



California  
Subject  
Examinations for  
Teachers®

# TEST GUIDE

## PRELIMINARY EDUCATIONAL TECHNOLOGY SUBTEST II

### Sample Questions and Responses and Scoring Information

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## Sample Test Questions for CSET: Preliminary Educational Technology Subtest II

Below is a set of multiple-choice questions and constructed-response questions that are similar to the questions you will see on Subtest II of CSET: Preliminary Educational Technology. You are encouraged to respond to the questions without looking at the responses provided in the next section. Record your responses on a sheet of paper and compare them with the provided responses.

1. A research study claims that a group of students who used a computer-based technology product tended to perform better on standardized tests than students who did not use the product. In analyzing the scientific validity of this study, which of the following is the most important question to ask *first*?
  - A. Did the students have the same amount of preparation time prior to taking the standardized tests?
  - B. Did the two groups consist of students who were equivalent in terms of ability and background?
  - C. Were the students instructed using a student-centered or a teacher-centered approach to learning?
  - D. Were both groups of students allowed to use the product while taking the standardized tests?
2. A teacher is interested in using technology to expand students' understanding of the process of scientific inquiry. Which of the following student activities would most effectively meet this goal?
  - A. using simulation software to design and conduct investigations
  - B. using the Internet to participate in virtual field trips
  - C. using the Internet to research recent scientific discoveries
  - D. using database software to organize scientific data
3. A middle school teacher has one computer in the classroom that is connected to the Internet. Which of the following would be the most effective plan for student use of this computer?
  - A. having students use the computer as a reward for superior performance
  - B. having students use the computer to practice basic computer skills
  - C. having students use the computer to complete drill-and-practice activities
  - D. having students use the computer for research activities

4. A social studies teacher is introducing students to the Internet as an information resource. The teacher begins by presenting a lesson on how to use a Web browser. Which of the following would be the most effective next step for this teacher to take?
- A. Have students find and download software that relates to the class.
  - B. Have students post a question to a social studies newsgroup.
  - C. Have students do a "treasure hunt" in which they search for answers to questions from a prepared list.
  - D. Have students begin doing independent research on topics of their choice.
5. Which of the following activities would be most effective in improving students' skills in critically analyzing Internet-based information?
- A. using an electronic dictionary to look up vocabulary words
  - B. evaluating news-related Web sites for objectivity
  - C. using an online encyclopedia to find information for a research paper
  - D. learning to use Web-browsing software
6. A student who has difficulty concentrating and has a low tolerance for frustration is planning a science research project that will include a final presentation. Which of the following educational technologies is most likely to benefit this student?
- A. an assistive listening device
  - B. text-to-speech software
  - C. a large keyboard for input
  - D. graphic organizer software
7. In a classroom in which educational technology has been effectively integrated, which of the following is the most appropriate role for student portfolio assessment?
- A. using students' work to examine their progress in meeting learning objectives
  - B. assigning grades to individual projects using a weighted grading system
  - C. reinforcing decisions based on more traditional methods of student assessment
  - D. determining whether computer-based instruction has improved students' content knowledge

8. When evaluating software designed to be used independently by students, it is most important to determine whether the software:
- A. has multiplatform capabilities.
  - B. has an abundance of graphics.
  - C. is easy to navigate.
  - D. integrates audio, text, and video.
9. Which of the following is the most important factor to consider when selecting a CD-ROM-based encyclopedia for classroom use?
- A. the copyright status of the included material
  - B. the capability to display full-color graphics
  - C. the ability of the software to block access to objectionable material
  - D. the ease of use and effectiveness of the search capabilities
10. A high school math class includes several students who are academically gifted. Their school is purchasing a tutorial package to help these students learn at an accelerated pace. Which of the following is the most important factor to consider in selecting the tutorial?
- A. Supplemental printed materials and access to online assistance should be included in the package.
  - B. The package should integrate multimedia and other motivational resources.
  - C. The program should prescribe that student performance on built-in assessments will determine the pace and direction of learning.
  - D. Students should not be able to obtain correct answers from the program, but should be required to solve problems on their own.
11. A sixth-grade teacher is evaluating a software program that requires students to design a riverboat and use it to successfully complete a journey. Along the way, students must obtain supplies and overcome a variety of obstacles. This type of program is most useful for fostering students':
- A. ability to use abstract reasoning.
  - B. critical-thinking and problem-solving skills.
  - C. ability to reason by analogy.
  - D. cooperative learning and teamwork skills.

