

**Final Report
of the
Computer Education Advisory Panel**

**Proposed Standards of Program Quality
and Effectiveness
Relative to the Implementation of AB 1023
(Chapter 404, Statutes of 1997)**

Effective Use of Computer-Based Technology in the Classroom for
Preliminary Multiple and Single Subject Teaching Credentials

and

Effective Use of Advanced Computer-Based Technology in the Classroom for
Professional Multiple and Single Subject Teaching Credentials



State of California
Adopted
December 1998

**California Commission on
Teacher Credentialing**
July 1998

Members of the Commission

Carolyn L. Ellner, Chair	Postsecondary Education Member
Torrie L. Norton, Vice Chair	Elementary School Teacher
Phillip A. Barker	Middle School Teacher
Melodie Blowers	School Board Member
Verna B. Dauterive	School Principal
Scott Harvey	Public Member
Carol Katzman	Office of the Superintendent of Public Instruction
Patricia Kuhn	Elementary School Teacher
Helen Lee	Public Member
Doris Miner	School Counselor
Gary Reed	Public Member
Craig Smith	Public Member
Edmund Sutro	High School Teacher
Jane Veneman	Special Education Teacher
Nancy Zarenda	Elementary School Teacher

Ex Officio Members

Edward DeRoche	Association of Independent California Colleges and Universities
Bill Wilson	California State University
Marge Chisholm	Postsecondary Education Commission
Jon Snyder	Regents, University of California

Executive Officer

Sam W. Swofford, Ed.D.	Executive Director
------------------------	--------------------

Members of the Computer Education Advisory Panel

Otto E. Benavides Associate Professor Instructional Technology and Resource Center CSU, Fresno	John P. Lenhardt Executive Director Project INSPIRE Narbonne / San Pedro Cluster Los Angeles Unified School Dist.
Dennis Brown Principal Kearny Senior High School San Diego	Grace Enju Liu Project Manager International Business Machines, Inc. Palo Alto
David R. Georgi Professor Department of Teacher Education CSU, Bakersfield	Arlene Machado Principal Los Paseos Elementary School Morgan Hill Unified School Dist.
James M. Gibson, Jr. Director Educational Technology Services Glendale Unified School District La Crescenta	Peter G. Milbury Librarian/Mentor Teacher Chico High School Chico
Carol Gilkinson Mentor Teacher Charter Oak Unified School District Covina	William H. Ragsdale Computer Teacher Pleasanton Unified School District Pleasanton
D. Patricia Hanlon English Teacher/Department Head Lowell High School San Francisco	Pamela Redmond Curriculum & Technology Specialist Department of Education College of Notre Dame Belmont
Norman Herr Professor Department of Secondary and Adult Education CSU, Northridge	Sheldon K. Smith Education Technology Specialist San Luis Obispo County Office of Education San Luis Obispo
Lisa Kala Director Education Media and Computer Services Graduate School of Education UC Berkeley	Warren Wagner President PPS Inc. Marina Del Rey
Enoch Kwok Physics/Geoscience Teacher Crescenta Valley High School La Crescenta	Lane Weiss Curriculum Coordinator Lodi Unified School District Lodi

Liaisons to the Computer Education Advisory Panel

Richard S. Normington	Representing: Education Council for Technology in Learning (ECTL)
Nancy Sullivan	Superintendent of Public Instruction

Commission Staff to the Computer Education Advisory Panel

Sanford L. Huddy	Consultant Program Evaluation and Research Professional Services Division California Commission on Teacher Credentialing
Helen Hawley	Assistant Consultant Certification, Assignments and Waivers Division California Commission on Teacher Credentialing
Shari Cooley	Office Technician Professional Services Division California Commission on Teacher Credentialing

Table of Contents

Commissioners	i
Members of the Computer Education Advisory Panel.....	ii
Liaisons and Commission Staff to the Computer Education Advisory Panel	iii
Final Recommendations of the Computer Education Advisory Panel	1
Foreword.....	6
Definitions of Key Terms.....	9
Proposed New Standard 24.5 (Use of Computer-Based Technology in the Classroom).....	11
Proposed Amendment to Common Standard 2 (Resources)	15
Proposed Amendment to Common Standard 5 (Admission).....	16
Proposed Amendment to Common Standard 7 (School Collaboration).....	17
Contributors to the Report of the Computer Education Advisory Panel	18
Bibliography	19
Text of AB 1023 (Chapter 404, Statutes of 1997).....	Appendix Page 1

Final Recommendations of the Computer Education Advisory Panel

The Computer Education Advisory Panel is charged with the following responsibilities:

1. The development of and recommendations for Standards of Program Quality and Effectiveness relative to the effective use of computer-based technology in the classroom for Preliminary Multiple and Single Subject Teaching Credential Candidates;
2. The development of and recommendations for Standards of Program Quality and Effectiveness relative to the effective use of advanced computer-based technology in the classroom for Professional Multiple and Single Subject Teaching Credential Candidates; and
3. The development of and recommendations for a variety of methods by which the attainment of standards may be assessed and demonstrated.

Recommendation One:

Establish an additional standard of program quality and effectiveness for Multiple and Single Subject Teaching Credential professional preparation programs that provides for the effective use of computer-based technology in the classroom prior to issuance of the preliminary credential and for the effective use of advanced computer-based technology prior to issuance of the professional credential.

The specific language of this proposed standard may be found on page 11 of this final report.

