From Research to Policy to Practice within the Context of California’s Learning to Teach Continuum

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Our presentation looks at how California continues to update and revise its Learning to Teach Continuum through research. We will examine the process in the areas of the California Standards for the Teaching Profession (CSTP), the teaching of mathematics, and the teaching performance assessment. While the Commission on Teacher Credentialing is responsible for the preparation of all certificated staff in California, we will be concentrating on teachers.

California Context

First of all, we will give some background on California and the issues it faces. There are 6 million students in California schools, of which over 25 percent are English learners, and 360,000 certificated staff. Education policy is divided among the State Board of Education, the Commission on Teacher Credentialing (CTC), the state superintendent of public instruction, and the secretary of education. The California Department of Education (CDE) is responsible for implementing the policy of the state board, the CTC is responsible for the preparation of educators, and the secretary is an adviser to the governor on education policy. Many policymakers in California say that this situation is unworkable and can be confusing. However, the CTC will be celebrating 40 years as an independent professional standards board. From a policy perspective, California has some of the highest standards for
educators and one of the most advanced accreditation systems in the country.

In the late '90s, California embarked on a reform effort to take a more systemic approach to teacher training. From the 1970s to the 1990s, credentialing had become a series of add-ons, with courses in special education, technology, and ELL strategies; however, time had not been taken to pull all the disparate parts into one whole system. The outcome of that reform effort was the Learning to Teach Continuum (LTTC). The continuum encompasses, in sequential order, the acquisition and demonstration of subject-matter competency; the completion of an educator preparation program, with focus on subject-specific pedagogy, intensive field experience, and demonstration of teaching performance expectations; and the completion of a two-year induction program or approved clear credential program. All candidates who complete the continuum have the same knowledge, skills, and abilities.

There are three entry routes, each of which must be aligned with the academic content and performance standards adopted by the state board. An individual may select among the routes depending on prior experience, education, and personal preference. These preliminary routes are referred to as the integrated program, the post-baccalaureate program, and the internship program.

At each of these levels of preparation, the focus differs. Subject-matter preparation is designed to ensure that all teachers have the content knowledge of their subject(s) and an understanding of the K–12 academic content standards. These preliminary preparation programs are responsible for ensuring that the teacher understands the theory behind the content, has the basic skills and abilities to teach K–12 students, and has support and supervision to do so. Finally, in the professional preparation program—Induction or the Fifth Year of Study Programs—the focus is on the application of both content and pedagogical knowledge and skills in the teacher's classroom.

In addition, LTTC requires the three levels of teacher preparation (subject-matter, pedagogical, and induction into the profession) to address K–12 academic content in a recursive manner. For example, field experience in the schools is required in an approved subject-matter program, in the preliminary preparation program, and through the induction phase of the
teacher's preparation. The types of field experiences build through the three levels of the teacher preparation programs.

**California’s Learning to Teach Continuum**

**Level 1 Preparation**

<table>
<thead>
<tr>
<th>Types of Preparation</th>
<th>Duration</th>
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<tr>
<td>Integrated Program</td>
<td>4–5 years</td>
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<tr>
<td>Post-Baccalaureate Program</td>
<td>1 year</td>
</tr>
<tr>
<td>Internship Program</td>
<td>1–2 years</td>
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*Earn a Preliminary Credential*

**Integrated Program**—Allows the teacher candidate to blend subject-matter and professional preparation while completing a baccalaureate degree and credential requirements.

**Post-Baccalaureate Program**—Allows the teacher candidate to complete credential requirements after obtaining subject-matter competency.

**Internship Program**—Allows the teacher candidate to teach while completing professional preparation and initial assessment.

**Level 2 Preparation**

<table>
<thead>
<tr>
<th>Preparation</th>
<th>Duration</th>
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<tbody>
<tr>
<td>Induction</td>
<td>1–2 years</td>
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*Earn a Clear Credential*

The length and specifics of induction programs vary depending on each teacher’s chosen route. The induction program includes advanced curriculum preparation, formative assessment and support, and frequent reflection on practice.

**Level 3 Credential Renewal**

There are no requirements to renew a credential; however, the California Education Code requires school districts to provide professional development. The specific hours for the participation in professional development are not part of credential renewal as of 2007.
Qualities of the Learning to Teach Continuum

The continuum is a systematic approach to preparing teachers. All of the preparation is based on the California Standards for the Teaching Profession (CSTP), which were updated in 2009.

<table>
<thead>
<tr>
<th>California Standards for the Teaching Profession</th>
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<tbody>
<tr>
<td>Standard 1</td>
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<tr>
<td>Engaging and Supporting All Students in Learning</td>
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<td>Standard 2</td>
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<td>Creating and Maintaining Effective Environments for Student Learning</td>
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<td>Standard 3</td>
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<td>Understanding and Organizing Subject Matter for Student Learning</td>
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<td>Standard 4</td>
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<tr>
<td>Planning Instruction and Designing Learning Experiences for All Students</td>
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<td>Standard 5</td>
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<tr>
<td>Assessing Students for Learning</td>
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<td>Standard 6</td>
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<tr>
<td>Developing as a Professional Educator</td>
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</table>

As previously mentioned, the system allows multiple entry routes based on the background and needs of the candidate. There are three program options: the first, the blended option, is for candidates who know they want to become teachers when they enter college; and the second, the post-baccalaureate option, is for individuals who have completed a bachelor’s degree but then decide that they want to be teachers. The third option, the internship program, is for individuals who decide to change careers but do not have the time or financial situation to take a year off from work. These individuals can become teachers of record after completing 120 hours of preparation combined with strong support while in the classroom.
The subject-matter preparation is fully aligned with the K–12 content standards adopted by the California State Board of Education; thus, candidates become familiar with the content standards before ever entering a classroom.

