3D

Information

Professional Services Committee

Proposal to Establish a Single Subject Teaching Authorization in Foundational-Level General Science

AGENDA INSERT

Executive Summary: This agenda insert provides the information collected through the web-based survey regarding a proposal for a new Single Subject authorization in Foundational-Level General Science and provides updated information from the Science Subject Matter Panel.

Recommended Action: For information only

Presenter: Teri Clark, Administrator, Professional Services Division.

Strategic Plan Goal: 1

Promote educational excellence through the preparation and certification of professional educators

- Sustain high quality standards for the preparation and performance of professional educators and for the accreditation of credential programs.

Proposal to Establish a Single Subject Teaching Authorization in Foundational-Level General Science

Introduction

This agenda insert is a continuation agenda item 3D, *Proposal to Establish a Single Subject Teaching Authorization in Foundational-Level General Science* and presents the stakeholder feedback from a short, web-based survey. This item also presents additional information from members of the Science Subject Matter Panel that was received after the deadline for the printed June agenda.

Staff developed a web-based survey (Appendix C of the original item) designed to collect feedback from current science teachers, those who prepare science teachers, employers of science teachers and professional development providers of science on the appropriateness and usefulness of a Foundational-Level General Science authorization. The survey was available from April 23-May 20, 2008.

Summary Results of Stakeholder Feedback

A total of 544 individuals began the online survey with 486 (89.3%) completing the survey. The survey was designed to gather feedback from four different role groups that have knowledge about and interactions with K-12 science teachers. Of the individuals who began the survey, almost 90% completed the survey. This is a very high completion rate. The high rate may be due to the fact that the survey was brief or that the individuals were committed to sharing their views on this topic.

Responses to the survey are presented and discussed below. When possible, responses by role groups will be presented as well as the total responses. Because the different role groups have different responsibilities with regard to the preparation for, or teaching of, science, the survey instructed respondents to jump to particular questions that were appropriate for their role. For example, employers of science teachers were asked about the ease of hiring science teachers, how many science teachers are currently serving on a document that is less than a credential, and how many General Science teachers might be employed by their school or district. In contrast, preparers of science teachers were asked their views on an examination route to satisfy the subject matter requirement, an approved coursework route to satisfy the requirement or the advisability of both routes. When possible, responses will be reported by role groups as well as by total responses. Responses to questions asked only of particular role groups will be reported in following sections. Due to incomplete surveys, the number of responses for particular questions may not equal the total number of individuals in each group who started the survey.

Table 1: Responses to the General Science Survey

Role*	Response Count	Percentage
Science teacher	272	49.8 %
Employer of science teachers	106	19.4 %
Preparer of science teachers	84	15.6 %
Professional developer of science teachers	82	15.2 %
Total responses	**544**	

**Individuals were able to indicate membership in more than one role group*

Some basic demographic information was collected from the responders. The school, district or county office of education identification was requested from teacher and employer respondents. For preparers of science teachers, their institution and their role in science teacher preparation was collected.

All survey participants were asked whether they supported the creation of a Foundational-Level General Science authorization. Almost 83% of the responders support the development of a General Science authorization (Table 2). There was some variability of support across role groups. The employers and preparers were most in support of the additional authorization. The science teachers were the role group with the lowest percentage of responders supporting the development of the additional authorization, although over 73% of teachers responding did express their support.

Table 2: Are you supportive of the creation of a Foundational-Level General Science authorization?

Role Group	Support	% in Support	Do Not Support	No Opinion
Teachers	199	73.2 %	44	29
Employers	93	87.7 %	4	9
Preparers	73	86.9 %	4	7
Professional Developers	65	79.2 %	8	9
Total All Responders	**437**	**82.6 %**	**56 (10.6 %)**	**51 (9.4 %)**

Responses to questions that were specific to the role groups are presented below.

Science teachers

Individuals identifying themselves as science teachers were the largest group of responders to the survey. Almost fifty percent of the responses were from science teachers. The science teachers as a group were the least positive (73%) of the four role groups about the creation of a General Science authorization (Table 2).

