

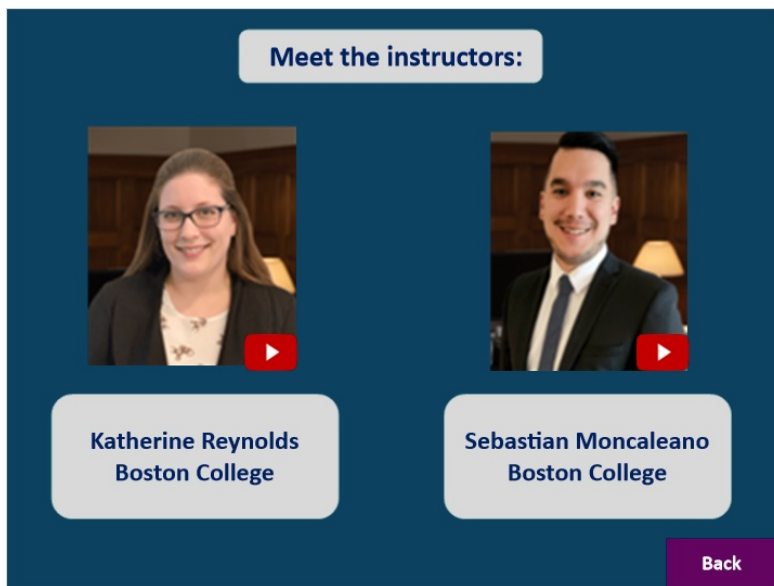
DM26 SLIDES (Standards Alignment, Version 1.0)

1. Module Overview

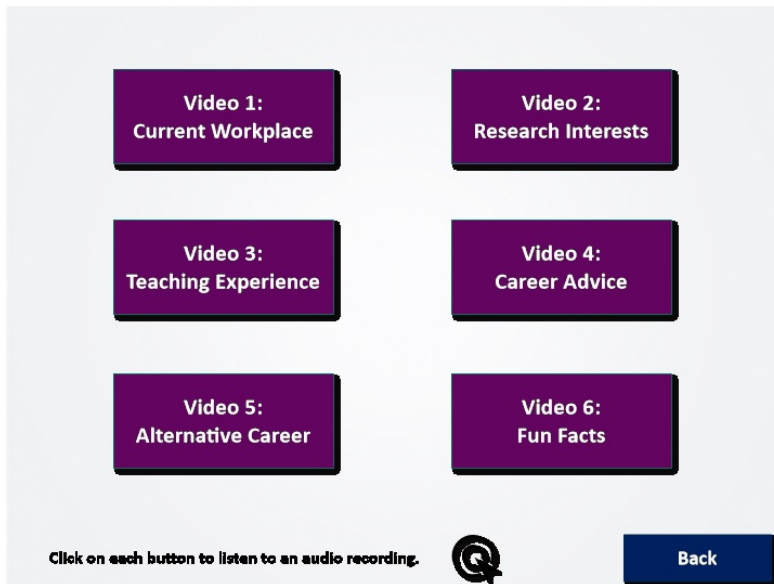
1.1 Module Cover



1.2 Instructor



Katherine Selection (Slide Layer)



Video 1:
Current Workplace

Video 2:
Research Interests


Video 3:
Teaching Experience

Video 4:
Career Advice

Video 5:
Alternative Career

Video 6:
Fun Facts

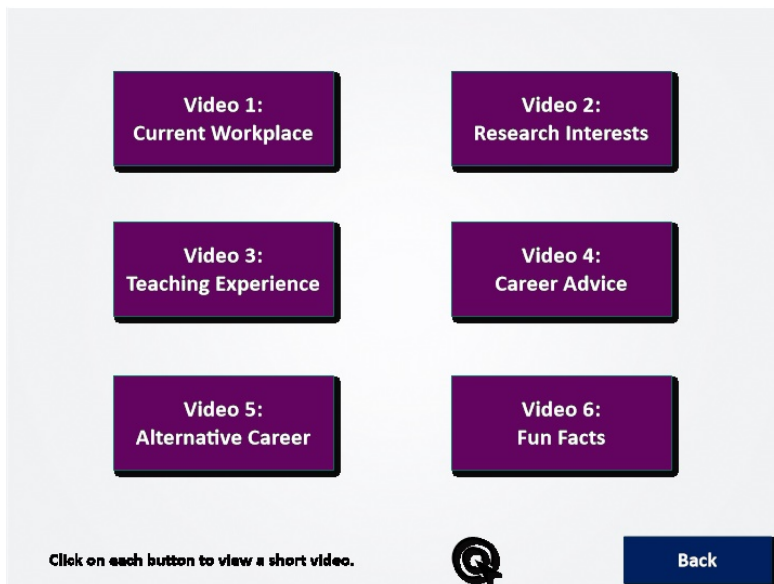
Click on each button to listen to an audio recording.



Back

The interface for Katherine's selection features a 2x3 grid of purple buttons with white text. The buttons are labeled 'Video 1: Current Workplace', 'Video 2: Research Interests', 'Video 3: Teaching Experience', 'Video 4: Career Advice', 'Video 5: Alternative Career', and 'Video 6: Fun Facts'. Below the grid, there is a text prompt 'Click on each button to listen to an audio recording.', a speaker icon, and a blue 'Back' button.

Sebastian Selection (Slide Layer)



Video 1:
Current Workplace

Video 2:
Research Interests


Video 3:
Teaching Experience

Video 4:
Career Advice

Video 5:
Alternative Career

Video 6:
Fun Facts

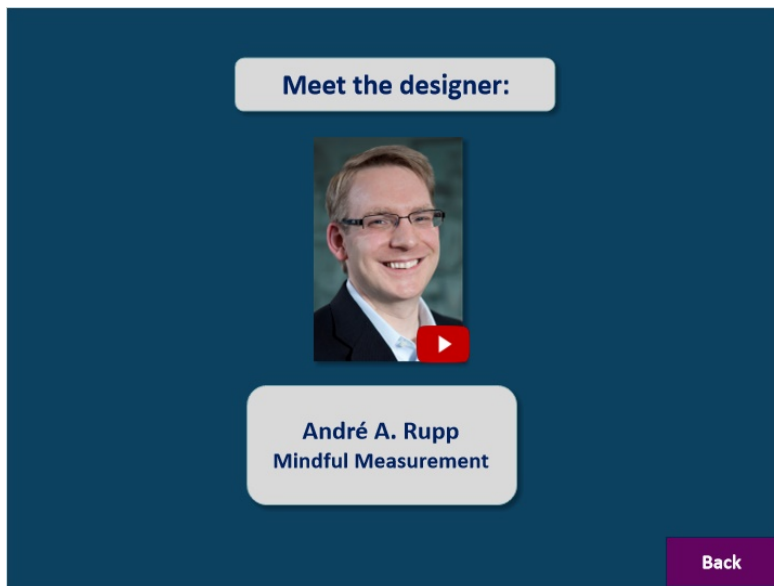
Click on each button to view a short video.



