

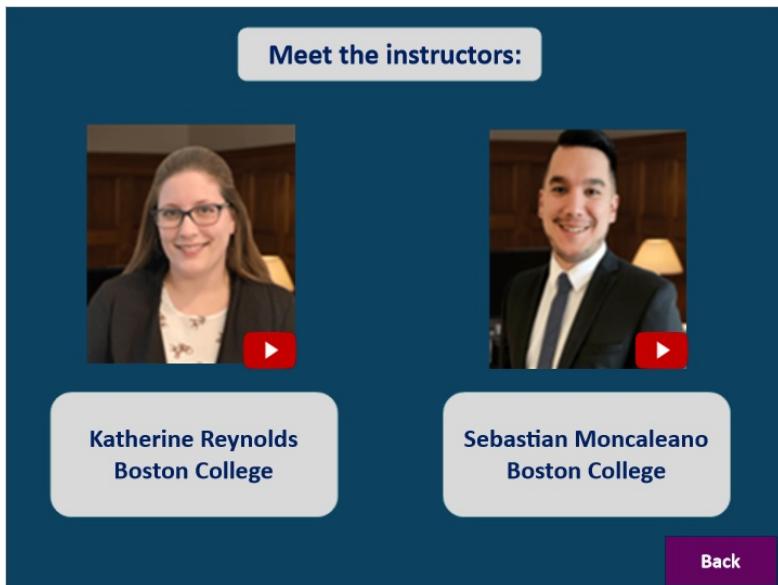
DM26 SLIDES (Standards Alignment, Version 1.0)

1. Module Overview

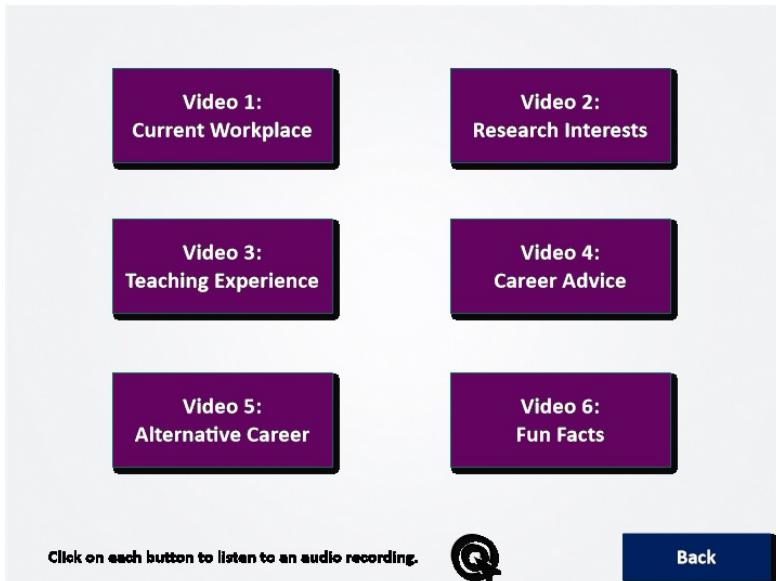
1.1 Module Cover



1.2 Instructor



Katherine Selection (Slide Layer)



A user interface for a selection slide. It features a 3x2 grid of buttons, each containing a video title. Below the grid is a text instruction, a magnifying glass icon, and a 'Back' button.

Video 1:
Current Workplace

Video 2:
Research Interests

Video 3:
Teaching Experience

Video 4:
Career Advice

Video 5:
Alternative Career

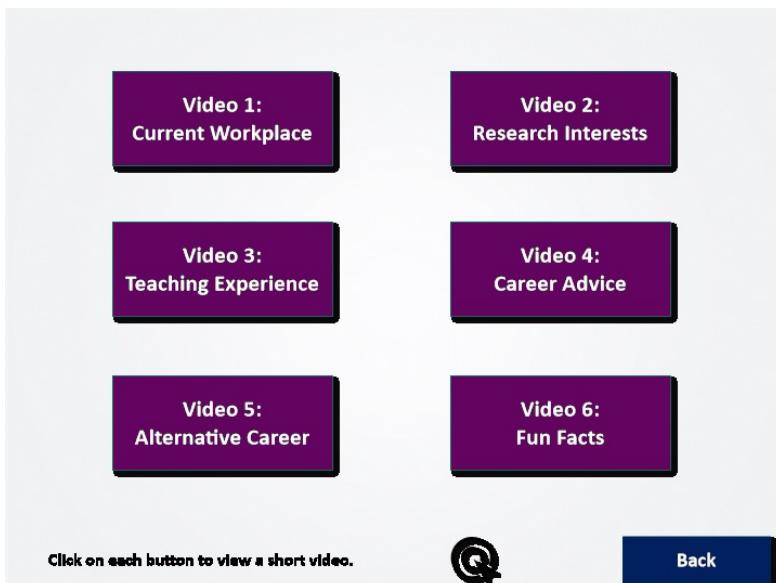
Video 6:
Fun Facts

Click on each button to listen to an audio recording.

Q

Back

Sebastian Selection (Slide Layer)



A user interface for a selection slide. It features a 3x2 grid of buttons, each containing a video title. Below the grid is a text instruction, a magnifying glass icon, and a 'Back' button.

Video 1:
Current Workplace

Video 2:
Research Interests

Video 3:
Teaching Experience

Video 4:
Career Advice

Video 5:
Alternative Career

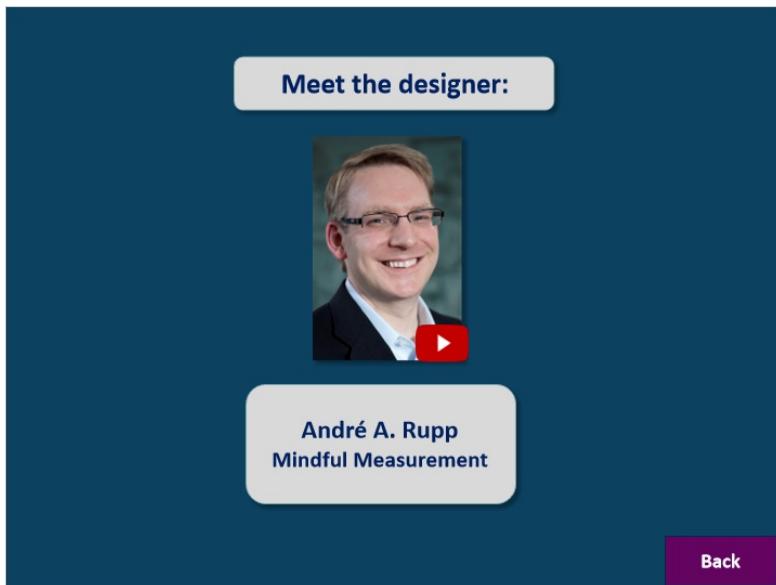
Video 6:
Fun Facts

Click on each button to view a short video.

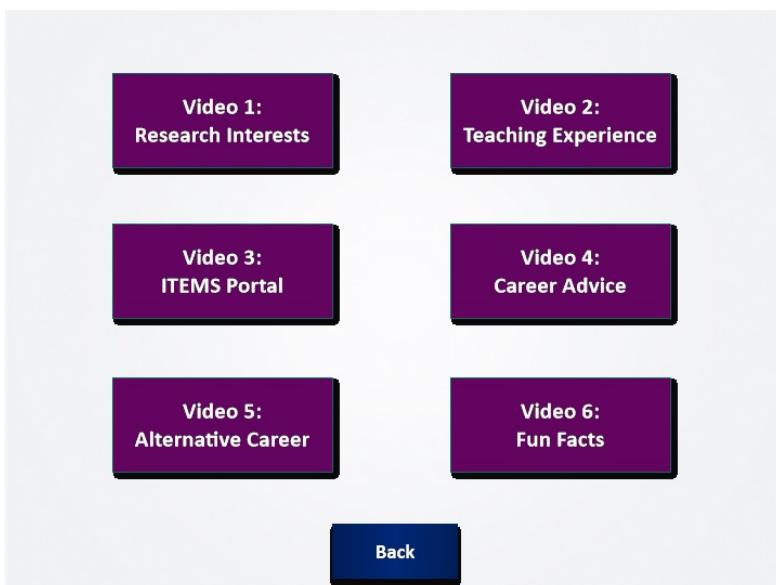
Q

Back

1.3 Designers



Andre Intro (Slide Layer)



1.4 Welcome



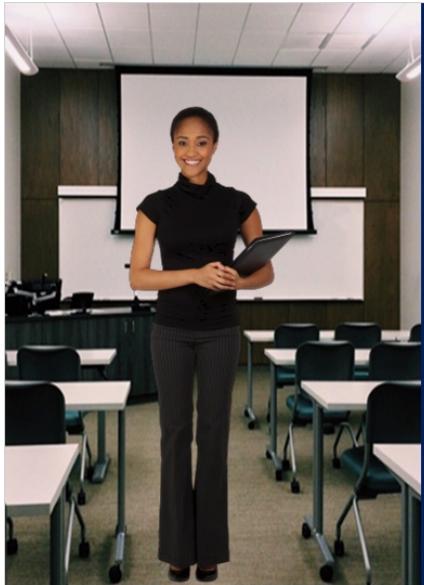
**Welcome to the
ITEMS Module!**

The woman to the left is Laura!

Along with the instructors
she will be guiding you
through the module content.