The science teachers who responded to the survey teach in one or more grade levels from Kindergarten to Grade 12 with the majority teaching in Grades 6-8. As is shown in Table 3, the science teachers who teach in Grades 3-5 were the most supportive of the additional authorization.

Table 3: Are you (science teachers by grade level) supportive of the creation of a Foundational-Level General Science authorization?

Grade Level(s)	Response Count	Support	Do Not Support	No Opinion
K-2	8	5 (62.5 %)	1	2
3-5	22	19 (86.4 %)	1	2
6-8	220	161 (73.9 %)	34	23
9-12	61	41 (67.2 %)	16	3
All	**272**	**199 (73.2 %)**	**44**	**29**

Employers of science teachers

Individuals from school districts and county offices of education in twenty-eight different counties responded to the online survey. Employers from 78 different school districts or county offices of education completed the survey. The districts included urban, suburban and rural districts. The complete list is included beginning on page 10 of this insert. The employers of science teachers were surveyed about the ease of hiring science teachers, how many science teachers are currently serving on a document that is less than a credential, and how many General Science teachers might be employed by their school or district.

In response to the question about how difficult it is to fill open science positions, more than 90% of respondents indicated they have trouble occasionally, regularly, or are unable to fill science positions with credentialed teachers (Table 4). Fewer than ten percent of the employers reported no problems filling science positions with fully credentialed individuals.

Table 4: How difficult is it to fill your science positions-with individuals who are *fully credentialed* to teach the science course?

	Response Count	Percentage
We have no problem filling all our science positions	10	9.8 %
We have trouble occasionally filling a science position	36	35.3 %
We regularly have trouble filling one or more science positions	50	49.0 %
We have been unable to fill one or more science positions	6	5.9 %
Total	**102**	**100.0 %**

Employers were asked to identify the types of documents their current science teachers are serving on. Both the 'Credential' and 'Supplementary or Subject Matter Authorization' are full science authorizations, although only the Credential and Subject Matter Authorization are *No Child Left Behind* compliant documents. The 'Local Teaching Assignment Option,' 'Teaching Permit or Waiver,' and 'Limited Assignment Permit' are less than full science authorizations, are not NCLB compliant, and indicate that the employer was unable to find a fully certified science teacher for the position (Table 5).

Table 5: Indicate on what type of credential or authorization your science teachers are serving?

	Response Count[1]	Percentage
Credential	97	95.1 %
Supplementary or Subject Matter Authorization	72	70.6 %
Local Teaching Assignment Option [2]	23	22.5 %
Teaching Permit or Waiver	19	18.6 %
Limited Assignment Permit [2]	16	15.7 %
Total	**227**	**100.0 %**

[1]Individuals were asked to indicate all the responses that apply
[2] Individuals hold a full credential but not in the area of science.

Since the General Science authorization would be designed to teach in introductory science classrooms, almost universally grade 8 and below, it seems that employers might differ in their support for the authorization based on the type of school district. Districts are, generally, either Kindergarten through Grade 12 (Unified), Kindergarten through Grade 5 or 6 (Elementary), or Grades 7-12 (High School). When the employers' responses are analyzed by the type of school district, the employers from Elementary school districts have the highest positive response to the possibility of a General Science authorization (96%), with the Unified (K-12) having a 90% support and the employers from the High School districts (7-12) having the lowest percentage in support at 80% (Table 6).

Table 6: Are you (employers of science teachers, by type of district) supportive of the creation of a Foundational-Level General Science authorization?

	Response Count	Support	Do Not Support	No Opinion
K-12 District	66	57 (90.5 %)	2	4
Elementary District	25	24 (96.0 %)	1	0
High School District	11	8 (80.0 %)	1	1
Total	**102**	**89 (87.3 %)**	**4**	**5**

To estimate the number of science teaching positions that exist for which a General Science authorization would be appropriate, the employers were asked:

How many FTE positions are in your school/district/COE where a General Science credential would be appropriate?
For the 106 employers who responded, only 84 individuals provided a numerical response to this question. The others replied that they did not know or it is impossible at this time to tell. For those employers who provided a numerical response, the responses ranged from zero to 200 with the average response being 14.8 teachers. The total number of teachers identified by the 84 employers was 1,244 prospective positions for General Science teachers.