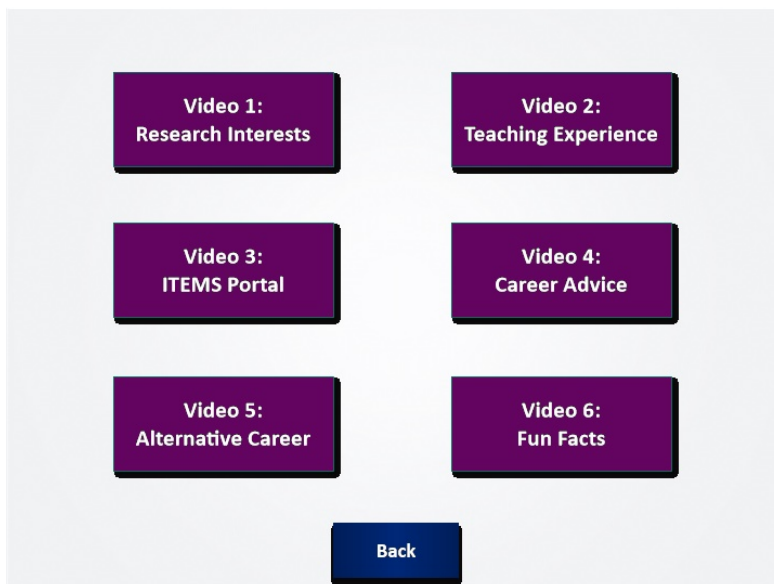
Back

The interface for Sebastian's selection is identical in layout to Katherine's, with a 2x3 grid of purple buttons. The text prompt below the grid reads 'Click on each button to view a short video.' instead of 'listen to an audio recording.'.


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)



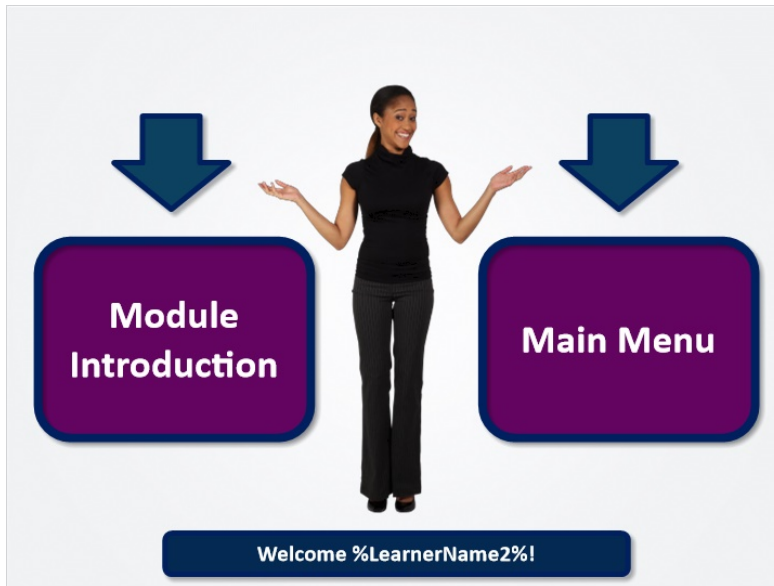
**Welcome to the
ITEMS Module!**

The woman to the left is Laura!

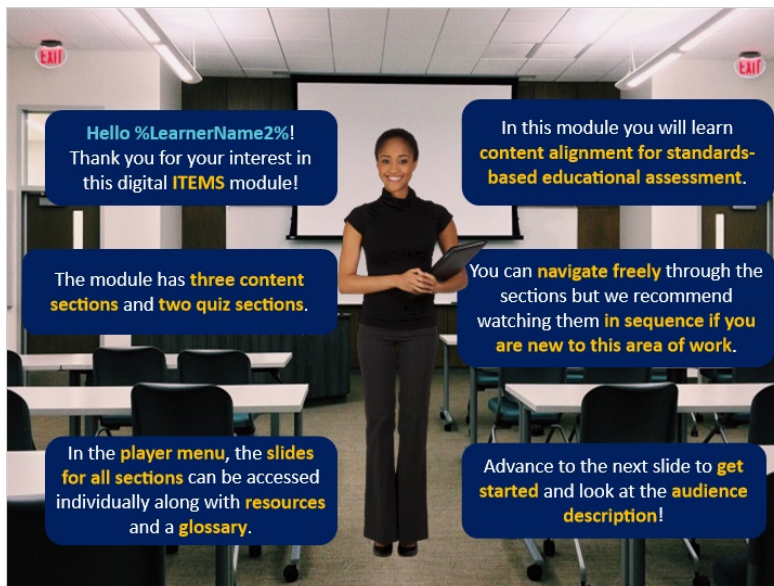
Along with the instructors
she will be guiding you
through the module content.

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!

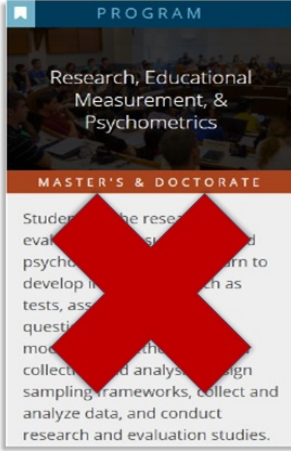
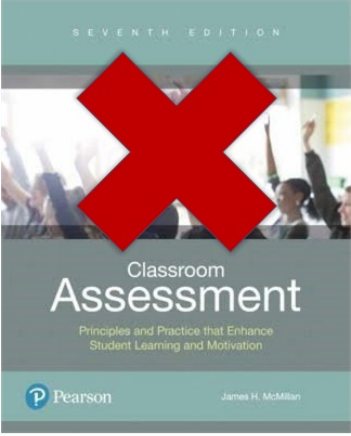
1.8 Expecations (I)



Let's discuss expectations....


1.9 Expectations (II)

ITEMS Modules in Context



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 ITEMS 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: 10.3102/0014554509341375
© 2009 AERA. <http://rer.aera.net>

Evaluating Alignment Between Curriculum, Assessment, and Instruction

Andrea Martone
The College of Saint Rose
Stephen G. Sireci
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) discuss the relative 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 alignment research is critical for ensuring the standards-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.

Welcome to Webb 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.