12. A group of teachers is evaluating online subscription databases for use by students. The most important factor in selecting a database from among several that have similar content is whether the:
- A. teacher can restrict student access to material in the database.
  - B. reading level of the material is age-appropriate for the students.
  - C. software provides interpretive feedback.
  - D. content can be downloaded as a variety of file types.
13. Which of the following features of computer-assisted instruction is likely to be most beneficial to students preparing for standardized tests of reading comprehension?
- A. the presence and effectiveness of built-in assessment tools
  - B. the presence of reading material with which students are familiar
  - C. the ability of the teacher to alter the format of the material
  - D. the ability of students to navigate the system independently
14. Which of the following is the most important factor to consider when evaluating the graphics in an instructional game for a middle school science class?
- A. Graphics should avoid using representations of any specific gender, age, or cultural group.
  - B. Graphics should be used to replace written or narrated text whenever possible.
  - C. Graphics should depict real-world objects that students are likely to encounter in their daily lives.
  - D. Graphics should fulfill an important purpose related to the learning objectives of the game.
15. Which of the following software products would be most appropriate to use in implementing an inquiry-based instructional strategy?
- A. a simulation that requires users to manipulate variables in order to keep a virtual mouse alive and train it to do specified tasks
  - B. an instructional game that rewards users by allowing them to interact with engaging animations when they master a new arithmetic skill
  - C. a virtual tour that uses multi-media components to simulate the experience of walking through a tropical rain forest
  - D. a tutorial that explains how recent scientific knowledge and technological developments may impact society in the future

## Constructed-Response Assignment Directions

For the first two constructed-response assignments in this section, you are to prepare a written response of approximately, but not limited to, 75–125 words on the assigned topic.

For the third constructed-response assignment in this section, you are to prepare a written response of approximately, but not limited to, 150–300 words on the assigned topic.

Read each assignment carefully before you begin to write. Think about how you will organize what you plan to write.

For **Assignments 1 and 2**, your responses will be evaluated based on the following criteria.

**PURPOSE:** the extent to which the response addresses the constructed-response assignment's charge in relation to relevant CSET subject matter requirements

**SUBJECT MATTER KNOWLEDGE:** the application of accurate subject matter knowledge as described in the relevant CSET subject matter requirements

**SUPPORT:** the appropriateness and quality of the supporting evidence in relation to relevant CSET subject matter requirements

For **Assignment 3**, your response will be evaluated based on the following criteria.

**PURPOSE:** the extent to which the response addresses the constructed-response assignment's charge in relation to relevant CSET subject matter requirements

**SUBJECT MATTER KNOWLEDGE:** the application of accurate subject matter knowledge as described in the relevant CSET subject matter requirements

**SUPPORT:** the appropriateness and quality of the supporting evidence in relation to relevant CSET subject matter requirements

**DEPTH AND BREADTH OF UNDERSTANDING:** the degree to which the response demonstrates understanding of the relevant CSET subject matter requirements

The assignments are intended to assess subject matter knowledge and skills, not writing ability. Your responses, however, must be communicated clearly enough to permit a valid judgment of your knowledge and skills. Your responses should be written for an audience of educators in the field.

Your responses should be your original work, written in your own words, and not copied or paraphrased from some other work. You may not use any reference materials during the testing session. Remember to review your work and make any changes you think will improve your responses.

