The Alignment between easyCBM©

Mathematics and Literacy Assessments

and State and National Standards

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Abstract

In this technical report, we present the results of a 2020-2021 study of the alignment between the easyCBM$^{©}$ mathematics and literacy assessments and the content standards adopted in the fifty U.S. states. The study used a three-wave process. First, a team of researchers gathered the status of state standard information for mathematics and English language arts (ELA) standards across grades K-8 for all 50 U.S. states. Three main groups were identified: CCSS Adopted (20 – ELA & Math), CCSS Revised (24 – ELA, 28 – Math) and State Unique (6 – ELA, 2 Math). Next, the team analyzed the alignment between the standards and the easyCBM$^{©}$ literacy measures. Finally, the team analyzed the alignment between the standards and the easyCBM$^{©}$ mathematics measures. This technical report describes the process used in the alignment study and provides the results of the analysis.

The Alignment between easyCBM© Mathematics and Literacy Assessments
and State and National Standards

Because of the autonomy granted to states to regulate their educational systems, there is no single set of content standards that applies equally across all 50 U.S. states. Thus, U.S. school districts are faced with the challenge of determining the extent to which a national curriculum or standardized assessment aligns with the expectations for learning adopted by their individual state. This technical report is intended to help facilitate the process of reviewing the alignment between the mathematics and literacy assessments offered on the easyCBM© system and the content standards adopted by the different states.

The purpose of this investigation was to examine the extent to which easyCBM© is aligned with English Language Arts and Mathematics content standards currently used across the U.S. Because the Common Core State Standards (CCSS) have been adopted (in some form) by most states, they were used as referent standards for both ELA and Math datasets.

Datasets were organized around the extent to which state standards reflected overlap with the CCSS, with "ADDITIONAL" state standards grouped together to capture skills and knowledge that extended beyond the scope of the CCSS. In general, ADDITIONALS were listed by increasing difficulty and links to earlier and later grade CCSS were noted.

The primary research question underlying this work was: *To what extent does easyCBM© measurement align with state English Language Arts and Mathematics academic standards across K-8?* Alignment analyses were conducted for both CCSS-corresponding and ADDITIONAL state standards across grades and content domains. A secondary question that may be asked from these datasets is: *To what extent do state standards align with the CCSS?*

Methods

From May – June 2020, the status of state standard information was gathered for ELA and Mathematics standards across K-8 for all 50 U.S. states. Three main groups were identified: **CCSS Adopted** (20- ELA & Math), **CCSS Revised** (24- ELA, 28- Math), and **State Unique** (6- ELA, 2- Math). **CCSS Adopted** was composed of states that wholly adopted the CCSS (without changes to language/competency elements). **CCSS Revised** was composed of states who "adopted" CCSS and made minor changes to their language and/or competency elements. **State Unique** was composed of states that may or may not have CCSS overlap, and where competencies substantially deviate from CCSS language.

Tables 1-3 present the state website URLs and adoption status documentation used in this study. Table 1 lists the states with direct CCSS adoption ("CCSS Adopted"). Table 2 lists the states with modifications to the CCSS ("CCSS Revised"). Table 3 lists the states where standards substantially deviate from the language and competencies used in the CCSS.

At the time this study was conducted (2020-2021), the following states had directly adopted the CCSS: Colorado, Connecticut, Delaware, Hawaii, Illinois, Kansas, Maine, Maryland, Michigan, Nevada, New Hampshire, New Mexico,

North Carolina, Oregon, Pennsylvania, Rhode Island, Vermont, Washington, Wisconsin, and Wyoming. Table 1 provides information about the website(s) our research team used to gather information about the states' standards, including the year the standards were adopted.