Prior to receiving a preliminary credential, each candidate is required to pass the Teaching Performance Assessment (TPA), which is based on the state’s Teaching Performance Expectations (TPEs). The TPA is the first subject-specific teaching performance assessment for pre-service teachers in the country. The TPEs describe the set of knowledge, skills, and abilities that California expects of each candidate for a Multiple- or Single-Subject Teaching Credential. Candidates must demonstrate that they meet these particular expectations through successful completion of the TPA.

**California Teaching Performance Expectations**

| TPE 1: Specific Pedagogical Skills for Subject-Matter Instruction |
| TPE 2: Monitoring Student Learning during Instruction |
| TPE 3: Interpretation and Use of Assessments |
| TPE 4: Making Content Accessible |
| TPE 5: Student Engagement |
| TPE 6: Developmentally Appropriate Teaching Practices |
| TPE 7: Teaching English Learners |
| TPE 8: Learning about Students |
| TPE 9: Instructional Planning |
| TPE 10: Instructional Time |
| TPE 11: Social Environment |
| TPE 12: Professional, Legal, and Ethical Obligations |
| TPE 13: Professional Growth |

The LTTC encourages collaboration between schools and universities through increased field opportunities.
After a candidate meets the subject-matter requirement and completes a teacher preparation program, he or she receives a preliminary credential. The next step on the continuum is to complete an induction program. California provides funding to induction programs for every new teacher through its Beginning Teacher Support and Assessment (BTSA) program. Prior to fiscal year 2009–2010, that funding could only be spent on induction. Due to the fiscal crisis in California, the 2009–2010 budget authorized the same funding; however, induction programs could spend the money on any program they wished.

The induction program provides advanced curriculum preparation, and the candidate must complete a formative assessment. Formative assessment is a cornerstone of induction. The adopted standards require the participating teacher and support provider to collaboratively collect, analyze, and act on evidence of the participating teacher’s practice. California Education Code §44279.25 (c) charged the CTC to review and redesign the state-developed formative assessment system—the Formative Assessment for California Teachers (FACT)—to align with the revised Induction Program Standards (2008). Approved programs may elect to use the state-developed formative assessment system or a locally developed formative assessment system that meets the adopted standards. The Santa Cruz New Teacher Center has developed its own formative assessment system (NTC FAS), which a number of approved programs implement.

The state-developed system, FACT, is a process-based assessment system now used within BTSA induction to provide information and feedback on teaching performance so that each participating teacher can build on the knowledge, skills, and abilities that he or she brings to the induction experience. Unlike the sequential California Formative Assessment and Support System for Teachers (CFASST), the FACT system requires each participant to build on his or her strengths and experiences in preliminary teacher preparation, and to customize the induction experience to address his or her individual needs. Through participation in four different FACT modules, the participating teacher examines current practice, researches an area for growth, and regularly reflects on that growth.
Formative Assessment FACT for California Teachers

Context for Teaching and Learning
- Collecting and reviewing class, school, district and community
- Contextualizing and extending information

Assessment of Teaching and Learning
- Link teacher preparation knowledge
- CSTP and induction standards based
- Classroom observation

Reflections on Teaching and Learning
(Assessment Toolbox)

Inquiry into Teaching and Learning
(IIP Embedded Across)
- Inquiry focus
- Action plan
- Preparing for instruction
  - Essential components of instruction
  - Entry-level assessment
  - Focus-student selection
- Observation
  - Analysis of student work
- Summative assessment
- Reflection and application

Reflections on Teaching and Learning
(Assessment Toolbox)

Year 1 Cycle

Summary of Teaching and Learning
- Reflection on teaching, students, and personal growth
- Future considerations for study

Year 2 Cycle
Policy into Practice: Communication Infrastructure

One of the key elements in revising the elements within the LTTC is a statewide communication infrastructure. The following items describe how the CTC communicates with its stakeholders.

CTC Coded Correspondence
CTC coded correspondence notifies the public and interested parties of changes in regulations, policies, and procedures. These coded correspondences are archived at: http://www.ctc.ca.gov/notices/coded-archives.html.

E-News and CAW-News
E-news is the CTC's listserv e-mail system, which allows the CTC to communicate and distribute information through the e-mail process, such as coded correspondence and press releases. CAW-News is for issues exclusive to credentialing, which include the distribution of Credential Information Alerts (CIAs).

PSD eNews
PSD eNews has been maintained on a weekly basis since 2008–2009. This electronic correspondence notifies over five hundred individuals, including all approved institutions, of ongoing activities related to the Professional Services Division. Information on accreditation-related activities, such as standards development, revision work, and technical assistance workshops, are routinely distributed via this communication tool.