Please enter your name below:

Untitled Layer 1 (Slide Layer)



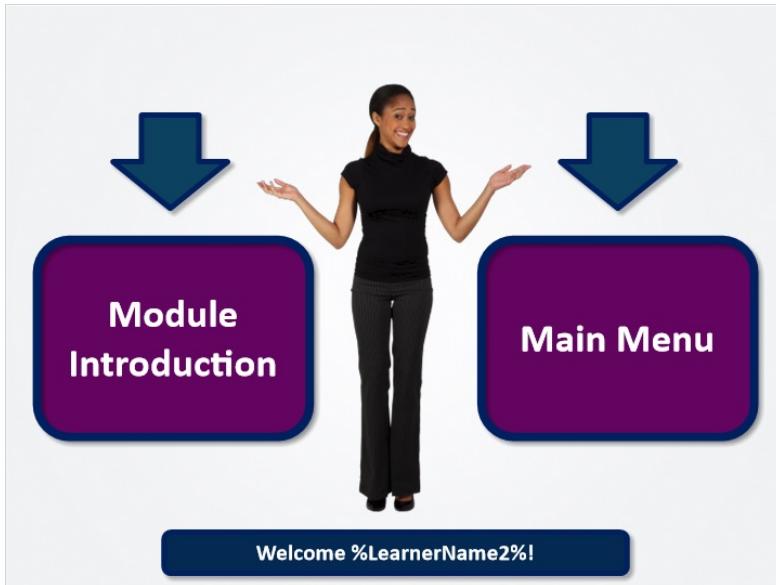
**Welcome to the
ITEMS Module!**

The woman to the left is Laura!

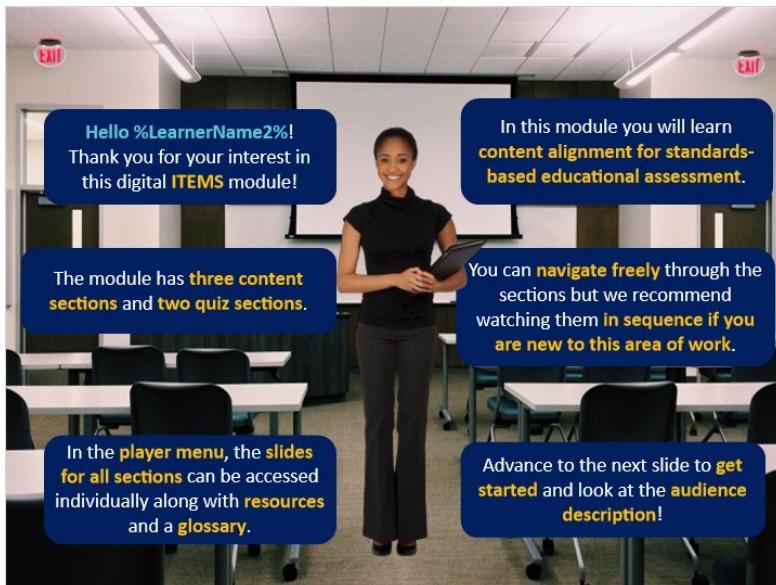
Along with the instructors
she will be guiding you
through the module content.

Please enter your name below:

1.5 Path Choice



1.6 Overview



1.7 Target Audience

Target Audience

Anyone who would like a gentle but methodologically sound introduction to this topic:

- graduate students and professionals in training
- teachers, administrators, and policymakers



However, we hope that you find the information in this module useful no matter what your official title or role in an organization is!

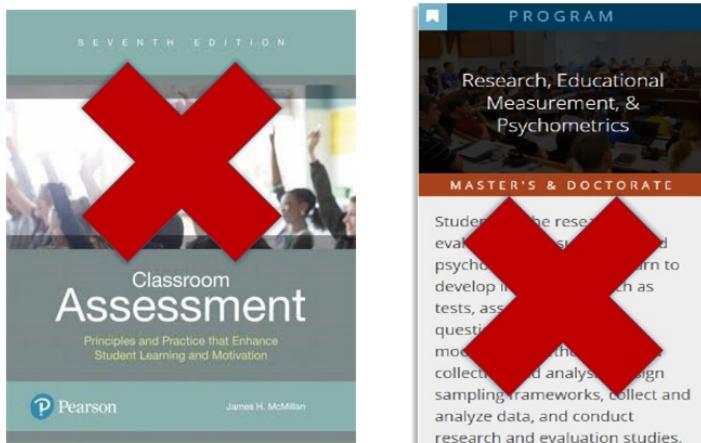
1.8 Expectations (I)



Let's discuss expectations....

1.9 Expectations (II)

ITEMS Modules in Context



The image shows two book covers side-by-side, each with a large red 'X' drawn over it. The book on the left is titled 'Classroom Assessment: Principles and Practice that Enhance Student Learning and Motivation' (Seventh Edition, Pearson, James H. McMillan). The book on the right is titled 'Research, Educational Measurement, & Psychometrics' (Program, Master's & Doctorate, Pearson, James H. McMillan). Both books are related to educational assessment and research.

1.10 Learning Objectives

Learning Objectives



1. Understand the concept of alignment as it pertains to assessments and content standards
2. Describe and compare different methods of conducting alignment studies
3. Understand the limitations of alignment studies and ongoing issues around study use
4. Describe the steps for carrying out an alignment study in the Webb framework
5. Describe the criteria used to evaluate alignment in the Webb framework

1.11 Prerequisites

Prerequisites

1. Basic knowledge of validity and types of validity evidence (particularly content-related validity evidence)
2. Basic understanding of the purpose of content standards in K-12 education
3. Basic understanding of state-wide large-scale assessment programs in the United States
4. Familiarity with a specific set of content standards or a specific state assessment program may be particularly helpful

1.12 Module Citation

Module Citation

Module Citation

Reynolds, K., & Moncaleano, S. (2021). Content alignment in standards-based educational assessment (Digital ITESTS Module 26). *Educational Measurement: Issues and Practice*, 40(3).



1.13 Resources

Resources

Review of Educational Research
December 2009, Vol. 79, No. 4, pp. 1332-1361
DOI: 10.3102/0034654509341375
© 2009 AERA <http://rera.aera.net>

Evaluating Alignment Between Curriculum, Assessment, and Instruction

Andrea Martone
The College of Saint Rose
Stephen G. Street
University of Massachusetts Amherst

The authors (a) discuss the importance of alignment for facilitating proper assessment and instruction, (b) describe the three most common methods for evaluating the alignment between state content standards and assessments, (c) describe the strengths and limitations of these methods, and (d) discuss examples of applications of each method. They conclude that choice of alignment method depends on the specific goals of a state or district and that all three research methods have merit. The authors argue that the assessment-instruction cycle facilitates student learning. Additional potential benefits of alignment research include valuable professional development for teachers and better understanding of the results from standardized assessments.

KEYWORDS: assessment, test theory and development, test validity and reliability, teacher education and development, psychometrics.

Click on the images to go to the respective websites to learn more.

WAI ALIGNMENT TOOL

HOME | ABOUT | 2008

Welcome to Web Alignment Tool

This tool is designed to produce reports on the alignment of curriculum standards and student assessments.

The process requires a group of reviewers first to assign depth-of-knowledge (DOK) levels to standard/objectives.

1. The steps in using this tool and the process include:
2. Training on DOK levels for content area
3. Logging in to the system
4. Selecting a state, content area, and grade
5. Selecting the DOK levels for each objective
6. Group meeting consensus on the DOK levels for each objective
7. Generating reports on the alignment of assessment items and corresponding objective(s)
8. Recording Source of Challenge and Notes

Training Materials | Training Manual | Training Framework

1.14 Main Menu

Main Menu

01 Overview of Alignment **[5 Minutes]**

02 Types of Alignment Studies **[15 Minutes]**

03 Applying the Webb Model **[15 Minutes]**

04 Quizzes **[10 Minutes]**

Navigation

Navigation Help (Slide Layer)



2. Section 1: Foundations of Alignment

2.1 Cover: Section 1



2.2 Learning Objectives

Learning Objectives



1. Define the concept of alignment
2. Describe how alignment can serve as a source of content-related validity evidence for assessments
3. Describe the importance of alignment as discussed within professional and policy documents

2.3 Alignment

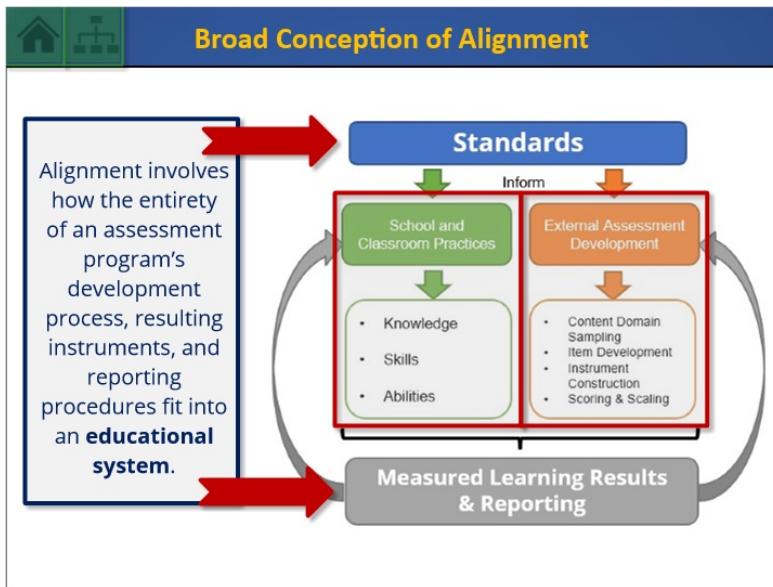
What is Alignment?

Alignment is based on the premise that **standards, assessment, and instruction** should all be “in agreement” with each other throughout an **educational system**.