The steps in using this tool and the process include:

1. Training on DOK levels for content area
2. Training on DOK levels for content area
3. Logging on
4. Selecting or state, content area, and grade
5. Individually coding DOK for each objective
6. Group meeting consensus on the DOK for each objective
7. Coding independently for DOK for each assessment item and corresponding objective(s)
8. Resolving source of Challenge and Notes

[Training Materials](#) [Training Manual](#) [Training Presentation](#)

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

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



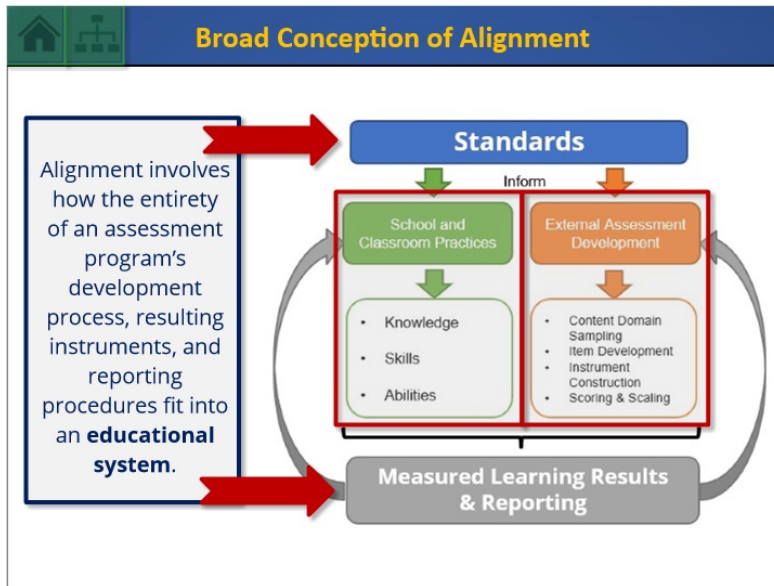
What is Alignment?

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

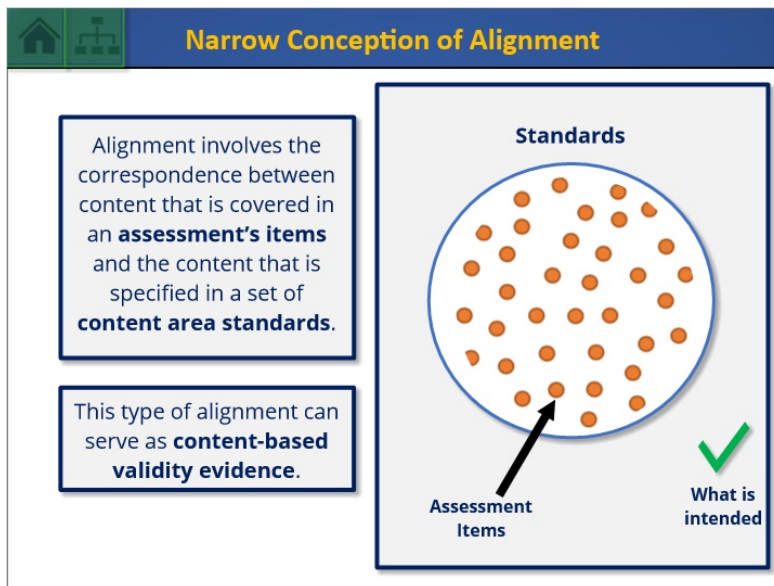


Alignment can be conceptualized **broadly** or **narrowly**.

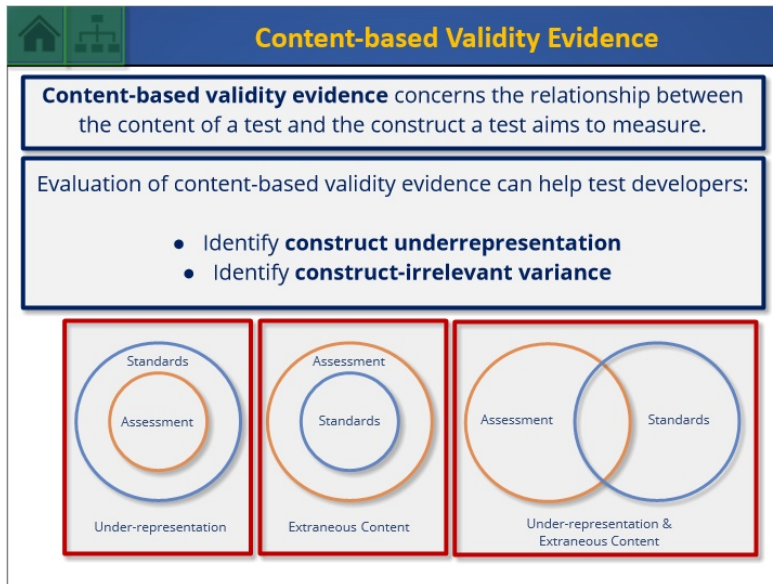
2.4 Broad Conception



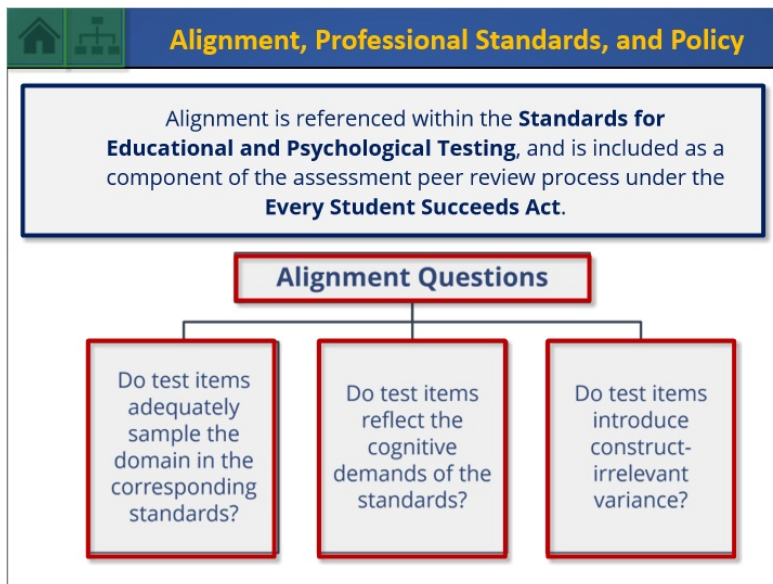
2.5 Narrow Conception





2.6 Content Validity



2.7 The Standards



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



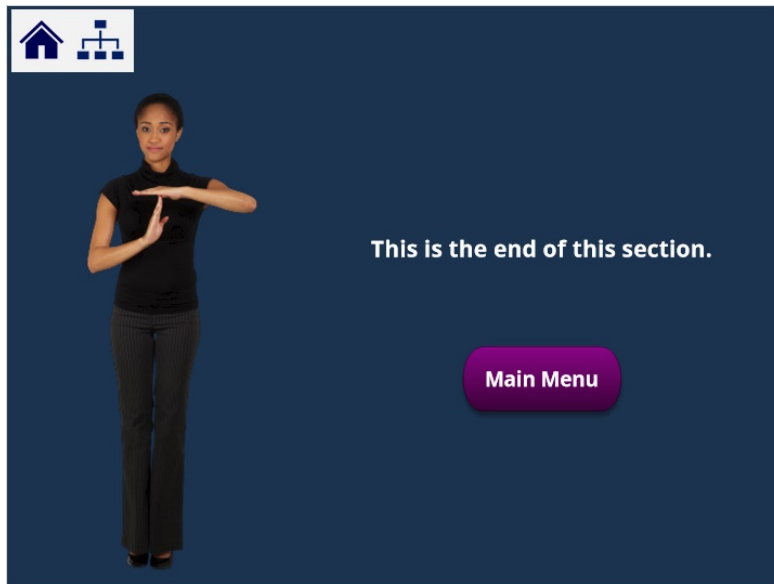
Methods for Evaluating Alignment

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



Content Area Standards

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

These are usually the **most specific** statements of what students are expected to know or be able to do.

