Career and Technical Education Item Bank Specifications

Hillsborough County Public Schools

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NOTE: The contents of this item specifications document were developed under a grant from the U. S. Department of Education. However, those contents do not necessarily represent the policy of the U. S. Department of Education, and you should not assume endorsement by the Federal Government.

Introduction

On August 24, 2010, the U.S. Department of Education announced Florida a winner of the federal Race to the Top Phase 2 competition. An important component of Florida's winning application focused on the "Standards and Assessments" assurance area, including the creation of high-quality, balanced assessments. At a national level, assessments generally focus on "traditional" content areas such as Reading, Math, Science and Social Studies. However, Florida has recognized the need for high quality, standards based assessments in other content areas, such as Physical Education and Career and Technical Education. Through this grant, seven projects were awarded to Local Education Agencies (LEAs) individually or in partnerships to create high-quality assessments for hard-to-measure content areas. The seven projects and the district awardees are as follows:

Project Letter	Hard To Measure Content Area	District Awardee
A	Physical and Health Education, K-8	Miami-Dade
B	Physical and Health Education, 9-12	Hillsborough
C	Performing Arts	Polk
D	Performing Arts	Polk
E	Visual Arts	Miami-Dade
F	World Languages	Duval
G	Career and Technical Education	Hillsborough

Within each of these Content Areas, the Florida Department of Education sought and included recommendations from educators across the state, including the Florida Organization of Instructional Leaders (FOIL) and a State Advisory Committee on District-Developed Student Assessments for Instructional Effectiveness (DDSAIE), made up of parents, teachers, and district-level administrators, to determine the appropriate scope of work for assessments for the hard-to-measure content areas. Based on these recommendations, teacher assignment and student enrollment data were analyzed to determine the courses that reach the greatest number of students and teachers in the hard-to-measure content areas. Hillsborough County partnered with Escambia, Leon, Duval, Polk, Osceola, Manatee, DeSoto, St. Lucie, and Hendry counties to develop the assessment items for Career and Technical Education.

This project is intended to provide Florida public and charter school districts with an extensive bank of assessment items that are high-quality, standards-based (NGSSS), field tested, and vetted by Florida educators. When the item bank and test platform are fully operational, Florida public and charter teachers and districts will have the ability to search the bank, export items, and generate customized assessments to meet their needs. In addition, there will be a public level of practice items available to students and parents that independent schools may access as well.

Hillsborough County is the fiscal agent for the development of Career and Technical Education (CTE) item banks.

Test items and a subsequent item bank will be created for the following CTE courses:

- Agriscience Foundations 1
- Agritechnology 1
- Animal Science and Services 2
- Animal Science and Services 3
- Introductory Horticulture 2
- Culinary Arts 1
- Culinary Arts 2
- Culinary Arts 3
- Early Childhood 1
- Early Childhood 2
- Early Childhood 3
- Secondary School Age Cert. Training 1
- Secondary School Age Cert. Training 2
- Teacher Assisting 1
- Teacher Assisting 2
- Teacher Assisting 3
- Veterinary Assisting 1
- Veterinary Assisting 2
- Veterinary Assisting 3
- Veterinary Assisting 4

Origin and Purpose of this Document

The *Career and Technical Education Item Bank Specifications (Specifications)* document was created as a resource for item specification writers/reviewers and item writers/reviewers. The *Specifications* defines the content and format of the item specifications, test items, and overall test considerations. It addresses the content area of Career and Technical Education (CTE) and the 20 courses included in this project, demonstrating the connection of test bank items with the NGSSS. The *Specifications* document serves to provide all stakeholders with information about the scope of the item bank for CTE.

Scope of the *Specifications*

The *Specifications* provides general and content area-specific guidelines for the development of all test items contained in the Career and Technical Education Item Bank.

The *Overall Considerations* section describes guidelines for test items in the Item bank, including Universal Design.

The *Criteria for the Career and Technical Education Assessment Items* section addresses the general guidelines used to develop multiple-choice items, constructed response items, and performance tasks. This section also covers the use of rubrics and media in items.

The *Item Difficulty and Cognitive Complexity* section addresses cognitive complexity levels as well as item difficulty and universal design.

The *Guide to the Item Specifications* section contains specific information about each standard and benchmark. It provides the template for the item specifications and defines the criteria for each item specification.

The *Guidelines for Item Writers* section includes general information for item writing.

The *Review Procedures for Career and Technical Education* provides an overview of the procedures and criteria that item reviewers utilize to review items.

Overall Considerations

This section of the specifications describes the guidelines that apply to all test items developed for the Career and Technical Education Item Bank. Overall considerations are broad item-development guidelines that should be addressed during the development of test items for the Career and Technical Education Item Bank.

1. Each multiple-choice item should be written to measure primarily one benchmark; however, other benchmarks may also be reflected in the item content.
2. Constructed response items and performance tasks may be written to reflect more than one benchmark.
3. All items, regardless of the item format, should be grade-level appropriate in terms of item difficulty, cognitive demands, and reading level.
4. The reading level of the items should aim to be two grade levels below the grade level of the students for whom they are intended, unless the student's reading ability is being assessed as part of the standard. If it is intended to be a reading item, it should be on grade level.
5. Items should not disadvantage or exhibit disrespect to anyone in regard to age, gender, race, ethnicity, language, religion, socioeconomic status, disability, occupation, or geographic region.
6. Some items may include an excerpt from stimulus material associated with several items in addition to the item stem.
7. Items should provide clear, concise, and complete instructions to students.
8. Each item should be written clearly and unambiguously to elicit the desired response.
9. Items may require the student to apply knowledge and skills described in NGSSS benchmarks from lower grades; however, the benchmarks from lower grades will not be assessed in isolation.
10. Items should provide all necessary components and information for students to listen, analyze, or use in order to respond to the items.
11. Items on the Career and Technical Education assessments should be written so that students are expected to select or provide the most accurate answer or appropriate response. Students should be allowed to listen to or view question stimuli for an appropriate number of times, or be allowed adequate time to prepare a performance when appropriate.
12. Constructed response and performance tasks must have a clear, concise rubric for grading.

Universal Design

The application of universal design principles helps develop assessments that are usable by the greatest number of test takers, including those with disabilities and non-native speakers of English. To support the goal of providing access to all students, the test items maximize readability, legibility, and compatibility with accommodations, and test item development includes a review for potential bias and sensitivity issues.

Universal design also implies that construct irrelevant features should be removed from items so that the item is truly assessing the intended construct and not some other feature of the item. It is expected that students in grades 9-12 taking the Career and Technical Education test items are able to read; however, for some benchmarks, their reading ability is not the construct being assessed. The students' scores on items with a complex reading passage will not represent their mastery of the course content but rather it will reflect their inability to read. Therefore, efforts will be made to minimize the amount and complexity of the text in test items, as applicable. If the intent of the benchmark is to assess the student's ability to read however, an appropriate text will be used.

In addition, because the Hard to Measure Content Areas item banks are assessing students' ability to apply the content and skills they have learned in class through activities that demonstrate the attainment of the required skills, the nature of the questions as well as the scored products will differ from those commonly used in standardized assessments. However, even with the inclusion of video components and audio components both as stimulus materials and as evidence for completed activities, the principles of universal design must be maintained so that students' scores reflect their knowledge of the constructs being assessed and not extraneous features of the task.

Internal and external reviewers revise items and tasks to allow for the widest possible range of student participation. Item writers must attend to the best practices suggested by universal design, including but not limited to

- reduction of wordiness;
- avoidance of ambiguity;
- selection of reader-friendly construction and terminology; and
- consistently applied concept names and graphic conventions.

Universal design principles also inform decisions about test layout and design, including, but not limited to, type size, line length, spacing, and graphics.

Throughout the development process for the Florida Career and Technical Education Item Bank, these elements are carefully monitored. The review processes and field testing are used to ensure appropriateness, clarity, and fairness.