Preparers of science teachers
Individuals from colleges, universities and district or county intern programs were asked to identify which segment of higher education or intern program they represent. Individuals from all three of the Commission's traditional higher education segments replied with the most responses from the CSU system (Table 7). As a group, the preparers of science teachers were

the second most positive about the development of a General Science authorization with almost 87% of the responders supporting the concept (Table 2).

Table 7: What segment of educator preparation are you affiliated with?

	Response Count	Percentage
California State University	48	54.4 %
University of California	7	8.0%
Private College or University	18	20.5 %
District/County Office Intern Program	10	11.4 %
Community College	5	5.7 %
Total	**88**	**100.0 %**

The preparers of science teachers were asked to identify their role in preparing science teachers. As with all single subject credentials, there is a subject matter requirement and a teacher preparation program requirement prior to earning a preliminary teaching credential. The majority of the respondents (n = 51) work with the pedagogical preparation of individuals who are preparing to teach science. The smallest group of preparers of science teachers (n=11) is the faculty who work only in the subject matter preparation programs. Seventeen of the respondents are affiliated with both the subject matter preparation and the pedagogical preparation programs (n=17). Table 8 displays respondents' roles in preparing science teachers as well as the level of support provided by those respondents for the new general science authorization.

Table 8: Are you affiliated with the department/school/college of teacher preparation or Letters and Science-subject matter preparation, or both AND **are you supportive of the creation of a Foundational-Level General Science authorization?**

Role in Teacher Preparation		**Support the Development of a General Science**		
	Response Count	**Support**	**Do Not Support**	**No Opinion**
Teacher Preparation	51	48 (94.1 %)	1	2
Subject Matter Preparation	11	9 (90.0%)	1	0
Both	17	13 (81.3 %)	2	1
Total	**79**	**73 (92.4 %)**	**4**	**3**

Science teacher preparation respondents were also asked their opinion on the different routes available for satisfying the subject matter requirement. Currently, all single subject content areas provide both an examination route and an approved program route. Regarding the proposed general science authorization, the majority of science teacher preparers responded that both an examination and an approved subject matter preparation program should be available for the General Science authorization (Table 9).

Table 9: For a General Science authorization, would you support an examination route, a program route, or both for individuals to meet the subject matter requirement AND **are you supportive of the creation of a Foundational-Level General Science authorization?**

Route to Satisfy Subject Matter Response Count		Supportive of the Creation of a General Science		
		Support	Do Not Support	No Opinion
Examination	4	2 (50.0 %)	1	1
Subject Matter Program	18	15 (83.3 %)	1	2
Both	76	69 (94.5 %)	2	2

All respondents were invited to respond to an open ended prompt: **Comments about a Foundational-Level General Science Credential.** Staff reviewed the comments and sorted the comments into three main groups: *Support*, *Do not support*, and *other comments*. Within each of these three main groups, staff then categorized the comment by the topic(s) expressed. Some of the comments contained more than one topic within the comment. Two themes were consistent across all role groups in the support comments: (1) The depth of knowledge defined by a general science authorization is appropriate for elementary and middle school science classes, and (2) a general science authorization will enable additional qualified individuals to earn a science credential. Presented below are the response counts and the themes expressed in the comments with a count of how many responders addressed each theme.

Science teacher comments: A total of 114 science teachers provided responses.
Support—60 responses. These responses addressed three themes.

- Content in a general science authorization is more appropriate for elementary and middle school. (32 responses)
- This authorization will make it easier to find individuals who are qualified to teach science for middle school—similar to the Foundational Math credential. (22 responses)
- This authorization will allow more middle school teachers to be in compliance with NCLB. (5 responses)

Do not support -28 responses. These responses addressed two themes.