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.

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

3.5 Topic Selection



Webb Model

Surveys of Enacted Curriculum

Achieve Model

Click on the buttons to learn more about each method.

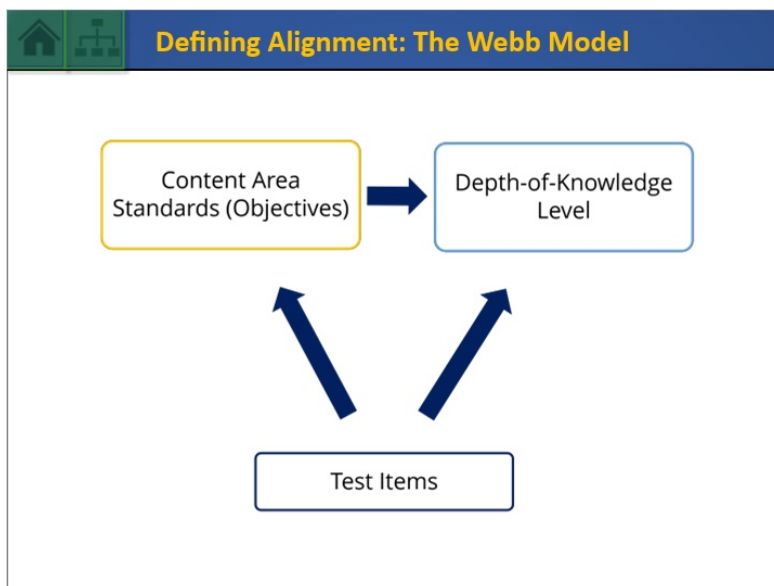


Section End

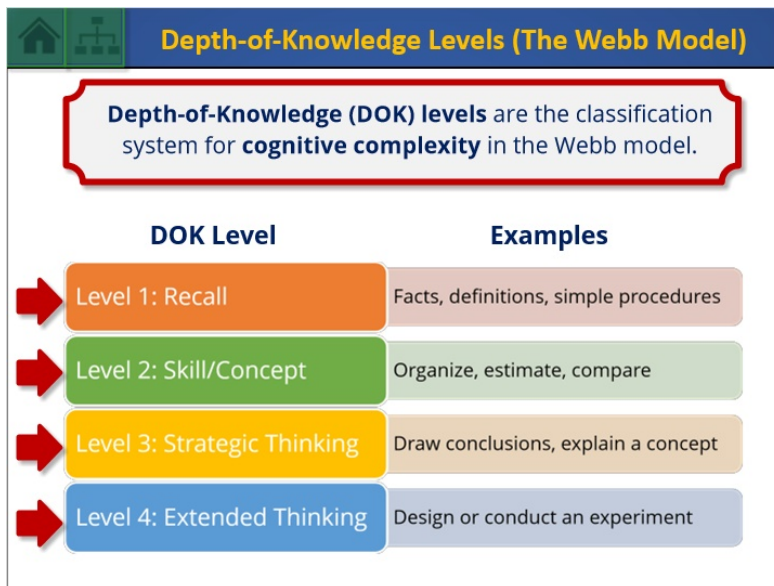
3.6 Bookmark: The Webb Model



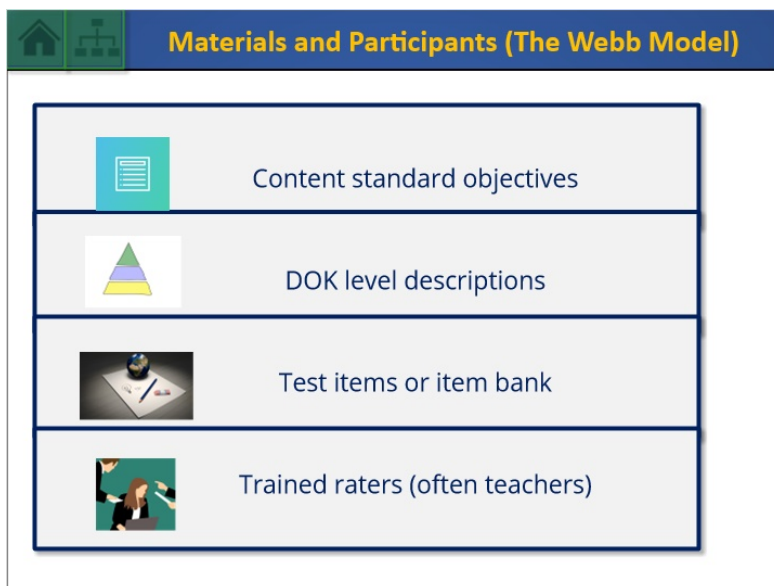
3.7 Webb: Defining Alignment



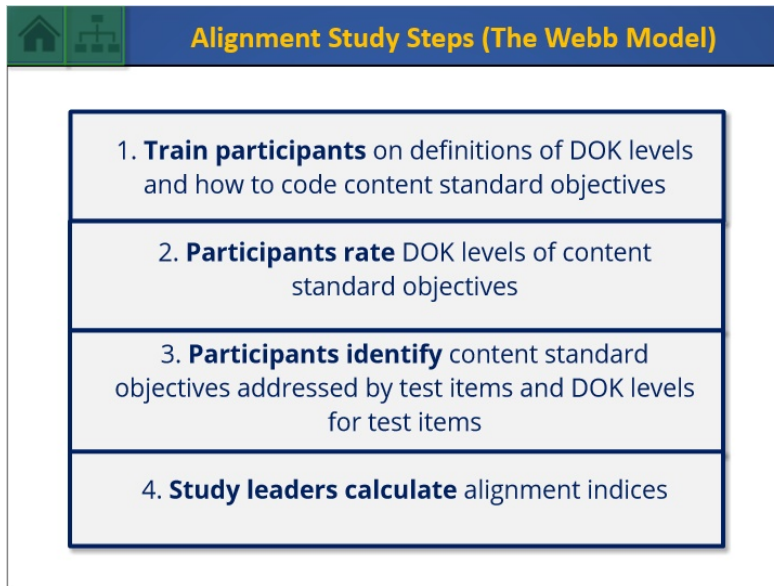
3.8 Webb: Depth-of-knowledge



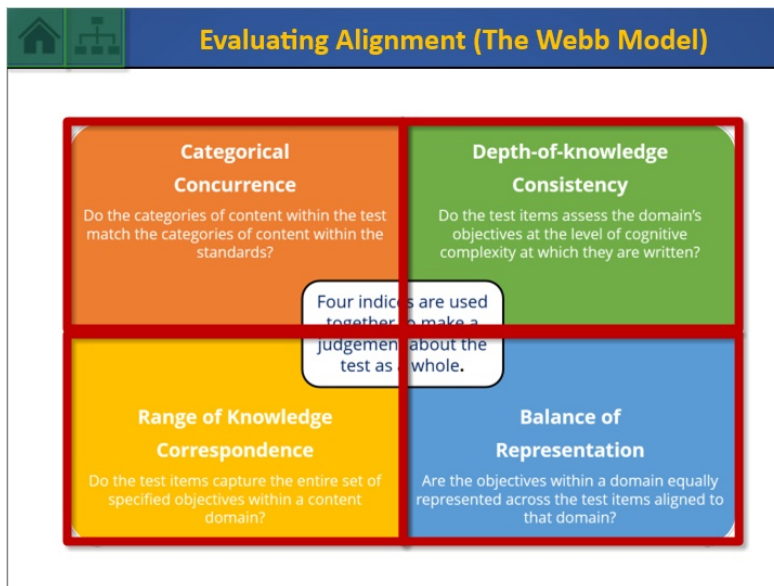
3.9 Webb: Materials



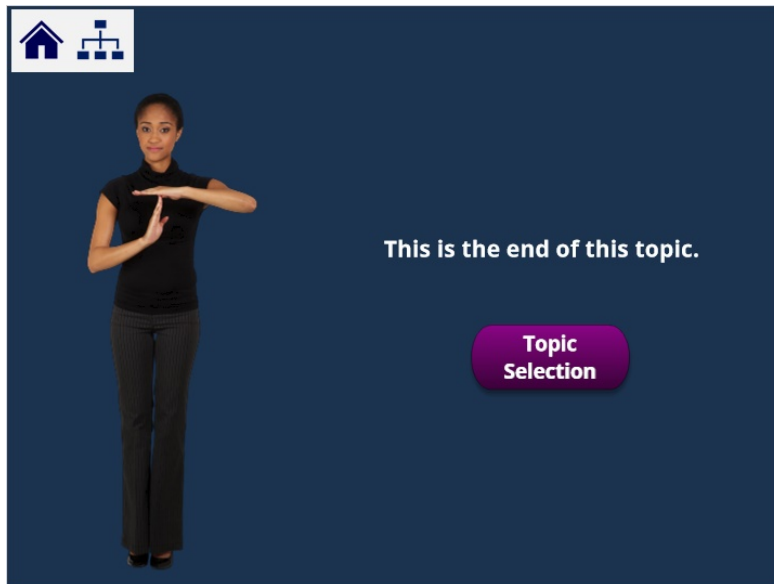
