grade level and made recommendations to the District Assistant Superintendent for Curriculum and Instruction.

Relationship with Publishers: Conflict of Interest Disclosure Statement:

Question 1: Do you or a member of your immediate family have, or have you had, a business relationship at any time over the last twelve months with a publisher that produces instructional materials for California?

Question 2: Are you currently employed by or under contract to any person, firm, or organization which will do business with or submit instructional material to the California Department of Education (CDE)?

Question 3: Have you ever been employed by or had any other kind of contractual relationship with any person, firm, or organization doing business with, or submitting instructional materials to, the CDE?

Question 4: Do you expect to receive any royalty payments during your period of service on the Science CFCC?

Question 5: Were you or any member of your immediate family an author, contributor, or editor of (or consultant on) any textbook, other curriculum material, or project proposal that is likely to be submitted to the CDE?

Have you received compensation, do you expect to receive compensation, or do you have any other kind of contractual relationship with any organization that is either a subsidiary, parent organization, or "sister organization" of any entity which will do business with your advisory body or will submit materials to your advisory body?

Language Skills:

Professional References:

Don Whisman	Science Program Manager	San Diego Unified School District
Nancy Taylor	Principal Investigator-Exploring STEM Careers Initiative (ESCI)	San Diego Science Alliance
Kathy DiRanna	Statewide Director	WestEd/K-12 Alliance

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SCIENCE CURRICULUM FRAMEWORK AND EVALUATION CRITERIA COMMITTEE APPLICATION

ID: 971		Submission Date: 2014-04-17 21:36:25	
Name: Mr. Anthony P Quan		Ethnicity: Asian	
Gender: Male		Ethnicity Other:	
Position Title: Consultant II, STEM		Years Teaching: 17	
Employer: Los Angeles County Office of Education			
Address: 9300 Imperial Highway		Downey	California 90242
Areas of Expertise: Administrator, Teacher providing instruction to students in kindergarten or grades one to twelve. Note that teachers must meet the requirements for a highly qualified teacher under the No Child Left Behind Act of 2001., Teacher not providing instruction to students in kindergarten or grades one to twelve (e.g., mentor teacher or certificated teacher employed by school districts or county offices of education who is not in a position that requires a service credential with a specialization in administrative services), Parent, Higher Education/ Researcher, Other Areas of Expertise		Other Expertise: Informal Education	
Grade Levels Expertise: 3–5, 6–8, 9–12, University, College		Subject Taught: Integrated Science, Earth Science, Life Science, Physical Science, Biology, Marine Science	
Experience Teaching English Learners: I have taught SDAIE Science for 9 years to grades 7 & 8. A typical class has 3-4 different languages (Spanish, Mandarin, Cantonese, Vietnamese). I am CLAD Certified and have attended numerous trainings in literacy strategies for the content area and EL trainings in the content area. I have taught courses for Teacher Education Programs in the area of English Language Learners and have presented at numerous conferences, including CABE, CSTA and CMC.		Experience Teaching Students with Disabilities: I have taught 7th and 8th Grade Science with students who have been identified with Autism, Traumatic Brain Injury, and Asperger's Syndrome. I have also worked with students at the high school level who have reading disabilities. I have attended trainings and seminars on working with Autistic students. I also have first hand knowledge of what life is like for an autistic child, having a brother identified as a high functioning autistic individual.	
Degrees/Credentials:		Institution:	
MA/Administration		CSU Los Angeles	
Teaching Credential		CSU Los Angeles	
BA/Marine Biology		UC Santa Cruz	
Knowledge of the Next Generation Science Standards: NGSS is a highly conceptual set of performance standards that will shift the paradigm of teaching for			

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teachers. Instruction must be balanced with providing experiential opportunities that will engage students and provide context for learning. Students are going to be pushed in a positive manner to develop a disposition of habits of mind and an understanding of what it means to be a scientist or an engineer. The science and engineering practices becomes more explicit as teachers will need to connect these practices to learning the content. Moreover, teachers are really going to need to think about how all the disciplines connect to one another, so that students do not develop a sense that different science disciplines are individual silos of information. NGSS now have educators truly thinking about a balanced curriculum where practice and learning are synonymous with one another. Students will be able to see the relationship between science disciplines and understand that all of these, collectively, helps us to understand the world around us. Students will be engaged with the content because there is context for the learning. Lab activities, inquiry-based learning, problem-based learning all lead to students learning. More importantly, teachers will need to move from teaching to learn to facilitating to learn .