Recommendation Two:

The current resources requirement specified in Common Standard 2 should be amended to include additional questions to consider which would guide evaluation teams relative to the availability of adequate and appropriate resources including computer-based technology and technical support for the success of faculty, staff, and candidates.

The specific language of this proposed amendment may be found on page 15 of this final report.

Recommendation Three:

The current question to consider already included within the admission requirement specified in Common Standard 5 should be amended to include entry level computer skills prior to entering the program.

The specific language of this proposed amendment may be found on page 16 of this final report.

Recommendation Four:

The current school collaboration requirement specified in Common Standard 7 should be amended to include an additional question to consider which would guide evaluation teams relative to the placement of candidates in schools where they can have significant experiences using computer-based technology.

The specific language of this proposed amendment may be found on page 17 of this final report.

Recommendation Five:

Future reviews and revisions of subject matter program standards by the Commission should address the use of computer-based technology.

New uses of technology can lead to significant changes in teaching and learning. Using computer-based technologies as a tool for instruction should be an integral characteristic of a subject matter program for teachers. Integrating the use of current instructional strategies and technologies into the curriculum is critical to enhance learning in all curriculum content areas.

Applicable to all subject matter areas:

- 1) The program includes examination of access, equity, privacy, legal, and ethical issues surrounding technology.
- 2) The program provides opportunities for candidates to analyze, compare, and evaluate appropriate computer-based technologies as effective tools of instruction within and across content areas.
- 3) The program assures adequate access to computing resources and incorporates significant learning experiences with technology within field work and course work.
- 4) The program provides opportunities for candidates to demonstrate effective use of appropriate computer-based technology in a variety of instructional situations.

Recommendation Six:

For both the preliminary and professional credentials the Commission should make available, as appropriate, a variety of mechanisms which enable

credential candidates to demonstrate their proficiency in the use of computer-based technology in the classroom, such as:

- a) Completion of a Commission-approved program of teacher preparation and subject matter preparation in which the effective classroom use of computer-based technology is infused throughout the programs;
- b) Completion of a course of study offered or accepted by a college or university which has a Commission-approved program of teacher preparation; this option has the advantage of providing a focused experience in which candidates are able to learn computer-based technology project planning, management and integration techniques;
- c) Passage of a Commission-approved assessment. This option is particularly important for meeting the requirements for the preliminary credential for out-of-state credential candidates;
- d) Demonstration of competency (such as a challenge exam or other assessment), carried out by a Commission-approved college, university, or local education agency (school district or county office of education);
- e) Completion of Commission-approved professional development conducted by a local education agency. This option is particularly important for meeting the requirements for the professional credential, and would be particularly effective as part of a Commission-approved program of induction.

Recommendation Seven:

AB 1023 amends Section 44259 of the Education Code in regard to teacher credential requirements. The specific changes are intended to ensure that prospective teachers commencing training after January 1, 2000, will acquire in the course of their formal preparation period a comprehensive level of comfort and understanding with respect to the use of computer-based technology as teaching and learning tools. Over time, these new credential requirements will lead to a significantly greater integration of technology into pedagogical practices and course curricula.

Even so, these AB 1023-mandated changes, in and of themselves, will have no direct impact on the technological knowledge and practices of in-service teachers. Indeed, many existing teachers have little or no experience with technology-assisted teaching. Accordingly, if the benefits to learning sought by AB 1023 are to accrue to today's school children in the least amount of time, State-endorsed guidelines must be established which provide in-service educators with a comprehensive program of professional development which is consistent with the precepts of the amended credentialing standards to be delivered by AB 1023-compliant institutions of higher education.

In addition to helping existing teachers acquire the same level of knowledge and understanding new teacher candidates will obtain via formal education, the Computer Education Advisory Panel observes that technology is among the most rapidly changing elements of modern society. Accordingly, as much as any other academic discipline, continuous, life-long learning is required in order to maintain subject matter currency. Professional development programs are the appropriate mechanism for addressing this axiom - by

providing for on-going knowledge building, skill development, and continuous improvement.

This addendum to the Computer Education Advisory Panel's recommendations in regard to AB 1023 implementation, was developed at the request of the Commission and in collaboration with the Panel's liaison from the Superintendent of Public Instruction. It outlines further recommendations and considerations vis-à-vis technology-related professional development. The Computer Education Advisory Panel recommends the following relative to professional development:

- a. The State of California should provide professional development leadership and funding necessary to bring all certificated personnel to the levels described in Standard 24.5 and to support continued professional growth.

This recommendation is supported by recently enacted legislation, AB 1339 (Chapter 844, Statutes of 1998), Knox, which provides, in Education Code Section 44730, for the allocation of funds for education technology staff development in grades 4 through 8. This legislation specifies that funds expended for education technology staff development must meet or exceed the proficiency standards developed by the Commission.

High quality professional development designed to promote the use of technology in teaching and learning:

- Is based on research and best practices
- Is an on-going process of training and assessment based upon a well-defined plan tailored to the needs of the certificated personnel.
- Is focused on curriculum and the use of technology to help students meet adopted standards.
- Uses multiple mechanisms such as mentoring, peer coaching, peer collaboration, self instruction, e-mail, video, formal coursework, and distance learning.
- Uses results based mechanisms to measure its effectiveness.
- Is supported and sustained by adequate human, physical, and financial resources at the state and district level
- Is consistent with and supported by policies of the school board
- Is supported by administrators who provide leadership by modeling, planning, and promoting the effective use of technology for teaching and learning
- Provides incentives, recognition, and compensation for investment in professional growth
- Provides time for training, collaboration, learning, and practice
- Is made available from a variety of sources including institutions of higher education, state-funded projects, county offices, districts, and private industry.

