

COMMISSION FOR TEACHER PREPARATION AND LICENSING

OFFICE OF THE EXECUTIVE SECRETARY

20 O STREET

SACRAMENTO, CALIFORNIA 95814

(916) 445-0184



March 11, 1976

75-7623

TO: All Individuals and Groups Interested in the
Activities of the Commission for Teacher
Preparation and Licensing

FROM: Peter L. LoPresti, Executive Secretary *PLP*

SUBJECT: General Subjects Scope and Content

The Commission for Teacher Preparation and Licensing has approved the attached General Subjects Scope and Content.

The General Subjects Scope and Content will be the subject of a Public Hearing for final adoption by the Commission at the May Commission meeting:

10:00 a.m.
Friday, May 7, 1976
Airporter Inn Hotel
Skyliner Room 4 and 5
18700 MacArthur Boulevard
Irvine, California 92664

Please feel free to duplicate and distribute the General Subjects Scope and Content to anyone you believe might be interested in responding. If you wish to make a presentation regarding the attached to the Commission, please send 30 copies of your material for distribution to the Commission and Staff by April 20, 1976. We would also appreciate a call to the Commission office in order to schedule sufficient time on the Agenda for people who wish to make presentations.

Attachment

GENERAL SUBJECTS SCOPE AND CONTENT

INTRODUCTION

I. CHARGE

The panel's charge was to prepare a statement of scope and content for the General Subjects Examination as described in the Education Code.

II. BACKGROUND

Section 13128 - Authorization for teaching credentials shall be of four basic kinds, as defined below:

- (b) "Multiple subject instruction" means the practice of assignment of teachers and students for multiple subject matter instruction, as is commonly practiced in California elementary schools and as is commonly practiced in early childhood education.

Section 13130 - The minimum requirements for the teaching credential, except designated subjects, are:

- (a) A baccalaureate degree or higher degree, except in professional education, from an approved institution.
- (b) A fifth year of study to be completed within seven years of the first employment of the certified employee.
- (c) An approved program of professional preparation.
- (d) Passage of a subject matter examination or its waiver as specified in this chapter.
- (e) Demonstration of a knowledge of the various methods of teaching reading, to a level deemed adequate by the commission, by successful completion of a program of study approved by the commission or passage of a commission-approved reading examination.

Section 13147 - A general subject matter examination authorizing teaching multiple subjects shall include an examination of the candidate's knowledge of the following areas: English, social science, fine arts, general science, and mathematics.

Section 13152 - The commission shall set passing scores with the objective of assuring an adequate level of subject matter preparation.

Section 13153.1 - The approved examinations shall be instruments whose purpose is to measure achievement and shall be used solely to measure objective knowledge of subject matter.

III. PANEL'S RECOMMENDATION

That equal weight be given among the five subject areas.

General Subjects Scope & Content
Introduction

Panel's recommendation - distribution of weight as follows:

20% English

20% Mathematics

20% Science

20% Social Science

10% Art

10% Music

GENERAL SUBJECTS SCOPE & CONTENT

ENGLISH EXAMINATION - 20% of Total

1.0 CREDENTIAL CANDIDATES MUST DEMONSTRATE:

- 1.1 Ability to speak and read aloud effectively.
- 1.2 Knowledge of the principles of interpersonal communication including dialog and group discussion.
- 1.3 Knowledge of language and how it works; that is, grammar and phonology.
- 1.4 Knowledge of how language is learned: language acquisition, usage, and grammar.
- 1.5 An acquaintance with the varieties of usage in current American English, and especially with social, regional, and ethnic dialects.
- 1.6 Knowledge and appreciation of the range of literature, including:
 - 1.6.1 Children's literature, such as folktales, nursery rhymes, and fantasy.
 - 1.6.2 Mythology;
 - 1.6.3 Ethnic literature;
 - 1.6.4 Dramatic literature
 - 1.6.5 Poetry;
 - 1.6.6 Biographies;
- 1.7 Ability to read a literary text closely and with comprehension, and to recognize its literary characteristics.
- 1.8 Elementary proficiency in expository writing.
- 1.9 Elementary knowledge of creative writing techniques, including fiction, description, and verse writing.
- 1.10 Knowledge of study skills, including notetaking, organization of ideas, proofreading, and library skills.
- 1.11 Knowledge of basic spelling rules and modifications which occur with current usage.
- 1.12 Familiarity with achievements and techniques in the communications media (film, radio, television, periodicals, newspapers).
- 1.13 Knowledge of the ways in which language is used rhetorically, including its use in written and oral propaganda and advertising.