Program Sponsor Alerts
Another type of communication is used to supplement the PSD eNews. The Program Sponsor Alert format targets a specific issue, such as institutional responsibilities, implementation of inactive status for programs, or modification to preconditions for multiple- and single-subject programs. These alerts, sent via e-mail, provide information from the CTC to approved educator preparation institutions and programs (usually deans and directors of teacher education) and are archived at: http://www.ctc.ca.gov/educator-prep/PS-alerts.html.
Policy into Practice: Organization Infrastructure

Also important to updating and revising the LTTC is working with organizations that represent the CTC’s stakeholders. What follows is a list of the stakeholder organizations that the CTC works with.

California Council on Teacher Education
Founded in 1945 as the California Council on the Education of Teachers and renamed in July 2001, the California Council on Teacher Education is a nonprofit organization devoted to stimulating the improvement of the pre-service and in-service education of teachers and administrators. The council attends to this general goal with the support of a community of teacher educators, drawn from diverse constituencies, who seek to be informed, reflective, and active regarding significant research, sound practice, and current public education issues.

Membership in the California Council on Teacher Education can be either institutional or individual. Colleges and universities with credential programs, professional organizations with an interest in the preparation of teachers, school districts and public agencies in the field of education, and individuals involved in or concerned about the field are encouraged to join. Membership entitles one to participation in semiannual spring and fall conferences, subscriptions to Teacher Education Quarterly and Issues in Teacher Education, newsletters on timely issues, an informal network for sharing sound practices in teacher education, and involvement in annual awards and recognition in the field.

Credential Counselors and Analysts of California (CCAC)
CCAC is a nonprofit professional organization of credentialing personnel from universities, school districts, and county offices of education in California. The organization is dedicated to the dissemination of credential information and provides liaison services to agencies involved in the credentialing process for California school personnel. The Web site and a member e-mail list are maintained to distribute time-sensitive and important information.

CCAC is committed to furthering the knowledge of its members by maintaining an informational network between certification personnel at California institutions of higher education, school districts, county offices of education, and the CTC. CCAC represents the link between the CTC and
teachers, students, and the public throughout California. Members interact with university students who seek certification, with teachers employed at school districts, with those seeking employment, and with personnel involved in assigning teachers to appropriate grade levels and subject areas. CCAC, in collaboration with the CTC, sponsors and organizes an annual fall conference in Sacramento and regional workshops in the spring.

The BTSA Induction Task Force and State Leadership Team
The California Beginning Teacher Support and Assessment (BTSA) induction program provides formative assessment, individualized support, and advanced content for newly credentialed beginning teachers, and is the preferred pathway to a clear teaching credential. The BTSA induction program is co-administered by the CDE and the CTC. The BTSA Induction Task Force and State Leadership Team provide support and technical assistance to local BTSA induction program leaders. There are currently over 169 SB 2042–approved BTSA induction programs across California, organized into six regions, or clusters.

Policy into Practice: Web Infrastructure
The utilization of the Web is of paramount importance in a state the size of California, as stakeholders do not always have the resources to travel to Sacramento for training or meetings. The Web has proved to be a valuable resource for providing transparency in the work of the CTC.

Maintain Public Access to the Committee on Accreditation and the Commission on Teacher Credentialing
Meetings of both the Committee on Accreditation (COA) and the CTC are held in public, with all meeting agendas posted in accordance with the Bagley-Keene Open Meeting Act. In addition, meetings are transmitted via audio broadcast and some via video Webcast to allow any individual with access to the Internet the ability to hear live or recorded broadcasts of all committee meetings. In addition to providing agenda items and notification of meetings, the CTC’s Web site allows broad-based access to critical accreditation materials for institutions and others interested in accreditation.

Agenda items and the audio archive of the meetings are housed on the CTC’s Web site. In addition, videoconferencing has been used in order that those involved in accreditation activities from the southern part of the state can participate from a videoconferencing center and do not have to travel to
Sacramento for an agenda item or a report to the COA that might only take between 20 and 60 minutes.

**Webcasts**
In 2009–2010, a variety of activities took place designed to share information about the revised accreditation system and its implementation. All technical assistance meetings were broadcast through the Web, with the audio archived for access by stakeholders: http://www.ctc.ca.gov/educator-prep/webcasts.html.

**Policy into Practice: Revising the CSTP**

**Educational Importance and Historical Significance of the CSTP**
The California Standards for the Teaching Profession are legislated requirements in California. The CSTP were adopted by the CTC, approved by the state superintendent of public instruction, and endorsed by the State Board of Education in 1997. In the 150-year history of California education, the CSTP were the first teaching performance standards to have statewide validity. All prior standards either focused on programs for teachers or had a limited basis for validity. Completion and adoption of the CSTP was a milestone in the long-term effort to foster standards-based professionalism in California teaching.

The CSTP have served to provide focus, rigor, and continuity to teacher preparation, induction, and professional development programs statewide. The CSTP represent an authenticated common language that has facilitated widespread communication as well as more intimate professional dialogues about best teaching practice. Such a common language had previously been missing, which inhibited the effectiveness of many efforts to improve teaching and learning in the schools.