Standards-Based Instruction Experience:

This lesson follows on the heels of understanding cells and healthy hygienic practices (health science). In a 7th grade Life Science class, students were to explain the effects of disease transmissions. Students begin describing the school as a large community, with each building on the campus seen as parallel to office buildings, homes, etc. They begin to see the city boundaries. A question is posed, what would happen to this small city if a brand new disease is introduced? . Students hold discussions for a minute or two and the class shares out. Students then prep for a lab activity, involving students sharing bodily fluids via a test tube. Each student is given a test tube with water. One student is given a test tube with a virus (diluted ammonia). Students then begin to share between 3 or 4 students. After, I introduce a chemical indicator to identify who now has the virus (cabbage juice). Each tube is tested and students take data to see who is clean and who is sick . Students then analyze their data to determine where the virus started. Students not only analyze, they must also develop ways to ensure that the virus does not get out of the city . This then leads into a discussion of population dynamics, some chemistry, and health hazards. Students then begin to discuss what they have seen or heard in the real world where this really happens. As a teacher, I know that the lesson is effective when students are engaged. Students are communicating with each other, providing justifications that would validate their thinking or others. They are writing, analyzing and understanding how this works in reality and not just this situation. As the teacher, if students are able to understand the mechanics of a virus by using their knowledge of cells, then it is a successful lesson. It is also effective because of the context for which students are learning, as well as the connections to chemistry and health.

Area of Expertise and Leadership:

Holding a degree in Marine Biology allows me to see the clear connections between all the science disciplines. In order to focus on Marine environmental systems, I have to have a clear understanding of the foundations of earth science, physics, chemistry and biology. Lacking a foundational basis of physics, would not allow me to understand light penetration and its affect on the biology of plankton or the salinity levels of the ocean. I have taken this to heart when I went into teaching, ensuring that students understood the connections of cell biology and chemical interactions. Students took what they learned from one grade and was able to extend their learning into the next grade. My experience as a University Lecturer allowed me to share my experiences and practices with future teachers, engaging them in inquiry, discussing the pros and cons of learning strategies, and more importantly, helping future teachers develop a habit of mind. This naturally led to providing professional development at the site, district and county level, preparing specific workshops that look at instructional practices, content specific lessons, and working with diverse populations with diverse needs. My associations have led to opportunities to work throughout the state, developing a worldly state of mind of what teachers really know and understand about teaching and learning science. I have a unique perspective of traditional, informal and higher education that allows me to see science teaching on a global scale. These experiences have assisted me in identifying what teachers need

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and have helped me to develop PD that is relevant, digestible and safe for teachers to take back to their classrooms and district.

Previous Committee Experience:

I have served on the initial focus groups of the EEI standards. I have also worked in district teams to develop grade level benchmarks. I have also worked with districts in lesson design for lesson studies. I have served on several textbook adoption committees, served as a trainer of trainers in selecting instructional materials, as well as facilitating district wide adoptions.

Relationship with Publishers: Conflict of Interest Disclosure Statement:

Question 1: Do you or a member of your immediate family have, or have you had, a business relationship at any time over the last twelve months with a publisher that produces instructional materials for California?

Question 2: Are you currently employed by or under contract to any person, firm, or organization which will do business with or submit instructional material to the California Department of Education (CDE)?

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Have you received compensation, do you expect to receive compensation, or do you have any other kind of contractual relationship with any organization that is either a subsidiary, parent organization, or “sister organization” of any entity which will do business with your advisory body or will submit materials to your advisory body?