Criteria for Career and Technical Education Assessment Items

The Career and Technical Education Item Bank has three allowable item types: multiple choice, constructed response, and performance tasks.

Item Style and Format

This section presents stylistic guidelines and formatting directions for all items included in the Career and Technical Education Item bank. These guidelines should be followed while developing any test items for the Career and Technical Education Item Bank to ensure clarity and consistency. Specific guidelines for each item type are included in the appropriate "Item Type" section below.

General Item Guidelines

1. Items should be clear and concise, and they should use vocabulary and sentence structure appropriate for the assessed grade level.
2. The final sentence of any multiple choice item stem must be expressed as a question. If an item or task asks a question involving the word *not*, the word *not* should be emphasized by being bolded and written in all uppercase letters (e.g., "Which of the following is **NOT** an example of . . ."). As appropriate, other key words such as MOST, BEST, or LEAST should also be boldface and capitalized.
3. Masculine pronouns should not be used to refer to both sexes. Plural forms should be used whenever possible to avoid gender-specific pronouns (e.g., instead of "The student will make changes so that he . . . ," use "The students will make changes so that they . . .").
4. An equal balance of male and female names should be used, including names representing different ethnic groups appropriate for Florida.
5. The comma should be used in a number greater than or equal to 1,000.
6. Acronyms are allowable only if they are commonly taught and used in the content area. (e.g., OSHA or FIFA)

Item Types

Multiple Choice Items

A **multiple choice** item is an objective test question which contains a question and four answer choices. One of the choices is the correct answer and the other choices are incorrect. The correct answer must be the only correct answer. Students who have mastered the content should be able to distinguish the correct answer from the other choices. However, the other choices must be plausible, as they are intended to draw students who have not yet mastered the concept being assessed.

Multiple choice items are designed to assess one benchmark. These items can be Low, Moderate, or High Complexity, based on Webb's Depth of Knowledge Levels. These levels are further explained later in this document.

Terminology

In assessment, there are specific terms used to represent the different components of a multiple choice item.

> **Stimulus**: what the student sees/hears/reads prior to the question. The stimulus gives the student necessary information to answer the question. The question is also included in the stimulus.

Stem: the question

Response Options: all of the provided answer choices

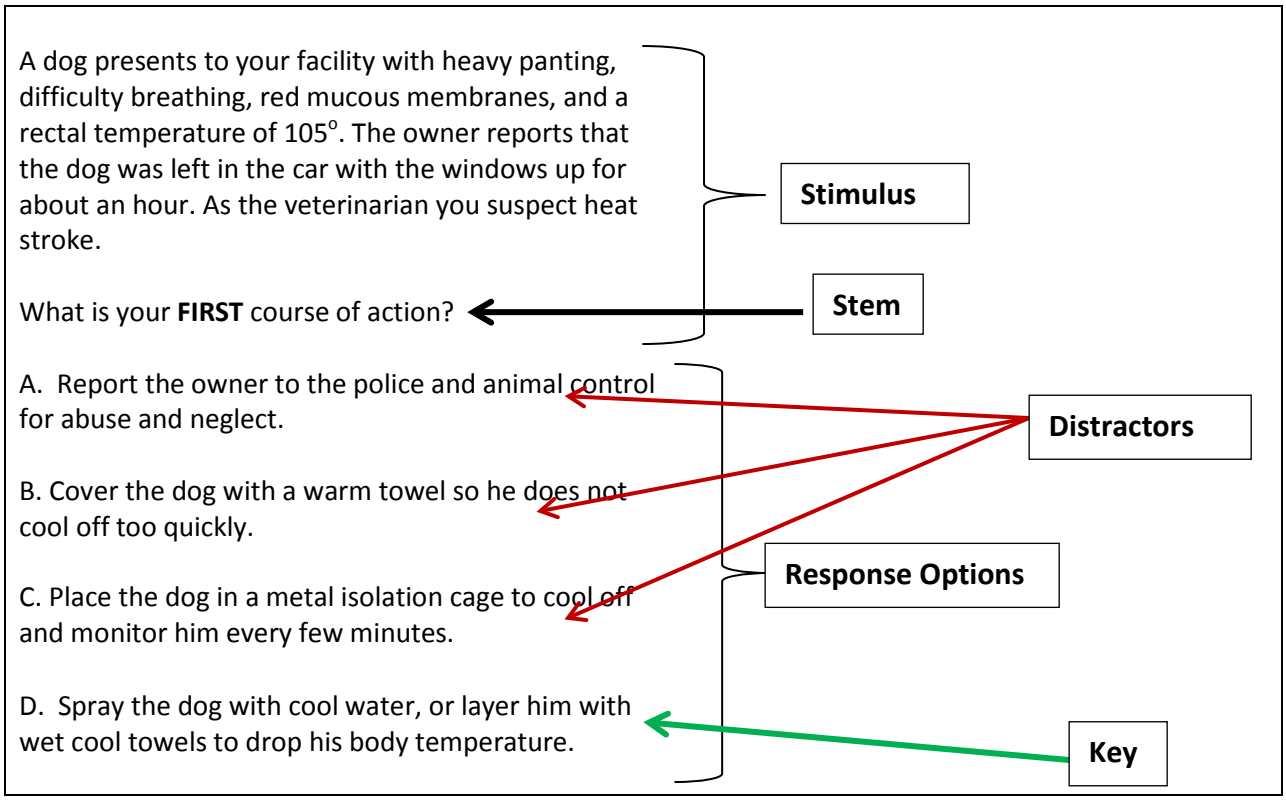
Key: the correct answer choice

Distractors: the incorrect but plausible answer choices

Sample Multiple Choice Item:

Course: Veterinary Assisting 2

Benchmark: 14.01 Evaluate emergency health (physical and behavioral) status.



Criteria for Multiple Choice (MC) Items:

1. MC items should take approximately one minute of testing time per item to answer.
2. MC items are worth one point each.
3. MC items should have four response options
4. MC items should have only one correct answer.
5. MC items should have directed stems, not undirected stems, such as: Which of the following statements is true?" The student should be able to answer the question without looking at the response options first.
6. Response options should be parallel in reference to parts of speech (i.e., options may all be the same part of speech, may all be different parts of speech, or contain two pairs of the same part of speech).
7. Response options should be arranged by length; short to long or long to short, to allow for variety in the position of the answer key.
8. Answer keys should not be the only option that contains words or phrases used in the item stem.
9. Answer keys should not be the only positively or negatively worded options.
10. Distractors should relate to the context of the question. Distractors should be incorrect but plausible based on the topic of the question.
11. Outliers should be avoided because they are answer choices that clue or draw the student's attention away from the other answer choices. For example, one answer choice that is much longer than the other choices may be an outlier.
12. Response options should avoid using opposites. A test wise student can eliminate options this way.
13. Response options should not overlap. In other words, two options should not mean the same thing, but said in different words.
14. Response options should not include the following: *No change needed*, *Correct as is*, *None of the above*, *All of the above*, *Not enough information, Cannot be determined,* etc.
15. Response options should avoid absolutes such as "only" or "never."
16. Response options should avoid clang associations, or repeating sounds but not meaning. This makes it a trick question. For example, if the question stem has the word "bought" in it and the answer key has the word "thought" in it.
17. The answer key should not be the only response option to include words from the stem. All options or no options should include words from the stem.
18. If the response options are single words, they should not be capitalized unless they are proper nouns.
19. If the response options are phrases, they should not begin with a capital letter, nor should they have a period at the end.
20. If the response options are sentences, they should be capitalized and punctuated appropriately.
21. MC items should adhere to all the general guidelines listed above in addition to these guidelines.

Constructed Response Items

Constructed response items require students to provide a written response. These questions typically ask students to describe, discuss, explain, critique, or evaluate the scenario provided in the stimulus. Constructed response items have multiple correct responses. However, there may be specific content that is required in the response to receive full credit.

Constructed response items can assess one or more benchmarks and can range from low to high complexity. Constructed response items are scored using a rubric. Rubrics can include up to four score points.