Table 1
States with Direct CCSS Adoption ("CCSS Adopted")

	State Name	Abbrev	State Education Website	CCSS Status	CCSS Comments	Name of State Standards	ELA_GrK-8	ELA_GrK-8_YrAdptd	ELA_GrK-8_YrImplmntd	Mth_GrK-8	Mth_GrK-8_YrAdptd	Mth_GrK-8_YrImplmntd
1	Colorado	CO	https://www.cde.state.co.us/standardsandinstruction/coloradostandards-academicstandards	Y	No revisions to date	Colorado Academic Standards (CAS)	Y	2010	2013	Y	2010	2013
2	Connecticut	CT	https://portal.ct.gov/SDE/CT-Core-Standards/CCSS-Overview	Y	No revisions to date	Conneticut State Standards	Y	2010	2013	Y	2010	2013
3	Delaware	DE	https://www.doe.k12.de.us/domain/374 https://www.doe.k12.de.us/domain/387	Y	No revisions to date	Delaware Common Core State Standards	Y	2010	2011	Y	2010	2011
4	Hawaii	HI	http://www.hawaiipublicschools.org/TeachingAndLearning/StudentLearning/CommonCoreStateStandards/Pages/home.aspx	Y	No revisions to date	Hawaii Common Core Standards	Y	2010	2013	Y	2010	2013
5	Illinois	IL	https://www.isbe.net/Pages/Learning-Standards.aspx	Y	No revisions to date	Illinois Learning Standards	Y	2010	2013	Y	2010	2013
6	Kansas	KS	https://community.ksde.org/Default.aspx?tabid=5280 https://community.ksde.org/Default.aspx?tabid=5276	Y	No revisions to date	Kansas College and Career Ready Standards	Y	2010	2013	Y	2010	2013
7	Maine	ME	https://www.maine.gov/doe/learning/content/ela https://www.maine.gov/doe/learning/content/mathematics/learningresults	Y	No revisions to date	Maine Learning Results	Y	2011	2012	Y	2011	2012
8	Maryland	MD	http://marylandpublicschools.org/programs/Pages/ELA/MCCR.aspx http://marylandpublicschools.org/about/Pages/DCAA/Math/MCCRSM.aspx	Y	No revisions to date	Maryland College and Career Readiness Standards	Y	2010	2013	Y	2010	2013
9	Michigan	MI	https://www.michigan.gov/0,4615,7-140-28753---,00.html	Y	No revisions to date	Michigan Academic Standards	Y	2010	2012	Y	2010	2012
10	Nevada	NV	http://www.doe.nv.gov/Assessments/Naa/NVACS_Connectors/	Y	No revisions to date	Nevada Academic Content Standards	Y	2010	2013	Y	2010	2013
11	New Hampshire	NH	https://www.education.nh.gov/who-we-are/division-of-learner-support/bureau-of-instructional-support/career-and-college-ready-standards	Y	No revisions to date	New Hampshire Career and College Ready Standards	Y	2010	2014	Y	2010	2014
12	New Mexico	NM	https://webnew.ped.state.nm.us/bureaus/instructional-materials/new-mexico-content-standards/	Y	No revisions to date	New Mexico Common Core State Standards (NMCCSS)	Y	2010	2013	Y	2010	2013
13	North Carolina	NC	https://www.dpi.nc.gov/districts-schools/classroom-resources/k-12-standards-curriculum-and-instruction/standard-course-study	Y	No revisions to date	North Carolina Standard Course of Study (NCSCOS)	Y	2010	2012	Y	2010	2012
14	Oregon	OR	https://www.oregon.gov/ode/educator-resources/standards/Pages/default.aspx	Y	No revisions to date	Oregon State Standards	Y	2010	2014	Y	2010	2014
15	Pennsylvania	PA	https://www.stateboard.education.pa.gov/Regulations/AcademicStandards/Pages/default.aspx	Y	No revisions to date	Pennsylvania Core Standards	Y	2010	2013	Y	2010	2013
16	Rhode Island	RI	https://www.ride.ri.gov/InstructionAssessment/Literacy/CommonCoreStateStandardsforELALiteracy.aspx https://www.ride.ri.gov/InstructionAssessment/Mathematics.aspx	Y	State currently reviewing the Common Core.	Rhode Island Early Learning and Development Standards	Y	2010	2013	Y	2010	2013
17	Vermont	VT	https://education.vermont.gov/student-learning/content-areas/language-arts https://education.vermont.gov/student-learning/content-areas/mathematics	Y	No revisions to date	Common Core State Standards	Y	2013	2014	Y	2013	2014
18	Washington	WA	https://www.k12.wa.us/student-success/learning-standards-instructional-materials	Y	No revisions to date	Washington State Learning Standards	Y	2011	2014	Y	2011	2014
19	Wisconsin	WI	https://dpi.wi.gov/standards	Y	No revisions to date	Wisconsin Standards	Y	2010	2014	Y	2010	2014
20	Wyoming	WY	https://edu.wyoming.gov/educators/standards/	Y	No revisions to date	Wyoming Content and Performance Standards	Y	2012	2014	Y	2012	2014