Language Skills:
Cantonese, Speak

Professional References:

Yamileth Shimojyo	Coordinator, Science and STEM	Riverside County Office of Education
Gary Widdison	Project Director, Marine and Outdoor Science Education	Los Angeles County Office of Education
Annamarie Francois	Director of Teacher Education Programs	UC Los Angeles

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SCIENCE CURRICULUM FRAMEWORK AND EVALUATION CRITERIA COMMITTEE APPLICATION

ID: 974		Submission Date: 2014-04-18 04:04:32	
Name: Ms. Jeanine H Wulfenstein		Ethnicity: Decline to state	
Gender: Female		Ethnicity Other:	
Position Title: Science and STEM Teacher		Years Teaching: 14	
Employer: Temecula Valley Unified School District			
Address: 31350 Rancho Vista Road		Temecula	California 92592
Areas of Expertise: Administrator, Teacher providing instruction to students in kindergarten or grades one to twelve. Note that teachers must meet the requirements for a highly qualified teacher under the No Child Left Behind Act of 2001., Parent, Community Member, Other Areas of Expertise		Other Expertise: CSTA Board Member	
Grade Levels Expertise: 6–8, 9–12		Subject Taught: Integrated Science, Earth Science, Life Science, Physical Science, Engineering, Chemistry, Physics, Biology, Algebra, Geometry	
Experience Teaching English Learners: 6th through 8th Grades, Long Beach Area. 2 Years. CLAD Certification. EL instructional leader in science. California Science Teacher Association presenter for Strategies for teaching science to EL students . 6th through 8th Grades, East San Francisco Bay Area. 4 Years. EL strategies trainer. 6th through 8th Grades, Riverside County Area. 8 Years. District SDAIE training, District instructional leader in EL strategies in science. K through 12th Grades, Riverside County Area. 1 Year. Individualized science and math supplemental instruction for EL students.		Experience Teaching Students with Disabilities: 6th through 8th Grades, Long Beach Area. 2 Years. Instructor for SAI (specialized academic instruction) mainstreamed students, SAI pull out students, students with down syndrome, students with autism, and severely handicapped students. 6th through 8th Grades, East San Francisco Bay Area. 4 Years. Staff developer for accommodating students with special needs. Instructor for SAI (specialized academic instruction) mainstreamed students, SAI pull out students, students with down syndrome, students with autism, and severely handicapped students. 6th through 8th Grades, Riverside County Area. 8 Years. District and site staff developer and leader in the successful mainstreaming of students with exceptional needs. K through 12th Grades, Riverside County Area. 1 Year. One-on-one science and math instruction for students with exceptional needs including autism, ADHD, and cognitive delays,	
Degrees/Credentials:		Institution:	
Administrative Services Credential		CPACE Examination	
Masters Degree - Science Curriculum and Instruction		California State University, East Bay	
Single Subject Teaching Credential - Biological Sciences		California State University, Long Beach	

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Bachelor of Arts, Biological Science	University of California, Santa Barbara
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Knowledge of the Next Generation Science Standards:

With the September 2013 CA NGSS adoption in place, there will be sweeping changes statewide in the way teachers approach instruction and the way students view their own learning. Students will have more opportunity to metacognate on their conceptual understanding and gain a deeper understanding of the subject matter they are studying. 21st century skills needed to be successful in the workplace will be embedded into classroom practice. Performance assessments will allow students to demonstrate what they know conceptually instead of solely being assessed on isolated facts. There will now be a focus on instruction of the big idea and the conceptual flow within a specific grade level and across a span of grades. Instruction will take into account how information flows within the scientific disciplines focus on cross cutting concepts to create a true conceptual understanding. With the adoption of NGSS, building a robust scientifically literate community of learners has become a state and national priority.

Standards-Based Instruction Experience:

Assessing effective instruction is based on clear and measurable learning objectives and the outcome of ongoing student assessment. The learning should be founded on a conceptual flow of the standards and student work should be the evidence of the learning. I have used a lesson on the occurrence of genetic traits in a population with a variety of 7th grade learners. The learning objectives are structured to build on a student's prior knowledge. In this case, by the end of the lesson students will be able to describe the occurrence of dominant and recessive traits in a population. The objective would be read aloud chorally as a class. The lesson begins with each student identifying what they know about genetics. During this quick write, the teacher is assessing prior knowledge and misconceptions. Next, students would discuss what they know with their table group. Follow-on questions would be posed to facilitate group dialog. Academic vocabulary such as, dominant trait and recessive trait would be explained to the whole class. Visual clues would be provided to support the vocabulary of dominance and recess. Students would predict dominant and recessive traits from visual examples of traits. Next, using pictures of the traits, they would work with their partner to survey their traits. Students get a class trait total and discuss which showed traits showed dominance. This allows students to engage in authentic academic language. Students chart their data in a data table and analyze the results to see which traits were dominant for the class and which were recessive. Graphic organizers for the data table and examples of completed student work are provided to individuals as needed. Advanced learners would extend their learning by researching rare recessive traits. The teacher would continue to evaluate students and provide timely feedback throughout the lesson. Instruction effectiveness is gauged by evidence of student work meeting the learning objective.