**Current Uses of the CSTP**
In the eleven years since their adoption, the CSTP have become the cornerstone document for teaching policy in the state of California. In 1997, the state legislature recommended that the CSTP be foundational to teacher preparation programs, a teaching performance assessment, beginning teacher induction, and a teacher's ongoing professional development.
Current uses of the CSTP include

1. fulfilling the legal requirement that the CSTP serve BTSA induction programs as the overarching framework to describe and document what a teacher should know and be able to do; within teacher induction, the CSTP additionally serve as the common language for reflective conversations and as methods of formative assessment for all participants, including beginning teachers, support providers, and induction program leadership;

2. guiding the redesign of pre-service teacher education program standards;

3. serving as the centering constructs for the teacher performance assessment that all beginning teachers in the state of California need to pass to receive a license to teach;

4. outlining the Peer Assistance Review program, the governor’s initiative to provide a structure to support experienced teachers in improving their practice or in removing them from the profession if they do not; and

5. framing employment evaluation processes in many districts throughout the state; the CSTP have expanded beyond induction and been adopted by a large number of school districts to guide and support administrators as they assess and dialogue with teachers regarding teaching performance.

The far-reaching use of the CSTP has had favorable, unforeseen effects on teaching in California by providing a common language for California’s education community when describing effective teaching practice.

**Need for Revalidation of CSTP**

The CSTP and accompanying elemental statements had not been reviewed or updated since 1997. Because of the extensive policy, legislative, and demographic changes that have occurred in California since the CSTP were adopted in 1997, the CDE and CTC revisited the validity of the CSTP.
Two foundational questions preceded the revalidation process and became the guiding suppositions for the CSTP revalidation study:

1. Have the changes in educational policies, changes and/or amendments to the California Education Code, and changing California demographics impacted effective teaching practice?

2. If so, what changes and/or amendments need to be made to the CSTP to ensure that they provide everyone in the educational community with current, research-based best practices?

**Education Policy Issues Impacting the CSTP**

In 2001, the largest teacher credentialing reform in California, SB 2042 (http://www.ctc.ca.gov/commission/agendas/2007-03/2007-03-6A.pdf), put into effect a complete overhaul of preparation for multiple- and single-subject teachers, articulating a standards-based continuum of teacher preparation that is aligned to the K–12 Student Academic Content Standards and Frameworks, and creating a two-tier credentialing system, with induction leading to licensure.

Further, significant shifts related to English learners have led to large changes in California’s demographics and education landscape. Over the last two decades, English learners in California public schools increased four-fold and currently represent 1.6 million of the state’s 6 million students, or over 25 percent (Maxwell-Jolly and Gandara 2006, 103). California has approximately 1 million additional students who are considered English proficient but who come from homes where English is not the primary language spoken. Students who speak a language other than English at home account for 43 percent of California’s K–12 school population (Maxwell-Jolly and Gandara 2006, 104). Estimates are that between 75 and 85 percent of all teachers have at least one English learner in their classroom (Maxwell-Jolly and Gandara 2006, 113).

This unprecedented increase in English learners in California’s public school system has created new challenges and needed skills for teachers, which were not directly addressed in the previous CSTP.

Numerous California education policy changes that impact the CSTP are in the area of K–12 academic content standards and curriculum frameworks. In the last decade, California has adopted K–12 academic content standards (and developed curriculum frameworks) across most content areas. The K–12 academic content standards were “designed to encourage the highest
achievement of every student, by defining the knowledge, concepts, and skills that students should acquire at each grade level” (California Department of Education 2008). In addition to elaborating on the academic content standards, the curriculum frameworks identify key components of effective programs, describe appropriate instructional practices, guide the development of assessment tools, suggest specific teaching strategies, and describe professional development that should be provided to teachers. The previous CSTP did not directly address the adopted content standards or the frameworks adoptions.

The CSTP should reflect expectations for current classroom teachers. Given the revised content standards for K–12 students and the updated curriculum frameworks—with which the CSTP were originally aligned—it was necessary to review and revise the CSTP to ensure their currency and congruence.

Description of the CSTP Revalidation Study
The CTC and the CDE held a gathering of key California stakeholders on July 22, 2008, to begin the collaborative conversation and garner input regarding the revalidation of the CSTP. An advisory panel consisting of a representative from each key California stakeholder group and other experts selected by the CTC and the CDE was formed to meet during the 2008–2009 year, with the charge of assisting the state agencies to complete a study of the validity of the 1997-adopted CSTP by analyzing field surveys and research reviews. The advisory panel was formed to propose revisions to the CSTP based on the validity study, evolving state policy, current research on teaching, and field input.

The Regional Educational Laboratory West at WestEd had supported this study by providing background information related to teaching in California, as well as policy and legislative changes over the past ten years, and assisting in constructing valid and reliable data-collection surveys. Formal and informal survey data were collected throughout the year, beginning in the fall of 2008.

WestEd Research Summary
The advisory panel for the revalidation process collectively represented a vast body of knowledge about teaching in California that would be invaluable as the CSTP were reviewed and revised. To extend panel
members’ knowledge, three research questions were developed and operationalized, resulting in three briefs:

1. How are the CSTP currently being used by practitioners in California?
2. What is the nature of the teaching standards developed by other large states? How are these states using their teaching standards?
3. What are the key developments affecting the teaching profession in California since 1997?