3.10 Webb: Steps



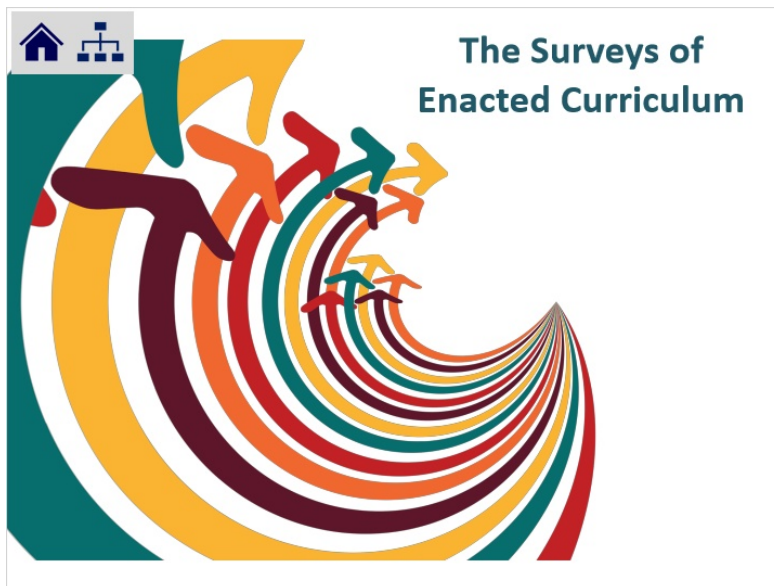
3.11 Webb: Evaluating Alignment



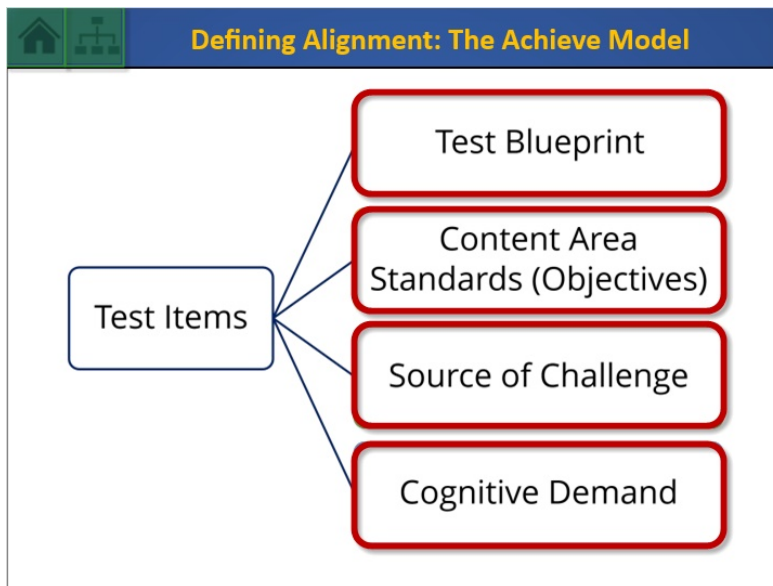
3.12 Bookend: Webb Method



3.13 Bookmark: The Surveys of Enacted Curriculum



3.14 Achieve: Defining Alignment





3.15 Achieve: Test Blueprint

Test Blueprint (The Achieve Model)

The test blueprint describes the particular content area standard objectives that are **intended to be assessed** by each test item.


Confirming the match between test items and their **intended objectives** is the first step of conducting an alignment study using the **Achieve Model**.