Area of Expertise and Leadership:

NGSS is all about "the big idea" and cross cutting concepts. In 14 years as a successful science educator, I have seen how important making connections is to long term conceptual understanding. I have worked with thousands of students in Alameda, Orange, and Riverside Counties and have seen their faces light up with excitement when they finally reach conceptual understanding. This deep conceptual understanding is vital to be successful in the 21st century workplace. With this philosophy in mind, I started a successful STEM elective program that has spread throughout the district. I have seen the diversity of our student population first-hand and have been successful in providing a guaranteed viable curriculum for all student populations. Given the diversity of the classrooms across California, quality teaching strategies including covert and overt simultaneous engagement, checking for understanding, monitoring and adjusting instruction, and ongoing formative and summative assessment are vital to student conceptual understanding. I am passionate about quality science instruction for ALL students. As a result, I was recognized as the TVUSD Middle School Teacher of the Year for being an instructional leader in the classroom, in the district, the county and at the state level. I serve on the Riverside County STEM leadership network. Statewide, I currently serve as the Region 4 Director for the California Science Teachers

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Association. I was invited to be part of the State NGSS presentation team to roll out NGSS to counties and districts in the southern part of the state. Recently, I also facilitated a review of the ELA/ELD framework at the Fleet Science Center with a cohort of science teachers. I am a proven leader at the site level, district level, county level, and state level.

Previous Committee Experience:

Over the years I have served on numerous committees engaged in curriculum development at the district and county levels. I have served on the Temecula Unified School District Science Curriculum Committee for the past 7 years. The purpose of that committee is district standards review, curriculum development, curriculum revision, development of staff development strategies, and review of instructional materials. I was part of the district committee for the last textbook adoption. At the state level, Most recently, I lead a cohort of San Diego science educators in a review of the ELA/ELD framework at the Fleet Science Center. I serve on the Riverside county STEM leadership network committee that reviews career technical education (CTE) standards and science standards to drive programs, curriculum, and instructional materials for the region.

Relationship with Publishers: Conflict of Interest Disclosure Statement:

Question 1: Do you or a member of your immediate family have, or have you had, a business relationship at any time over the last twelve months with a publisher that produces instructional materials for California?

Question 2: Are you currently employed by or under contract to any person, firm, or organization which will do business with or submit instructional material to the California Department of Education (CDE)?

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Question 4: Do you expect to receive any royalty payments during your period of service on the Science CFCC?

Question 5: Were you or any member of your immediate family an author, contributor, or editor of (or consultant on) any textbook, other curriculum material, or project proposal that is likely to be submitted to the CDE?

Have you received compensation, do you expect to receive compensation, or do you have any other kind of contractual relationship with any organization that is either a subsidiary, parent organization, or “sister organization” of any entity which will do business with your advisory body or will submit materials to your advisory body?

Language Skills:

Professional References:

Laura Henriques	Professor of Science Education/CSTA President	California State University, Long Beach
Timothy Ritter	Superintendent	Temecula Valley Unified School District
Karen Cerwin	Regional Director	k12 Alliance

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SCIENCE CURRICULUM FRAMEWORK AND EVALUATION CRITERIA COMMITTEE APPLICATION