- Provides access to hardware, curriculum specific software and telecommunications infrastructure during training, practice, and implementation
- b. The State of California should establish an on-line repository linking new and existing sources of research, successful models for planning and implementation, standards, and professional development plans and resources.

Most districts find themselves charting new territory when devising an overall technology plan. Developing a technology plan with strong professional development and support elements can prove to be a daunting and expensive task.

School districts attempt to make the most of available resources often with little guidance or collaboration among districts and sometimes even among schools within a district. A central repository can be used to bring together the disparate resources of the public and private sectors to share and disseminate information about best practices in professional development.

- c. The State of California should establish an advisory panel of experts to implement these professional development recommendations.

The advisory panel should be representative of the stake holders affected by professional development including but not limited to:

- State Agencies
- Teachers and other certificated personnel
- Site and District Administrators
- County Offices
- School Boards
- Professional Associations
- Colleges and Universities
- Labor Unions
- Business and Community Partners

Foreword

The Panel's task:

The California Commission on Teacher Credentialing was mandated through AB 1023 (Chapter 404, Statutes of 1997), Mazzoni, to establish "standards of program quality and effectiveness relative to the use of computers in the classroom for preliminary credential candidates, and to establish standards of program quality and effectiveness relative to advanced computer-based technology for professional credential candidates". As provided by law [Education Code Section 4425(I)] and practice, the Commission elected to select a "Computer Education Advisory Panel" which was charged to make a comprehensive review and make specific recommendations with regard to computer competency standards.

Composition of the Panel:

The eighteen Panel members represent a diverse group of individuals from across the state of California whose daily work is focused on the enrichment of California teachers and students. The Advisory Panel includes: 1) technologically proficient administrators with current relevant experience, 2) library professionals with current experience in computer applications and online research, 3) professional mentor teachers who have taken the lead in introducing computer-related technology into their own classroom and beyond, 4) private sector professionals who have employed graduates and/or have been working with California's educators on a myriad computer technology issues, 5) representatives from colleges and universities who will ultimately be charged with designing programs to prepare incoming teachers who must meet the standards of AB 1023 as recommended herein.

Prior works, recommendations and standards:

The Panel wishes to acknowledge the work of pioneering advisory panels, school districts, independent and private sector volunteer groups and others who have published and contributed to the effective use of computer technology in the classroom. The volume of recent information published on this subject is testimony to the intense interest in better utilizing the tools of computer technology within the classroom environment and has been of great help to the Panel.

The Panel's recommendations coincide with SB 1422 recommendations (November 1997) in the "Report of the Advisory Panel on Teacher Education, Induction and Certification for Twenty First Century Schools", and with the January 1996 report drafted by the Committee to Review Computer Education Requirements. The recommendations made by the Panel have embraced the prior work done by Education Council for Technology in Learning (ECTL) and other groups. The recommended standards align with the framework of

California Standards for the Teaching Profession (CSTP) standards to the greatest degree possible considering the rapid evolution of technology.

The Panel was cautious in avoiding terminology that was so specific that it would be limiting. (For example the term “browser” was not widely used until the 1990’s, spreadsheets were not heard of until the mid 1970’s, and until the late 1980’s “multi-media” meant 35mm slide show presentations perhaps with sound and effects). Because of these rapid changes, the Panel recommends that ongoing reviews and updates be scheduled by the Commission.

Process:

The first meeting of the Panel consisted primarily of discussions regarding the present state of technology access in California schools, briefings on credentialing procedures and discussions as to each Panel member’s experiences with introducing technology into their own realm. The Panel then identified five domains which were broadly defined as basic skills, social and legal concerns, productivity tools, research, and curriculum. Panel members whose experiences most closely fit each domain formed sub-committees to further develop the concepts within each domain.

As the Panel worked to define the progression in a teacher's ability to effectively use technology in the classroom, it became apparent that the curriculum domain was the most important. The original five domains were consolidated into the following two: 1) productivity tools and 2) curriculum and instruction. These two domains are embedded in the “Factors To Consider” section beginning on page 11 of this final report.

The Panel met seven times during 1998. In July of 1998, the preliminary report of the Panel was reviewed by the Commission and approved for distribution to the field for review and comment. In September of 1998, the Panel met again to review the comments from the field which resulted in amendments to the recommendations which are contained in this final report.

Commissioned Research:

A research paper was prepared at the request of Assembly Member Kerry Mazzoni, Chair of the Assembly Education Committee, to support the work of the Panel. This research paper summarizes ways in which computer technology and communications have been found to enhance learning in K-12 classrooms. The information reflects published and unpublished sources (both formal and informal) as well as direct observations. The paper proved to be invaluable to the work of the Panel and the Panel expresses its sincere appreciation to Dr. Kenneth W. Umbach, Policy Analyst for the California Research Bureau, California State Library.

Importance of this effort:

As currently outlined, the "Goals 2000" program emphasizes technology in education. The use of computer-based technology as a productivity, research, and communications tool has been promoted by private industry and government. However, the excitement generated by the Internet and the move toward greater utilization of computer related technologies within our schools must be tempered with the reality of the availability of funding and the knowledge base of our school administrators, teachers and parents.

The pervasiveness of computer-based technology as part of daily life clearly has educational implications. Teacher preparation institutions require adequate resources to properly equip teachers to use those technologies in their jobs. The expanse of knowledge now being accessed and the way that it is obtained requires an equally dynamic plan of ongoing teacher professional development. The Panel's interpretation of AB 1023's goal is to provide the correct mix of appropriate computer related tools within the framework of a world-class education and to assure that our teachers are prepared to meet the challenges and opportunities before them.