Terminology

Listed below are the definitions of the specific terms used for the parts of a constructed response item along with a sample item with each of the terms identified.

> **Stimulus**: the stimulus provides the students with the instructions for the task or it provides some type of input (such as a scenario, graphic, or video clip) to which the student must respond.
>
> **Rubric**: a description of how to score the student's response

Constructed response items may require a short answer or a more extended response, such as an essay. Instructions are provided in the stimulus as to how much the student is required to produce.

The sample item below shows the format for a constructed response item with the item specific rubric. In this sample, the stimulus is presented first, followed by the rubric with the applicable score points. An extended constructed response item is worth from 1 to 4 points; however, a student who does not answer receives a score of "0".

Sample Constructed Response Item:

Course: Early Childhood Education 1

Benchmark: 10.08 Model appropriate structure of written composition.

Stimulus: Using the theme "Dinosaurs," construct a written composition that is appropriate for a classroom of four-year-olds. The writing should model appropriate writing structures and allow the children in the classroom to successfully learn effective writing skills.

Rubric:

4 Points	Response includes a thorough and well-structured writing sample. Response includes a correctly written composition based on the theme of "Dinosaurs" that is age-appropriate for a classroom of four-year-olds. Response includes effective writing structures that allow for four year-old classroom students to mimic.
3 Points	Response includes a well-structured writing sample. Response includes a correctly written composition based on the theme of "Dinosaurs" that is mostly age-appropriate for a classroom of four year-olds. Response includes effective writing structures that allow for four-year-old classroom students to mimic. There may be small errors in the structure or writing.
2 Points	Response includes a partially proper structured writing sample. Response includes a partially correct written composition based on the theme of "Dinosaurs" that is mostly age-appropriate for a classroom of four year-olds. Response includes mostly ineffective writing structure that does not consistently allow for four-year-old classroom students to mimic.

1 Point	Response includes a poorly structured writing sample. Response generally does not include a correct written composition based on the theme of "Dinosaurs" that is age-appropriate for a classroom of four year-olds. Response includes an ineffective writing structure that does not consistently allow for four-year-old classroom students to mimic.

Criteria for Constructed Response (CR) Items

1. CR items should require a more complex response than a multiple-choice item permits.
2. CR items should not ask for a yes or no response.
3. CR items should contain enough information to focus the student on the task that must be accomplished.
4. CR items should indicate the amount and type of information that must be included in the response.
5. CR items should not ask for multiple repetitions of the same task to gain additional points.
6. CR items should not be used to assess lower level skills, unless the assessment task mirrors one required in the professional field.
7. CR items with two parts should not include score point dependencies, that is, achieving points on the second part of the item should not be dependent on giving a correct response to the first part of the item.
8. CR items should present a task that can be completed in the time allotted for the question type.
9. CR items should permit multiple solutions to the task presented in the prompt. Rubrics must provide for scoring of multiple solutions.
10. CR items should have rubrics that are clearly aligned to the task presented in the prompt.
11. CR items must be accompanied by a rubric or scoring guideline that lists the anticipated responses and the point value for each of the responses.
12. CR item rubric score point descriptions should clearly delineate what a student must do to earn each point.
13. CR item rubrics should not contain scoring rules that do not correspond to what is asked in the prompt.
14. Following field testing of the CR items, sample student papers should be included in the rubrics to provide student-generated exemplars for each of the score points.
15. CR items should adhere to all the general guidelines listed above in addition to these guidelines.

Performance Tasks

Performance tasks require students to produce a product or demonstrate required actions or behaviors. Performance tasks can range from low complexity to high complexity. Low complexity performance tasks may include the performance of rote behaviors required in particular Career and Technical Education courses. More complex performance tasks may include tasks that require the student to analyze the information presented in the stimulus and perform some action or actions as a response, or may require the student to create a product after following multiple steps.

Terminology

Listed below are the definitions of the specific terms used for the parts of a performance task along with a sample task with each of the terms identified.

Task: the directions that are stated prior to the student beginning the task

Rubric: the scoring guidelines for a student's response

Sample Performance Task:

Course: Culinary 3

Benchmark: 29.02 Prepare and creatively present: appetizers; salads; vegetables; fruits; pasta/rice/cereals; soups/stocks/sauces/gravies; meats; poultry; fish/shellfish; yeast breads; pies and pastries; cakes and icing; specialty desserts; breakfast foods; quick breads; sandwiches; hors d'oeuvres; garnishes; edible centerpieces.

Task: Your aunt is having a baby and your mother is throwing her a baby shower. She has put you in charge of the appetizers. Prepare and present a selection of appetizers (no more than 5) that are appropriate for this occasion.

Rubric:

4 Points	The student prepares a variety of appetizers. All the appetizers are appropriate for the occasion, and are presented in a creative and appealing way.
3 Points	The student prepares a variety of appetizers. Most of the appetizers are appropriate for the occasion and are presented in a creative and appealing way.
2 Points	The student prepares some variety of appetizers. Few of the appetizers are appropriate for the occasion. The appetizers may not be presented in an appealing way.
1 Point	The student prepares only one appetizer. The appetizer may not be appropriate for the occasion and has been presented poorly. The appetizer presentation does not follow standards for food presentation.

The sample task above shows the format for a performance task along with its item-specific rubric. In this sample, the student is presented with a scenario and instructions for what he or she must do. This is followed by the rubric with the applicable score points.

Criteria for Performance Tasks

1. Performance tasks are worth up to 4 points.
2. Performance tasks should permit multiple solutions to the task presented in the prompt. Rubrics must allow for scoring of multiple solutions.
3. Performance tasks should reference and use materials, tools, and techniques that are appropriate classroom activities for students.
4. Performance tasks must be accompanied by a rubric or scoring guideline that lists descriptions of anticipated responses and the point value for each of the responses.
5. Performance tasks should adhere to all the general guidelines and the constructed response guidelines listed above.

Rubrics

Rubrics, or scoring guides, are used to evaluate constructed response and performance tasks. Rubrics define an ordered range of score points and the criteria associated with the score point. Rubrics may be designed to assess the overall quality of the performance or writing. These rubrics are holistic rubrics, and provide one overall score for the performance or writing. In general, the rubrics on the Career and Technical Education Item bank are holistic rubrics. However, there may be instances where analytic rubrics may be more appropriate. An analytic rubric evaluates multiple aspects of a student's writing or performance, and each aspect has its own set of scoring criteria. The scores for each independent aspect may be combined to result in an overall score.

Example of a holistic rubric:

4 Points	The student answer shows a thorough understanding of the skills and characteristics of a good entrepreneur. The student provides multiple accurate examples. The response includes relevant details and may include few minor errors. The response is clear and comprehensive.
3 Points	The student answer shows an understanding of the skills and characteristics of a good entrepreneur. The student provides some accurate examples. The response includes some details and may include some errors. The response is mostly clear.
2 Points	The student answer shows a partial understanding of the skills and characteristics of a good entrepreneur. The student provides few accurate examples. The response includes minimal detail and many errors. The response is somewhat unclear.
1 Point	The student answer shows a poor understanding of the skills and characteristics of a good entrepreneur. The student provides few or no accurate examples or details. Response has many errors. The response is generally unclear.

Media in Test Items

Test items in the Career and Technical Education Item Bank may include the use of media, through the use of graphics, video clips, or audio clips. Due to the nature of the content area, some benchmarks may be best assessed by utilizing images, video clips, or audio clips. It is important to select images that will render as high-quality in print and on computer displays. Below are the specifications for media that may appear in the stimulus or in response options.

Types

The purpose of the Career and Technical Education items is to measure student achievement in understanding the appropriate way to perform specified activities, the skills necessary to engage in these activities, the proper use of equipment required in certain courses, and the safety measures necessary when performing certain behaviors. There are many real-world applications in Career and Technical Education courses that can best be represented visually, instead of described in words. This can be accomplished in items through use of a graphic, a series of graphics, or through video or audio clips. Images may include black and white line illustrations, color illustrations, or photographs. The use of photographs and video clips will allow for some display of the aspects of the dimensionality and time sequence of a physical activity.