ID: 977		Submission Date: 2014-04-18 11:23:18	
Name: Dr. Teresa De Diego Forbis		Ethnicity: Hispanic/Latino, White	
Gender:		Ethnicity Other:	
Position Title: Science Teacher		Years Teaching: 10	
Employer: Los Angeles Unified School District/ San Pedro High School			
Address: 1001 W. 15th Street		San Pedro	California 90731
Areas of Expertise: Teacher providing instruction to students in kindergarten or grades one to twelve. Note that teachers must meet the requirements for a highly qualified teacher under the No Child Left Behind Act of 2001.		Other Expertise:	
Grade Levels Expertise: 9–12		Subject Taught: Integrated Science, Chemistry, Biology, AP Environmental Science	
Experience Teaching English Learners: I have been teaching English learners for 10 years at grade levels 9-12 in various high school level sciences (please see subjects taught for a list of subjects). My current teaching credential as stated on the Commission of Teacher Credentialing website "authorizes me to provide the following services to English learners: (1) instruction for English language development in grades twelve and below, including preschool, and in classes organized primarily for adults; and (2) specially designed content instruction delivered in English in single-subject-matter (departmentalized) courses as authorized on this document. This authorization also covers classes authorized by other valid, non-emergency credentials held, as specified in Education Code Section 44253.3." My teaching site has also provided various professional development workshops and meetings designated to promote teaching strategies in EL and SDAIE instruction.		Experience Teaching Students with Disabilities: I have been teaching students with disabilities for 10 years at grade levels 9-12 in high school level science. I currently have 20 students with either IEPs or 504 plans that require accommodations within and/or out of my classroom. My teaching site has also provided various professional development workshops and meetings designated to promote teaching strategies in differentiated instruction and SLOs (student learner outcomes) for all students.	
Degrees/Credentials:		Institution:	
Ph. D. in Geological Sciences		University of Southern California	

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Master of Science in Geological Sciences	University of Southern California
Bachelors of Science in Biological and Earth Sciences	California State University Dominguez Hills
Teaching Credentials	California State University Dominguez Hills

Knowledge of the Next Generation Science Standards:

The next generation science standards will impact science instruction and student learning by switching the focus from learning of specified facts and the use of inquiry for the sake of inquiry (which has led to ambiguity of inquiry), to a focus on practices, such as modeling, developing, critiquing and evaluations. The goal of NGSS to develop students with skills to think like scientists and engineers. Students who can look, develop and interpret a variety of different models, Students who can read a piece a science literary or several pieces of science literature and evaluate the strengths and weakness of the authors' points or the determine their own personal opinion based from the facts and evidence they have read. The way this will impact instruction is that in the classroom, students will have emphasis on science practices (e.g. modeling, evaluating, investigating, engaging in argument) focusing on a few discipline core ideas that will have been built on since second grade. There will be more scientific literacy geared towards not just looking for informative answers in the text but looking for evidence in documents to answers or evidence to determine strengths and weakness in a scientific document (e.g. evaluating the effectiveness/validity of an experiment or someone's opinion).

Standards-Based Instruction Experience:

NGSS: HS-LS2-2 & HS-LS2-6 Common Core Reading Standards: RST.11-12.1 California State Science Standards Biology: 6a-c Description of lesson: Students will investigate the relationships between predator and prey (lynx and snow hare) by organizing and graphing data from a simulation (hands on group activity). Students will graph two different scenario, titled normal and habitat loss. Students will analyze and compare and contrast data from the two scenarios using them to predict population change over time due to human influences. Students should be able to link different sources of materials as evidence (their graphs, warm up activity and reading assignment) in order to support their claims. Accommodations: EL, Students at below reading level & Special Needs: Students are using hands on manipulatives and visuals of the populations. Students will annotate while reading (show/draw concepts or ideas). Pair/share with a partner to increase comprehension. Student will highlight which questions they will work in groups with, which they will work in pairs and which they will work by themselves. GATE: Students will add the following parameter to the simulation: Lynx only reproduces if it eats more than 2 mice. (Survives with 2 mice, Reproduces with more than 2 mice). Students will research other relationships that affect population in an ecosystem or real-world human impacts on populations/biodiversity. Students will evaluate the strength of their arguments compared to others in the class. Assessment: The effectiveness of this instruction will be determined by 3 factors. 1. The ability of the student to make and interpret their graphs of population change over time. 2. Their ability to make claims and use evidence to from multiple sources (graphs, reading and prior notes in class). 3. Whether or not the students link and distinguish changes in their simulations' population due to predator-prey relationships and human activity.