To investigate the uses of the CSTP, a survey instrument was designed to elicit detailed information about the way in which a variety of practitioners in California use the standards to inform their daily practice. The survey population included representatives from local education agencies, teacher educators, school principals, teachers at various stages of their careers, and BTSA support providers. A stratified random sample ensured that each respondent category was represented in the sample, along with schools and districts with students of varying levels of academic achievement. Analysis disaggregated by respondent type and district/school achievement indices revealed a variety of perspectives on the CSTP, in some cases confirming, and in others disconfirming, hypotheses about its current uses.

The investigation of the nature and use of teaching standards in other states (research question #2) involved detailed interviews with representatives from Florida, Texas, New York, Illinois, and other states. Topics covered in the interviews included:

- For what purposes are teaching standards used?
- How have the standards been used to advance the teaching profession?
- How have the standards been revised over time?

Document reviews of the content and organization of each state’s standards revealed differences in the nature of the standards, especially with regard to the way in which they addressed issues related to teaching English learners and special student populations.

Key developments in the state that have affected the teaching profession since the adoption of the CSTP (research question #3) were summarized after reviews of documents from a wide variety of sources, including policy reports on the teaching profession; enabling legislation for key statutory
changes related to the preparation, induction, assessment, and professional development of teachers in California; agenda items and reports produced by both the CDE and the CTC; and state education data. This historical review showed that the teaching profession had changed fundamentally since the late 1990s.

**Review and Revision of the CSTP**

CTC staff worked in collaboration with staff from the CDE in convening an advisory panel that reviewed the previous CSTP and proposed appropriate updates. The panel consisted of applicants from the field and key stakeholder group appointees with expertise in teacher preparation and/or effective teaching. CTC and CDE staff reviewed applications to verify appropriate knowledge, skills, and experience. The selection of panel members took into consideration such factors as geographic representation, credentials, expertise with standards, and diversity and professional experiences. Executive Director Dale Janssen, in consultation with the state superintendent of public instruction, appointed members to the advisory panel.

Formal and informal survey data were collected throughout the year to inform the work of the advisory panel and the development of the panel recommendations related to revising the CSTP. The following table summarizes the key changes in the standards.

**Changes between Previous and Revised CSTP**

<table>
<thead>
<tr>
<th>Revised Standard</th>
<th>Differences between Previous Standard and Revised Standard</th>
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| 1. Engaging and Supporting All Students in Learning | • Greater emphasis on meeting diverse learning needs  
• Begins with teachers’ need to know who their students are and what they are able to do  
• Emphasis on linking subject matter with meaningful, real-life experiences  
• Integrates the concept of inquiry into student learning  
• Added teachers’ use of technologies in engaging students  
• Added the concept of a teacher monitoring and adjusting while teaching |
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<th>Revised Standard</th>
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</table>
| 2. Creating and Maintaining Effective Environments for Student Learning | • Emphasis on developing social, emotional, and cognitive safety in the classroom  
  • Added the concept of a caring community, wherein each student is treated fairly and respectfully  
  • Reinforces the concept of equity in terms of access to resources and technologies  
  • Emphasizes that the physical learning environment reflects curriculum and student learning  
  • Added norms and supports for positive behavior with routines and procedures |
| 3. Understanding and Organizing Subject Matter for Student Learning | • More clearly articulates teacher knowledge of subject matter and remaining current in the subject as a professional responsibility  
  • Highlights the importance of knowledge of student developmental readiness by separating it from content matter  
  • Acknowledges district policy/expectations in regard to the use of curriculum  
  • More clearly identifies differentiation for students with special needs and for English learners |
| 4. Planning Instruction and Designing Learning Experiences for All Students | • Incorporates introductory language on using assessment information when planning instruction  
  • More closely links planning to school and district expectations for student learning  
  • More clearly identifies differentiation for students with special needs and for English learners |
5. Assessing Students for Learning

- Changed the title of the standard to emphasize a focus on student learning (originally “Assessing Student Learning”)
- Added an emphasis on understanding characteristics and limitations of assessment
- Added an emphasis on analyzing assessment data for instructional purposes—not just collecting assessment data simply as information but analyzing data explicitly for instructional purposes
- Added a technology element to highlight the role of technology in understanding and using assessment information

6. Developing as a Professional Educator

- Focuses more clearly on teachers developing to support student learning; addresses the question of how one can improve his or her teaching practice in order to improve student learning
- Emphasizes the developmental nature of teaching
- Added a new element, 6.7, focusing on professional conduct: “Demonstrating professional responsibility, integrity, and ethical conduct”

These standards were adopted by the CTC and approved by the superintendent of public instruction in October 2009. The State Board of Education endorsed the standards in November 2009.

**Dissemination Plan**

While the themes within the CSTP can be applied at varying levels of teacher development depending on the experience of the teacher, the overall content remains constant throughout the teacher’s career span, from novice to seasoned professional. The CSTP are a cornerstone of participation in BTSA induction and a foundational formative assessment component of the induction standards.
During the 2009–2010 year, BTSA Induction Cluster Region Directors (CRD) and staff from the CTC and the CDE worked with stakeholder groups represented on the advisory panel to disseminate the revised CSTP to their constituents. Also during the 2009–2010 year, staff from the CDE and the CTC joined panel members to work with the New Teacher Center in Santa Cruz to establish a Continuum of Teacher Development, which describes levels of practice aligned with the 2009 CSTP.