This final report will be submitted to the Commission in December 1998 for their consideration.

Definitions of Key Terms

“Acceptable Use Policy” (AUP) refers to a formal agreement between an institution and the user requiring the user to abide by standards and rules of conduct when using computer-based resources.

“Appropriate technology” refers to using technological tools which can add depth, quality and reinforcement to the learning process that is not as readily obtained by other means; conversely, inappropriate use of technology detracts from the learning process. Appropriate use of technology requires an understanding of when, where, and how to use computer-based technology to enhance instruction.

“Common Standards” deal with aspects of program quality that are the same for all credential programs. The institution responds to each Common Standard by providing pertinent information, including information about individual programs. For each Common Standard, questions are included which will assist team members during training and continuing accreditation reviews. The questions can also be used by institutions as they reflect upon the quality of their programs and for assistance in the preparation proposals for initial accreditation of programs and self-study reports for continuing accreditation.

“Computer-based technology” refers to computer hardware, peripherals, network infrastructure, and software.

“Daily teaching responsibilities” refers to the extended period of time during student teaching when a candidate assumes primary responsibility for teaching one or more classes of students on consecutive school days. “Full-time teaching responsibilities” means that a student teacher assumes the range of academic responsibilities that the candidate’s supervising teachers normally assume on a given day.

“Digital Information” refers to information coded in a binary format that is interpreted and processed by a computer.

“Factors to Consider” will guide evaluation teams in determining the quality of a program’s response to each standard. Within the scope of a standard, each factor defines a dimension along which programs vary in quality. To enable an evaluation team to understand a program fully, a college or university may identify additional quality factors, and may show how the program fulfills these added indicators of quality. In determining whether a program fulfills a given standard, the Commission expects the team to consider, in conjunction with each other, all of the quality factors related to that standard. In considering the several quality factors for a standard, excellence on one factor compensates for less attention to another indicator by the institution.

"Multimedia" refers to combining text, graphics, audio, video, animation or other media.

"Network" refers to computers linked together for the purpose of moving information from one place to another.

"Online" refers to a computer that is connected to the Internet, an intranet, or other type of network for the purpose of data retrieval, messaging, applications access, and interactive uses.

"Questions to Consider" are designed to assist accreditation team members during training and continuing accreditation reviews. They may also assist institutions in preparing proposals for initial accreditation of programs and self-study reports for continuing accreditation.

A "Standard" is a statement of program quality that must be fulfilled for initial approval or continued approval of a professional preparation program by the Commission. The Commission determines whether a program satisfies a standard on the basis of a consideration by an evaluation team of all available information related to the standard.

Standard 24.5 (New)

Use of Computer-Based Technology in the Classroom

Candidates are able to use appropriate computer-based technology to facilitate the teaching and learning process.

Rationale

The widespread reliance of contemporary society upon computer-based technologies reflects the increasing importance of electronic information management and communication tools. Technology, in its many forms, has become a powerful tool to enhance curriculum and instruction. Productivity, communication, research, and learning are dramatically enhanced through the appropriate use of technology thereby allowing educators to accomplish tasks that were not previously possible.

The true power and potential of computer-based technologies lies not in the machine itself but in the prudent and appropriate use of software applications to gather, process, and communicate information. Teachers' integration of these tools into the educational experience of students, including those with special needs, is crucial to preparing them for lives of personal, academic, and professional growth and achievement.

Teachers must become fluent, critical users of technology to provide a relevant education and to prepare students to be life-long learners in an information-based, interactive society. The appropriate and efficient use of software applications and related media to access and evaluate information, analyze and solve problems, and communicate ideas is essential to maximizing the instructional process. Such use of technology supports teaching and learning regardless of individual learning style, socio-economic background, culture, ethnicity, or geographic location.

Factors to Consider

When an evaluation team judges whether or not a program meets this standard, the Commission expects the team to consider the extent to which:

Prior to issuance of the Preliminary Credential

General Knowledge and Skills

- Each candidate demonstrates knowledge of current basic computer hardware and software terminology.
- Each candidate demonstrates competency in the operation and care of computer related hardware (e.g. cleaning input devices, avoiding proximity to magnets, proper startup and shut down sequences, scanning for viruses, and formatting storage media).
- Each candidate implements basic troubleshooting techniques for computer systems and related peripheral devices (e.g. checking the connections, isolating the problem components, distinguishing between software and hardware problems) before accessing the appropriate avenue of technical support.
- Each candidate demonstrates knowledge and understanding of the legal and ethical issues concerned with the use of computer-based technology.
- Each candidate demonstrates knowledge and understanding of the appropriate use of computer-based technology in teaching and learning.

Specific Knowledge and Skills

- Each candidate uses computer applications to manage records (e.g. gradebook, attendance, and assessment records).
- Each candidate uses computers to communicate through printed media (e.g. newsletters incorporating graphics and charts, course descriptions, and student reports).
- Each candidate interacts with others using e-mail.
- Each candidate is familiar with a variety of computer-based collaborative tools (e.g. threaded discussion groups, newsgroups, list servers, online chat, and audio/video conferences).
- Each candidate examines a variety of current educational digital media and uses established selection criteria to evaluate materials, for example, multimedia, Internet resources, telecommunications, computer-assisted instruction, and productivity and presentation tools. (See California State guidelines and evaluations).