Area of Expertise and Leadership:

My experience in teaching 9-12 science, especially biology and environmental science, in a Title 1 school with a diverse population for the past 10 years and in teaching college level science labs during my graduate program have given me various experiences at what science looks like for different levels of students. I have seen the strengths and weaknesses of the far below basic 9th grader and the freshman college student. I have in the past been a reader for the AP Environmental Science exam and fully understand the standards for student outcomes at that level. I am currently a NGSS common core fellow with the LAUSD where our workshops are designed to look at the NGSS and develop district assessments and NGSS ready lesson plans to be used by the district as a whole. At my school site, I am the science department facilitator for department professional developments

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and meetings in NGSS curriculum and implementation. As a graduate student, I wrote several abstracts and journal articles on research that I did towards my MS and PhD, so I understand what is needed to do research and write at a peer ready level. I have used this experience to help my students explore, develop, comprehend and evaluate at a level that will be require of them when they reach college. I have taught multiple science subjects in my 10 years of experience: Biology 10 years, AP Environmental Science 9 years, Integrated Science 3 years, Environmental Science 2 years, Chemistry 1 year, Marine Biology 1 year. I also have 2 single subject credentials: Biology and Geology. I have also passed the single subject exam for chemistry.

Previous Committee Experience:

I have served on school and department based committees to develop curriculum at my school site. These committees were developed cross department project based lessons, curriculum maps for departments and instructional practices. I have also been on curriculum focus groups on my campus for WASC evaluations.

Relationship with Publishers: Conflict of Interest Disclosure Statement:

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Language Skills:

Professional References:

Doug Martinez	Science Department Chair	San Pedro High School
Jeanette Stevens	Principal	San Pedro High School
Jennifer Cheng	Science Teacher	San Pedro High School

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SCIENCE CURRICULUM FRAMEWORK AND EVALUATION CRITERIA COMMITTEE APPLICATION

ID: 981		Submission Date: 2014-04-18 12:22:16	
Name: Mr. John Galisky		Ethnicity: White	
Gender: Male		Ethnicity Other:	
Position Title: Science Teacher / Academy Coordinator		Years Teaching: 20	
Employer: Lompoc High School			
Address: 515 W. College Avenue		Lompoc	California 93436
Areas of Expertise: Teacher providing instruction to students in kindergarten or grades one to twelve. Note that teachers must meet the requirements for a highly qualified teacher under the No Child Left Behind Act of 2001., Parent		Other Expertise:	
Grade Levels Expertise: 9–12		Subject Taught: Integrated Science, Earth Science, Physical Science, Engineering, Physics, Space Science, Electronics & Robotics, Algebra	
Experience Teaching English Learners: Grades 9-12 CLAD certification		Experience Teaching Students with Disabilities: For the last 20 years, in 9th grade Earth Science and 10th-11th grade Conceptual Physics, I have worked with students who have minor learning challenges. Occasionally I have taught students who are deaf or blind and I have had several students with issues related to fine motor control.	
Degrees/Credentials:		Institution:	
Master of Education		U.C. Santa Barbara	
Bachelor of Arts		U.C. Berkeley	
Knowledge of the Next Generation Science Standards: Science is not just a list of facts; it is a way of thinking about the natural world. Instead of just learning about science, NGSS will allow students to think like scientists and do science—ask questions, gather information, find patterns, and make predictions. With the inclusion of Science and Engineering Practices, students will be actively engaged in exploration and discovery by defining problems, brainstorming solutions, designing and prototyping, testing and evaluating. Daily instruction may be very different in the future as students work more independently to set up their own experiments or projects. There will still be direct instruction—disciplinary core ideas are the foundation on which the performance expectations are based—but this content can be framed as necessary information to solve an interesting or relevant problem.			
Standards-Based Instruction Experience: A unit on energy (energy transfer, energy conservation) could include lessons on various sources of electricity. Often, when I teach this unit, I include a research project and presentation. Students form companies and try to sell their energy source to the local community. Representing either biomass, fossil fuels, geothermal, hydroelectric, nuclear, solar, or wind power, the challenge is to present a persuasive argument to city council members and other community leaders. This argument is built			

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on five factors: 1) the benefits of the type of power they represent 2) the costs, dangers, or difficulties of the other energy sources 3) locations where this energy source is already in use 4) drawings and simple explanations of how the energy conversion happens 5) mathematical data in a graphical form showing growth in the industry, return-on-investment, or any other relevant information Assessments, based on their understanding of energy transfer and efficiency, include: A) either a letter to the city council or a newspaper opinion piece promoting their source of energy B) a company slogan, and C) a bus stop or subway style poster. Because they are working in groups where they can discuss concepts and divide tasks, and because much of the content is either demonstrable or at least visual, students are able to overcome many language barriers.