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



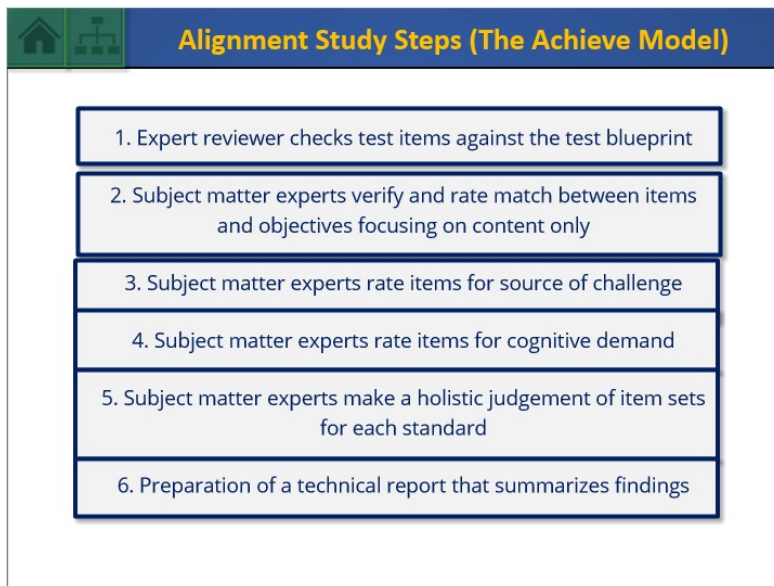
Cognitive Demand (The Achieve Model)

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

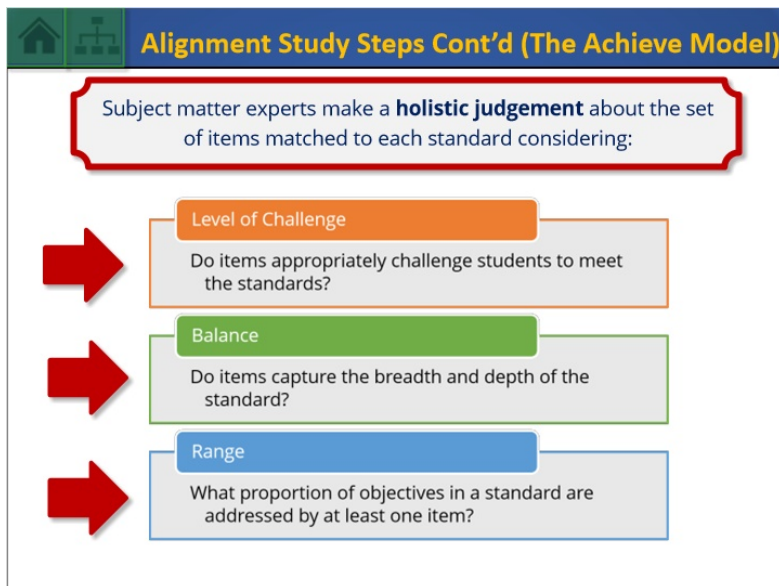
3.18 Achieve: Materials



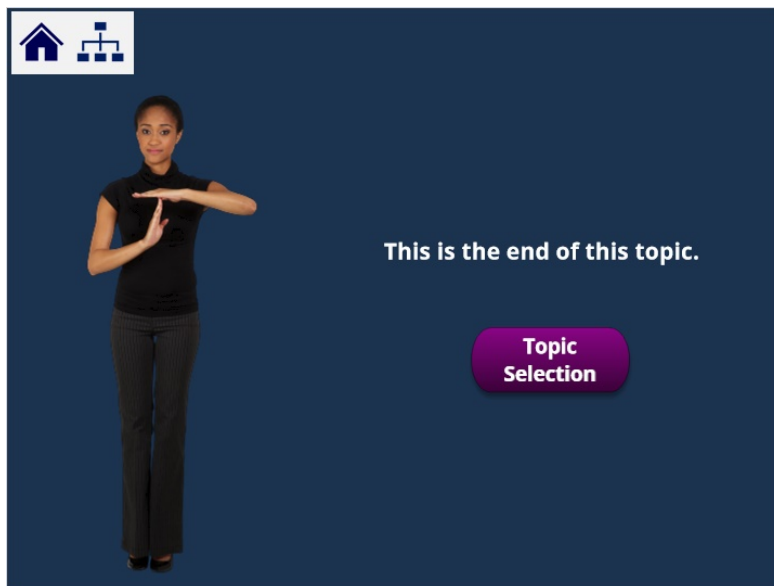
3.19 Achieve: Steps



3.20 Achieve: Steps (cont'd)



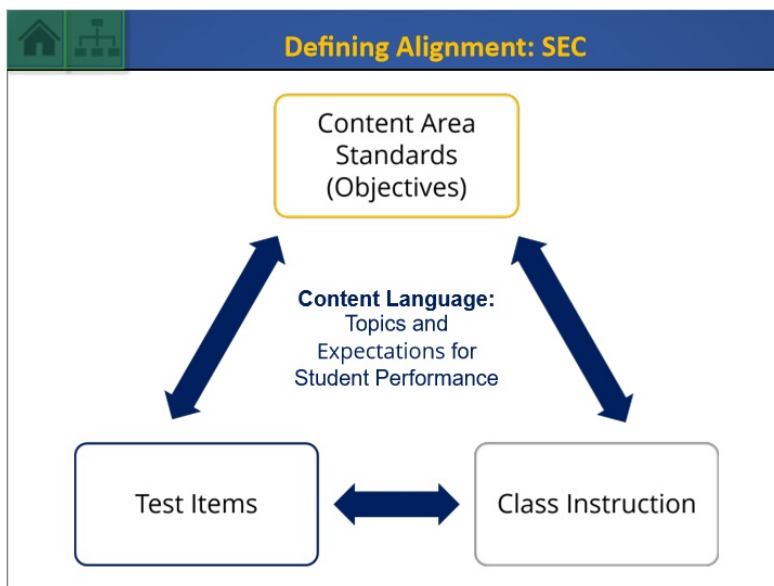
3.21 Bookend: Achieve Method





3.22 Bookmark: The Achieve Model



3.23 SEC: Defining Alignment


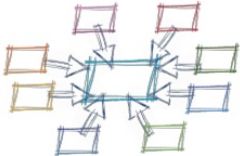


3.24 SEC: Content Languages





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

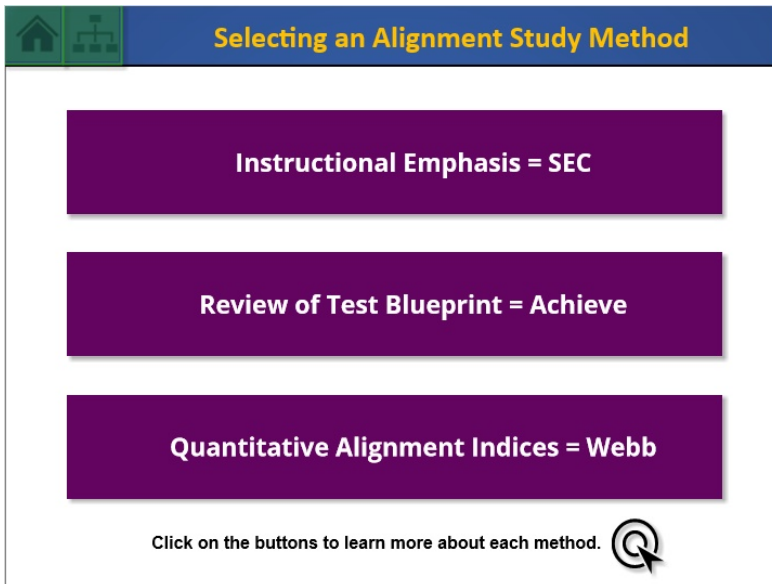




This is the end of this topic.