16. **Complete the exercise that follows.**

Identify a grade level and subject area for which you are prepared to teach. Then write a response in which you:

- describe one way you could use presentation software to enhance instruction for classes, small groups, or individual students; and
- explain the benefit(s) of using presentation software for the purpose you described.

**17. Complete the exercise that follows.**

Identify a grade level and subject area for which you are prepared to teach. Then write a response in which you:

- identify three important educational criteria that you could use to evaluate a multimedia product for instructional use in your classroom; and
- explain why the criteria you have identified are important in selecting a product for use in the classroom.

**18. Complete the exercise that follows.**

Write a response in which you describe how a teacher might make effective use of computer-based technology to enhance instruction and promote learning for students with low motivation for learning. You may specify grade level(s) and/or subject area(s) to help clarify your response.

In your response:

- describe a project, lesson, or activity in which a teacher might enhance instruction for students with low motivation through the use of computer-based technology; and
- describe how computer-based technology would be used in this project, lesson, or activity, and explain how its use would enhance instruction and promote learning for these students.

## Annotated Responses to Sample Multiple-Choice Questions for CSET: Preliminary Educational Technology Subtest II

### Teaching and Learning Applications of Computer-Based Technology

1. **Correct Response: B.** (SMR Code: 3.1) In any scientific study, it is essential that the researchers carefully control the variables that could influence the observed results of the experiment. In a study such as the one described in the question, the best way to control the variables is to make certain that that two experimental groups are equivalent in terms of the backgrounds and ability levels of the students. With proper controls, the researchers can be more certain that the conclusions of the study are scientifically valid.
2. **Correct Response: A.** (SMR Code: 3.1) The process of scientific inquiry requires students to learn about the world in which they live by formulating hypotheses and designing experiments to support or disprove a given hypothesis. A software program that allows students to design and conduct simulated investigations would help students formulate and test hypotheses and therefore develop their understanding of the process of scientific inquiry.
3. **Correct Response: D.** (SMR Code: 3.1) A single computer connected to the Internet can be used to conduct research on almost any topic. Individual students or small groups of students can take turns using the computer to find up-to-date information that can be printed out on paper or electronically saved to a file.
4. **Correct Response: C.** (SMR Code: 3.1) After students have learned the basic features of a Web browser, the best way for them to learn how to use the browser to locate information is to ask them to find answers to questions from a well-prepared list.
5. **Correct Response: B.** (SMR Code: 3.1) Having students evaluate news-related Web sites is an effective way to improve their ability to critically analyze information on the Web. Students can examine the objectivity of online news sources by accessing several sites that cover the same news events and then comparing and contrasting the reporting of events on those sites.
6. **Correct Response: D.** (SMR Code: 3.1) A student with a low tolerance for frustration and who has difficulty concentrating would benefit from using graphic organizer software. The software would help the student organize his or her ideas and create the presentation in a logical fashion. The ability to construct visual diagrams would also help the student clarify his or her thinking, prioritize the information to present, and make connections among related topics in the presentation.
7. **Correct Response: A.** (SMR Code: 3.1) A portfolio is a collection of student work and can consist of reports, presentations, video projects, and other work samples. When evaluated using reliable methods of scoring, such as scoring rubrics, a student's portfolio can provide teachers with valuable information for assessing the student's progress toward meeting learning objectives.
8. **Correct Response: C.** (SMR Code: 3.2) When students are using a software package independently, the students must be able to easily navigate the various menus and levels of the program. The program's interface should be simple to use and should not detract from the program's learning content and objectives.