All images should be clear and should demonstrate the focus of the image. The image should be in focus, without excess background material, or anything to distract the eye from the intent of the image.

Images should be at a resolution of 300 dpi and saved as an EPS file. Color images should be saved with the color settings of CMYK (not RGB).

Video clips should be clear and should demonstrate the focus of the question without superfluous background material present. They should not contain more than 2 or 3 people engaged in the activity that is being illustrated. The clip should start at a static position and then show the action to be illustrated clearly from the start to the finish. The clip should last no longer than 1 minute.

Sources

Graphics should be of non-copyrighted images in the public domain or produced or commissioned by the item writer expressly for the Career and Technical Education item bank. Commissioned graphics produced by the item writers for Florida's Career and Technical Education item bank and related products will be the property of the FLDOE. The sources must be cited when the items are turned in for approval.

Characteristics

Graphics must be clear and easy to reproduce as well as authentic. Graphics that require the test taker to have prior or specialized knowledge that is not consistent with the NGSSS should not be included.

Graphics must function as intact pieces. They must also contain the recognizable key concepts which they are intended to illustrate.

Graphics produced for the Florida Career and Technical Education Item Bank should reflect the same qualities of art expressed in the NGSSS. Graphics should present subject matter that is grade-level appropriate.

The selection of public domain graphics must follow the same rigorous review process as all other types of graphics. They should be reviewed by the item writer for any bias and sensitivity issues and grade-level appropriateness.

Content

Graphics should be interesting and appealing to students at the grades for which the graphic is intended. Graphics at a given grade level should include a range of age-appropriate images, drawings, photos, or videos. Also, graphics should contain conceptually appropriate and relevant subjects. Graphics with controversial or offensive content should not be included in the item bank. Confusing or emotionally charged subjects should also be avoided. References to trademarks, commercial products, and brand names should not be included.

Modifications

A public domain graphic or a work of art should not be modified but should be shown as intended by the artist. However, graphics developed specifically for the Florida Career and Technical Education Item Bank that are otherwise appropriate may be modified, through an iterative process with the graphic artist.

Graphic Features

Graphics may include text boxes and other labels, legends, keys and/or captions. Graphics should also reflect multicultural diversity and avoid gender stereotyping.

Item writers must not develop items where the correct response is dependent upon recognition of color, unless required by the benchmark. If a reference to color is used in an item, the color must be labeled with appropriate text. All graphics must be high quality.

Diversity

Graphics should bring a range of cultural diversity to the test. Characters, settings, and situations should reflect the variety of interests and backgrounds that make up Florida's student population. Graphics should represent and or be created by people of different cultures and races; however, graphics about culture- or region-specific graphics should not create an advantage or disadvantage for any particular group of students with a particular characteristic, including gender, race, ethnicity, religion, socioeconomic status, disability, or geographic region. These kinds of graphics must include text with sufficient information to allow a student to answer the question.

Length of Video Clip

Video clips should be a maximum of one minute in length in an effort to minimize test-taking time and keep test takers engaged. Item writers should make their best efforts to ensure that the information required to answer the test question should not require more than one minute of viewing a video.

Item Difficulty and Cognitive Complexity

Often, item difficulty and item complexity are two terms that some people use interchangeably. However, item difficulty is not the same as item complexity.

Item Difficulty

Item difficulty refers to the actual percentage of students who chose the correct answer after an item appears on a test. In general, the items break down into the following categories:

Easy	More than 70 percent of students are likely to respond correctly.
Average	Between 40 percent and 70 percent of the students are likely to respond correctly.
Challenging	Less than 40 percent of the students are likely to respond correctly.

Cognitive Complexity

Cognitive complexity refers to the cognitive demand of the item, or what the student needs to do in his/her head to arrive at the correct answer. The cognitive classification system is based upon Dr. Norman L. Webb's Depth of Knowledge (DOK) levels. [1] The rationale for classifying an item by its DOK level of complexity focuses on the *expectations made by the item*, not on the *ability of the student*. When classifying an item's demands on thinking (i.e., what the item requires the student to recall, understand, analyze, and do), it is assumed that the student is familiar with the basic concepts of the task. Since Career and Technical Education courses are not grade-level specific, the cognitive complexity of an item depends on the benchmark associated with the item.

The categories—low complexity, moderate complexity, and high complexity---form an ordered description of the demands an item may make on a student. For example, Low-complexity items may require a student to solve a one-step problem. Moderate-complexity items may require multiple steps. High-complexity items may require a student to analyze and synthesize information. The distinctions made in item complexity ensure that items will assess the depth of student knowledge at each benchmark. The intent of the item writer weighs heavily in determining the complexity of an item.

The pages that follow illustrate some of the varying demands that items might make at each complexity level for Florida's Career and Technical Education Item Bank. Note that items may fit one or more descriptions. In most instances, these items are classified at the highest level of complexity demanded by the item. Caution must be used in referring to the table on page 22, which describes activities at each cognitive complexity level. This table is provided for ease of reference, but the ultimate determination of the item complexity should be made considering the overall cognitive demand placed on a student.

Item writers are expected to evaluate their items in terms of cognitive complexity and include this on the item template. Items should generally be targeted to the highest level of complexity as appropriate to the assessed benchmark, though some benchmarks call for items at varying levels. When this is the case, writers should take care to cover the range of levels that are appropriate and not create items only at the lower ranges.

[1] Webb, Norman L. and others. "Webb Alignment tool" 24 July 2005. Wisconsin Center of Educational Research. University of Wisconsin-Madison. 2 Feb. 2006. http://www.wcer.wisc.Edu/WAT/index.aspx.

Low Complexity

Low Complexity items require students to recall, observe, question, or represent basic facts. For a low-complexity item, the student would be expected to demonstrate simple skills or abilities. A low-complexity item requires only basic understanding—often verbatim recall or simple understanding of a course specific term or process.

Below is an example of a low-complexity item.

Course: Culinary 3

Benchmark: 25.01 Identify basic food items.

Which picture shows zucchini?

A. 

B. 

C. 

D. 

Moderate Complexity

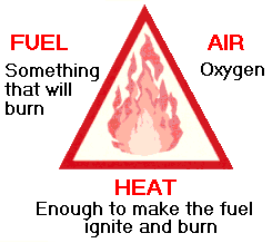
Moderate complexity items require two steps: identification and subsequent processing of that information. Students are expected to make inferences and may encounter items that include words such as classify, organize, and compare. Depending on the objective of a particular moderate level item, students may also be required to explain, describe, or identify cause and effect relationships.

Below is an example of a moderate complexity item.

Course: Agriscience Foundations 1

Benchmark: 02.02 Demonstrate proper safety precautions and use of personal protective equipment.

Joe has been interning in an agricultural mechanics shop. He sees this sign and immediately knows that he should be concerned about the potential of starting a fire. What safety step should he take?



A. Make sure he has a blanket with him at all times so he can smother any flames.
B. Keep his cell phone with him at all times so he can call 911.
* C. Receive instructions on how to use the fire extinguishers.
D. Place all oily rags in a plastic box for pickup once a week.

High Complexity

High complexity items make heavy demands on student thinking. Students may be asked to explain, generalize, or make multiple connections. High complexity items require several steps involving abstract reasoning and planning. Students must be able to support their thinking.

Below is an example of a high complexity item.

Course: Veterinary Assisting 3

Benchmark: 26.02 Draft, revise, and edit written documents using correct grammar, punctuation and vocabulary.

Stimulus: Create a document promoting the upcoming shot clinic that a veterinarian would like to hold on March 3rd at 1 pm. The clinic will provide annual shots for household pets. The document should include correct grammar, punctuation, and vocabulary.

Rubric:

4 Points	Response demonstrates a comprehensive understanding of an appropriate promotional document. Response includes all essential elements including time, date, and location. The document includes appropriate language and contains few grammatical errors.
3 Points	Response demonstrates an understanding an appropriate promotional document.