**Policy into Practice: Teaching Mathematics**

**Policy Conversations**
Mathematics, especially Algebra I, has been the focus of much attention recently due to action taken by the State Board of Education in July 2008 to assess all eighth-grade students in Algebra I by the 2010–2011 school year. This action was taken as a condition of entering into a compliance agreement with the U.S. Department of Education. In light of this new state policy direction, the CTC began a review and discussion regarding the authorizations an individual can use to teach mathematics. The CTC discussed the current credential authorizations for mathematics in the context of student coursework and related evidence of student proficiency. The discussion specifically addressed a number of topics related to the preparation of individuals to teach mathematics, including types of authorizations required for different levels of mathematics instruction; K–12 student proficiency in mathematics; the number of mathematics credentials and other mathematics authorizations awarded; subject-matter preparation to teach mathematics, including the number and passing rate of single-subject candidates who satisfy the subject-matter requirement through the California Subject Examinations for Teachers (CSET): Mathematics; and pedagogical preparation to teach mathematics.

At different points in the discussion, questions were posed about the adequacy of the preparation of professional educators who provide mathematics instruction. Finally, staff compiled a number of questions for the CTC to consider regarding the preparation and credentialing of individuals to teach mathematics.

The questions, which follow, address the subject-matter knowledge of individuals who teach mathematics in elementary schools and many middle schools, as well as the subject-specific pedagogical preparation of those individuals.
1. Does the subject-matter preparation of multiple-subject teachers include adequate subject-matter preparation to allow the teachers to be successful with students at the full range of the credential authorization?

2. Does the current CSET: Multiple Subjects examination appropriately assess a candidate’s knowledge of the content of mathematics?

3. Do the multiple-subject teacher preparation programs include adequate pedagogical preparation for the successful teaching of mathematics in grades K–6, 7, or 8?

4. Should the pedagogy statements in the adopted preliminary program standards be reviewed and possibly revised based on the more recent mathematics framework?

5. What is happening during mathematics instruction in the elementary years that results in students’ mathematics proficiency decreasing as the students’ grade level increases? Are teachers with a multiple-subject credential adequately prepared to teach mathematics in the upper elementary grades? Are they adequately preparing students for Algebra I? Are they adequately prepared to teach Algebra I?

**The Teaching Mathematics Advisory Panel**

In order to look more closely at the issues raised by the January 2009 agenda item, the CTC directed staff to convene a Teaching Mathematics Advisory Panel (TMAP), which would include representatives from key stakeholder groups. Staff developed an application that was publicized widely through the CTC’s Web site, mathematics professional associations, the California Subject Matter Project, and the weekly Professional Services Division E-News. Following a review of a large number of applications, Executive Director Janssen appointed the twenty-member panel. The members were selected based on their expertise in mathematics and mathematics instruction. The panel membership represents diversity with respect to organizational affiliation, geographic region, and credentials held. In addition, a consultant from the CDE served as a liaison to the panel.

In June 2009, one agenda item continued the discussion related to the teaching of mathematics in California. The focus of the item was the
pedagogical preparation required for individuals who are authorized to teach mathematics.

The June 2010 CTC agenda item included the charge to the TMAP, presented an overview of panel deliberations, and identified the major issues that the panel discussed. The agenda item also provided an update on the work of the TMAP, outlined the proposed changes to the structure of the mathematics specialist authorization, and presented proposed draft program standards for the revised authorizations as well as for the mathematics pedagogy preparation of multiple-subject credential candidates.

Stakeholder feedback from the survey was discussed at the June 2010 TMAP meeting. In general, feedback was very positive, with 80 percent of the sixty respondents stating that they had no problem with the concepts or proposed language of the standards. The panelists reviewed all comments regarding clarity and made revisions as needed.

**Issues Identified in the Preparation of Individuals to Teach Mathematics**

Based on the study and discussion of research articles, national panel recommendations, CTC agenda reports, and the California mathematics curriculum framework, the TMAP decided to focus its work in two areas: (1) restructuring and updating the authorizations and standards for the mathematics specialist credential, and (2) expanding the mathematical pedagogy preparation for multiple-subject credential candidates. These foci were chosen because they provided a mechanism for responding relatively quickly to the critical need for mathematics teaching expertise at the K–8 grade levels (math specialist) and to the long-term needs of K–8 students for mathematically competent multiple-subject teachers.

**Overview of Revised Mathematics Specialist Credential**

The TMAP came to the agreement that although teachers of mathematics have at least a basic level of knowledge and expertise regarding teaching mathematics, there is a pressing need to provide additional support to teachers by increasing access to mathematics teaching expertise on a consistent basis, especially at the elementary and middle grade levels. The panel felt that access to expertise in mathematics would best be accomplished by updating the former mathematics specialist credential program standards so that more mathematics specialists could be available statewide to support classroom teachers. As the panel refined its thinking
about the needed changes and updates to the mathematics specialist credential, it determined that a structure that parallels the current nested structure of the reading certificate and reading specialist credential would be appropriate in the area of mathematics.