9. **Correct Response: D.** (SMR Code: 3.2) A CD-ROM-based encyclopedia can contain thousands of articles, images, maps, charts, audio clips, video clips, and other media. Finding the information desired can be a challenge. The encyclopedia needs to have an easy-to-use and effective search function that will allow users to quickly find the information they need.
10. **Correct Response: C.** (SMR Code: 3.2) Tutorial software can be used for individualizing student instruction. A good tutorial package will include regular assessments that students must pass in order to advance through the tutorial. This feature determines the pace and direction of student learning and allows gifted students to learn the material at an accelerated rate while still ensuring mastery of the content.
11. **Correct Response: B.** (SMR Code: 3.2) The riverboat software described in the question is a simulation program designed to help students re-create the trials and tribulations of a journey by riverboat. The obstacles to overcome and problems to solve in the course of the simulation program are intended to improve the critical-thinking and problem-solving skills of the students.
12. **Correct Response: B.** (SMR Code: 3.2) An online subscription database needs to be written at an age-appropriate reading level in order for students to understand the material. The information contained in the database is of little use if the students are unable to comprehend or interpret the text.
13. **Correct Response: A.** (SMR Code: 3.2) Computer-assisted instruction for preparing students for standardized tests of reading comprehension would be most beneficial if the instruction came with effective built-in assessment tools. Effective assessment tools help students identify their strengths and needs, become familiar with various standardized test question formats, and gain experience with test-taking skills and strategies.
14. **Correct Response: D.** (SMR Code: 3.2) Educational software programs often use graphics to interest and motivate students. A well-designed educational software program will use the graphics as an important learning component to help students master the learning objectives of the game.
15. **Correct Response: A.** (SMR Code: 3.2) An inquiry-based instructional strategy presents students with situations in which they need to investigate and design solutions to problems. A simulation requiring students to manipulate variables to keep a mouse alive would provide students with a problem that could be adapted to an inquiry-based instructional strategy. Students could propose solutions and use the simulation to test and evaluate these solutions.

## Examples of Strong Responses to Sample Constructed-Response Questions for CSET: Preliminary Educational Technology Subtest II

### Teaching and Learning Applications of Computer-Based Technology (Short [Focused]-Response Questions)

#### Question #16 (Score Point 3 Response)

If I were teaching 10th-grade social studies, I would have my students do team research projects and then use presentation software to share the results of the team research. I would have certain requirements for the team presentation: 1) it must be no longer than 15 minutes; 2) it must contain graphics and/or video, and 3) it must be designed to teach the entire class what team members have learned, with each team member required to do a part of the actual presentation to the class.

The benefits of using presentation software in this way are as follows: 1) having the student create the presentation as a team supports collaborative learning, 2) the time limitation requires that the presentation be well organized, stay on topic to achieve its purpose, and not contain unnecessary features (i.e., frivolous animations and transitions); 3) the graphics and/or videos will allow the students to creatively demonstrate what they have learned and use multiple media to communicate this knowledge, and 4) in order to teach a topic, you must fully understand it. By making use of presentation software a requirement, the students will be more engaged and involved in completing the assignment.

**Question #17 (Score Point 3 Response)**

If I were teaching 5th-grade history, I would want to use a multimedia electronic learning resource (ELR) on the American Revolution. When selecting the ELR, the following three criteria would be the most important: 1) Has the ELR been reviewed by the California Learning Resource Network (CLRN) and what was the recommendation? 2) How closely does the ELR content align with the goals of the lesson? and 3) How well does the format of the ELR support the learning activities my students will be completing?

The CLRN website reviews ELRs for alignment with California's content standards. Before using any ELR, one should verify that CLRN reviewed it and that it does align with the appropriate content standards. However, just because an ELR is aligned with state learning standards does not mean that it is addressing the content for the lesson I will be teaching. Therefore, it is important for me to review the ELR content to ensure that it covers what I want the students to learn. Lastly, it is important to ensure that the ELR fits in with the learning activities that the students will be completing. For example, if the activity has students doing research and making a presentation on their findings, then the ELR must have text, graphs, images, and/or videos that can be used to support the student research and presentations.

## Teaching and Learning Applications of Computer-Based Technology (Extended-Response Question)

### Question #18 (Score Point 4 Response)

Technology can be a powerful educational tool, but only when it is used as a means to achieving thoughtfully selected educational objectives. Technology is a catalyst for discovery. A brief media clip can spark student interest. Research has indicated that when teachers use computer-related technology integrated into their curriculum, students retain more information, understand concepts rapidly, and are more enthusiastic about what they are learning.