Area of Expertise and Leadership:

The title of my work to earn my Master's degree in Education was Creativity in the Science Classroom. NGSS provides an opportunity to return my classroom to the creative and explorative environment it used to be. Though I never lost the questioning in my classroom, I am now returning to broader exploration and experimentation—more problem-based and project-based. Having worked with NGSS as a member of the California State Review Team starting in fall of 2011, I am able to discuss all the content areas and how they overlap--though I am most comfortable with the Physical Science standards and Earth and Space Science standards. In spring of 2013 I was appointed to the Science Expert Panel where I worked on the Physical Science standards and the integrated middle school model. During each period of public comment I have worked with teachers in my department and across the district to develop a familiarity with the standards and how they could be applied in our classrooms. Since the State Board of Education adopted the standards in September we have been working more formally, coaching each other, to begin implementing the standards using existing pacing guides and instructional materials.

Previous Committee Experience:

Beginning my first year of teaching, and for the next six years, my district embraced an integrated science model. At the time there were very few materials available so we developed our own. As coordinator of a California Partnership Academy, I have worked for almost 14 years with teachers across grade levels and across disciplines to develop project-based, theme-based units that integrate core academics with career-technical education. All of this experience earned me the opportunity to participate in a University of California Curriculum Integration Institute in 2011. Our task was to develop a CTE course that would qualify to earn Lab Science credit when students apply to UC or CSU. The course, Clean Energy-neering, integrates standards from Engineering Design and Physics. With scaffolding of core ideas and project-based learning, this course will continue to be useful for teachers wanting to implement NGSS.

Relationship with Publishers: Conflict of Interest Disclosure Statement:

Question 1: Do you or a member of your immediate family have, or have you had, a business relationship at any time over the last twelve months with a publisher that produces instructional materials for California?

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is likely to be submitted to the CDE?		
Have you received compensation, do you expect to receive compensation, or do you have any other kind of contractual relationship with any organization that is either a subsidiary, parent organization, or “sister organization” of any entity which will do business with your advisory body or will submit materials to your advisory body?		
Language Skills:		
Professional References:		
Greg Doyle	Board President	Lompoc Unified School District
Kathy Alfano	Principal Investigator	College of the Canyons, CREATE NSF Grant
Sid Haro	Asst. Superintendent	Lompoc Unified School District

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**SCIENCE CURRICULUM FRAMEWORK
AND EVALUATION CRITERIA COMMITTEE APPLICATION**

ID: 982		Submission Date: 2014-04-18 13:11:03	
Name: Mr. Caleb Cheung		Ethnicity: Asian, Other	
Gender: Male		Ethnicity Other: Asian American	
Position Title: Science Manager		Years Teaching: 18	
Employer: Oakland Unified School District			
Address: 4551 Steele Street		Oakland	California 94619
Areas of Expertise: Administrator, Parent, Community Member, Other Areas of Expertise		Other Expertise: Science Administrator	
Grade Levels Expertise: 3–5, 6–8, University		Subject Taught: Life Science, Biology	
Experience Teaching English Learners: 9 years at 7th grade, CLAD certificate		Experience Teaching Students with Disabilities: 9 years at 7th grade, RSP and SDC inclusion.	
Degrees/Credentials:		Institution:	
Administrative Services Credential		School Leaders Licensure Assessment	
M.A., Education, Curriculum and Teacher Education		Stanford University, Stanford, CA	
National Board Certification in Early Adolescence Science		National Board for Professional Teaching Standards, Arlington, VA	
B.A., Integrated Biology		University of California, Berkeley, CA	
<p>Knowledge of the Next Generation Science Standards: The adoption of NGSS by the CDE has the potential to radically transform science education in California. It will not only set higher teaching and learning expectations for classrooms, but also galvanize resources, funding, and policies to better support K-12 science education. For the past 13 years, an unintended consequence of No Child Left Behind is the deprioritization of science education across the country. Elementary schools have been most severely impacted as resources and instructional time shifted to English Language Arts and Math. Science was left as an elective or not taught at all in many schools. The new focus on NGSS will have the potential to reverse this trend and address the numerous equity issues that currently exists in many districts. The shift to science and engineering practices and cross-cutting concepts will also have a profound impact on pedagogical practices in classrooms. Students and teachers will be required to move far beyond facts and traditional standards to a deeper understanding of principles and practices of science.</p>			
<p>Standards-Based Instruction Experience: In 2003, I wrote an evolution and genetics curriculum called Change Over Time using elephants as a theme for students to explore concepts on the state science standards. This six week unit focused on interactive inquiry based activities and investigations, covering the key concepts of natural selection, variation, genetics, and adaptations. By using the unique features of elephants and their varied environments, students were naturally drawn to the activities and key concepts. The unit culminated in a Survivor Elephant Island activities where students had to apply their knowledge of the key concepts to a group of evolving elephants and arguing for who would survive in various environments. What made this unit successful was the level of engagement demanded from my</p>			