- This authorization would be too limited in employment options. (9 responses)
- This authorization lacks the depth of a full science credential. (23 responses)

An additional 26 responses were provided by science teachers. These responses did not indicate a position on the additional authorization but addressed other topics. A sampling of the comments is provided below:

- A teacher preparation program should be required.
- Academic credit should be valued.
- Classroom management skills are more important.
- I am teaching middle school with a multiple subject credential.
- I need more information.
- Keeping student interest is critical in middle school.
- Most districts would only find this useful in the middle schools.

Employers of science teacher comments: A total of 65 employers of science teachers provided responses.
Support— 60 responses. These responses addressed five themes.

- This authorization would be very helpful in providing flexibility in assignment individuals to classes, especially in middle schools.
- Science is the most difficult opening to fill and this will help in the middle schools.
- For small, rural schools this will allow flexibility and some assurances of content knowledge. (5 responses)
- The depth of knowledge is appropriate for elementary and middle school assignments.
- This authorization would be more appropriate for those teaching in middle school classrooms than the current situation where many individuals are teaching science on a multiple subject credential.

Do not support – 5 responses. These responses addressed two main themes.

- This authorization might be too broad and not in-depth enough, therefore, concerns exist about the depth of knowledge for an individual with a general science credential. (3 responses)
- Physical science and Earth science are the toughest positions to fill and this will not help with these openings. (2 responses)

Preparer of science teacher comments: A total of 56 preparers of science teachers provided responses.
Support— 48 responses. These responses addressed six themes.

- The level of subject matter preparation is appropriate for middle school classes. (7 responses)
- This authorization would be an additional pathway for individuals to enter teaching. (5 responses)
- This authorization would work well as an 'add-on' to a multiple subject or other content area in single subject in order to give increased flexibility to an individual. (2 responses)
- This authorization could help address the shortage of credentialed science teachers. (12 responses)
- Foundational Math has been a very successful authorization at bringing additional individuals into the schools. This science authorization will be similar. (18 responses)
- This authorization would ensure a level of preparation that a multiple subject credential does not guarantee. (9 responses)

Do not support – 3 responses. These responses addressed the three concepts listed below.

- This credential should only be attached to a full credential.
- There is a decreasing need for elementary and middle school science teachers so no need for this additional authorization.
- The depth of science knowledge might not be sufficient.

An additional 5 responses were provided by preparers of science teachers. These responses did not indicate a position on the additional authorization but addressed other topics. A sampling of the comments and questions offered by respondents is provided below:

- How many schools are looking for science teachers where this would be helpful?

- What if you already hold a Biology credential, would you need to get a General Science credential?
- We recently had a subject matter preparation program approved by CTC, but we only have one or two students complete it each year.

Professional developer comments: A total of 65 professional developers of science teachers provided responses.
Support—49 responses. These responses addressed four themes.

- This authorization will increase recruitment for science teachers. (16 responses)
- This content in this authorization is appropriate for elementary and middle school teachers. (24 responses)
- This authorization would allow individuals to focus on middle school rather than high school. (8 responses)
- Neither the multiple subject credential, nor the single subject science credential is really appropriate for middle school assignments. (2 responses)

Do not support –9 responses. These responses addressed two themes.

- The limited nature of the authorization raises concerns. (5 responses)
- The proposed authorization lacks the depth of the full science credential. (4 responses)

An additional 7 responses were provided by professional developers. These responses did not indicate a position on the additional authorization but addressed other topics. A sampling of the comments is provided below:

- A degree in Geology would be good preparation for a general science teacher.
- This authorization should only be for elementary, not middle school.
- Don't all teachers have to be 'highly qualified'?

Additional Feedback from a Member of the Science Subject Matter Panel
Staff was able to make contact with one additional member of the Science Subject Matter Panel. The panel member's feedback was in support of a General Science authorization through an examination or a program route. The panel member provided the following comment on the Subject Matter Requirements (SMRs), the two General Science subtests and the science program standards:

> "Before, (when the SMRs and Standards were developed) we assumed that a biology credential-holder, for example, could teach other subjects at lower grade levels, based on their performance on these general science examinations, or the program standards. I think they (the SMRs) were well-rounded and went deep enough to ensure enough subject matter competence for these classes."