MATH EXAMINATION - 20% of Total

In examining the concepts and ideas of this Mathematics Scope and Content, it is implicit that the examination test the candidate's problem solving ability. Questions will be selected to cover the following concepts: translation of problem to a mathematical model, application of basic arithmetic skill to problem solution, estimation of magnitude of solution, and recognition of extraneous and needed information.

2% 1.0 FOUNDATIONS

- 1.1 Logic
 - 1.1.1 Logical operations: and, or, if...then, if and only if, negation.
 - 1.1.2 Simple and compound sentences.
 - 1.1.3 Truth tables.
 - 1.1.4 Universal and existential quantification.
 - 1.1.5 Logical equivalence.

(Math Continued)

- 1.2 Set theory
 - 1.2.1 Set relations (equality, subset, proper subset, equivalence)
 - 1.2.2 Set operations (union, intersection, complement, cartesian product) and their properties.
 - 1.2.3 Relations and functions.

- 14% 2.0 REAL NUMBER SYSTEM AND SUBSYSTEMS
 - 2.1 Natural numbers
 - 2.1.1 Distinction between number and numeral.
 - 2.1.2 Cardinal development.
 - 2.1.3 Operations (addition, subtraction, multiplication, division) and their properties.
 - 2.1.4 Relations (equality, less-than, greater-than) and their properties.
 - 2.2 Whole numbers
 - 2.2.1 As an extension of the natural numbers.
 - 2.2.2 Operations and properties.
 - 2.2.3 Relations and properties.
 - 2.2.4 Exponentiation.
 - 2.2.5 Expanded notation including bases other than 10.
 - 2.2.6 Algorithms.
 - 2.2.7 Greatest common factor, least common multiple, and the fundamental theorem of arithmetic.
 - 2.3 Integers
 - 2.3.1 As an extension of the whole numbers.
 - 2.3.2 Operations (including exponentiation) and properties.
 - 2.3.3 Relations and properties.
 - 2.3.4 Representation on number line
 - 2.3.5 Absolute value.
 - 2.4 Rational numbers
 - 2.4.1 As an extension of the integers.
 - 2.4.2 Operations (including exponentiation) and properties.
 - 2.4.3 Relations and properties.
 - 2.4.4 Decimal representation and characterization.
 - 2.4.5 Representation on number line.
 - 2.4.6 Denseness of rational numbers.
 - 2.5 Real numbers
 - 2.5.1 As an extension of the rational numbers.
 - 2.5.2 Completeness of real numbers.
 - 2.5.3 Existence of irrationals:
 - 2.5.3.1 Via geometry, e.g., $\sqrt{2}$, π
 - 2.5.3.2 Via decimal expansion, e.g., .1010010001...
 - 2.5.4 Representation on number line.

- 3% 3.0 GEOMETRY
 - 3.1 Non-metric geometry
 - 3.1.1 Lines, rays, line segments.
 - 3.1.2 The relations intersect, parallel, and perpendicular.
 - 3.1.3 Plane figures, e.g., rectangle, hexagon, circle.
 - 3.1.4 Three-dimensional figures, e.g., sphere, cube.
 - 3.1.5 Congruence and similarity.
 - 3.1.6 Basic geometric constructions.
 - 3.2 Metric geometry
 - 3.2.1 Systems of measurement including the metric system.
 - 3.2.2 Measurement of length, area, and volume of basic geometric figures.
 - 3.2.3 Angular measurement.

(Geometry Continued)

3.3 Coordinate geometry

3.3.1 Cartesian coordinates.

3.3.2 Graphing of linear equations, parabolas, and circles.

1% 4.0 PROBABILITY AND STATISTICS

4.1 Collection, organization, and representation of data.

4.2 Measures of central tendency and dispersion.

4.3 Construction of elementary sample spaces.

SCIENCE EXAMINATION- 20 % of Total

5% 1.0 CONSERVATION OF MATTER AND ENERGY

1.1 Energy: When energy changes from one form to another the total amount of energy remains unchanged.

1.1.1 Potential and kinetic energy.

1.1.2 Energy applied to produce an unbalanced force results in motion.

1.1.3 A gain of internal energy increases molecular motion.

1.1.4 Convertible forms of energy: Heat, chemical, (food) sound, electrical, motion, electromagnetic, (light) and gravitational.

1.1.5 Energy transfer by photosynthesis and respiration.

1.1.6 Most forms of energy derive from the sun.

1.1.7 Energy flows through living systems and their environment..

1.2 When matter is changed by chemical or physical methods, the total amount of matter remains unchanged.

1.2.1 In chemical changes, atoms react to produce molecular changes.

1.2.2 Molecular motion determines the state of matter (solid, liquid, gas).

1.2.3 Matter is exchanged between living systems and the environment.

1.3 In nuclear reactions, rest mass is converted to energy, but the total amount of mass plus energy remains unchanged ($E=MC^2$).