The fifth-grade social studies curriculum is rich with media designed for use with students. I have chosen to focus on exploring and understanding colonial life in the 1620's. The standards for the activities would be for students to describe the past on its own terms, through the eyes and experiences of those who were there, as revealed in diaries, letters, and the like. Students are able to draw on the visual, literary, and musical resources to clarify and elaborate on historical information.

An activity for a fifth-grade classroom would examine how popular language and slang have changed over the course of American history. Using online and print resources, students will develop an understanding of how Americans have adapted their language from earliest colonial times to the present. The outcome would be to have students rewrite the content of a 17<sup>th</sup>-century primary source document in their own words.

PBS's "Colonial House" Web site contains many resources for finding slang terms during periods in American history. Students would form groups, go online, and print the slang glossaries. Also, the PBS site has actual transcripts and video diary clips revealing the lives of the colonial settlers. Students would listen to and watch the diaries then try to match the transcripts with the video diaries.

As stated in the beginning of this response, the power of computer-related technology when integrated into a teacher's lesson can make the subject come alive. Connecting students to content in a meaningful way, with the aid of appropriate technology, can motivate the most unwilling and reluctant students to learn.

## **Scoring Information for CSET: Preliminary Educational Technology Subtest II**

Responses to the multiple-choice questions are scored electronically. Scores are based on the number of questions answered correctly. There is no penalty for guessing.

Responses to constructed-response questions are scored by qualified California educators using focused holistic scoring.

Because the constructed-response questions on CSET: Preliminary Educational Technology Subtest II are of two types—one type requiring a short (focused) response taking approximately 10–15 minutes to complete, and another type requiring an extended response taking approximately 30–45 minutes to complete—two sets of performance characteristics and two scoring scales will be used to score responses to the constructed-response questions. Scorers will judge the overall effectiveness of your responses while focusing on the appropriate performance characteristics that have been identified as important for this subtest (see below and page 15). Each response will be assigned a score based on an approved scoring scale (see pages 15–16).

Your performance on the subtest will be evaluated against a standard determined by the Commission on Teacher Credentialing based on professional judgments and recommendations of California educators.

### **Performance Characteristics and Scoring Scales for CSET: Preliminary Educational Technology Subtest II**

#### **A. SHORT (FOCUSED)-RESPONSE QUESTIONS**

**Performance Characteristics.** The following performance characteristics will guide the scoring of responses to the short (focused)-response constructed-response questions on CSET: Preliminary Educational Technology Subtest II.

<b>PURPOSE</b>	The extent to which the response addresses the constructed-response assignment's charge in relation to relevant CSET subject matter requirements.
<b>SUBJECT MATTER KNOWLEDGE</b>	The application of accurate subject matter knowledge as described in the relevant CSET subject matter requirements.
<b>SUPPORT</b>	The appropriateness and quality of the supporting evidence in relation to relevant CSET subject matter requirements.

**Scoring Scale.** Scores will be assigned to each response to the short (focused)-response constructed-response questions on CSET: Preliminary Educational Technology Subtest II according to the following scoring scale.

SCORE POINT	SCORE POINT DESCRIPTION
<b>3</b>	<p><b>The "3" response reflects a command of the relevant knowledge and skills as defined in the subject matter requirements for CSET: Preliminary Educational Technology.</b></p> <ul style="list-style-type: none"> <li>• The purpose of the assignment is fully achieved.</li> <li>• There is an accurate application of relevant subject matter knowledge.</li> <li>• There is appropriate and specific relevant supporting evidence.</li> </ul>
<b>2</b>	<p><b>The "2" response reflects a general command of the relevant knowledge and skills as defined in the subject matter requirements for CSET: Preliminary Educational Technology.</b></p> <ul style="list-style-type: none"> <li>• The purpose of the assignment is largely achieved.</li> <li>• There is a largely accurate application of relevant subject matter knowledge.</li> <li>• There is acceptable relevant supporting evidence.</li> </ul>
<b>1</b>	<p><b>The "1" response reflects a limited or no command of the relevant knowledge and skills as defined in the subject matter requirements for CSET: Preliminary Educational Technology.</b></p> <ul style="list-style-type: none"> <li>• The purpose of the assignment is only partially or not achieved.</li> <li>• There is limited or no application of relevant subject matter knowledge.</li> <li>• There is little or no relevant supporting evidence.</li> </ul>
<b>U</b>	<p><b>The "U" (Unscorable) is assigned to a response that is unrelated to the assignment, illegible, primarily in a language other than English, or does not contain a sufficient amount of original work to score.</b></p>
<b>B</b>	<p><b>The "B" (Blank) is assigned to a response that is blank.</b></p>