Next Steps (as stated in the printed agenda item)
If the Commission supports the concept of a Foundational-Level General Science authorization - both an examination route and a program route, the staff would bring an action item to the Commission with proposed subject matter program standards for the Foundational-Level General Science authorization and move forward with the examination route. This would pave the way for a programmatic route for individuals to satisfy the subject matter requirement for this

authorization. If the Commission does not support the concept, staff will not bring additional agenda items on this topic.

A separate agenda item is scheduled for this Commission meeting with proposed Title 5 regulations to amend the authorization for the single subject credential. If the Commission is in support of the proposed regulation language, the Certification, Assignment and Waivers Division will move forward with the regulation process to establish a Foundational-Level General Science authorization.

Counties and Districts from which Employers Responded to the Survey

County	School District
Alameda	Castro Valley Unified
Alameda	Newark Unified
Alameda	Oakland Unified School District
Butte	Paradise Unified
Calaveras	Calaveras County Office of Education
Contra Costa	Oakley Union Elementary
El Dorado	El Dorado County Office of Education
Fresno	Fresno County Office of Education
Fresno	Fresno Unified
Glenn	Orland Unified School District
Inyo	Lone Pine Unified
Kern	Kern County Office of Education
Lassen	Susanville Elementary
Los Angeles	Bellflower Unified
Los Angeles	Bonita Unified
Los Angeles	Charter Oak Unified
Los Angeles	Claremont Unified
Los Angeles	Compton Unified
Los Angeles	Culver City Unified
Los Angeles	El Rancho Unified
Los Angeles	Las Virgenes Unified
Los Angeles	Long Beach Unified
Los Angeles	Los Angeles Unified School District
Los Angeles	Manhattan Beach Unified
Los Angeles	South Whittier Elementary
Los Angeles	Torrance Unified
Los Angeles	West Covina Unified
Los Angeles	Wm S. Hart Union High
Madera	Madera Unified School District
Marin	Novato Unified School District
Mono	Mono County Office of Education
Orange	Huntington Beach City School District
Orange	Irvine Unified School District
Orange	Orange Unified
Orange	Saddleback Unified
Orange	Tustin Unified
Riverside	Beaumont Unified
Riverside	Hemet Unified
Riverside	Lake Elsinore Unified
Riverside	Menifee Union School District
Riverside	Palm Springs Unified

County	School District
Sacramento	Galt Joint Union Elementary
Sacramento	San Juan Unified
San Bernardino	Alta Loma Elementary
San Bernardino	Apple Valley Unified
San Bernardino	Fontana Unified School Dist.
San Diego	Escondido Union School District
San Diego	Ramona Unified
San Diego	San Diego County Office of Education
San Diego	San Dieguito Union High
San Diego	Sweetwater Union High School District
San Diego	Vista Unified School District
San Francisco	San Francisco Unified
San Luis Obispo	Pleasant Valley Joint Union Elementary
San Mateo	Burlingame Elementary
Santa Clara	Gilroy Unified
Santa Clara	Los Gatos Union Elementary
Santa Clara	Oak Grove School District
Santa Cruz	Santa Cruz City Schools
Solano	Fairfield-Suisun Unified
Tulare	Earlimart Elementary
Tulare	Farmersville Unified
Tulare	Strathmore Union Elementary
Tulare	Tipton Elementary
Tulare	Tulare City School District
Tulare	Tulare County Office of Education
Tulare	Woodlake Union High School District
Ventura	Conejo Valley Unified
Ventura	Oak Park Unified
Ventura	Ocean View Elementary
Ventura	Oxnard Elementary
Ventura	Oxnard Union High School District
Ventura	Rio Elementary School District
Ventura	Santa Paula Union High School
Ventura	Somis Union
Ventura	Ventura County Office of Education
Ventura	Ventura Unified School District
Yolo	Washington Middle School
Yolo	Yolo County Office of Education