- Each candidate chooses software for its relevance, effectiveness, alignment with content standards, and value added to student learning.
- Each candidate demonstrates competence in the use of electronic research tools (e.g. access the Internet to search for and retrieve information).
- Each candidate demonstrates the ability to assess the authenticity, reliability, and bias of the data gathered.
- Each candidate identifies student learning styles and determines appropriate technological resources to improve learning.
- Each candidate considers the content to be taught and selects the best technological resources to support, manage, and enhance learning.
- Each candidate demonstrates an ability to create and maintain effective learning environments using computer-based technology.
- Each candidate analyzes best practices and research findings on the use of technology and designs lessons accordingly.
- Each candidate demonstrates knowledge of copyright issues (e.g. distribution of copyrighted materials and proper citing of sources).
- Each candidate demonstrates knowledge of privacy, security, and safety issues (e.g. appropriate use of chatrooms, confidentiality of records including graded student work, publishing names and pictures of minors, and Acceptable Use Policies).
- The program meets other factors related to this standard of quality brought to the attention of the team by the program.

Prior to issuance of the Professional Credential

- Each candidate uses a computer application to manipulate and analyze data (e.g. create, use, and report from a database; and create charts and reports from a spreadsheet).
- Each candidate communicates through a variety of electronic media (e.g. presentations incorporating images and sound, web pages, and portfolios).
- Each candidate interacts and collaborates with others using computer-based collaborative tools (e.g. threaded discussion groups, newsgroups, electronic list management applications, online chat, and audio/video conferences).
- Each candidate demonstrates competence in evaluating the authenticity, reliability; bias of the data gathered; determines outcomes and evaluates the success or effectiveness of the process used.

- Each candidate optimizes lessons based upon the technological resources available in the classroom, school library media centers, computer labs, district and county facilities, and other locations.
 - Each candidate designs, adapts, and uses lessons which address the students' needs to develop information literacy and problem solving skills as tools for lifelong learning.
 - Each candidate creates or makes use of learning environments inside the classroom, as well as in library media centers or computer labs, that promote effective use of technology aligned with the curriculum.
 - Each candidate uses technology in lessons to increase each student's ability to plan, locate, evaluate, select, and use information to solve problems and draw conclusions.
 - Each candidate uses technology as a tool for assessing student learning and for providing feedback to students and their parents.
 - Each candidate frequently monitors and reflects upon the results of using technology in instruction and adapts lessons accordingly.
 - Each candidate collaborates with other teachers, mentors, librarians, resource specialists, and other experts to support technology-enhanced curriculum. For example, they may collaborate on interdisciplinary lessons or cross grade level projects.
 - Each candidate contributes to site-based planning or local decision making regarding the use of technology and acquisition of technological resources.
 - The program meets other factors related to this standard of quality brought to the attention of the team by the program.
-

Common Standard 2 (Amended)

Resources

Sufficient resources are consistently allocated for the effective operation of each credential preparation program, to enable it to be effective in coordination, admission, advising, curriculum, instruction, and field experiences. Library and media resources, computer facilities, and support personnel, among others, are adequate.

Questions to Consider

The following questions are designed to assist accreditation team members during training and continuing accreditation reviews. They may also assist institutions in preparing proposals for initial accreditation of programs and self-study reports for continuing accreditation.

- How adequate are personnel resources (including sufficient numbers of full and part-time positions for instructional faculty, field supervisors and support personnel) to staff each credential program and maintain its effectiveness?
- How well does the institution provide a critical mass of faculty resources to provide breadth and depth of expertise to support an effective program of instruction and supervised field experience in each credential area? Do credential candidates have sufficient opportunity for contact with faculty members?
- To what extent do faculty, staff and candidates have access to appropriate buildings, classrooms, offices, study areas, furniture, equipment, library services, computers, media, and instructional materials? Are those resources sufficient and adequate?
- To what extent do faculty, staff, and candidates have equitable and appropriate access to computer-based technology, information and network resources for teaching and learning?
- To what extent do faculty, staff, and candidates have adequate technical support services for maintenance and training to support instructional goals?

Common Standard 5 (Amended)

Admission

In each professional preparation program, candidates are admitted on the basis of well-defined admission criteria and procedures (including all Commission-adopted admission requirements) that utilize multiple measures. The admission of students from a diverse population is encouraged. The institution determines that candidates meet high academic standards, as evidenced by appropriate measures of academic achievement, and demonstrate strong potential for professional success in schools, as evidenced by appropriate measures of personal characteristics and prior experience.

Questions to Consider

The following questions are designed to assist accreditation team members during training and continuing accreditation reviews. They may also assist institutions in preparing proposals for initial accreditation of programs and self-study reports for continuing accreditation.

- To what extent are the admission criteria and procedures clearly described and available to prospective candidates for credentials?
- What are the multiple measures used by the institution to define the academic achievement and professional potential of credential candidates?
- For the basic teaching credential programs; does the institution define an appropriate comparison group? Does each admitted candidate have an undergraduate GPA that is above the median GPA for the comparison group?
- For advanced credential programs; does each admitted candidate meet the institutional standards for graduate study?
- How does the institution determine and evaluate each applicant's personal qualities and preprofessional qualifications (including entry level computer skills), for example, personal interviews with candidates, written evaluation of candidates' prior experiences with children and youth, and prior leadership activities?
- What alternative criteria and procedures are used to encourage admission of candidates from underrepresented groups?
- To what extent do the institution's recruitment and admissions policies and practices reflect a commitment to achieve a balanced representation of the population by gender, race, ethnicity and disability?
- How do the admissions criteria consider the candidates' sensitivity to (and interest in) the needs of children and youth, with special consideration for sensitivity to those from diverse ethnic, cultural and socio-economic backgrounds?