	Response includes many of the essential elements of advertising including time, date, and location. The document may include minor errors in vocabulary selection and may include minor grammatical errors.
2 Points	Response demonstrates at least a basic understanding of an appropriate promotional document. Response includes some of the essential element including time, date, and location. The document may include major errors in vocabulary selection and may include multiple grammatical errors. There may be errors in the elements.
1 Point	Response demonstrates a poor understanding of an appropriate promotional document. Response may not include all of the essential elements of advertising including time, date, and location. There may be errors in the elements. The document includes inappropriate vocabulary or may include multiple grammatical errors.

The following table is provided for ease of reference; however, caution must be used in referring to this table describing activities at each cognitive complexity level. The ultimate determination of an item's cognitive complexity should be made considering the intent of the overall cognitive demand placed on a student.

Examples of Career and Technical Education Activities Across Cognitive Complexity Levels		
Low Complexity	**Moderate Complexity**	**High Complexity**
• Define a common term • Complete a one step process • Write a symbol or a list • Label a diagram • Identify breeds of animals	• Summarize a procedure • Discuss the importance of a topic • Demonstrate multi-step procedures	• Create and present complex food items • Evaluate situations • Critique the behaviors of a peer • Conduct a research experiment • Analyze a situation and develop a plan of action

An effective test has:

- 15–25% low complexity Items
- 50–60% moderate complexity items
- 15–20% high complexity Items

Content experts from each CTE course represented in the Item Bank collaborated to decide upon a test blueprint. The test blueprint generally followed the percentages defined above. Our experts however, decided which benchmarks would be appropriate to assess, and in what capacities. These blueprints will be revisited in year 2 of the project.

Guide to the Item Specifications

What is an item specification?

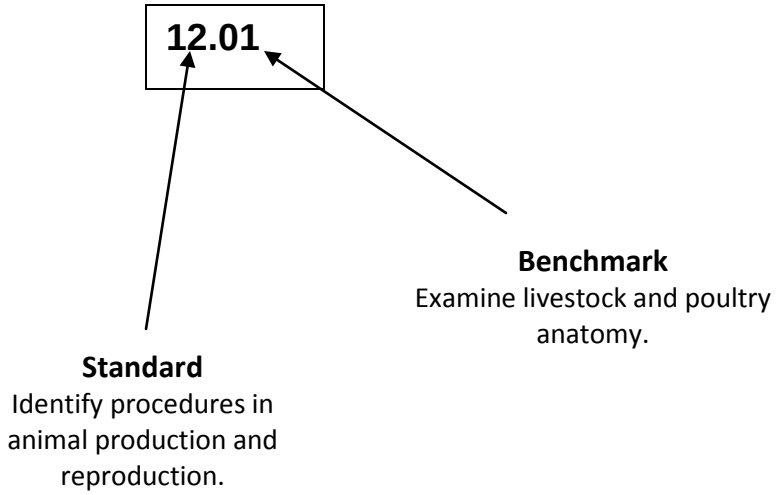
An item specification is a guideline for item writers and reviewers. Item specifications define the context and content which belongs in a test item. Item specifications link content standards to test items.

It is important to note the organization of the content standards and benchmarks.

Benchmark Classification System

Each Career and Technical Education course has its own set of course standards. See Appendix A for each course's standards. Each standard has an associated series of more specific benchmarks for that course. The benchmarks are organized numerically, with two numbers separated by a decimal point. The first number is the standard number, and the second number is the benchmark number. You will see these numbers on the Item Specifications for each course.

An example, from Agritechnology 1:



Item Specifications Template and Definitions

Item specifications for the Career and Technical Education Assessment bank include the following components:

Standard: Each standard is a general statement of expected student achievement within a course in the NGSSS.

Benchmark: Benchmarks are specific statements of expected student achievement under course-specific Standards.

Depth of Knowledge: Based on Webb's Depth of Knowledge, items may be Low Complexity, Moderate Complexity, or High Complexity. Item specifications may include more than one category.

Item Types: This section of the item specification identifies what types of items may be written to address the benchmark. Items may be Multiple Choice, Constructed Response, or Performance Task.

Content Limits: The content limits define the scope of content knowledge that will be assessed (e.g., specific elements that can be compared or contrasted) and in some cases, indicate areas of the benchmark that will not be assessed. For some benchmarks, additional information is provided to clarify specific directions in developing test items.

Stimulus Attributes: Stimulus attributes define the types of stimuli that will be used in the development of items, including appropriate context or content suitable for assessing the particular benchmark.

Response Attributes: The response attributes define the characteristics of the responses, either which the student will produce, or those that appear in the multiple choice item.

Sample Item: Sample items for each benchmark are provided. Item specifications (at this time) may include one or more sample item. The sample item is one of the listed item types. The sample items are presented in a format similar to the test, and the correct answer or scoring rubric for each sample item is provided.

Guidelines for Item Writers

Item writers participating in the project must be certified to teach the course for which they are writing items. The teachers must have a comprehensive knowledge of the content covered by their course curriculum, as well as an intimate understanding of the NGSSS benchmarks for the Career and Technical Education courses they teach. Additionally, since item writers are familiar with the age group of the students who are the audience for this item bank, item writers should also be familiar with the cognitive abilities of these students. Item writers should use their best judgment in writing items that measure Career and Technical Education benchmarks of the NGSSS without introducing extraneous elements that may interfere with the test's validity. Item writers should know and respect the guidelines established in this document as well as appreciate the spirit of developing test content that allows students to perform at their best.

Item writers for Florida's Career and Technical Education Item Bank must submit items in an approved Item Writing Template which includes the following information about each item.

Format	Item writers must submit items in the template provided in Appendix B. All appropriate sections of the template should be completed before the items are submitted.
Sources	Item writers are expected to provide sources for all images included in the item. Acceptable sources for art work are public domain sources that do not require copyright fees for use. Photos of student images and videos must be accompanied by a completed permission form.
Correct Response	Multiple-Choice Items: Item writers must indicate which option is the correct answer. Constructed Response Items: Item writers must provide a scoring rubric that includes the required ideas/wording that must be present for each score point. Performance Tasks: Item writers must provide a scoring rubric that clearly delineates the activities or actions that must be present for each score point.
Option Rationales	Multiple-Choice Items: All response options for a multiple choice item must be accompanied by a rationale. The rationales defend the plausibility of the response option. For the correct option the rationale must state why the option is correct based on the benchmark being assessed. For incorrect options the rationales must state why the option is plausible and why it is incorrect based on the benchmark being assessed.
Cognitive Complexity	Item writers are expected to write items that are low, moderate, or high complexity. The cognitive complexity of the item must be one indicated on the item specification. Item writers should take care to cover the range of levels

that are appropriate and to not create items only at the lower ranges.

Submission of Items

When submitting items, item writers must balance several factors. Item submissions should

- include items for the benchmarks and cognitive complexities assigned to the item writer;
- have an approximate balance of the correct response between the answer choices for multiple-choice items;
- have an equal balance of male and female names and include names representing different ethnic groups in Florida;
- have an equal balance of male and female students at the appropriate grade level in the stimulus and/or option photographs and drawings; and
- have an equal balance of ethnic groups in Florida represented in the stimulus and/or option photographs and drawings.

Electronic Submission

Items will be submitted into the online collaboration tool, Basecamp. Project participants will be invited to create a password-protected Basecamp account. Information about how to upload items into the system will be provided to participants. Items will then be input into the AIR temporary item banking system.

Review Procedures

Before being accepted into Florida's Career and Technical Education Item Bank, all items must pass several levels of review. Florida educators, in conjunction with the DOE and the LEAs, scrutinize all items prior to accepting them for placement in the item bank. The graphics and items are reviewed for content characteristics, potential bias, and any issues of concern to Florida stakeholders. Concerns expressed during the reviews must be resolved satisfactorily before the graphics and items are placed in the item bank.