1.3.1 Fission and fusion reactions change rest mass into radiant energy.

1.3.2 Throughout the universe, the nuclear reaction in stars converts matter into radiant energy.

5% 2.0 MATTER IS IN CONTINUOUS MOTION

2.1 Motion is a change of position with reference to time.

2.1.1 Measurements are relative and must have a frame of reference.

2.1.2 Bodies in space are in continuous motion.

2.2 Motion of atoms and molecules depends on energy levels.

2.2.1 Living systems exhibit characteristic motion from molecular to migration.

2.3 A known force on a known mass will produce a predictable motion ($F=MA$).

2.3.1 Motion of earth, moon, and sun allows prediction of sunrise, tides, seasons, and annual events.

2.3.2 Cyclic motion leads to predictable events.

2.3.3 Random molecular motion results in some predictable events.

(Science Continued)

- 3% 3.0 INTERDEPENDENCE AND INTERACTION OF MATTER ARE UNIVERSAL RELATIONSHIPS
- 3.1 Units of matter interact by nuclear, electromagnetic, and gravitational forces.
 - 3.1.1 Motions of bodies in space depend on gravitational interactions (earth, sun, moon).
 - 3.1.2 The weight of a mass is due to gravitation and is dependent on the distance to, and size of a second mass (weight on earth, moon).
 - 3.1.3 Electron interaction establishes chemical bonds (molecules).
 - 3.1.4 Nuclear force is exhibited between sub-atomic particles and is the source of nuclear energy.
 - 3.2 Interaction of matter causes continuous change.
 - 3.2.1 Stars and galaxies exhibit systematic change (H-R Diagram).
 - 3.2.2 The earth surface changes due to weathering, erosion, and plate tectonics.
 - 3.2.3 Rocks may change form from igneous to sedimentary to metamorphic.
 - 3.2.4 Living things change by growth, aging, and mutation.
 - 3.2.5 Environments change as a result of interaction of its components.
 - 3.3 A living system is the product of its interdependence and its interaction between the environment and its heredity.
 - 3.3.1 Living systems are related to the past through the genetic code.
 - 3.3.1.1 Forms of life have become extinct.
 - 3.3.1.2 Changes in the genetic code result in changes in living things.
 - 3.3.2 Living systems are adapted by structure and function to their environments (cells, plankton, man).
 - 3.3.3 Living systems develop and mature according to their genetic structure and environmental influences.
 - 3.4 An ecosystem is made up of the physical environment and living systems adapted to it.
 - 3.4.1 Every geographical area has a particular physical environment with plants and animals specific to it (oceans, deserts, forests).
 - 3.4.2 Human activities modify natural environments (agriculture, cities, forests).
 - 3.4.3 Matter is recycled through an ecosystem, but energy flows through it.
 - 3.4.4 A biotic community contains producers, consumers, and decomposers.
- 2% 4.0 CLASSIFICATION SYSTEMS, BASED ON UNIFYING THEMES BRING ORDER TO APPARENTLY DISSIMILAR AND DIVERSE NATURAL PHENOMENA.
- 4.1 Matter may be classified according to levels or organizations (electrons, protons, neutrons, atoms, elements, molecules, organic and inorganic compounds, planets, stars, galaxies).
 - 4.2 Living systems may be classified according to levels of complexity (organelles, cells, tissues, organs, organ systems, organism, species, populations, communities).
 - 4.3 Living systems are classified through possession of similar structure into kingdoms, phyla, classes, order, family, genus, and species.
 - 4.4 Scientific classification systems permit interpretation and prediction.
 - 4.4.1 The Periodic Tables of Elements is a classification system.
 - 4.4.2 The electromagnetic spectrum is a classification system for energy.