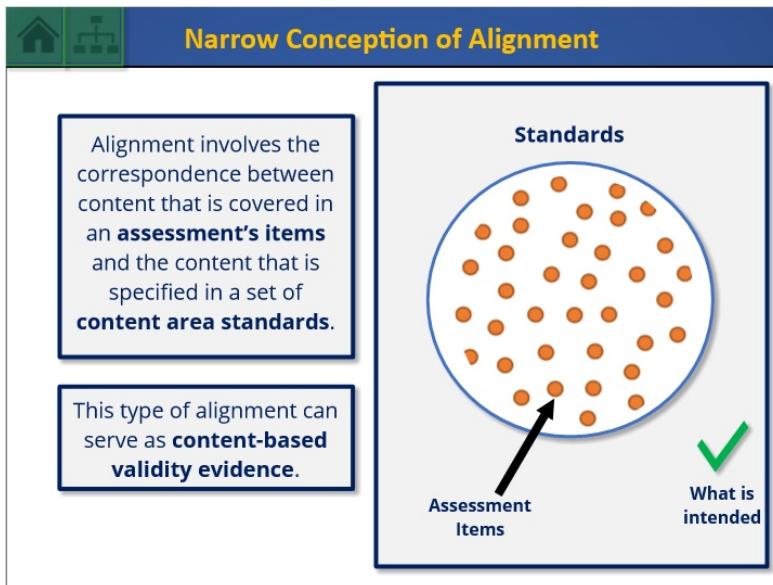


Alignment can be conceptualized **broadly** or **narrowly**.

2.4 Broad Conception



2.5 Narrow Conception



2.6 Content Validity

Content-based Validity Evidence

Content-based validity evidence concerns the relationship between the content of a test and the construct a test aims to measure.

Evaluation of content-based validity evidence can help test developers:

- Identify **construct underrepresentation**
- Identify **construct-irrelevant variance**

The diagram consists of three separate boxes, each containing two overlapping circles. The left box is labeled 'Under-representation' and shows the 'Assessment' circle (blue) completely inside the 'Standards' circle (orange). The middle box is labeled 'Extraneous Content' and shows the 'Assessment' circle (blue) completely outside the 'Standards' circle (orange). The right box is labeled 'Under-representation & Extraneous Content' and shows the 'Assessment' circle (blue) partially overlapping the 'Standards' circle (orange).

2.7 The Standards

Alignment, Professional Standards, and Policy

Alignment is referenced within the **Standards for Educational and Psychological Testing**, and is included as a component of the assessment peer review process under the **Every Student Succeeds Act**.

Alignment Questions

- Do test items adequately sample the domain in the corresponding standards?
- Do test items reflect the cognitive demands of the standards?
- Do test items introduce construct-irrelevant variance?

2.8 Content & Complexity



Alignment, Content, and Cognitive Complexity

Evaluating alignment between **test items** and a set of **content area standards** involves paying attention to both **content** and **cognitive complexity**.

Test items should address the content of a set of standards at the **level of cognitive complexity at which the standards are written**.

Different approaches for evaluating alignment will do this differently.

2.9 The Three Methods



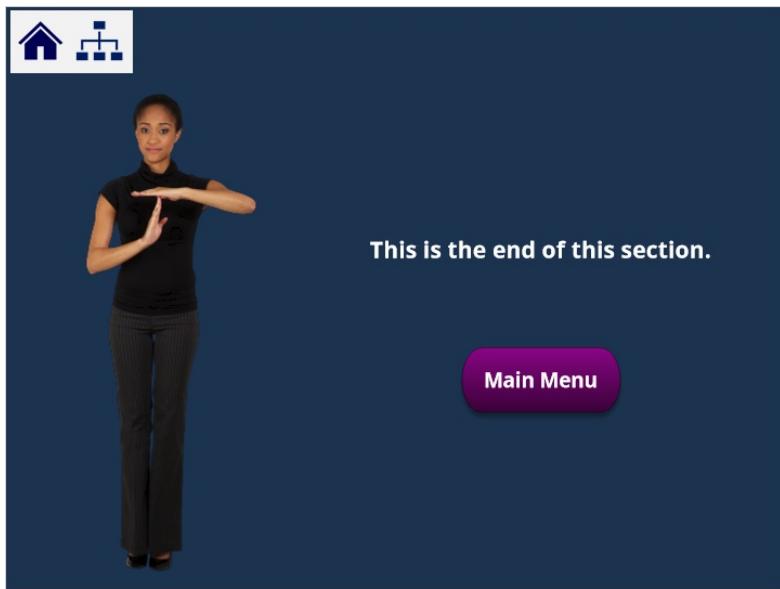
Methods for Evaluating Alignment

Alignment is typically evaluated through conducting an alignment study.

There are many different methods for conducting alignment studies. We will focus on **three popular methods** in the next section of this module:

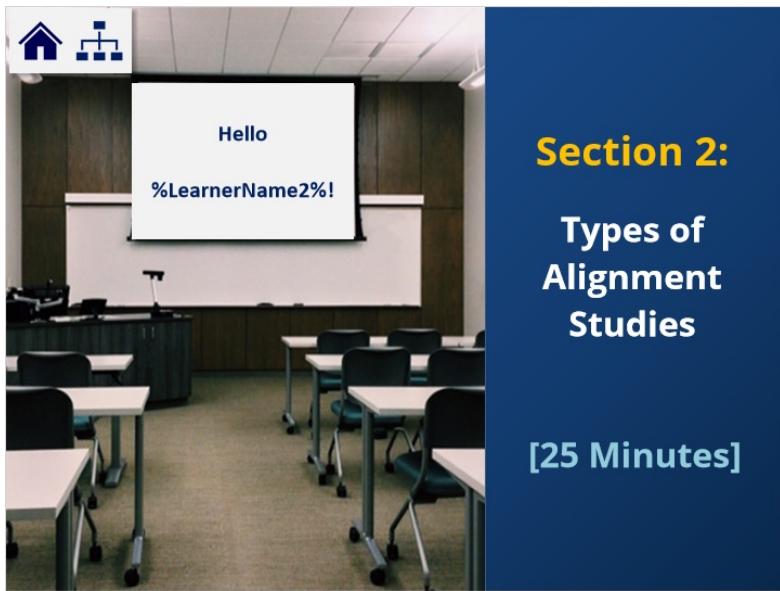
- The Webb Model
- The Surveys of Enacted Curriculum
- The Achieve Model

2.10 Bookend: Section 1



3. Section 2: Types of Alignment Studies

3.1 Cover: Section 2



3.2 Learning Objectives

Learning Objectives



1. Describe how alignment is conceptualized in three different types of alignment studies
2. List the basic steps in carrying out an alignment study using each of these approaches
3. Describe how a determination about an assessment's alignment is made within each of these approaches

3.3 The Three Approaches

Three Alignment Study Approaches

The Webb Model
The Surveys of Enacted Curriculum
The Achieve Model

Conceptualization of Alignment

Materials and Participants

Study Execution

Judgment Criteria

Click on the buttons to learn more about each method. 

3.4 Content Area Standards

The unit of analysis for the content area standards is typically the **objectives**.

Content Area: Mathematics
Grade level: 5th

Domain 2 – Algebra

Standard 5.2.1: Recognize and represent patterns of change; use patterns, tables, graphs and rules to solve real-world and mathematical problems.

5.2.1.1 Create and use rules, tables, spreadsheets and graphs to describe patterns of change and solve problems.

Objective →

3.5 Topic Selection

Webb Model

Surveys of Enacted Curriculum

Achieve Model

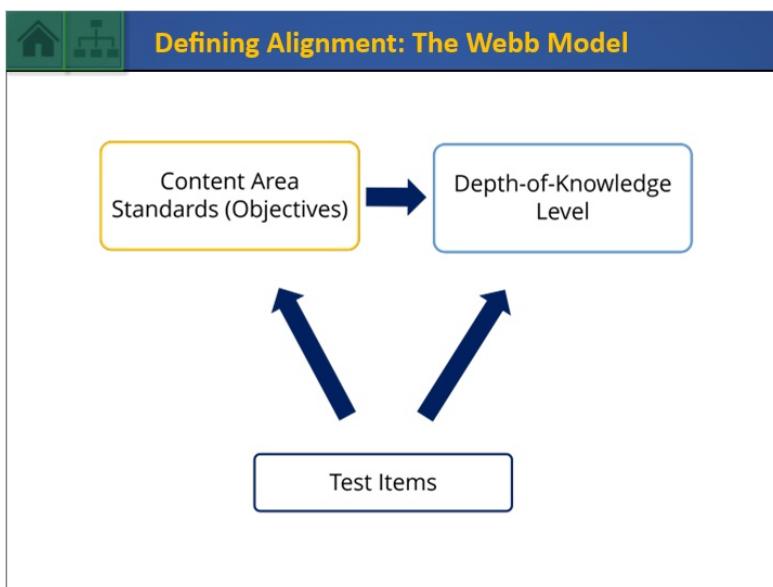
Click on the buttons to learn more about each method. 

Section End

3.6 Bookmark: The Webb Model



3.7 Webb: Defining Alignment



3.8 Webb: Depth-of-knowledge

  Depth-of-Knowledge Levels (The Webb Model)

Depth-of-Knowledge (DOK) levels are the classification system for cognitive complexity in the Webb model.