Review of Test Items

The DOE, the LEAs, and a committee made up of select Florida educators with experience and expertise in Career and Technical Education instruction review all test items during the item development process. The content specialists at the DOE review and edit items, judging them for overall quality and suitability for the tested grade level.

Prior to submission to the DOE for their review, items are reviewed by project staff, which includes Career and Technical Education teachers from across the state who have agreed to participate in the Review stage of the development process.

The reviewers will be focusing on the content of the items, issues of bias and sensitivity, and style and formatting issues. The primary focus however, is the content validity, whether or not the item is a valid measure of the designated NGSSS benchmark, and if the item aligns with the item specifications.

Item writers and reviewers will be provided a checklist to guide their thinking as it relates to their specific task. The Item Writing and Reviewing Checklist is found in Appendix C. The checklist directs the reviewers to examine the item as a whole, and also to independently examine the stimulus and question stem as well as the response options and answer key. The Checklist is separated into sections for each of those components and includes guiding questions. Item Reviewers will use the Checklist with every item they review.

Feedback on the item will be recorded on an Item Review Cover Sheet for each item. The Item Review Cover Sheet, found in Appendix D, correlates with the Checklist. However, the coversheet provides only a few key questions that relate to the various aspects of the item, instead of the exhaustive list that is found on the Checklist. Reviewers are directed to mark which aspects of the item they have concerns about, and provide specific written feedback on the Cover Sheet. Then, the Reviewer will rate the item based on a rubric provided on the Cover Sheet. The reviewers' feedback is given to the original item writer, and the item writer has time to implement the feedback and make the necessary changes. At that point, the item may be submitted into the Item Banking System.

Review for Potential Bias and Sensitivity Issues

The Department of Education provided documentation to guide item reviews for bias and sensitivity. We incorporated this document into our review checklist and provided the FLDOE documentation to all of our item writers and reviewers. Both the graphics and items are reviewed by Florida educators for the following kinds of bias: gender, racial, ethnic, linguistic, religious, geographic, and socioeconomic. Reviews also include consideration of issues relevant to individuals with disabilities.

The purpose for the sensitivity review is to ensure that the topic or information presented in the item does not cause any strong student reaction which would negatively affect the student's performance on

the item. Topics that may be offensive, or that students may have particularly strong negative associations or experiences with should be avoided. The topic of the item should not distract from the purpose of the assessment item. Some topics that may be deemed inappropriate to include on assessment items are wildfires, hurricanes, religion, death, or child abuse.

Appendix A: Course Standards

Each Career and Technical Education Course has a set of course standards which outlines what the students should be learning throughout the course. Each standard has associated benchmarks, which are more specific expressions of the standard. The teacher is required to teach all of the benchmarks in the course. This assessment will assess each benchmark for the courses included in this grant.

Agritechnology Standards

(Agriscience Foundations 1, Agritechnology 1)

01.0 Describe the history of agriculture and its influence on the global economy.
02.0 Practice agriscience safety skills and procedures.
03.0 Apply scientific and technological principles to agriscience issues.
04.0 Apply environmental principles to the agricultural industry.
05.0 Investigate and utilize basic scientific skills and principles in plant science.
06.0 Investigate and utilize basic scientific skills and principles in animal science.
07.0 Demonstrate the use of agriscience tools, equipment, and instruments.
08.0 Demonstrate agribusiness, employability and human relation skills.
09.0 Apply leadership and citizenship skills.
10.0 Explore the scope of the agriscience industry.
11.0 Provide for proper animal health and nutrition.
12.0 Identify procedures in animal production and reproduction.
13.0 Develop procedures for exhibiting animals.
14.0 Compare, select, and use plant production systems.
15.0 Fertilize plants and crops.
16.0 Irrigate plants and crops.
17.0 Control plant pests.
18.0 Operate, maintain, and service facilities, tools, and equipment.
19.0 Describe procedures for harvesting and marketing agricultural products.
20.0 Apply principles of agribusiness finance.
21.0 Demonstrate leadership, employability, communication, and human-relations skills.
22.0 Demonstrate language arts knowledge and skills.
23.0 Demonstrate mathematics knowledge and skills.
24.0 Demonstrate science knowledge and skills.
25.0 Use oral and written communication skills in creating, expressing and interpreting information and ideas.
26.0 Solve problems using critical thinking skills, creativity and innovation.
27.0 Use information technology tools.
28.0 Describe the roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment.
29.0 Demonstrate the importance of health, safety, and environmental management systems in organizations and their importance to organizational performance and regulatory compliance.
30.0 Demonstrate leadership and teamwork skills needed to accomplish team goals and objectives.
31.0 Describe the importance of professional ethics and legal responsibilities.
32.0 Explain the importance of employability skill and entrepreneurship skills.
33.0 Demonstrate personal money-management concepts, procedures, and strategies.

Animal Science and Services (2–3) Standards

10.0 Describe animal science and the role of animals in society.
11.0 Identify careers in the animal industry.
12.0 Practice animal and human first aid and laboratory safety.
13.0 Demonstrate the importance of health, safety, and environmental management systems in organizations and their importance to organizational performance and regulatory compliance.
14.0 Identify parts and functions of various systems of selected animals.
15.0 Recognize normal and abnormal animal behaviors.
16.0 Differentiate between animal welfare and animal rights.
17.0 Demonstrate knowledge of animal control and humane societies.
18.0 Demonstrate employability and interpersonal skills.
19.0 Demonstrate leadership and teamwork skills needed to accomplish team goals and objectives.
20.0 Demonstrate language arts knowledge and skills.
21.0 Demonstrate mathematics knowledge and skills.
22.0 Demonstrate science knowledge and skills.
23.0 Identify the different digestive systems of animals and the nutritional requirements of selected species.
24.0 Explain the reproductive system and breeding of selected animals.
25.0 Demonstrate knowledge of preventive medicine and disease control.
26.0 Describe internal and external parasites and control methods.
27.0 Groom, exhibit and market animals.
28.0 Maintain and analyze records.
29.0 Use information technology tools.

Culinary Arts (1–3) Standards

01.0 Identify career and job opportunities.
02.0 Demonstrate language arts knowledge and skills.
03.0 Demonstrate mathematics knowledge and skills.
04.0 Demonstrate science knowledge and skills.
05.0 Exhibit the ability to follow state mandated guidelines for food service.
06.0 Demonstrate and incorporate workplace safety procedures.
07.0 Demonstrate the importance of health, safety, and environmental management systems in organizations and their importance to organizational performance and regulatory compliance.
08.0 Demonstrate personal productivity.
09.0 Explain the importance of employability skill and entrepreneurship skills.
10.0 Demonstrate leadership and teamwork skills needed to accomplish team goals and objectives.
11.0 Utilize operational systems.
12.0 Use and care for commercial tools and equipment.
13.0 Describe the principles of basic food science.
14.0 Demonstrate how to read, follow, and prepare recipes.
15.0 Describe the basic principles of nutrition.
16.0 Identify and explain front-of-the-house and back-of-the-house duties
17.0 Prepare and present food and beverage items to meet creativity aspects as well as quality standards.
18.0 Exhibit and utilize safe, secure, and sanitary work procedures.
19.0 Apply principles of food science in cooking and baking techniques.
20.0 Apply principles of nutrition in menu planning, cooking, and baking.
21.0 Perform front-of-the-house duties.
22.0 Perform back-of-the-house and inventory duties.
23.0 Solve problems using critical thinking skills, creativity, and innovation.
24.0 Research career and advancement opportunities in professional cooking and baking.
25.0 Follow food identification, selection, and purchasing, receiving, storing, and inventory guidelines.
26.0 Practice advanced cooking and baking techniques.
27.0 Use oral and written communication skills in creating, expressing and interpreting information and ideas.
28.0 Apply scientific principles in cooking and baking.
29.0 Prepare and present food products to meet creativity aspects as well as quality standards.
30.0 Demonstrate management skills.
31.0 Describe the importance of professional ethics and legal responsibilities.
32.0 Comply with laws and regulations specific to the food service and hospitality industry.
33.0 Develop a business plan.
34.0 Describe the roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment.
35.0 Use information technology tools.
36.0 Create and prepare menus for various nutritional needs.
37.0 Utilize cost-control techniques to maximize profitability.
38.0 Interpret and incorporate guidelines and policies for food service establishments.
39.0 Compare and analyze the relationship of nutrition to wellness.
40.0 Create and prepare menus for customers on special diets.
41.0 Compare and analyze menus of food establishments.
42.0 Demonstrate personal money-management concepts, procedures, and strategies.