**B. EXTENDED-RESPONSE QUESTION**

**Performance Characteristics.** The following performance characteristics will guide the scoring of responses to the extended-response constructed-response question on CSET: Preliminary Educational Technology Subtest II.

<b>PURPOSE</b>	The extent to which the response addresses the constructed-response assignment's charge in relation to relevant CSET subject matter requirements.
<b>SUBJECT MATTER KNOWLEDGE</b>	The application of accurate subject matter knowledge as described in the relevant CSET subject matter requirements.
<b>SUPPORT</b>	The appropriateness and quality of the supporting evidence in relation to relevant CSET subject matter requirements.
<b>DEPTH AND BREADTH OF UNDERSTANDING</b>	The degree to which the response demonstrates understanding of the relevant CSET subject matter requirements.

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**Scoring Scale.** Scores will be assigned to each response to the extended-response constructed-response question on CSET: Preliminary Educational Technology Subtest II according to the following scoring scale.

SCORE POINT	SCORE POINT DESCRIPTION
<b>4</b>	<b>The "4" response reflects a thorough command of the relevant knowledge and skills as defined in the subject matter requirements for CSET: Preliminary Educational Technology.</b> <ul style="list-style-type: none"><li>• The purpose of the assignment is fully achieved.</li><li>• There is a substantial and accurate application of relevant subject matter knowledge.</li><li>• The supporting evidence is sound; there are high-quality, relevant examples.</li><li>• The response reflects a comprehensive understanding of the assignment.</li></ul>
<b>3</b>	<b>The "3" response reflects a general command of the relevant knowledge and skills as defined in the subject matter requirements for CSET: Preliminary Educational Technology.</b> <ul style="list-style-type: none"><li>• The purpose of the assignment is largely achieved.</li><li>• There is a largely accurate application of relevant subject matter knowledge.</li><li>• The supporting evidence is adequate; there are some acceptable, relevant examples.</li><li>• The response reflects an adequate understanding of the assignment.</li></ul>
<b>2</b>	<b>The "2" response reflects a limited command of the relevant knowledge and skills as defined in the subject matter requirements for CSET: Preliminary Educational Technology.</b> <ul style="list-style-type: none"><li>• The purpose of the assignment is partially achieved.</li><li>• There is limited accurate application of relevant subject matter knowledge.</li><li>• The supporting evidence is limited; there are few relevant examples.</li><li>• The response reflects a limited understanding of the assignment.</li></ul>
<b>1</b>	<b>The "1" response reflects little or no command of the relevant knowledge and skills as defined in the subject matter requirements for CSET: Preliminary Educational Technology.</b> <ul style="list-style-type: none"><li>• The purpose of the assignment is not achieved.</li><li>• There is little or no accurate application of relevant subject matter knowledge.</li><li>• The supporting evidence is weak; there are no or few relevant examples.</li><li>• The response reflects little or no understanding of the assignment.</li></ul>
<b>U</b>	<b>The "U" (Unscorable) is assigned to a response that is unrelated to the assignment, illegible, primarily in a language other than English, or does not contain a sufficient amount of original work to score.</b>
<b>B</b>	<b>The "B" (Blank) is assigned to a response that is blank.</b>