At the time this study was conducted (2020-2021), the following states had adopted some modified version of the CCSS: Alaska, Alabama, Arkansas, Arizona, California, Florida, Georgia, Idaho, Indiana, Iowa, Kentucky, Louisiana, Massachusetts, Minnesota, Mississippi, Montana, New Jersey, New York, North Dakota, Ohio, South Dakota, Tennessee, Utah, and West Virginia. Table 2 provides information about the website(s) our research team used to gather information about the states' standards, including the year the standards were adopted.

Table 2

States with Modified CCSS Adoption ("CCSS Revised")

#	State Name	Abbrev	State Education Website	CCSS Status	CCSS Comments	Name of State Standards	ELA_GrK-8	ELA_GrK-8_YrAdptd	ELA_GrK-8_YrImplmntd	Mth_GrK-8	Mth_GrK-8_YrAdptd	Mth_GrK-8_YrImplmntd
1	Alaska	AK	https://education.alaska.gov/standards/english-language-arts https://education.alaska.gov/standards/mathematics	Y	*No reported revisions to date*	Alaska Standards		2012			2012	
2	Alabama	AL	https://alex.state.al.us/ccrs/content/alabama-college-career-ready-standards-ccrs https://www.alsde.edu/sec/sct/COS/2016%20Revised%20Alabama%20English%20Language%20Arts%20Course%20of%20Study.pdf	Y	*Revised Common Core Standards in 2014*	Alabama College & Career Ready Standards (CCRS)	Y	2010	2012	Y	2010	2012
3	Arkansas	AR	http://dese.ade.arkansas.gov/divisions/learning-services/curriculum-and-instruction http://dese.ade.arkansas.gov/divisions/learning-support/humanities/english-language-arts/english-language-arts-standards-and-courses	Y	*Revised Common Core Standards- announced a major Common Core rewrite/replacement*	Arkansas Academic Standards	Y	2010	2011	Y	2010	2011
4	Arizona	AZ	https://www.azed.gov/standards-practices/k-12standards/english-language-arts-standards/ https://www.azed.gov/standards-practices/k-12standards/mathematics-standards/	Y	*Revision of CCSS Underway*	Arizona College and Career Ready Standards (renamed in 2014)	Y	2010	2014	Y	2010	2014
5	California	CA	https://www.cde.ca.gov/re/cc/ https://www.cde.ca.gov/be/st/ss/documents/finalelaccssstandards.pdf	Y	*Revised Common Core Standards*	Common Core State Standards	Y	2010	2014	Y	2010	2014
6	Florida	FL	https://www.cpalms.org/Public/search/Standard	Y	*Revised Common Core Standards. State developing new standards to replace the Common Core*	Next Generation Sunshine State Standards or NGSSS	Y	2010	?	Y	2010	?
7	Georgia	GA	https://www.georgiastandards.org/Pages/default.aspx https://www.georgiastandards.org/Georgia-Standards/Pages/ELA-K-5.aspx https://www.georgiastandards.org/Georgia-Standards/Documents/ELA-Standards-Grades-6-8.pdf	Y	*Revised Common Core Standards*	Georgia Standards of Excellence	Y	2010	2014	Y	2010	2014
8	Idaho	ID	https://www.sde.idaho.gov/academic/standards/ https://www.sde.idaho.gov/academic/shared/ela-literacy/booklets/ELA-Literacy-Standards	Y	*Revision of Common Core Standards underway*	Idaho Core Standards		2011	2013		2011	2013
9	Indiana	IN	https://www.doe.in.gov/standards	W	*Former Common Core implementation.*	Indiana Academic Standards	Y	2010	Paused	Y	2010	Paused
10	Iowa	IA	https://iowacore.gov/ https://iowacore.gov/sites/default/files/k-12_literacy_0.pdf	Y	*Revision of Common Core Standards underway*	Iowa Core Standards, aka Iowa Academic Standards	Y	2010	2012	Y	2010	2012
11	Kentucky	KY	https://kystandards.org/home/ky-acad-standards/	W	*Former Common Core State implementing other standards- Revision of Common Core Standards underway*	Kentucky State Standards	Y	2010	2011	Y	2010	2011