Early Childhood Education (1–3) Standards

01.0 Identify rules and regulations governing child care.
02.0 Plan, establish and maintain a safe, clean, and healthy learning environment.
03.0 Plan and implement food service and nutrition education.
04.0 Identify and report child abuse and neglect in accordance with state regulations.
05.0 Identify and apply principles of child development typical and atypical (birth through age eight).
06.0 Implement developmentally appropriate practices for programs serving children from birth through age eight.
07.0 Identify and demonstrate communication skills related to child care.
08.0 Identify various observation and recording methods.
09.0 Recognize appropriate methods of guidance.
10.0 Plan, establish, and implement a developmentally appropriate emergent literacy program.
11.0 Identify the characteristics of an environment that is conducive to language use and acquisition.
12.0 Demonstrate professionalism.
13.0 Identify community resources that provide services or assistance to children in the community.
14.0 Display interpersonal relationship skills.
15.0 Develop intercommunication with family.
16.0 Demonstrate observation and recording methods.
17.0 Demonstrate appropriate use of technology for the child care profession.
18.0 Create, implement and evaluate lesson plans.
19.0 Analyze theories of child development.
20.0 Analyze how nutrition, environment, heredity, and health status influence the development of the child.
21.0 Describe developmentally appropriate guidance and activities for infants and toddlers.
22.0 Plan and implement developmentally appropriate motor development activities for preschool children.
23.0 Guide the cognitive development and general knowledge of preschool children.
24.0 Guide the creative development of preschool children which reflects various approaches to learning.
25.0 Guide the social and emotional development of preschool children.
26.0 Describe the history of school-age child care and the development and diversity of school-age children.
27.0 Plan and provide for developmentally appropriate care-giving environments for students with special needs.
28.0 Plan and implement classroom management techniques for preschoolers.
29.0 Demonstrate how schedules, spaces, and experiences create environments that promote children's total growth and development.

Horticulture 2 Standards

10.0 Describe the horticulture industry.
11.0 Identify safety procedures in the workplace.
12.0 Identify and classify plants.
13.0 Propagate plants.
14.0 Identify growing media and apply fertilizers.
15.0 Irrigate plants and turf.
16.0 Describe Integrated Pest Management approaches.
17.0 Describe the principles and requirements of plant growth.
18.0 Apply best management practices in the horticulture industry.
19.0 Identify principles of landscape design.
20.0 Demonstrate leadership, employability, communications, and human relations skills.
21.0 Demonstrate language arts knowledge and skills.
22.0 Demonstrate mathematics knowledge and skills.
23.0 Demonstrate science knowledge and skills.
24.0 Use oral and written communication skills in creating, expressing and interpreting information and ideas.
25.0 Solve problems using critical thinking skills, creativity and innovation.
26.0 Use information technology tools.
27.0 Describe the roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment.
28.0 Demonstrate the importance of health, safety, and environmental management systems in organizations and their importance to organizational performance and regulatory compliance.
29.0 Demonstrate leadership and teamwork skills needed to accomplish team goals and objectives.
30.0 Describe the importance of professional ethics and legal responsibilities.
31.0 Explain the importance of employability skill and entrepreneurship skills.
32.0 Demonstrate personal money-management concepts, procedures, and strategies.

Secondary School Age Certification (1–2) Standards

01.0 Identify rules and regulations which govern child care.
02.0 Plan, establish and maintain a safe, clean, and healthy learning environment.
03.0 Plan and implement food service and nutrition education.
04.0 Identify and report child abuse and neglect in accordance with state regulations.
05.0 Identify and apply principles of child development typical and atypical (birth through age twelve).
06.0 Exhibit skills in implementing developmentally appropriate practices for programs serving children from birth through age twelve.
07.0 Identify communication skills related to child care.
08.0 Identify various observation and recording methods.
09.0 Recognize appropriate methods of guidance.
10.0 Demonstrate professionalism.
11.0 Provide a safe environment.
12.0 Provide and promotes an environment that contributes to good health, physical fitness, and nutrition.
13.0 Use space, relationships, materials and routines as resources for constructing enriching environments.

Teacher Assisting (1–3) Standards

01.0 Describe the role and career path of the substitute teacher and the regulations governing those in that occupation.
02.0 Describe the role of education in the United States.
03.0 Demonstrate the interpersonal skills required for successful employment as a substitute teacher and/or teacher assistant.
04.0 Use oral and written communication skills in creating, expressing and interpreting information and ideas.
05.0 Demonstrate the communication skills required to be an effective substitute teacher and/or teacher assistant.
06.0 Use information technology tools.
07.0 Operate instructional technology.
08.0 Arrange, organize, and perform educational support tasks.
09.0 Demonstrate mathematics knowledge and skills.
10.0 Demonstrate language arts knowledge and skills.
11.0 Demonstrate science knowledge and skills.
12.0 Demonstrate the importance of health, safety, and environmental management systems in organizations and their importance to organizational performance and regulatory compliance.
13.0 Supervise the safety and health of students.
14.0 Identify and report child abuse and drug abuse.
15.0 Support the learning activities of students.
16.0 Establish and maintain appropriate student behaviors.
17.0 Demonstrate leadership and teamwork skills needed to accomplish team goals and objectives.
18.0 Recognize leadership and Career and Technical Student Organization (CTSO) activities.
19.0 Describe key events and factors that influence education in the United States.
20.0 Demonstrate the methods for creating and interpreting assessments.
21.0 Describe the importance of professional ethics and legal responsibilities.
22.0 Identify the responsibilities involved when supervising students.
23.0 Analyze the effects of child abuse and drug abuse on student academic achievement and behavior.
24.0 Demonstrate methods of supporting the learning activities of students.
25.0 Demonstrate the ability to work effectively with exceptional students.
26.0 Demonstrate an awareness of diversity in education.
27.0 Define multiple intelligences
28.0 Recognize a balanced literacy classroom.
29.0 Demonstrate the methods for administering and grading assessments.
30.0 Solve problems using critical thinking skills, creativity and innovation.
31.0 Prepare visual aids.

Veterinary Assisting (1–4) Standards

01.0 Describe veterinary science and the role of animals in society.
02.0 Describe the socioeconomic role of veterinary sciences on the livestock industry.
03.0 Discuss the human-animal bond and its effects on human health.
04.0 Demonstrate the proper use of veterinary science terminologies.
05.0 Identify careers in the animal industry.
06.0 Practice safety.
07.0 Recognize normal and abnormal animal behaviors.
08.0 Restrain and control companion and livestock animals.
09.0 Identify common breeds of companion animals.
10.0 Investigate the common husbandry practices and daily care of several species of companion and livestock animals.
11.0 Demonstrate human-relations, communications and leadership through FFA activities.
12.0 Demonstrate leadership and teamwork skills needed to accomplish team goals and objectives.
13.0 Demonstrate basic first aid for humans.
14.0 Demonstrate basic first aid for companion and livestock animals.
15.0 Apply scientific and technological principles to the veterinary sciences and companion animal industry.
16.0 Demonstrate the use of tools, equipment and instruments in the veterinary science and companion animal industry.
17.0 Identify common breeds of livestock animals.
18.0 Identify parts and functions of various systems of selected animals.
19.0 Investigate the common husbandry practices and daily care of companion animals, exotic animals and fish.
20.0 Demonstrate knowledge of animal control and humane societies.
21.0 Describe the problems, causes, and solutions of animal overpopulation.
22.0 Locate and interpret animal-related laws.
23.0 Identify the different digestive systems of animals and the nutritional requirements of selected species.
24.0 Explain the reproductive system and breeding of selected animals.
25.0 Identify common breeds of small and exotic animals.
26.0 Demonstrate language arts knowledge and skills.
27.0 Describe the importance of professional ethics and legal responsibilities.
28.0 Differentiate between animal welfare and animal rights.
29.0 Explain the role of animals in research.
30.0 Demonstrate human-relations, communications, leadership and employability skills.
31.0 Maintain and analyze records.
32.0 Demonstrate knowledge of preventive medicine and disease control.
33.0 Describe internal and external parasites and control methods.
34.0 Demonstrate the importance of health, safety, and environmental management systems in organizations and their importance to organizational performance and regulatory compliance.
35.0 Use oral and written communication skills in creating, expressing and interpreting information and ideas.
36.0 Use information technology tools.
37.0 Demonstrate leadership and teamwork skills needed to accomplish team goals and objectives.
38.0 Explain the importance of employability skills and entrepreneurship skills.
39.0 Describe the roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment.