Topic Selection

3.30 Selecting an Approach




The interface has a dark blue header with a home icon and a tree icon on the left, and the title "Selecting an Alignment Study Method" in yellow. Below the header are three purple buttons stacked vertically: "Instructional Emphasis = SEC", "Review of Test Blueprint = Achieve", and "Quantitative Alignment Indices = Webb". At the bottom, there is a line of text "Click on the buttons to learn more about each method." followed by a magnifying glass icon.

Selecting an Alignment Study Method

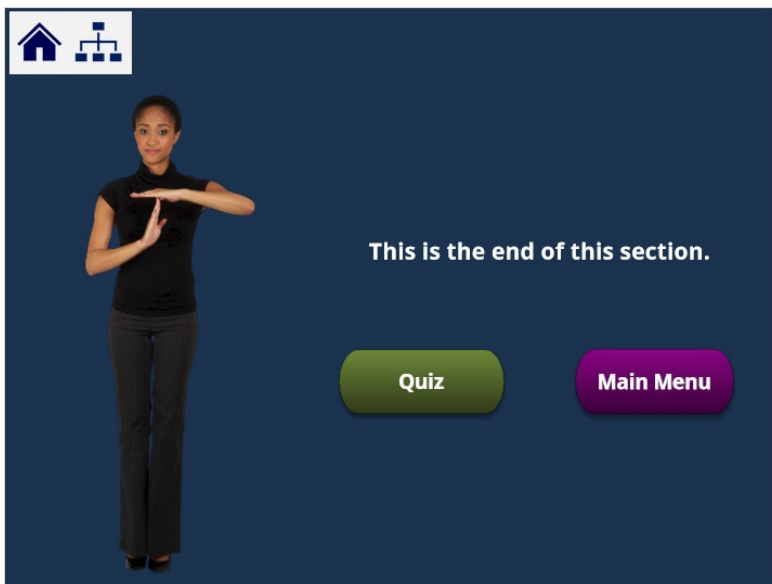
Instructional Emphasis = SEC

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 interface has a dark blue background. In the top left corner, there is a white box containing a home icon and a tree icon. On the left side, there is a woman in a black top and dark pants, standing with her arms crossed. In the center, 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






4.2 Learning Objectives

The image shows a presentation slide titled 'Learning Objectives'. The slide has a blue header bar with the title 'Learning Objectives' in yellow text. To the left of the title are two small icons: a house and a tree. Below the header is a large white rectangular area. In the center of this area is a 3D target icon with a red bullseye and a black arrow hitting the center. Below the target icon are three stacked rectangular boxes, each containing a learning objective. The first box contains '1. Understand the practical steps in carrying out an alignment study using the Webb model'. The second box contains '2. Describe principles for determining alignment based on Webb's four indices'. The third box contains '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





Training Panel Leaders

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

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)
- How to train panelists on the work of the panel

4.6 The WAT



The Web Alignment Tool (WAT)

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

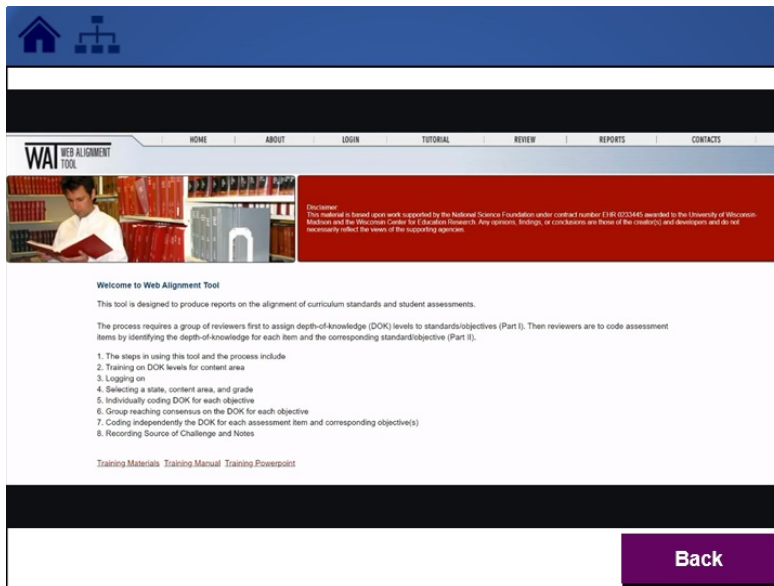
Content area standard objectives should be entered into the WAT prior to the study meeting.

Panelists input all judgements into the WAT:

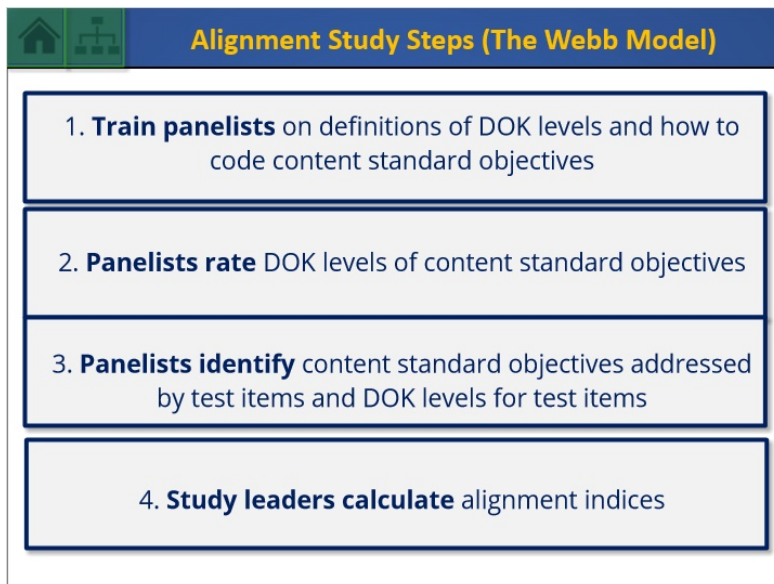
- Depth-of-Knowledge (DOK) ratings for standard objectives
 - Matching test items to standard objectives
 - DOK ratings for test items

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)




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


WAT WEB ALIGNMENT TOOL

Select your specific area of study.


OVERVIEW OF ALIGNMENT STUDY




MATHEMATICS



LANGUAGE ARTS



SCIENCE





SOCIAL STUDIES

STUDY WALKTHROUGH

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

Back

4.9 DOK of Content Standards





Rating DOK Levels of Content Standards

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.