12	Louisiana	LA	https://www.louisianabelieves.com/academics/academic-standards https://www.louisianabelieves.com/resources/library/academic-standards	Y	*Announced a major Common Core rewrite/replacement-no revision to date*	Louisiana State Students Standards	Y	2010	2013	Y	2010	2013
13	Massachusetts	MA	http://www.doe.mass.edu/frameworks/ela/2017-06.pdf http://www.doe.mass.edu/frameworks/math/2017-06.pdf	Y	*Revised Common Core Standards*	Massachusetts Cirricular Framework	Y	2010	2013	Y	2010	2013
14	Minnesota	MN	https://education.mn.gov/MDE/index.html https://education.mn.gov/MDE/dse/stds/ela/052565 https://education.mn.gov/MDE/dse/stds/ela/	Y	*No revisions to date*	Minnesota Academic Standards for ELA	Y	2010	2012	N/A	N/A	N/A
15	Mississippi	MS	https://www.mdek12.org/OAE/college-and-career-readiness-standards https://districtaccess.mde.k12.ms.us/curriculumandInstruction/MississippiCurriculumFrameworks/ELA/2016-MS-CCRS-ELA.pdf	Y	*Revised Common Core Standards*	Mississippi College and Career Readiness Standards	Y	2010	2013	Y	2010	2013
16	Montana	MT	http://opi.mt.gov/Educators/Teaching-Learning/K-12-Content-Standards-Revision http://opi.mt.gov/Educators/Teaching-Learning/K-12-Content-Standards-Revision/English-Language-Arts-Literacy-Standards	Y	*Revision of Common Core Standards underway*	Montana Content Standards	Y	2011	2013	Y	2011	2013
17	New Jersey	NJ	https://www.nj.gov/education/cccs/ https://www.nj.gov/education/cccs/2016/ela/crosswalk.pdf	Y	*Revised Common Core Standards- announced a major Common Core rewrite/replacement*	New Jersey Student Learning Standards (NJSLS)	Y	2010	2013	Y	2010	2013
18	New York	NY	http://www.nysed.gov/curriculum-instruction/new-york-state-next-generation-english-language-arts-learning-standards http://www.nysed.gov/curriculum-instruction/new-york-state-next-generation-mathematics-learning-standards	Y	*Revision of Common Core Standards underway*	New York State Next Generation Learning Standards	Y	2010	2013	Y	2010	2013
19	North Dakota	ND	https://www.nd.gov/dpi/districtsschools/k-12-education-content-standards https://www.nd.gov/dpi/sites/www/files/documents/Academic%20Support/ELA-Literacy%20Standards-2017%20Final-Revised%2011-08-17.pdf	Y	*Revision of Common Core Standards underway*	North Dakota Content Standards	Y	2011	2013	Y	2011	2013
20	Ohio	OH	http://education.ohio.gov/Topics/Learning-in-Ohio/OLS-Graphic-Sections/Learning-Standards http://education.ohio.gov/getattachment/Topics/Learning-in-Ohio/English-Language-Art/English-Language-Arts-Standards/ELA-Learning-Standards-2017.pdf.aspx?lang=en-US	Y	*Revision of Common Core Standards underway*	Ohio Learning Standards	Y	2010	2013	Y	2010	2013
21	South Dakota	SD	https://doe.sd.gov/contentstandards/ https://doe.sd.gov/contentstandards/documents/ELA-Standards.pdf	Y	*Revision of Common Core Standards underway*	South Dakota State Standards	Y	2010	2014	Y	2010	2014
22	Tennessee	TN	https://www.tn.gov/education.html	W	*Revision of Common Core Standards underway*	Tennessee Academic Standards		2010	2013		2010	2013
23	Utah	UT	https://www.uen.org/core/ https://www.uen.org/core/languagearts/	Y	*Revised Common Core Standards*	The Utah State Core Curriculum	Y	2010	2013	Y	2010	2013
24	West Virginia	WV	https://wvde.us/college-and-career-readiness/	Y	*State currently reviewing the Common Core.*	West Virginia College and Career Readiness Standards	Y	2010	2014	Y	2010	2014

At the time this study was conducted (2020-2021), the following states had adopted unique standards, distinct from the CCSS: Missouri, Nebraska, Oklahoma, South Carolina, Texas, and Virginia. Table 3 provides information about the website(s) our research team used to gather information about the states' standards, including the year the standards were adopted.