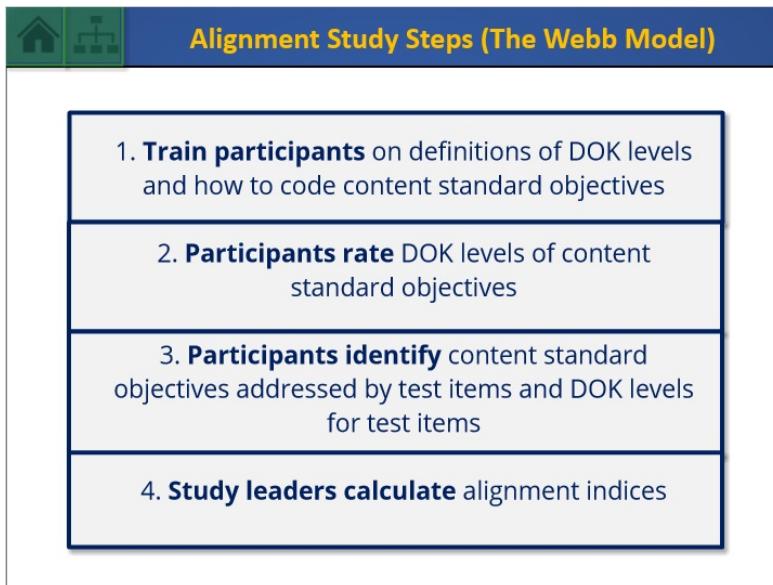
DOK Level	Examples
Level 1: Recall	Facts, definitions, simple procedures
Level 2: Skill/Concept	Organize, estimate, compare
Level 3: Strategic Thinking	Draw conclusions, explain a concept
Level 4: Extended Thinking	Design or conduct an experiment

3.9 Webb: Materials

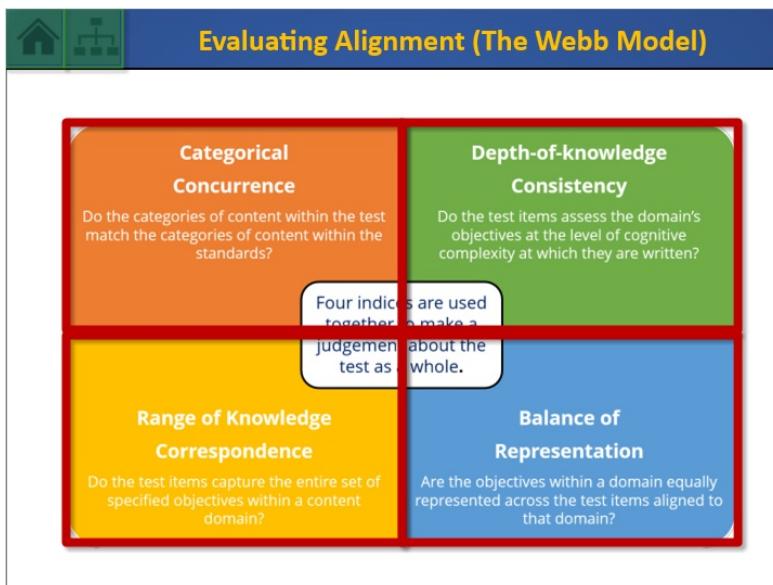
  Materials and Participants (The Webb Model)

	Content standard objectives
	DOK level descriptions
	Test items or item bank
	Trained raters (often teachers)

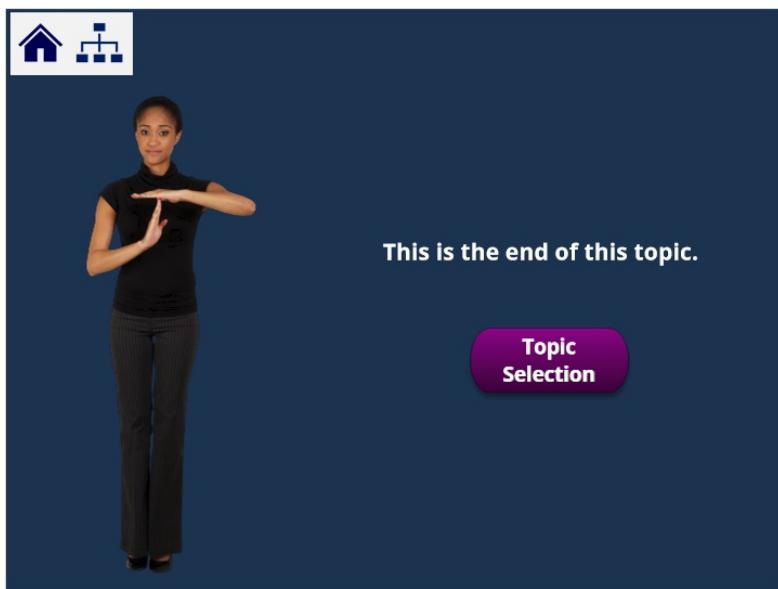
3.10 Webb: Steps



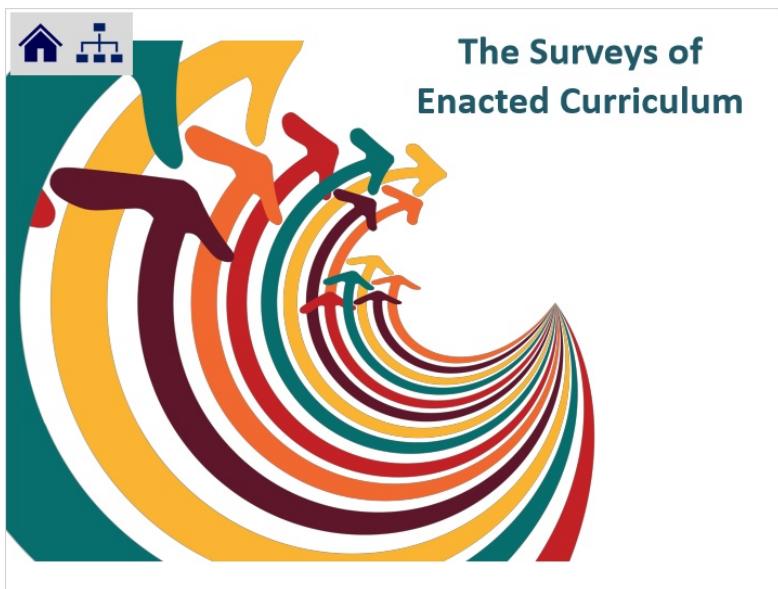
3.11 Webb: Evaluating Alignment



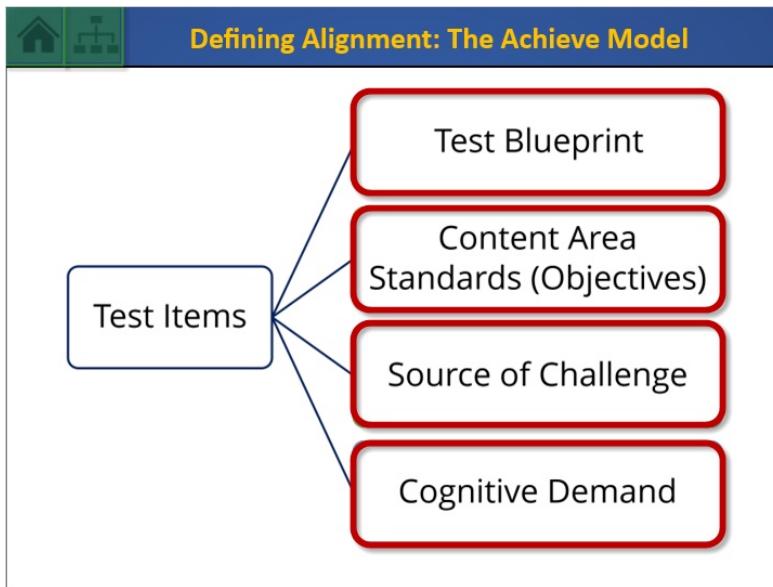
3.12 Bookend: Webb Method



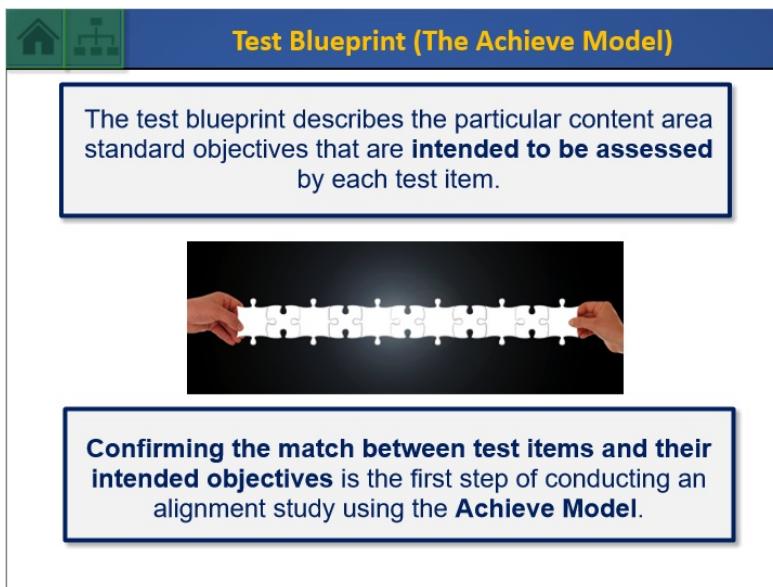
3.13 Bookmark: The Surveys of Enacted Curriculum



3.14 Achieve: Defining Alignment



3.15 Achieve: Test Blueprint



3.16 Achieve: Source of Challenge

Source of Challenge (The Achieve Model)

In addition to alignment with standards and the test blueprint, raters review items for **source of challenge**.



Inappropriate sources of challenge can include **specialized vocabulary** inaccessible to students or a **heavy reading load**.