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

Video

Objective coding recording (Slide Layer)



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

WA
WEB ALIGNMENT
TOOL

Reviewer Login
Username:
Group ID:
☐ Group Leader Login
[Forgot Login Information](#)

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.

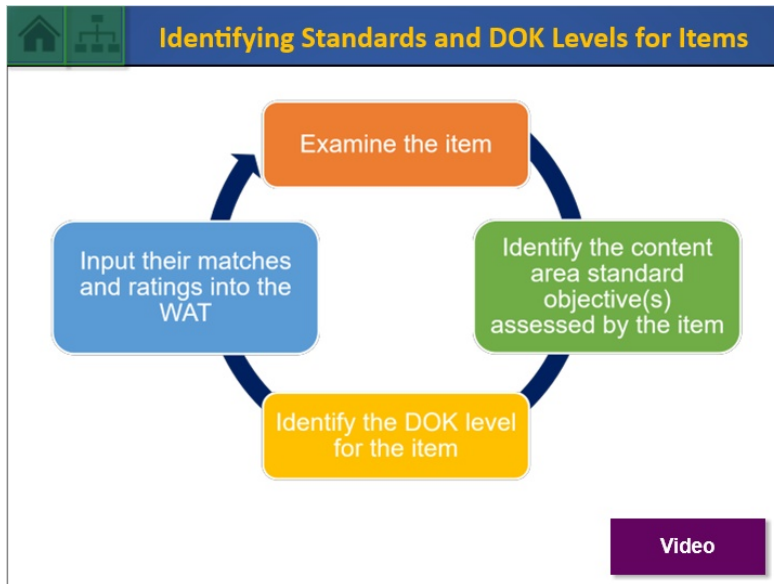
If you are a Group Leader and would like to register a new group, please go to the [Group Registration Page](#) to register your group.

[Administration Area](#)
[Download Standard](#)

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

Back

4.10 Item Review Workflow





Item coding recording (Slide Layer)

The screenshot shows the 'WAT WEB ALIGNMENT TOOL' interface. At the top, there is a navigation bar with links: HOME, ABOUT, LOGIN, TUTORIAL, REVIEW, REPORTS, and CONTACTS. Below the navigation bar, the user is logged in as 'Sebastian Moncaleano' with 'Group Number: 298'. The main content area is titled 'Welcome, Sebastian Moncaleano' and contains instructions for the review process. It is divided into two parts: 'Part I Progress' and 'Part II Progress'. 'Part I Progress' shows a table of standards with columns: Standard Name, State, Subject, Grade, Total # of Standards, Current Answered Standards, Done, and Study ID. The table has one row: 'Mock MA', 'MA', 'Mathematics', '3', '8', '9', 'True', and '11388'. 'Part II Progress' shows a table of standards and assessments with columns: Standard Name, State, Subject, Grade, Assessment Name, Course, Form, Source of Assessment, Elements Count, Elements Done, and Done. The table is empty. A 'Back' button is located at the bottom right of the interface.

Standard Name	State	Subject	Grade	Total # of Standards	Current Answered Standards	Done	Study ID
Mock MA	MA	Mathematics	3	8	9	True	11388

Standard Name	State	Subject	Grade	Assessment Name	Course	Form	Source of Assessment	Elements Count	Elements Done	Done
---------------	-------	---------	-------	-----------------	--------	------	----------------------	----------------	---------------	------


4.11 Alignment Indices





Study Leaders Calculate Alignment Indices

Categorical Concurrency 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?
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?

Four indices are used together to make a judgement about the test as a whole.

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

Categorical Concurrency (Slide Layer)



Categorical Concurrency



Categorical Concurrency

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

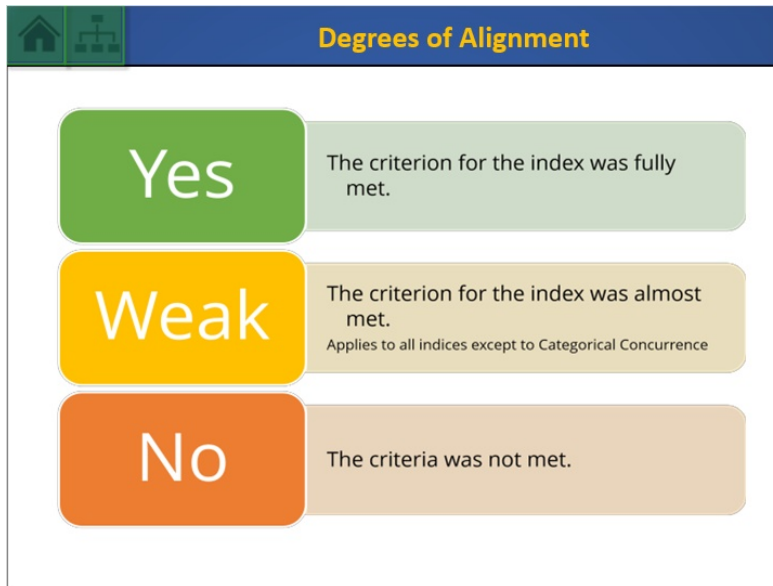


Putting the Indices Together

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

Index-specific Degrees of Alignment				
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
Recommendations				
WEAK/ NO	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)

4.16 Example: MCAS

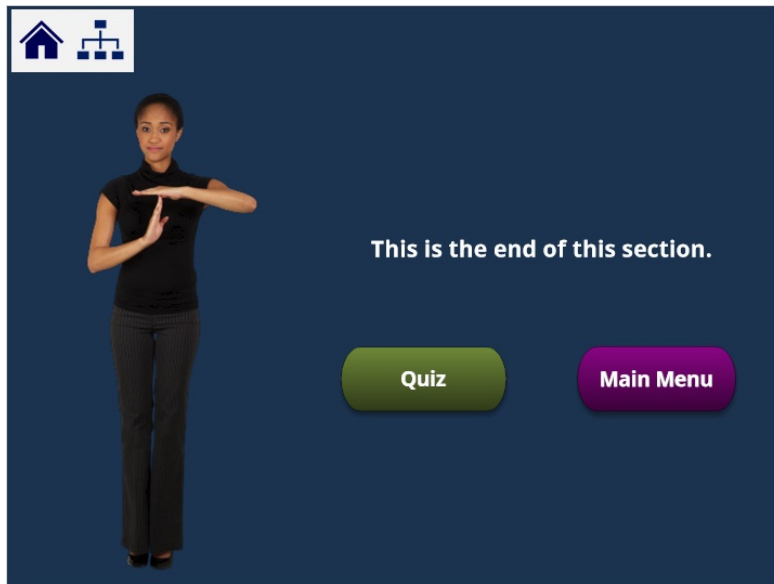
Example: Massachusetts Content Alignment Study

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