Table 3
States without CCSS ("State Unique")

	State Name	Abbrev	State Education Website	CCSS Status	CCSS Comments	Name of State Standards	ELA_GrK-8	ELA_GrK-8_YrAdptd	ELA_GrK-8_YrImplmntd	Mth_GrK-8	Mth_GrK-8_YrAdptd	Mth_GrK-8_YrImplmntd
1	Missouri	MO	https://dese.mo.gov/college-career-readiness/curriculum/missouri-learning-standards	W	Announced a major Common Core rewrite/replacement-no revision to date	Missouri Learning Standards	Y	2010	2014	Y	2010	2014
2	Nebraska	NE	https://www.education.ne.gov/contentareastandards/ https://www.education.ne.gov/wp-content/uploads/2017/07/2014_Updated_ELA_Standards_Vertical_Version_k_12.pdf	N	Never adopted CCSS	Nebraska College and Career Ready Standards	N/A	N/A	N/A	N/A	N/A	N/A
3	Oklahoma	OK	https://sde.ok.gov/oklahoma-academic-standards https://sde.ok.gov/sites/default/files/documents/files/OAS-ELA-Final%20Version_0.pdf	W	Withdrew from the Common Core	Oklahoma Academic Standards	Y	2010	2014	Y	2010	2014
4	South Carolina	SC	https://ed.sc.gov/instruction/standards-learning/ https://ed.sc.gov/scdoe/assets/file/programs-services/59/documents/ELA2015SCCCRStandards.pdf	W	Former Common Core State	South Carolina College and Career Ready Standards	Y	2010	?	Y	2010	?
	State Name	Abbrev	State Education Website	CCSS Status	CCSS Comments	Name of State Standards	ELA_GrK-8	ELA_GrK-8_YrAdptd	ELA_GrK-8_YrImplmntd	Mth_GrK-8	Mth_GrK-8_YrAdptd	Mth_GrK-8_YrImplmntd
1	Texas	TX	https://tea.texas.gov/academics/curriculum-standards/teks/texas-essential-knowledge-and-skills	N	Never adopted CCSS	Texas Essential Knowledge and Skills (TEKS)	N/A	2012	N/A	N/A	2012	N/A
2	Virginia	VA	http://www.doe.virginia.gov/testing/index.shtml http://www.doe.virginia.gov/testing/sol/standards_docs/english/sol_ccss_comparison_english.pdf	N	Never adopted CCSS	The Standards of Learning (SOL)	Y	2016	N/A	Y	2016	N/A

Once all states' standards had been analyzed and documented, the research team turned to an analysis of the alignment overlap between easyCBM© measurement, and Common Core and various state standards (with variations noted, as described below). Data were drawn from the following sources: www. corestandards.org (ELA and Mathematics) and individual state ELA and Mathematics standards websites (as documented in Tables 1-3); easyCBM© math item development files, easyCBM© test items (ELA and Math) accessed on easyCBM.com (lite and district versions), and easyCBM© user manual.