3.17 Achieve: Cognitive Demand

Cognitive Demand (The Achieve Model)

	Level 1	Recall/basic comprehension
	Level 2	Apply a skill or concept
	Level 3	Strategic thinking
	Level 4	Extended analysis

3.18 Achieve: Materials



Materials and Participants (The Achieve Model)

	Content standard objectives
	Test blueprint
	Test items or item bank
	Expert reviewer (to check items against blueprint)
	Trained subject matter experts

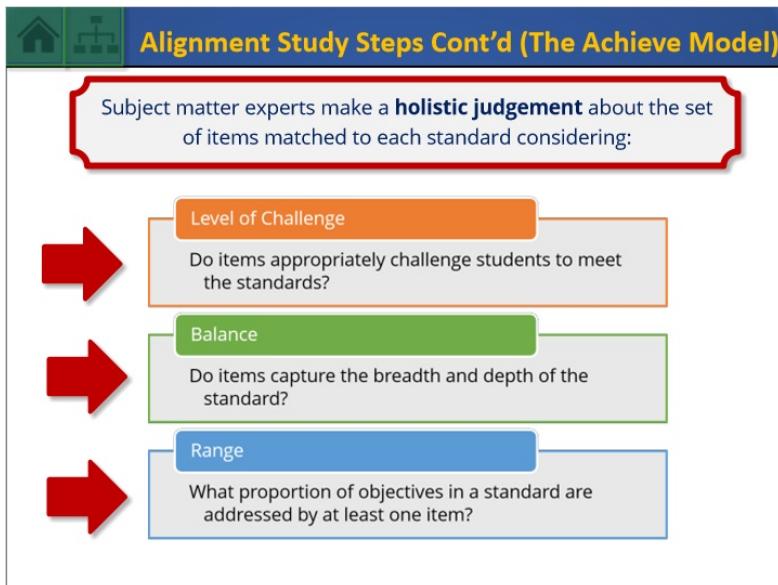
3.19 Achieve: Steps



Alignment Study Steps (The Achieve Model)

1. Expert reviewer checks test items against the test blueprint
2. Subject matter experts verify and rate match between items and objectives focusing on content only
3. Subject matter experts rate items for source of challenge
4. Subject matter experts rate items for cognitive demand
5. Subject matter experts make a holistic judgement of item sets for each standard
6. Preparation of a technical report that summarizes findings

3.20 Achieve: Steps (cont'd)

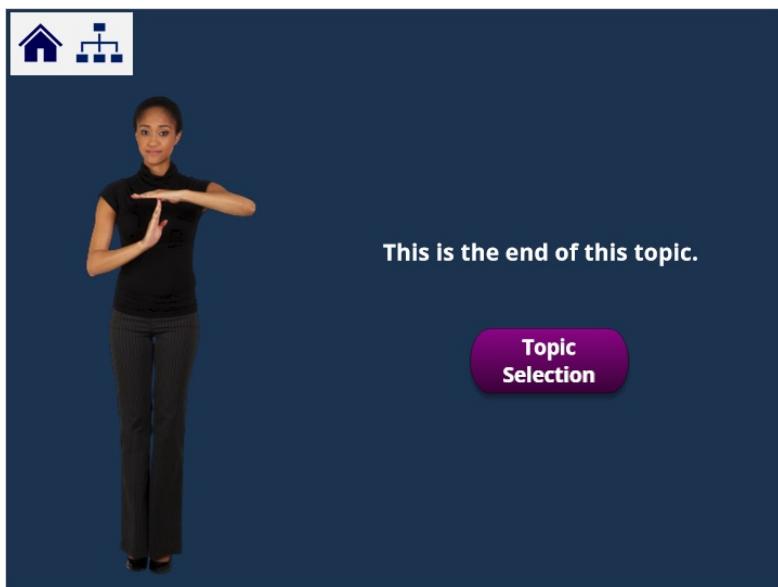


Alignment Study Steps Cont'd (The Achieve Model)

Subject matter experts make a **holistic judgement** about the set of items matched to each standard considering:

- Level of Challenge**
Do items appropriately challenge students to meet the standards?
- Balance**
Do items capture the breadth and depth of the standard?
- Range**
What proportion of objectives in a standard are addressed by at least one item?

3.21 Bookend: Achieve Method



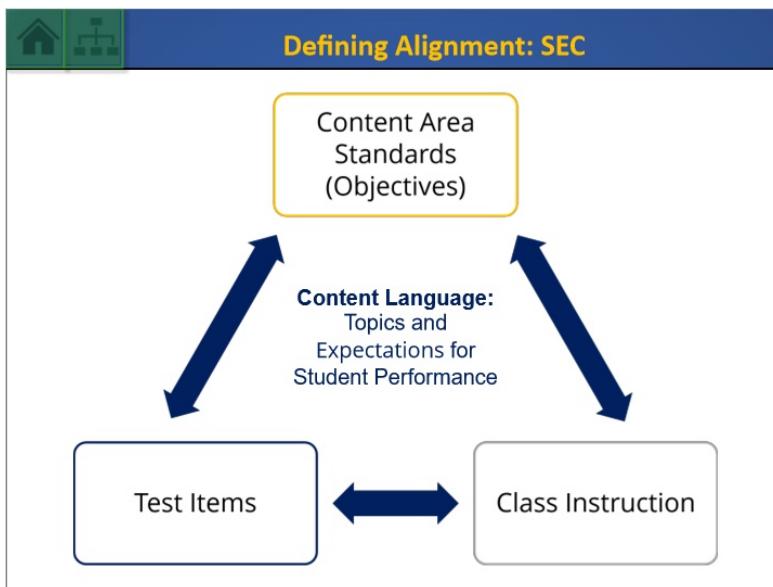
This is the end of this topic.

Topic Selection

3.22 Bookmark: The Achieve Model



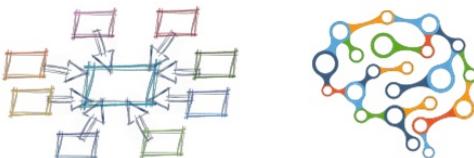
3.23 SEC: Defining Alignment



3.24 SEC: Content Languages

Content Languages (SEC)

Content languages list the **topics** and **expectations for student performance** (i.e., cognitive levels) within a content area.



They are **tools** against which the **standards, test items, and instruction** are rated.

3.25 SEC: Expectations of Performance

Expectations for Student Performance (SEC)

- Memorize
- Perform procedures
- Communicate understanding
- Solve nonroutine problems
- Conjecture/generalize/prove

3.26 SEC: Materials

 **Materials and Participants (SEC)**

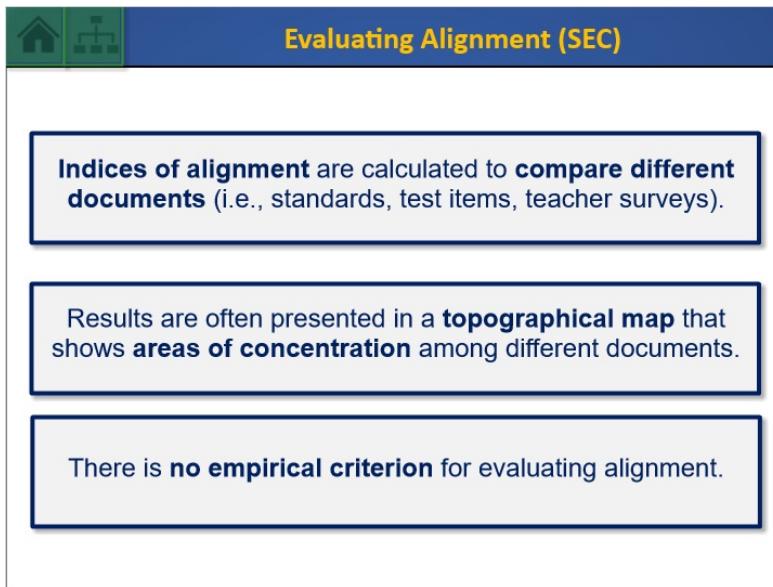
	Content standard objectives
	Content language matrix
	Test items or item bank
	Teachers (to code instruction)
	Trained coders (to code test items and standards)

3.27 SEC: Steps

 **Alignment Study Steps (SEC)**

1. Teachers complete **end of year survey using the content language matrix** to report amount of instructional time spent covering topics at different cognitive levels
2. Trained coders use content language matrix to **rate test items and content area standards** (usually objectives)
3. **Matrices of proportions** are created based on teachers' and coders' ratings
4. **Alignment indices are calculated** to compare instruction, test items, and standards

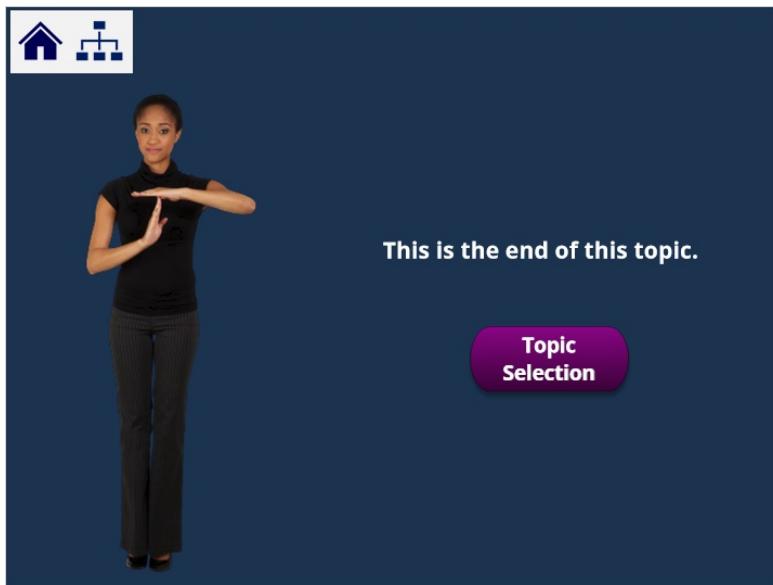
3.28 SEC: Evaluating Alignment



Evaluating Alignment (SEC)

- Indices of alignment are calculated to **compare different documents** (i.e., standards, test items, teacher surveys).
- Results are often presented in a **topographical map** that shows **areas of concentration** among different documents.
- There is **no empirical criterion** for evaluating alignment.

3.29 Bookend: Surveys of Enacted Curriculum



This is the end of this topic.