First, the panel proposed revising and renaming the existing authorization as the mathematics instruction certificate (MIC). In considering what knowledge, skills, and experience a MIC holder should have, the panel agreed that an individual with this certificate should be required to complete advanced preparation and fieldwork in both mathematics content and the pedagogy of mathematics above and beyond what is required for the multiple-subject teaching credential. In addition, the panel recognized that within the MIC option, some teachers would have the prerequisite math content mastery to obtain a certificate that would go through but not beyond the level of mathematics typically taught in kindergarten through pre-Algebra, whereas other teachers might possess the math content that would authorize the teaching of mathematics in kindergarten through Algebra I.

Further, in addition to the MIC, the panel felt that there should be an authorization to recognize a higher level of specialized skills that would allow an individual to not only provide support to teachers but also provide leadership at the K–12 level with respect to the teaching and learning of mathematics. This proposed credential is the mathematics instructional leadership (MIL) specialist credential.

Following is a further description of the MIC and the MIL specialist credential.

**Mathematics Instruction Certificate (MIC): K–Pre-Algebra and K–Algebra**

Candidates with the prerequisite teaching credential may pursue either of two authorizations through a MIC program, depending on the mathematics content knowledge of the candidate and the authorization desired:

1. The MIC (K–Pre-Algebra) would apply to candidates who can document mastery of mathematics knowledge, as organized in the California mathematics content standards, from kindergarten through Algebra I.

2. The MIC (K–Algebra I) would apply to candidates whose mathematics knowledge includes mastery of the California
mathematics content standards from kindergarten through Algebra I, Geometry, and Algebra II.

It should be pointed out that the actual knowledge base of the teacher is required to be at a higher level than what the teacher would be authorized to teach.

### Structure of the Mathematics Instruction Certificate

<table>
<thead>
<tr>
<th>MIC Route</th>
<th>Precursor Credential</th>
<th>Mathematics Content Knowledge of the Teacher</th>
<th>Authorizes Teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>K–Pre-Algebra</td>
<td>Teaching Credential</td>
<td>K–7 through Algebra I</td>
<td>Kindergarten–Pre-Algebra</td>
</tr>
<tr>
<td>K–Algebra I</td>
<td></td>
<td>K–7, Algebra I, Geometry, and Algebra II</td>
<td>Kindergarten–Algebra I</td>
</tr>
</tbody>
</table>

The MIC would be an authorization beyond the preliminary, life, or clear multiple-subject teaching credentials. It is anticipated that the holder of either MIC authorization would play a major role in bridging the existing achievement gap, as he or she would have expertise in designing curriculum; coaching teachers; designing and implementing intensive interventions; and teaching teachers to effectively intervene, accommodate, and differentiate their mathematics instruction to increase student engagement and proficiency in mathematics from kindergarten through pre-Algebra or Algebra I.

The holder of either MIC authorization would need to have the knowledge and skills needed to provide leadership in a comprehensive kindergarten through pre-Algebra/Algebra I mathematics program that addresses the instructional needs of English learners, students with disabilities, gifted and talented students, and students at risk. Additionally, the holder of either MIC authorization could potentially teach mathematics from kindergarten through pre-Algebra/Algebra I in a departmentalized setting. The impact of the holder of either MIC authorization might include but not be limited to increasing:

- student proficiency in K–pre-Algebra/Algebra I and closing the achievement gap by providing math instructional leadership to schools, districts, and counties in such areas as curriculum design,
coaching, intensive interventions, accommodation, and differentiation;

• expertise in teaching K–pre-Algebra/Algebra I subject matter in either a departmentalized or self-contained setting to all students, including English learners, students with disabilities, gifted and talented students, and students at risk; and

• the number of highly qualified K–pre-Algebra/Algebra I teachers in departmentalized settings.

Proposed Mathematics Instructional Leadership (MIL) Specialist Credential

Individuals must complete the mathematics instruction certificate program before they would be eligible for the MIL specialist credential, as this credential is built on the MIC. The proposed new MIL specialist credential would provide experienced teachers the skills required to

• promote more effective teaching and learning of mathematics pre-K–12;

• provide the leadership and a vision for mathematics instruction for schools, districts, and county offices; and

• fulfill a need in the field for a cadre of mathematics teacher-leaders who can connect content-level and coaching expertise with school, district, and/or county leadership.

Programs preparing MIL specialist credential candidates would include advanced preparation and fieldwork in

• effectively connecting action research and mentoring/coaching skills with theoretical research to bridge the theory and practice divide in mathematics teaching and learning;

• designing and implementing a school and/or district professional development system that involves teachers and administrators in working collaboratively to increase student engagement and learning in mathematics;

• analyzing and using student, school, district, county, state, and college/university data to inform school and district program design to increase the number of students who are college-ready and to reverse the pervasive achievement gap; and
• leading a professional community of practice.

Improved Preparation to Teach Mathematics for Multiple-Subject Teachers

The current standards for multiple-subject preparation programs contain one standard that is devoted specifically to the teaching of reading: program Standard 7A. One result of this emphasis is that teacher preparation programs typically have at least one course that focuses exclusively on developing candidates’ knowledge and skills for teaching reading. In contrast, program standards for preparing candidates’ pedagogical skills in mathematics are found in a standard that also defines the content for subject-specific pedagogical preparation for science, history/social science, the visual and performing arts, physical education, and health.