Common Standard 7 (amended)

School Collaboration

For each credential preparation program, the institution collaborates with local school personnel in selecting suitable school sites and effective clinical personnel for guiding candidates through a planned sequence of fieldwork/clinical experiences that is based on a well developed rationale.

Questions to Consider

The following questions are designed to assist accreditation team members during training and continuing accreditation reviews. They may also assist institutions in preparing proposals for initial accreditation of programs and self-study reports for continuing accreditation.

- For each credential preparation program, to what extent does an effective and ongoing system of communication and collaboration exist between the institution and local districts and school sites where candidates are placed for their field experiences?
- To what extent does the institution, in consultation with local administrators and teachers, have clear, explicit criteria for the selection of schools and district field experience supervisors? How effectively does the institution seek to place candidates in self-renewing schools in which the curriculum and the staff develop continually?
- To what extent is there a description of the fieldwork/clinical experience options that are available and how those options correspond to the organizational structure and academic requirements of each credential program?
- To what extent does the institution provide opportunities for candidates to be placed in schools where computer-based technology is used to support teaching and learning?
- How does the institution ensure that each credential candidate's field/clinical experiences are planned collaboratively, involving the candidate, school district personnel and institutional personnel?
- How thoroughly does the institution periodically review the suitability and quality of all field placement sites?
- To what extent does the institution review each candidate's fieldwork/clinical placement to ensure that candidates are assigned to appropriate site supervisors?
- How well developed is the institution's plan and rationale for the sequence of field experiences in each credential program?

**Contributors to the Report of the
Computer Education Advisory Panel**

The members of the Computer Education Advisory Panel gratefully acknowledge the contributions to this report made by the following individuals:

Brian Arnold, Director
Educational Technology Masters Program
Azusa Pacific University

John Cradler, President
Educational Support Systems and
Executive Director of TECH CORPS California

Sylvester Robertson, Visiting Assistant Professor
Instructional Technology
Department of Science, Mathematics, and Technology Education
CSU, San Bernardino

Kenneth W. Umbach, Policy Analyst
California Research Bureau, California State Library

David Wright, Director
Office of Policy and Programs
California Commission on Teacher Credentialing

Don Zundel, Program Manager
Education Grants
Apple Computer, Inc.

Bibliography

American Association of School Librarians. (1994). *Position statement on information literacy: A position paper on information problem solving*. [Brochure]. . Chicago, IL: Author. [Available on the World Wide Web]. Retrieved May 20, 1998 from the World Wide Web:
http://www.ala.org/aasl/positions/PS_infolit.html

Butte County Office of Education. (1997). *Benchmarks for student performance in technology*. [Brochure]. . (6-16-98). Oroville, CA: Author. [Available on the World Wide Web]. Retrieved May 20, 1998 from the World Wide Web:
<http://bcoe.butte.k12.ca.us/isd/irc/bcic/techfram.html>

California State University Commission on Learning Resources and Instructional Technology, Work Group on Information, CLRIT Task 6.1. (1995, December). *Information competence in the CSU*. [Available on the World Wide Web]. Retrieved May 20, 1998 from the World Wide Web:
http://www.calstate.edu/ITPA/Docs/html/info_comp_report.html

California Technology Assistance Project (CTAP) & Butte County Office of Education. (1997). *The CTAP Region 2, Level One certification challenge requirements*. [Available on the World Wide Web]. Retrieved May 20, 1998 from the World Wide Web: <http://www.ctap2.bcoe.butte.k12.ca.us/CHALLENGE/>

California Commission on Teacher Credentialing, Committee on Accreditation. (1997). *Teacher preparation in California: Standards of quality and effectiveness: Common standards: Handbook for teacher educators and accreditation members*. [Monograph]. Sacramento, CA: Author

California Commission on Teacher Credentialing, Advisory Panel on Teacher Education, Induction and Certification for the Twenty-First Century Schools (SB 14232). (1997). *California's future: Highly qualified teachers for all students*. [Monograph]. Sacramento, CA: Author

California Commission on Teacher Credentialing & California Department of Education. (1997). *California standards for the teaching profession: A description of professional practice for California teachers*. [Monograph]. Sacramento, CA: Author.

California Commission on Teacher Credentialing. (1997). *Standards of program quality and effectiveness, factors to consider and preconditions in the evaluation of professional teacher preparation programs for multiple and single subject credentials*. [Monograph]. Sacramento, CA: Author.

California Commission on Teacher Credentialing. (1996). *Standards for district internship teaching programs with BCLAD emphasis: Handbook for district intern program administrators and program reviewers*. [Monograph]. Sacramento, CA: Author.

California Commission on Teacher Credentialing, Committee to Review Computer Education Requirements. (1996). *Computer education recommendations to the Senate Bill 1422 Advisory Panel of the California Commission on Teacher Credentialing*. [Monograph]. Sacramento, CA: Author.

California Department of Education, Education Technology Office. (1997). *Educational technology programs in California*. [Monograph]. Sacramento, CA: Author.

California Department of Education, Education Technology Office, Education Council for Technology In Learning. (1997) *Draft: Recommendations regarding technology-based content and performance standards*. [Monograph]. Sacramento, CA: Author.

Cassidy, John. (1998, February 23). *Annals of enterprise: The Comeback*. The New Yorker. pp. 122(6).