Topic Selection

3.30 Selecting an Approach

The screenshot shows a user interface for selecting a study method. At the top, there are two icons: a house and a document with a grid. The title "Selecting an Alignment Study Method" is displayed in yellow text. Below the title are three purple rectangular boxes, each containing a method name and its corresponding acronym. The first box contains "Instructional Emphasis = SEC". The second box contains "Review of Test Blueprint = Achieve". The third box contains "Quantitative Alignment Indices = Webb". At the bottom of the interface, there is a message: "Click on the buttons to learn more about each method." followed by a magnifying glass icon.

Instructional Emphasis = SEC

Review of Test Blueprint = Achieve

Quantitative Alignment Indices = Webb

Click on the buttons to learn more about each method.

3.31 Bookend: Section 2

The screenshot shows a slide with a dark blue background. At the top left, there are two icons: a house and a document with a grid. In the center, a woman in a black top and dark pants is making a "time out" hand gesture. To her right, the text "This is the end of this section." is displayed. At the bottom, there are two buttons: a green "Quiz" button and a purple "Main Menu" button.

This is the end of this section.

Quiz

Main Menu

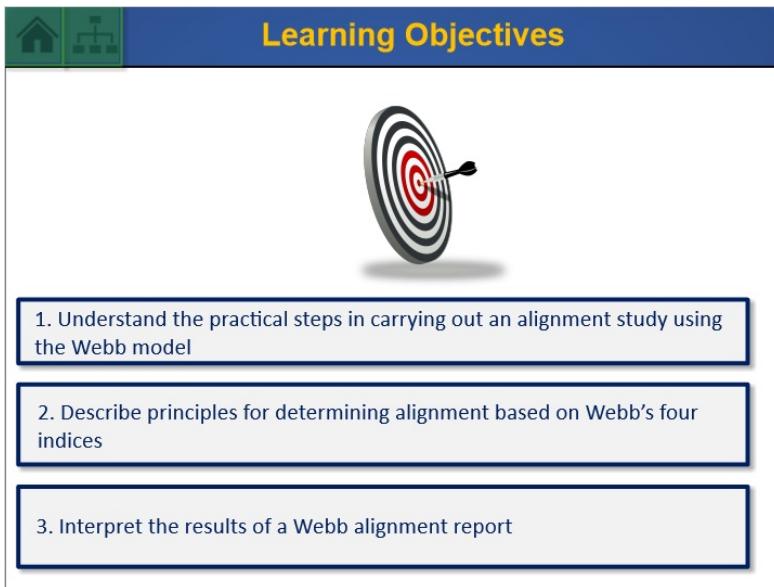
4. Section 3: Applying the Webb Model

4.1 Cover: Section 3



Section 3:
Applying the
Webb Model
[20 Minutes]

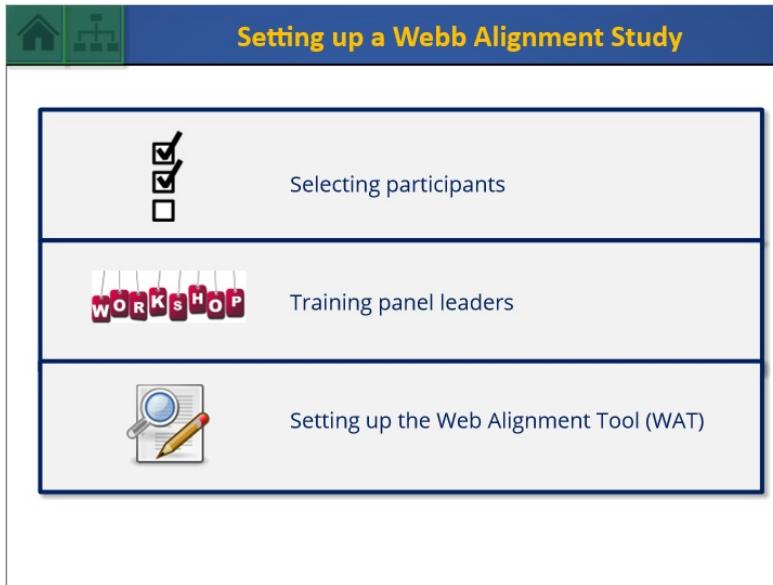
4.2 Learning Objectives



Learning Objectives

1. Understand the practical steps in carrying out an alignment study using the Webb model
2. Describe principles for determining alignment based on Webb's four indices
3. Interpret the results of a Webb alignment report

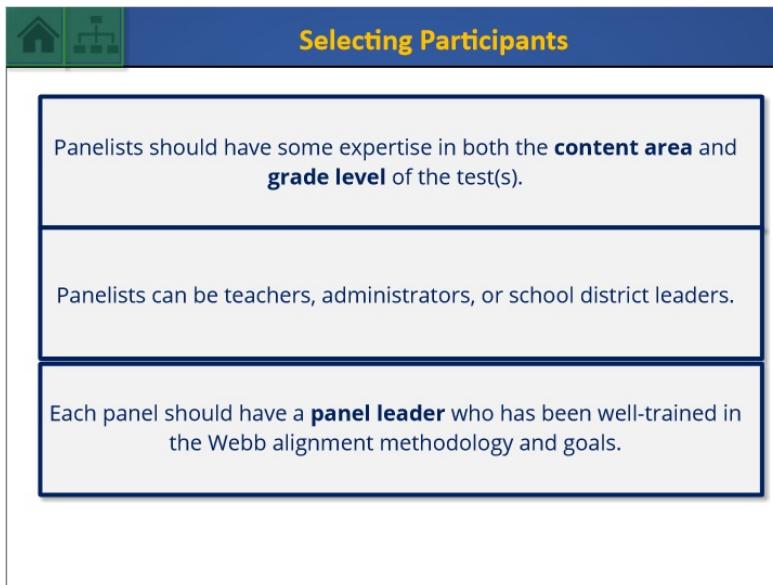
4.3 Setting the Study



Setting up a Webb Alignment Study

-  Selecting participants
-  Training panel leaders
-  Setting up the Web Alignment Tool (WAT)

4.4 Participant Selection



Selecting Participants

- Panelists should have some expertise in both the **content area** and **grade level** of the test(s).
- Panelists can be teachers, administrators, or school district leaders.
- Each panel should have a **panel leader** who has been well-trained in the Webb alignment methodology and goals.

4.5 Panel Leader Training

The slide has a blue header bar with the title 'Training Panel Leaders' in yellow. In the top-left corner, there are icons for a house and a gear. The main content area has a white background with a red-bordered callout box containing the following text:

Panel leaders should be trained to lead the work of each panel.

Below the callout box, the text 'The training should cover:' is followed by a list of four items:

- The Depth-of-Knowledge (DOK) levels
- The coding process for the content area standard objectives and items
- How to use the Web Alignment Tool (WAT)
- How to train panelists on the work of the panel

4.6 The WAT

The slide has a blue header bar with the title 'The Web Alignment Tool (WAT)' in yellow. In the top-left corner, there are icons for a house and a gear. The main content area has a white background with a red-bordered callout box containing the following text:

The WAT is a free online tool for conducting Webb alignment studies.

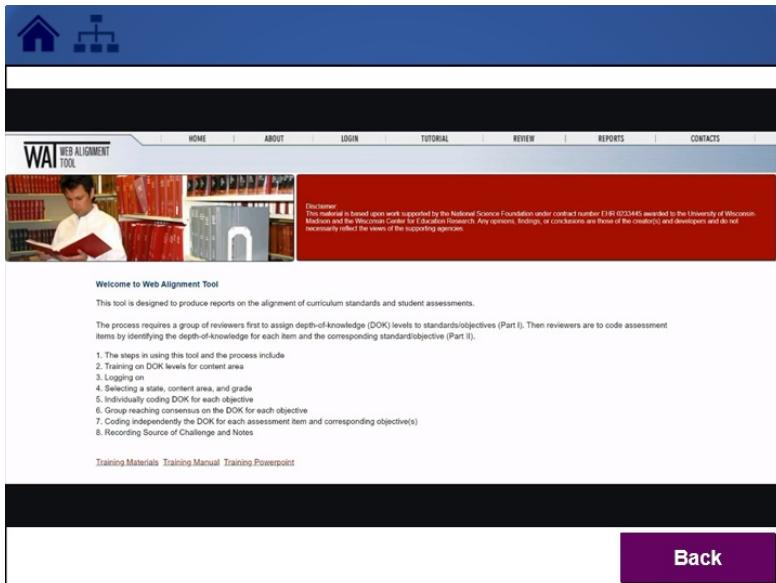
Below the callout box, the text 'Content area standard objectives should be entered into the WAT prior to the study meeting.' is displayed.

Below this, a blue-bordered box contains the text 'Panelists input all judgements into the WAT:' followed by a list:

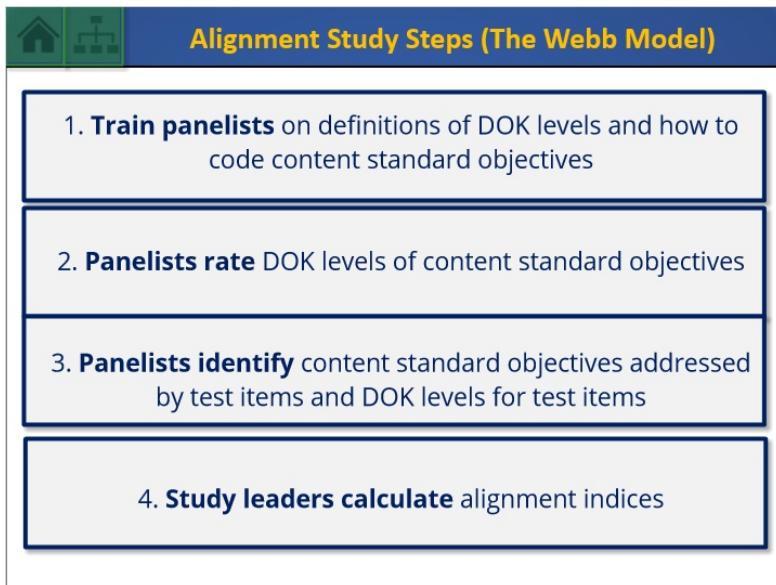
- Depth-of-Knowledge (DOK) ratings for standard objectives
 - Matching test items to standard objectives
 - DOK ratings for test items

At the bottom of the slide is a purple button labeled 'Video'.