The panel determined that the current single standard that includes mathematics along with other content areas does not provide enough specificity to ensure that multiple-subject candidates develop the mathematical knowledge for teaching that is essential for ensuring that children in K–8 classrooms receive effective instruction in mathematics. To place more emphasis on developing the mathematics knowledge of multiple-subject teachers, the panel developed draft language for a mathematics-specific teacher preparation program standard. The standard describes the critical mathematics content knowledge, specialized content knowledge for teaching mathematics, and mathematics pedagogical skills that multiple-subject credential holders must have to be effective early teachers of mathematics.

The following excerpt from the proposed draft program standard illustrates this focus:

Specifically, the program coursework and fieldwork considers three domains of professional knowledge to be central to the work of teaching mathematics: mathematics content knowledge, specialized mathematical knowledge for teaching and thinking, and pedagogical knowledge and practices for teaching mathematics. The specifications for the Multiple Subject CSET provide a basis for documenting candidates’ foundational mathematical content knowledge prior to field experiences. The program develops candidates’ specialized mathematical knowledge for teaching and thinking, as well as pedagogical knowledge and practices for teaching mathematics. The program lays a solid foundation of these
three domains of professional knowledge and teaches candidates to use and integrate these domains in their developing practice.  
(Professional Services Committee 2010)

Next Steps
Staff is developing a standards handbook and will disseminate the preconditions and standards to all institutions via a Program Sponsor Alert and the CTC Web site. These will include a timeline for transition and implementation, and a date on which technical assistance will be provided via Webcast.

Policy into Practice: Teaching Performance Assessment

Performance Assessment Requirements
California state law requires that teacher preparation programs include a performance assessment of each preliminary multiple- and single-subject credential candidate’s teaching ability. The CTC completed the development of a model teaching performance assessment—the California Teaching Performance Assessment (CalTPA)—which program sponsors could choose to embed in their programs. The model includes formative assessment data as well as summative assessment data for each credential candidate, and pilot testing and field review have been conducted. The assessment system contains a set of performance tasks and task-specific rubrics, assessor training, and administrator training. Alternatively, program sponsors could choose to develop their own teaching performance assessments or select other CTC-approved assessments that meet the same standards as the CalTPA. Pursuant to SB 1209 (Chap. 517, Stats. 2006), teacher preparation programs were required to embed a teaching performance assessment (TPA) into their programs by July 1, 2008.

As of July 2008, California statute (Chap. 517, Stats. 2006) requires all candidates for preliminary multiple- and single-subject teaching credentials to pass an assessment of their teaching performance with K–12 public school students. This assessment of teaching performance is designed to measure the candidate’s knowledge, skills, and ability in relation to California’s Teaching Performance Expectations (TPEs), including demonstrating his or her ability to appropriately instruct all K–12 students in the student academic content standards. Each of the three approved teaching
performance assessment models (CalTPA, FAST, and PACT) requires a
candidate to complete defined tasks in four areas: (1) subject-specific
pedagogy, (2) design and implementation of instruction, (3) student
assessment, and (4) a culminating teaching experience or event. Candidate
performance is scored by trained assessors against one or more rubrics that
describe levels of performance relative to each task. Each model must also
meet and maintain specified standards of assessment reliability, validity, and
fairness to candidates.

**Assessments’ Reliability and Validity Requirements**
The process used to develop and implement California examinations follows
a standardized, rigorous set of procedures to ensure the validity, reliability,
and legal defensibility of the examination. This process guarantees that
teacher candidates ultimately have the required knowledge, skills, and
abilities to provide effective instruction for K–12 students in accordance with
California’s student academic content standards. The development process
and associated activities include the formation of a panel of K–16 California
educators who are experts in their particular area of the examination and
represent the demographics of California. These panel members review the
most current K–12 standards, curriculum frameworks, advisories, literature,
and research when drafting the content specifications. National experts and
focus groups consisting of California K–12 practitioners as well as the CTC’s
Bias Review Committee then review those specifications. Next, as a job-
analysis activity, the specifications are reviewed by a wide range of
California K–16 practitioners with background in the examination field.
These practitioners rate specific knowledge, skills, and abilities that would
be expected of beginning teachers in that area. The CTC then presents the
specifications in a public forum to seek additional stakeholders’ input before
final adoption. The test items are then developed—based specifically on the
finalized content specifications—and field-tested by individuals who have
the same background as potential examinees. An analysis of the item
performance is then carried out to determine which items accurately test the
needed knowledge, skills, and abilities. A new panel of K–16 California
educators then reviews the items used on the first administration to
recommend a score appropriate for a beginning teacher, which is then
presented to CTC members in a public forum for their review and adoption.
The examination is reviewed periodically to ensure that any changes made
to California’s student academic content standards are addressed so that the
examination maintains its validity, reliability, and legal defensibility.
Reference

Professional Services Committee. 2010. *Proposed preconditions and program standards for the teaching of mathematics*. Sacramento: California Commission on Teacher Credentialing