Copley, Richard J., Cradler, John & Engel, Penelope K. (1997). *Computers and classrooms: the status of technology in U.S. schools* (Chapters 3, 4 & 5). Princeton, NJ: Educational Testing Service.

Cradler, John & Bridgforth, Elizabeth. (1995). *Telecommunications and technology education: what have we learned from research and experience?* San Francisco, CA: Far West Laboratory (for the California, Department of Education). (Chapters VIII and IX).

Cradler, John & Bridgforth, Elizabeth. (1996). *Effective Site Level Planning for Technology Integration*. San Francisco, CA: Far West Laboratory (for the California Department of Education).

Cradler, John & Cradler, Ruthmary. (1997). *Inventory of conditions for effective technology use*. San Mateo, CA: Educational Support Systems (Draft, for Fall 1997 Technology Innovation Challenge Grants Meeting.)

Cradler, John. (1994). *Summary of Current Research and Evaluation Findings on Technology in Education*. San Francisco, CA: Far West Laboratory.

Cradler, John. (1997). *Educational technology and telecommunications research policy, and planning, documents on the Internet*. [Monograph]. Sacramento, CA: TECH Corps.

Cradler, John. (1997). *Resources supporting educational technology and telecommunications implementation*. [Monograph]. Sacramento, CA: TECH Corps.

Derich, Barbara, Redmond, Pamela & Education Task Force. (1996). *Technology planning guide for curriculum integration*. Larkspur, CA: Author.

Education Week. (1997, November 10). *Technology counts: Schools and reform in the information age*. 16(11). (Entire edition dedicated to educational technology.)

International Society for Technology in Education (ISTE). (1998). ISTE national educational technology standards (NETS): *Guiding the development of new learning environments for today's classrooms*. Eugene, OR: Author. [Available on the World Wide Web]. Retrieved May 20, 1998 from the World Wide Web: <http://www.iste.org/Resources/Projects/TechStandards/NETS/>

Kotkin, Joel. (1997, July). *The emergence of the entrepreneur*. Foundation for Enterprise Development. [Posted to the World Wide Web]. Retrieved May 20, 1998 from the World Wide Web: http://www.fed.org/leading_companies/july97/kotkin.html

Milbury, Peter. (1997, October). *Collaborating on Internet-based lessons: A teacher and librarian SCORE with PBL*. *Technology Connection*, 4(5), 8-9.

Milbury, Peter. (1998, March). *Daily news on the Internet: Finding and effectively using free online news sources (full-text daily news archives with search engines)*. *Technology Connection*, 5(1), 28-30.

Milbury, Peter. (1997, September-October). *Effective searching buys time to reflect, ponder & analyze*. *The Book Report*, 16(2), 23-25.

NCTET Executive Board and Policy Committee, National Coalition for Technology in Education and Training. (1997) *Educational technology goals, progress, and recommended actions*. Washington, DC: Author.

National Council for Accreditation of Teacher Education. (1998). *Technology and the new professional teacher: Preparing for the 21st Century classroom*. [Monograph]. Washington, DC: Author.

Normington, Richard S. (1998). *Optimizing the effectiveness of education technologies, or, Why some ed tech deployment projects don't work*. [Monograph]. Sacramento, CA: TQM Services Group.

Phelan, Rick. (1997). *SVUSD Technology rubric: Classroom uses of technology*. [Monograph]. Sonoma, CA: Sonoma County Office of Education.

San Jose Unified School District. (1996). *Draft #1: IBM "Reinventing Education Grant": Standards for using technology to achieve student-centered teaching and learning*. [Handout]. San Jose, CA: Author.

Smith, Sheldon & California Technology Assistance Project (CTAP) & San Luis Obispo County Office of Education. (1998). *TechCert: Technology Certification for San Luis Obispo County Educators*. [Brochure]. San Luis Obispo, CA: Author.

U.S. Department of Commerce. (1998). *The Emerging Digital Economy*. Washington, DC: Author [Available on the World Wide Web]. Retrieved May 20, 1998 from the World Wide Web: <http://www.ecommerce.gov/emerging.htm>

U.S. Department of Education. (1996). *Getting America's students ready for the 21st Century: Meeting the technology literacy challenge: A report to the nation on technology and education*. [Monograph]. Washington, DC: Author.

Umbach, Kenneth W. (1998). *Computer Technology in California K-12 Schools: Uses, Best Practices, and Policy Implications*. [Monograph, prepared at the request of Assembly Member Kerry Mazzone]. Sacramento, CA: California Research Bureau, California State Library. Available in Adobe Portable Document (pdf) format at <http://www.library.ca.gov/CRB/98/03/98003.pdf>.

Umbach, Kenneth W. (1998). *Learning-Related Outcomes of Computer Technology in K-12 Education*. [Monograph, prepared at the request of Assembly Member Kerry Mazzone to support the work of the California Commission on Teacher Credentialing]. Sacramento, CA: California Research Bureau, California State Library. Available in Adobe Portable Document (pdf) format at <http://www.library.ca.gov/CRB/98/10/98010.pdf>.

Wiebe, James. (1995). *Editor's message: Technology and the restructuring of teacher education*. *Journal of Computing In Teacher Education*. 11(2), 2.

Wiebe, James. (1995). *Editor's remarks: The need to teach people about computers*. *Journal of Computing In Teacher Education*. 11(3), 2.