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students. It invited them to participate regardless of their language level or special needs. It was also easy to adapt many of the activities to meet accommodations or work with other teachers. A number of the activities were also interdisciplinary and allowed for credit in their science and English classes. My former students were 100% students of color, 80% FRMP, 35% ELL, and 10% SpEd. Students were assessed based on their ability to demonstrate understanding of the key concepts through writing samples, concept maps, and final projects.

Area of Expertise and Leadership:

I have taught middle school science for nine years in Oakland. Additionally, for the past eight years, I have directed the district K-12 Science Department and grown the previous team of three to fifteen staff. Much of my current work involves developing districtwide structures and regional partnerships for improving science education that includes curriculum development and implementation, assessments, monthly districtwide professional development, multiple summer institutes, teacher and principal leadership, and the SMART Center, a science support center for the district. I have also worked with numerous local partners to promote science education in Oakland and the Bay Area. This includes organizing the Oakland Science Partners Network, an annual meeting with 75+ partner organizations interested in working to promote science education in Oakland. I have served on many local, state, and national groups to review, revise, or develop science standards as listed below.

Previous Committee Experience:

Advisory Board, Berkeley Science and Math Initiative, CalTEACH, UC Berkeley, CA, 2012-present
Advisory Committee, Strengthening Science & Math Education in California, WestEd, 2012-present
Advisory Board, California Science Project, 2007-present
Member, California Teacher Advisory Council, California Council on Science and Technology, 2009-2014
Certification Council, National Board for Professional Teaching Standards, Arlington, VA, 2007-2013
Broker of Expertise Advisory Committee, California Department of Education, 2007-2010
Chair/Commissioner, California Commission on Teacher Credentialing, 2006-2009
Director, District K-12 Textbook Adoption, Oakland Unified School District (OUSD), 2008
Research Committee, National Board for Professional Teaching Standards, Arlington, VA, 2006-2008
Advisor, Understanding Science Project, WestEd, San Francisco, CA, 2005-2007
Member, National Board Early Adolescence Science Standards Committee, Arlington, VA, 2002-2003

Relationship with Publishers: Conflict of Interest Disclosure Statement:

Question 1: Do you or a member of your immediate family have, or have you had, a business relationship at any time over the last twelve months with a publisher that produces instructional materials for California?

Question 2: Are you currently employed by or under contract to any person, firm, or organization which will do business with or submit instructional material to the California Department of Education (CDE)?

Question 3: Have you ever been employed by or had any other kind of contractual relationship with any person, firm, or organization doing business with, or submitting instructional materials to, the CDE?

Question 4: Do you expect to receive any royalty payments during your period of service on the Science CFCC?

Question 5: Were you or any member of your immediate family an author, contributor, or editor of (or consultant on) any textbook, other curriculum material, or project proposal that is likely to be submitted to the CDE?

Have you received compensation, do you expect to receive compensation, or do you have any other kind of contractual relationship with any organization that is either a subsidiary, parent organization, or "sister organization" of any entity which will do business with your

Note: Information in this application was captured directly from input submitted by the applicant and may contain typographic and data errors.

advisory body or will submit materials to your advisory body?		
Language Skills: Chinese,Speak, Read		
Professional References:		
Kyla Johnson	Associate Superintendent, LCI	Oakland Unified School District
Maria Simani	Executive Director	California Science Project

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