(Science Continued)

- 5% 5.0 CREDENTIAL CANDIDATE MUST DEMONSTRATE KNOWLEDGE OF THE PROCESSES OF SCIENCE
- 5.1 Organize and classify data from observations and measurements.
 - 5.1.1 Use metric measurement for common units of length, volume, mass, force, and temperature.
 - 5.1.2 Establish error and level of confidence.
 - 5.1.3 Locate information in scientific handbooks.
 - 5.1.4 Construct and interpret graphs.
 - 5.1.5 Identify significant variables.
 - 5.2 Organize information using established theories and principles.
 - 5.3 Construct generalizations and hypotheses from organized information.
 - 5.3.1 Test hypotheses by experimental methods.
 - 5.3.2 Modify hypotheses as a result of tests.
 - 5.3.3 Develop alternative interpretation and verification.
 - 5.4 Interrelate science to other disciplines.
 - 5.4.1 Organize knowledge from a historical perspective.
 - 5.4.2 Be aware of the uncertainty of science. (current scientific debates)
 - 5.4.3 Distinguish between science and pseudo-science.
 - 5.5 Make and interpret scientific observations in the laboratory and in the field.
 - 5.5.1 Identify and show relationships in the environment of local plants and animals.
 - 5.5.2 Describe the parts of the physical environment and how they effect each other and living things.
 - 5.5.3 Interpret simple ecosystems.
 - 5.5.4 Give examples of the human impact on ecosystems.
 - 5.6 Demonstrate knowledge of standard laboratory procedures.
 - 5.6.1 Be aware of basic horticulture and animal care.
 - 5.6.2 Demonstrate safe laboratory techniques, especially when using fire, electrical systems, and mixing or heating chemicals.

SOCIAL SCIENCE EXAMINATION - 20% of Total

Within the framework indicated below, the candidate should demonstrate mastery of the following interdisciplinary concepts (as indicated by the Social Sciences Education Framework for California Public Schools - Kindergarten and Grades One through Twelve, Adopted May 9, 1974): citizenship, justice, freedom, diversity, culture, resources, multiple causation, needs, property, authority/power, scarcity, social control, morality, change, conflict, interdependence, environment, and truth.

The examination must also test knowledge of "the role and contributions of women, American Negroes, American Indians, Asian Americans, Mexican-Americans, and other ethnic groups to the economic, political, and social development of California and the United States with emphasis on the roles of these groups in contemporary society." (Summary of sections of The Education Code as quoted from Amendment Number 2 of the adopted framework.)

- 1.0 SOCIAL INTERACTION - HOW PEOPLE FORM GROUPS AND MAKE THEM WORK.
- 1.1 Culture is the manner in which people organize for survival.
 - 1.1.1 Types of culture (preliterate, peasant, urban, modern industrialized).
 - 1.1.2 Belief systems, how they serve to maintain cultures (e.g., mores, taboos, etc.).
 - 1.1.3 Social structure with a culture - organization by roles, kinship, stratification; primary and secondary groups; institutions; bureaucracy; ethnic and racial interaction.
 - 1.1.4 Cultural and social diversity.
 - 1.1.5 Change and how it comes about.

(Social Science Continued)

- 1.2 Socialization - how a society shapes itself.
 - 1.2.1 Some agencies such as family and ethnic groups.
 - 1.2.2 Childrearing techniques: U.S. and cross-cultural patterns, effects
 - 1.2.3 The process of education.
 - 1.2.4 Agents of socialization: family, education, peer groups, religion, mass communication.
 - 1.2.5 Roles and how they shape us by providing a frame of reference.
 - 1.2.6 Irrational behaviors play important roles in the process (e.g., bias prejudice, ethnocentrism).
- 1.3 Social Behavior Patterns
 - 1.3.1 Collective behavior: crowds, mobs, public opinion, social opinion, social movements, fads and crazes.
 - 1.3.2 Deviant behavior, including crime, delinquency and strategies for treatment of offenders.
 - 1.3.3 Political behavior: voting patterns of social classes in the U.S. and cross-culturally; political movements; formal and informal power.
- 2.0 INDIVIDUAL VARIABILITY - AN IMPORTANT ELEMENT IN HUMAN BEHAVIOR
 - 2.1 Learned behavior, such as personality, ethnicity, and morality.
 - 2.2 Innate behavior as the product of heredity, physical and motor functions.
 - 2.3 The role of environment in shaping behavior, both physical and cultural.
- 3.0 ORGANIZATION BY PEOPLE OF THEIR RESOURCES TO TAKE CARE OF THEIR NEEDS AND WANTS
 - 3.1 Systems humans have developed to do these tasks (capitalism, socialism, communism, corporate (fascist) economics).
 - 3.2 Concepts economists use for analysis (scarcity, supply and demand, and specialization)
 - 3.3 The role both economic and political interests play in economic decision-making.
- 4.0 MAN'S USES OF AND INFLUENCES ON HIS PHYSICAL WORLD.
 - 4.1 Regional influences play a major role - consideration must be given climate, soil, vegetation, landforms, etc.
 - 4.2 Demography is a growing concern - its distribution, growth, density, and movement.
 - 4.3 Urban geography demands consideration of urban/rural relationships, situation and site, urban land use and functions.
- 5.0 MAN - A POLITICAL BEING
 - 5.1 Political systems of all kinds must be well understood:
 - 5.1.1 How they function.
 - 5.1.2 Basic types (Democratic, Republican/Parliamentarian, authoritarian, totalitarian, and monarchical).
 - 5.1.3 Political behavior must be understood in terms of roles, functions, and decision-making.
 - 5.2 The United States Government, its:
 - 5.2.1 Constitution.
 - 5.2.2 Structure of Federal, State, and Local Government.
 - 5.2.3 Dynamics as expressed by the American Political System.