BILL NUMBER: AB 1023 CHAPTERED
[Note: Underlined text added to Section 44259 by AB 1023 (Chapter 404,
Statutes of 1997)]

CHAPTER 404
FILED WITH SECRETARY OF STATE SEPTEMBER 2, 1997
APPROVED BY GOVERNOR SEPTEMBER 2, 1997
PASSED THE SENATE AUGUST 7, 1997
PASSED THE ASSEMBLY MAY 8, 1997
AMENDED IN ASSEMBLY APRIL 17, 1997

INTRODUCED BY Assembly Member Mazzoni

FEBRUARY 27, 1997

An act to amend Section 44259 of the Education Code, relating to teacher credentialing.

LEGISLATIVE COUNSEL'S DIGEST

AB 1023, Mazzoni. Teacher credentialing.

Existing law prescribes the minimum requirements for the preliminary multiple or single subject teaching credential.

This bill, commencing January 1, 2000, would add demonstration of basic competency in the use of computers in the classroom, as specified, to those minimum requirements.

Existing law requires completion of designated studies for the professional multiple or single subject teaching credential, including the study of computer-based technology and the uses of technology in educational settings.

This bill would require the above-referenced studies to be completed in accordance with the commission's standards of program quality and effectiveness, and that the study of computer-based technology be of advanced computer-based technology.

The people of the State of California do enact as follows:

SECTION 1. Section 44259 of the Education Code is amended to read:

44259.

- (a) Each program of professional preparation for multiple or single subject teaching credentials shall not include more than one year of, or the equivalent of one-fifth of a five-year program in, professional preparation.
- (b) The minimum requirements for the preliminary multiple or single subject teaching credential, are all of the following:
 - (1) A baccalaureate degree or higher degree, except in professional education, from a regionally accredited institution of postsecondary education.
 - (2) Passage of the state basic skills examination that is developed and administered by the commission pursuant to Section 44252.5.
 - (3) Completion of a program of not more than one year of professional preparation that has been approved or accredited on the basis of standards of program quality and effectiveness pursuant to subdivision (a) of Section 44227, subdivisions (a), (b), and (c) of Section 44372, or Section 44376.
 - (4) Study of alternative methods of developing English language skills, including the study of reading as described in subparagraphs (A) and (B), among all pupils, including those for whom English is a second language, in accordance with the commission's standards of program quality and effectiveness. The study of reading shall meet the following requirements:
 - (A) Commencing January 1, 1997, satisfactory completion of comprehensive reading instruction that is research-based and includes all of the following:
 - (i) The study of organized, systematic, explicit skills including phonemic awareness, direct, systematic, explicit phonics, and decoding skills.
 - (ii) A strong literature, language, and comprehension component with a balance of oral and written language.
 - (iii) Ongoing diagnostic techniques that inform teaching and assessment.
 - (iv) Early intervention techniques.
 - (v) Guided practice in a clinical setting.
 - (B) For the purposes of this section, "direct, systematic, explicit phonics" means phonemic awareness, spelling patterns, the direct instruction of sound/symbol codes and practice in connected text and the relationship of direct, systematic, explicit phonics to the components set forth in clauses (i) to (v), inclusive.
 A program for the multiple subjects credential also shall include the study of integrated methods of teaching language arts.
 - (5) Completion of a subject matter program that has been approved by the commission on the basis of standards of program quality and effectiveness pursuant to Article 6 (commencing with Section 44310) or passage of a subject matter examination pursuant to Article 5 (commencing with Section 44280).
 - (6) Demonstration of a knowledge of the principles and provisions of the Constitution of the United States pursuant to Section 44335.

- (7) Commencing January 1, 2000, demonstration, in accordance with the commission's standards of program quality and effectiveness, of basic competency in the use of computers in the classroom.
- (c) The minimum requirements for the professional multiple or single subject teaching credential shall include completion of the following studies:
 - (1) Study of health education, including study of nutrition, cardiopulmonary resuscitation, and the physiological and sociological effects of abuse of alcohol, narcotics, and drugs and the use of tobacco. Training in cardiopulmonary resuscitation shall also meet the standards established by the American Heart Association or the American Red Cross.
 - (2) Study and field experience in methods of delivering appropriate educational services to students with exceptional needs in regular education programs.
 - (3) Study, in accordance with the commission's standards of program quality and effectiveness, of advanced computer-based technology, including the uses of technology in educational settings.
 - (4) Completion of an approved fifth year program after completion of a baccalaureate degree at an accredited institution.
- (d) A credential that was issued prior to the effective date of this section shall remain in force as long as it is valid under the laws and regulations that were in effect on the date it was issued. The commission may not, by regulation, invalidate an otherwise valid credential unless it issues to the holder of the credential, in substitution, a new credential authorized by another provision in this chapter that is no less restrictive than the credential for which it was substituted with respect to the kind of service authorized and the grades, classes, or types of schools in which it authorizes service.
- (e) Notwithstanding this section, persons who were performing teaching services as of January 1, 1991, pursuant to the language of this section that was in effect prior to that date, may continue to perform those services without complying with any requirements that may be added by the amendments adding this subdivision.
- (f) Subparagraphs (A) and (B) of paragraph (4) of subdivision (b) do not apply to any person who, as of January 1, 1997, holds a multiple or single subject teaching credential, or to any person enrolled in a program of professional preparation for a multiple or single subject teaching credential as of January 1, 1997, who subsequently completes that program. It is the intent of the Legislature that the requirements of subparagraphs (A) and (B) of paragraph (4) of subdivision (b) be applied only to persons who enter a program of professional preparation on or after January 1, 1997.