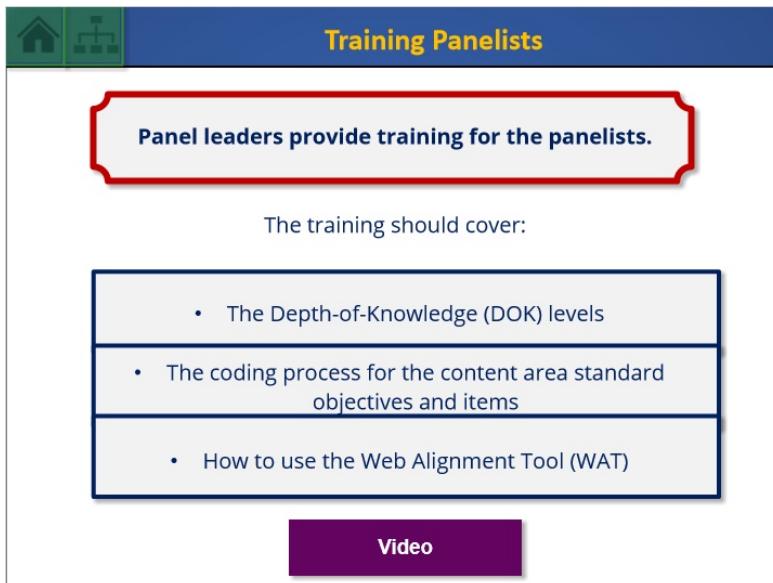
The WAT Intro Screen recording (Slide Layer)



4.7 Alignment Study Steps



4.8 Panelist Training



Training Panelists

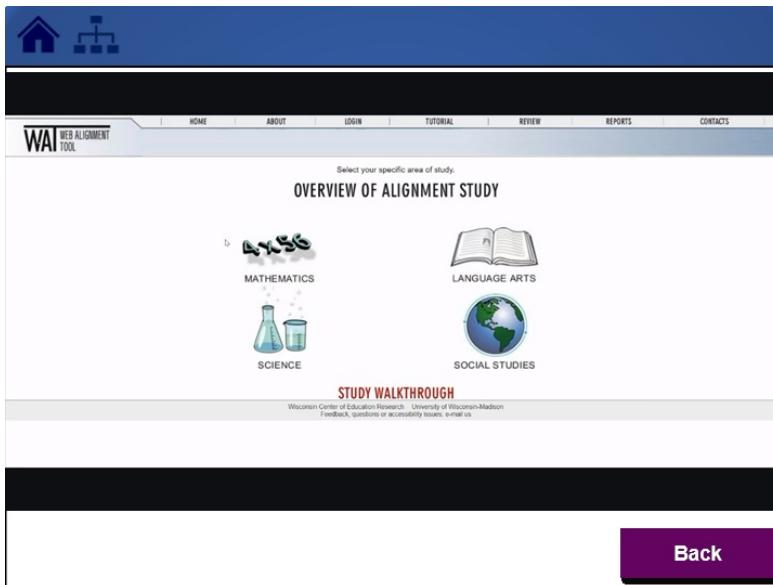
Panel leaders provide training for the panelists.

The training should cover:

- The Depth-of-Knowledge (DOK) levels
- The coding process for the content area standard objectives and items
- How to use the Web Alignment Tool (WAT)

Video

DOK training recording (Slide Layer)



WAT WEB ALIGNMENT TOOL

HOME | ABOUT | LOGIN | TUTORIAL | REVIEW | REPORTS | CONTACTS

Select your specific area of study

OVERVIEW OF ALIGNMENT STUDY

 MATHEMATICS

 LANGUAGE ARTS

 SCIENCE

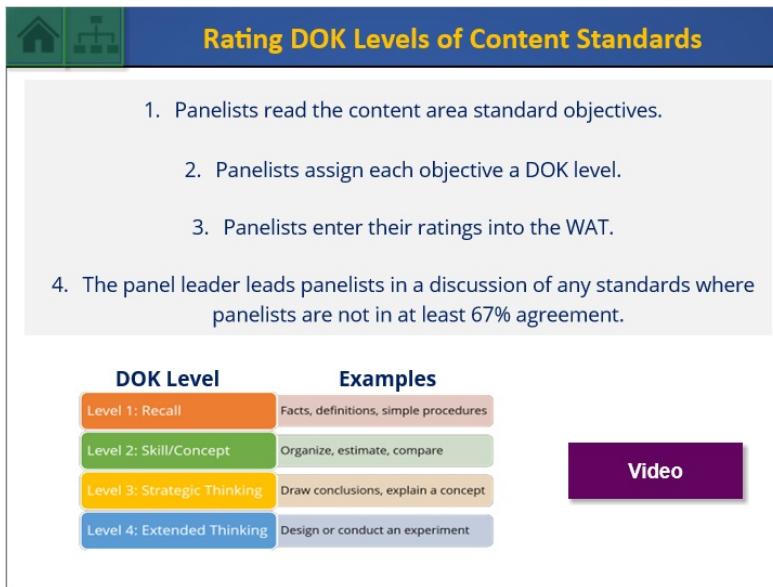
 SOCIAL STUDIES

STUDY WALKTHROUGH

Wisconsin Center for Education Research University of Wisconsin-Madison
Feedback, questions or accessibility issues: e-mail us

Back

4.9 DOK of Content Standards



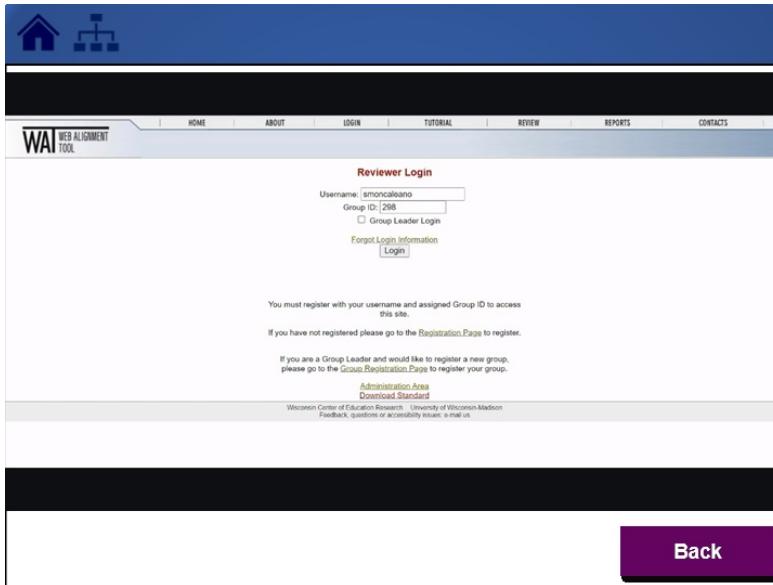
The slide features a blue header with the text "Rating DOK Levels of Content Standards". Below the header is a list of four steps for rating DOK levels:

1. Panelists read the content area standard objectives.
2. Panelists assign each objective a DOK level.
3. Panelists enter their ratings into the WAT.
4. The panel leader leads panelists in a discussion of any standards where panelists are not in at least 67% agreement.

Below the steps is a table titled "DOK Level Examples". The table has two columns: "DOK Level" and "Examples". The rows are color-coded: Level 1 (orange), Level 2 (green), Level 3 (yellow), and Level 4 (blue). A "Video" button is located to the right of the table.

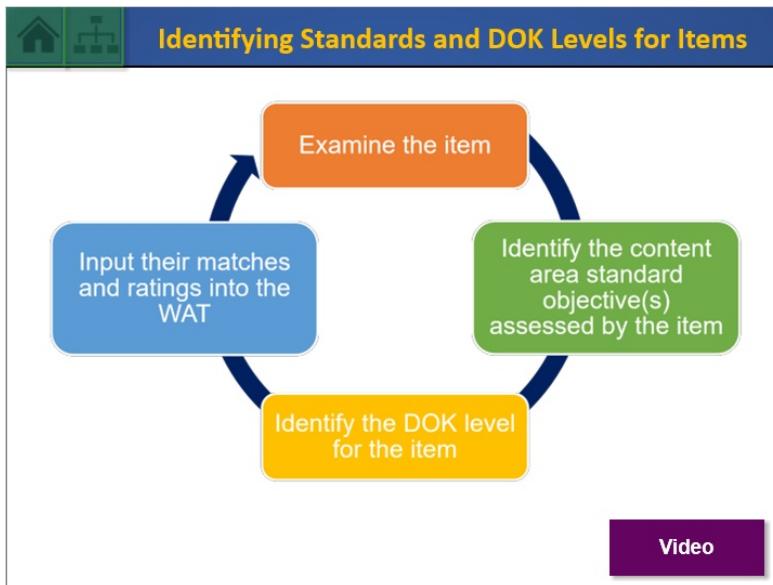
DOK Level	Examples
Level 1: Recall	Facts, definitions, simple procedures
Level 2: Skill/Concept	Organize, estimate, compare
Level 3: Strategic Thinking	Draw conclusions, explain a concept
Level 4: Extended Thinking	Design or conduct an experiment

Objective coding recording (Slide Layer)



The slide shows a screenshot of the WAT (Web Alignment Tool) login page. The top navigation bar includes links for HOME, ABOUT, LOGIN, TUTORIAL, REVIEW, REPORTS, and CONTACTS. The WAT logo is on the left. The main content area is titled "Reviewer Login" and contains fields for "Username" (smontalano) and "Group ID" (298), with a "Group Leader Login" checkbox. Below these are links for "Forgot Login Information" and a "Login" button. A message at the bottom states: "You must register with your username and assigned Group ID to access this site. If you have not registered please go to the [Registration Page](#) to register. If you are a Group Leader and would like to register a new group, please go to the [Group Registration Page](#) to register your group." At the bottom of the page, there is an "Administration Area" with a "Download Standard" link and a note about Wisconsin Center for Education Research at the University of Wisconsin-Madison. A "Back" button is located at the bottom right of the slide content.