(Social Science Continued)

6.0 THE HUMAN HERITAGE

6.1 The American Experience:

- 6.1.1 Human settlement.
- 6.1.2 Regional cultural developments (English Eastern Seaboard, Canada (French & English), Spanish Southwest, Native Americans, and Black Americans).
- 6.1.3 The consolidation of the United States.
- 6.1.4 The American National Experience - integrative factors.
- 6.1.5 The American Regional Experience.
- 6.1.6 The American ethnic experience.
- 6.1.7 American in the world.

6.2 European Civilization - particularly as it relates to the American Experience.

6.3 The "Third World".

- 6.3.1 Concept of cultural pluralism.
- 6.3.2 Idea of underdevelopment.
- 6.3.3 Diversity of various geographical and cultural features.
- 6.3.4 Western Civilization and the "Third World".

6.4 History of California.

7.0 SOCIAL SCIENCE RESEARCH PROCESSES.

7.1 The scientific process as used by the social scientist.

7.2 The examinee must demonstrate knowledge of the use of social science data and research methodology:

- 7.2.1 Unique to particular disciplines.
- 7.2.2 Common to several disciplines.

7.3 There must be understanding of elementary statistical concepts.

7.4 Familiarity with the methods of presenting the outcomes of research.

ART EXAMINATION - 10% of Total

1.0 VISUAL AND TACTILE PERCEPTION

- 1.1 Capable of identifying works of art and of making associations of works of art with other visual images.
- 1.2 Able to understand the relationship of natural and man-made environments with art media and techniques.

2.0 CREATIVE EXPRESSION

- 2.1 Be able to demonstrate competency in a variety of art and craft techniques appropriate to the Pre-Kindergarten through 8, both 2- and 3-dimensional forms, and traditional and contemporary modes. Techniques should include drawing and painting, graphics, modeling, construction, and textiles.

3.0 ART HERITAGE

3.1 Understand the artistic accomplishments of major cultures, including their historical, geographic, and ethnic aspects, reflecting:

- 3.1.1 A balance of past eras and contemporary times.
- 3.1.2 A balance of Western cultures as well as Asian, Oceanic, African, Latin American, and also ethnic minorities in America.
- 3.1.3 A balance among the major forms of visual art, such as painting, sculpture, architecture, design, and the art aspects of communications media.

(Art Continued)

4.0 AESTHETIC JUDGMENT

4.1 Demonstrate a knowledge of:

- 4.1.1 The structure of art (elements; principles; concepts).
- 4.1.2 The vocabulary of art.
- 4.1.3 The styles of art.

5.0 PROFESSIONAL JUDGMENT

- 5.1 Knowledge of the varying complexities of art media and processes.
- 5.2 Knowledge of the bases for making aesthetic judgments.

MUSIC EXAMINATION - 10% of Total

1.0 MUSIC HERITAGE

- 1.1 A basic understanding of the musical literature of major cultures:
 - 1.1.1 From the past to the present.
 - 1.1.2 Including various areas: Asian, Oceanic, African, Latin American, European, etc.

2.0 MUSIC FORM AND MEDIA

- 2.1 Knowledge of the various forms and media: instrumental, vocal, solo, ensemble, orchestral, song, symphony, opera, and musicals.

3.0 KNOWLEDGE OF YOUNG PEOPLE'S LEVEL OF MUSICAL DEVELOPMENT

4.0 MUSICAL PERFORMANCE

- 4.1 Able to play a simple melody on an instrument such as recorder, bells, or piano with reasonable accuracy.
- 4.2 Demonstrate the ability to lead a group in reading, singing, or repertoire with reasonable accuracy.

5.0 AESTHETIC JUDGMENTS

- 5.1 Ability to make aesthetic judgments based upon knowledge of:
 - 5.1.1 The structure of music.
 - 5.1.2 The vocabulary of music.
 - 5.1.3 The styles of music.

6.0 AURAL PERCEPTION/COMPOSITION

- 6.1 Ability to hear a melodic line and write it using standard notation.
- 6.2 Ability to recognize basic melodic and harmonic sequences and patterns.