40.0 Demonstrate personal money-management concepts, procedures, and strategies.
41.0 Demonstrate science knowledge and skills.

Appendix B: Item Writing Template

Project: G-Career and Technical Education

Course Name:

Item Writer ID:

Webb's Cognitive Level:

Benchmark/standard:

Item:

Choices:	Correct Answer
A)	
B)	
C)	
D)	

For each incorrect choice describe why the answer is plausible.

A)
B)
C)
D)

Appendix C: Item Writing and Review Checklist

For each test item you submit, review this checklist[2] alongside of each item.

Overarching questions

1) Does the item match the benchmark?
2) Does the item meet the intended complexity?
3) Does the item match the item specification in terms of **Content Limits**, **Stimulus Attributes**, and **Response Attributes**?
4) Is the item different from the sample item provided in the item specification?
5) Is the item free of bias/sensitivity?
6) Is the item laid out in a clear and consistent manner?
7) Are the grammar, punctuation, and spelling correct?

Reviewing the Stimulus and Question Stem

Look at the **stimulus** (excluding the question stem), ask yourself:

- If you are including a sample technical text or included a passage,
  - Have you verified that the passage is original, or have you cited all sources for a passage which has been adapted from an existing text?
  - Is it a realistic representation of something a student in this course would read?
  - Does it relate to the benchmark?
  - Is it clear and well written?
  - Is all the necessary content present?
- If you are including a scenario,
  - Is it realistic?
  - Is it grade level appropriate?
  - Does it relate to the course?
  - Does it relate to the benchmark?
  - Are the text and amount of reading required appropriate and reasonable for the grade level (assume 2 grade levels below)?
- If you are including data or charts/graphs,
  - Is the data related to the course?
  - Is the data realistic and accurate?
  - Is the data labeled appropriately?
  - In your graph, are the axes labeled and does the graph have a title?
- If you are including an image,
  - Is the source cited (if potential copyright issue)?
  - Is the image of good quality?
  - Is it free of bias/stereotyping?

Look specifically at the **question stem**:

- Is the question stem appropriate for the benchmark?
- Does the question stem relate to the passage, scenario, data, chart, graphic, etc. provided?
- Is the intent of the question stem clear? Does it *clearly* ask the student what needs to be done?

[2] Adapted from:
Reading Item Checklist, CAL/ WIDA Consortium
Haladyna, T. (1999).*Developing and Validating Multiple Choice Test Items*. Mahwah, NJ: Lawrence Erlbaum Associates.
Checklist for Multiple Choice Item Review, USF

- Does the question stem read naturally? Is the question stem concise and well written? Is it free of colloquial language or slang?
- Can the question be answered in a straightforward way without viewing the response options? (e.g., when you cover the response options and read it, can you answer the question? The answer in MOST cases should be YES.)
- Does the natural response to the task statement/question provide evidence that the student can do what is indicated in the benchmark?
- Does the item stem include all the information necessary to understand the question?
- Are repeated terms included in the stem? (e.g., if the response options **all** start "He should …"; consider including that in the question stem.)
- Does the item avoid logical deduction or "testwiseness"? (e.g.; a word in the question stem shouldn't be repeated in the key)
- As needed, is there a reminder to seek the answer from the passage (e.g., according to this passage…)?
    - This is important when other background knowledge might lead the student somewhere else. "Based on what you've read…" serves to focus the student on the immediate passage.
- Is the stem stated in a positive way (unless it cannot be avoided)?
- If the stem contains the words: **MUST**, **ONLY**, **NOT**, etc., are they **bolded** and CAPITALIZED?

Reviewing the Response Options

- Do all of the response options answer the question? (e.g., if the question is "Which activity should she choose?" a response option should not be "happy." "Happy" is not an activity.)
- Are the response options complete sentences?
    - If so, do they begin with a capital letter, and end with a period?
    - If not, the first letter should NOT be capitalized, and there should NOT be a period.
- Are the length, word frequency, and other surface/deep characteristics of each distractor about equal to each other?
    - If the response options must be different lengths, are they arranged in order from shortest to longest?
- Are the response options arranged in chronological (if applicable) or alphabetical order?
- Are there four response options?
- Are the following absent from all response options:
    - Opposites (e.g., one cancels out the other)
    - Overlapping choices (e.g., options that essentially say the same thing)
    - Unintentionally tricky or "garden path" distractors
    - Impossible or nonsensical distractors
    - Responses that lead the student to the correct answer
    - "All of the above." or "None of the above.

For the **Answer Key**, ask yourself:

- Is it a natural answer to the question stem?
- Does it give evidence that the student can do what is indicated in the benchmark?
- Is it clearly the ONLY correct answer?
- If you were to cover up all response options and answer the question, would your answer be the key? (must be YES to avoid trick questions)

For the **Distractors**, ask yourself, "if a student understood the question but does not know the answer":

- Is each distractor clearly a plausible answer to the task statement/question?

- Is the distractor plausibility section complete in the template?
- Is each distractor clearly incorrect?

Appendix D: Item Review Cover Sheet

Course Name:
Benchmark Number:
Item Writer ID (from the filename):
Item ID (from the filename):
Reviewer ID (This is YOUR number):

Criteria	Yes/No	Comments*
Overarching Questions		
1) Does the item match the benchmark?		
2) Does the item meet the intended complexity?		
3) Does the item match the item specification in terms of **Content Limits**, **Stimulus Attributes**, and **Response Attributes**?		
4) Is the item different from the sample item provided in the item specification?		
5) Is the item free of bias/sensitivity?		
Stimulus and Question Stem		
6) Are there any questions/concerns with the **Stimulus**?		
7) Are there any questions/concerns with the **Question Stem**?		
Response Options		
8) Are there any questions/concerns with **answer key**?		
9) Are there any questions/concerns with the **distractors**?		
Final Check		
10) Is the item laid out in a clear and consistent manner?		
11) Are the grammar, punctuation, and spelling correct?		

* You must complete the "Comments" section if there is a concern with the item.

General comments/feedback on item:

Rating Rubric:

1 point	The item needs **extensive** revision. There are major problems with the content of this item. It needs an entire rewrite. I have marked errors in the "Overarching Questions" section of the coversheet. I may also have marked errors in the "Stimulus and Question Stem" and/or the "Response Options" sections of the coversheet.
2 points	This item needs **some** revisions. The item has problems, but can be salvaged using the comments and suggestions I (the reviewer) have provided. I have marked errors in the "Stimulus and Question Stem" and/or the "Response Options" sections of the coversheet.
3 points	This item needs **minor** revisions. There are only a few small grammar/punctuation/format issues that should be corrected. I have indicated these errors in the "Final Check" section of the coversheet.
4 points	This item is good and needs no revisions. It is ready to be submitted to DOE.

I'm rating this item: _____