4.10 Item Review Workflow



Item coding recording (Slide Layer)

The screenshot shows the WAI Web Alignment Tool interface. At the top, there is a navigation bar with icons for Home, About, Login, Tutorial, Review, Reports, and Contacts. Below the navigation bar, the text "Group Number: 298" and "Welcome, Sebastian Moncaleano" is displayed. A "LOG OUT" button is located in the top right corner. The main content area is titled "Start Part I Review Process". It contains instructions for Part I: "In Part I, you are to work with other reviewers as a group to fill out the Depth levels (depth of knowledge level) of the standards. You will have to select the appropriate standards and discuss with other reviewers to reach a consensus of your Depth levels. Each group can only submit one consensus of the Depth levels of the specified standard." Below this is a "Start Part II Review Process" button. The "Part I Progress" section lists standards to be completed, with a table showing the status of "Mock MA" (State: MA, Subject: Mathematics, Grade: 3, Total of Standards: 9, Current Answered Standards: 9, Done: True, Continue: Continue, Study ID: 11398). The "Part II Progress" section lists standards already worked on, with a table showing the status of "Standard Name: Mock MA, State: MA, Subject: Mathematics, Grade: 3, Assessment Name: Course, Form: Form, Source of Assessment: Elements Count: 11398, Elements Done: 11398, Done: True". At the bottom right of the content area is a purple "Back" button.

4.11 Alignment Indices

  **Study Leaders Calculate Alignment Indices**

Categorical Concurrence Do the categories of content within the test match the categories of content within the standards?	Depth-of-knowledge Consistency Do the test items assess the domain's objectives at the level of cognitive complexity at which they are written?
Four indices are used together to make a judgement about the test as a whole.	
Range of Knowledge Correspondence Do the test items capture the entire set of specified objectives within a content domain?	Balance of Representation Are the objectives within a domain equally represented across the test items aligned to that domain?

Click on the four fields to learn more about each index. 

Categorical Concurrence (Slide Layer)

  **Categorical Concurrence**

Categorical Concurrence Do the categories of content within the test match the categories of content within the standards?

Criterion:
6 test items per domain, distributed across the domain's objectives

Back

DOK Consistency (Slide Layer)

  Depth-of-Knowledge Consistency

Depth-of-knowledge Consistency

Do the test items assess the domain's objectives at the level of cognitive complexity at which they are written?

Criterion:

At least 50% of objectives in a domain are targeted by test items with DOK levels at or above the objective's DOK.

Back

Balance of Representation (Slide Layer)

  Balance of Representation

Balance of Representation

Are the objectives within a domain equally represented across the test items aligned to that domain?

Criterion:

Objectives should be weighted equally, unless there is a particular reason for them not to be.

BOR index ranges between 0 and 1, with values above .7 being desired

$$1 - \frac{\left(\sum_{k=1}^O \left| \frac{1}{O} - \frac{I_k}{H} \right| \right)}{2}$$

- O is number of objectives hit for a subject domain
- I_k is the number of items corresponding to objective k
- H is the number of items within the subject domain

Back

ROK Correspondence (Slide Layer)

Range of Knowledge Correspondence

Range of Knowledge Correspondence

Do the test items capture the entire set of specified standards within a content domain?

Criterion:

At least 50% of a domain's objectives are assessed by at least one test item

Back

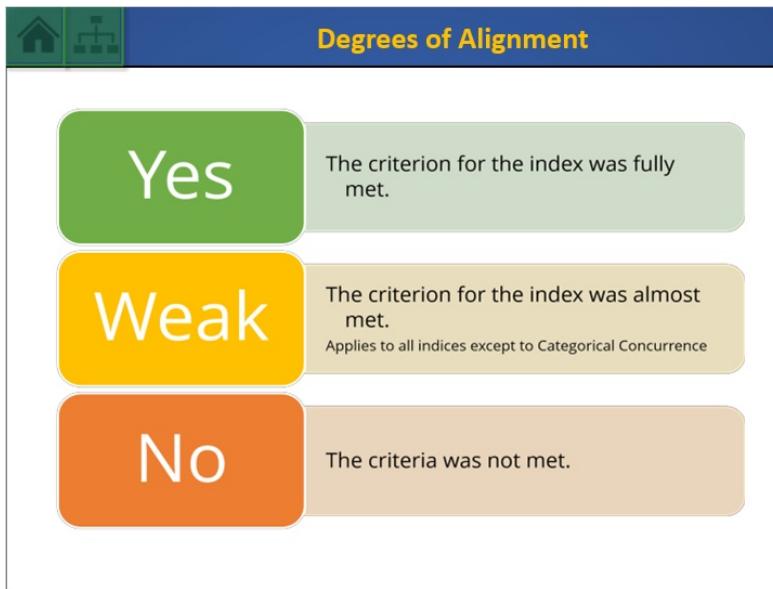
4.12 Reporting

Putting the Indices Together

The WAT produces multiple reports, including an overall summary of alignment showing "YES," "NO," or "WEAK" alignment for each content area domain according to each of the four alignment criteria.

Content Area Domain	Categorical Concurrence	DOK Consistency	Range of Knowledge Correspondence	Balance of Representation
Numbers	YES	NO	YES	WEAK
Algebra	NO	YES	YES	WEAK
Geometry	YES	YES	YES	YES
Statistics	NO	WEAK	YES	YES

4.13 Degrees of Alignment



4.14 Index-specific Results

The table is titled "Index-specific Degrees of Alignment" in a blue header. It has five columns: Degree, Categorical Concurrence, DOK Consistency, Range of Knowledge Correspondence, and Balance of Representation. The rows represent the three degrees: Yes, Weak, and No.

Degree	Categorical Concurrence	DOK Consistency	Range of Knowledge Correspondence	Balance of Representation
Yes	At least 6 items targeted the domain	At least 50% of items were at or above the DOK of the objectives	At least 50% of objectives in the domain were targeted by items	The calculated balance of representation index had a value of .7 or higher
Weak	Does not apply	40-50% of items were at or above the DOK of the objectives	40-50% of objectives in the domain were targeted by items	The calculated balance of representation index had a value between .6 and .7
No	Less than 6 items targeted the domain	Fewer than 40% of items were at or above the DOK of the objectives	Fewer than 40% of objectives in the domain were targeted by items	The calculated balance of representation index had a value below .6

4.15 Practical Interpretation

Interpreting the Results				
	Categorical Concurrence	DOK Consistency	Range of Knowledge Correspondence	Balance of Representation
YES	A sufficient number of items targeted the domain	A sufficient number of items targeted the objectives at the corresponding DOK level	A sufficient number of objectives in the domain were targeted by items	The number of items per objective was balanced across objectives in the domain
WEAK	More items targeting the domain are recommended	Review items to improve alignment with DOK of the targeted objectives	More items targeting unassessed objectives within the domain are recommended	Review items for over-representation of objectives (too many items targeting few objectives)
Recommendations				
NO				

4.16 Example: MCAS

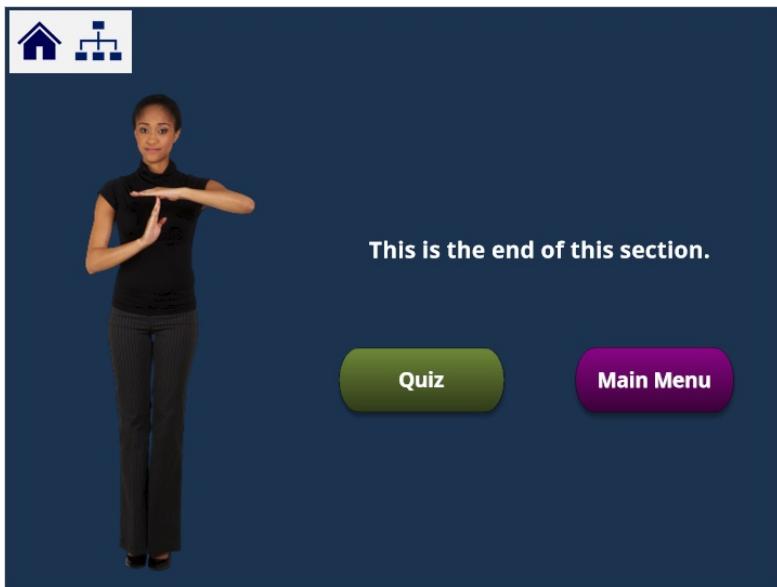
Example: Massachusetts Content Alignment Study				
Standards	Alignment Criteria			
	Categorical Concurrence	Depth-of-Knowledge Consistency	Range of Knowledge	Balance of Representation
4.OA - Operations and Algebraic Thinking	YES	YES	YES	YES
4.NBT - Number and Operations in Base Ten	YES	NO	YES	YES
4.NF - Number and Operations - Fractions	YES	NO	YES	YES
4.MD - Measurement and Data	YES	WEAK	YES	WEAK
4.G - Geometry	YES	YES	YES	YES

[View the full Massachusetts Content Alignment Study Report.](#)

Click on the highlighted cells to learn more about the ratings.



4.17 Bookend: Section 3



4.18 Module Cover