From June – November 2020, Common Core and ELA state standards information for each state was input into a multi-tabbed Excel file. This resulted in information about the following 4 CCSS *strands* (and *domains*): *Reading Literature (Key Ideas & Details, Range of Reading Level & Complexity, Craft & Structure), Reading Informational Texts (Key Ideas & Details, Range of Reading Level & Complexity, Craft & Structure, Integration of Knowledge & Ideas), Foundational Skills (Print Concepts, Phonological Awareness, Phonics & Word Recognition, Fluency), and Language (Vocabulary).*

From November 2020 – March 2021, Common Core and Mathematics state standards information for each state was input into a multi-tabbed Excel spreadsheet. This resulted in information about the following 11 domains: *Geometry, Measurement & Data, Counting & Cardinality, Operations and Algebraic Thinking, Numbers & Operations in Base 10, Numbers & Operations- Fractions, The Number System, Ratios & Proportional Relations, Expressions & Equations, Statistics & Probability, Functions.*

General Alignment Criteria Across Data Sets

Because many of the easyCBM© ELA measures were developed prior to the 2009 release of the CCSS, we anticipated that evidence of "weak" and/or "absent" alignment would be found. Except for Vocabulary and Basic Reading comprehension measures, which were developed in 2013, easyCBM© reading measures were developed between 2006 and 2010. In contrast, the easyCBM© Proficient Math measures were developed after the release of the CCSS (in 2012). Consequently, while efforts were made to consistently analyze information across the two content areas, the processes undertaken were not identical due to differences in resources and measurement design.

Judgements of "alignment" were based on how well easyCBM© items represented content standards. Therefore, a minimum criterion for domain/strand inclusion in this project was set for both ELA and math (2 of 3 benchmark measures or 5 of 10 progress monitoring measures, depending on the measure; see each content area for additional details).

The rationale for this stringent criterion was to establish minimum alignment qualifications (e.g., to avoid evaluations of "alignment" based on one item found on one form). Four levels of alignment were used to characterize standard representativeness within easyCBM© measurement: *Strong*, *Moderate*, *Limited*, and *Insufficient*.

In both datasets, the following basic rules were applied to facilitate evaluations of correspondence between state and Common Core standards. Text analysis was applied to avoid "inferring" a state's intention for written standards. Using CCSS as the referent, state standards text was evaluated for its degree of word matching (e.g., exact, partial, deviation, or non-matching) using an essentialization process.

Key CCSS verbs were **bolded** to highlight key aspects of the standard. This created guidance for evaluating linguistic overlap or "fit" between Common Core and state standards. Exact matches were left unchanged. Differences in state standard wording were considered acceptably similar, and unchanged, when synonymous with bolded verbs. Wording differences were modified, as shown below with both ELA and Math examples.

a) **CCSS exact match**

EX. **CCSS:** Describe how characters in a story respond to major events and challenges.

State Standard: Describe how characters in a story respond to major events and challenges.

EX. **CCSS:** Compose simple shapes to form larger shapes

State Standard: Compose simple shapes to form larger shapes.

b) **CCSS partial match** (task demands that are similar in scope despite text differences in their descriptions, noted in *red italics;* minor text differences remained *black italicized* - e.g., in cases of *allowed supports, differences in the range of numbers counted or specific types of texts to be used*)

EX. **CCSS:** Describe how characters in a story respond to major events and challenges.

State: Read or listen closely to *compare and contrast* characters' actions, feelings, and responses to major events or challenges

CCSS: Understand that the two digits of a two-digit number represent amounts of tens and ones.

State: *Explain* that the two digits of a two-digit number represent amounts of tens and ones.

c) **CCSS deviation** (related task demands but substantial wording differences, as noted in **red bold** font, suggesting tenuous overlap)

EX. <u>**CCSS:**</u> Describe characters in a story (e.g., their traits, motivations, or feelings) and explain how their   actions contribute to the sequence of events.

<u>**State:**</u> **explain the relationships among the major and minor characters**

<u>**CCSS:**</u> Understand that each successive number name refers to a quantity that is one larger.

<u>**State:**</u> **generate a number that is one more than or one less than another number up to at least 20**

d) <u>**non-CCSS**</u> (task demands consistent with the subdomain, but outside of the CCSS; these were considered "ADDITIONALS")

EX. <u>**State:**</u> Make and confirm predictions about story details.

EX. <u>**State:**</u> Determine elapsed time.

<u>*A note about ADDITIONALS</u>: The "ADDITIONAL" section contained aggregated state standards that were grouped together based on similarity of skills/knowledge addressed, using a "meta" overarching standard. When possible, exact wording from state-standards was used for meta-standards. In most cases, ADDITIONAL standards comprised off-grade associations with the CCSS or idiosyncratic state standards; meta-standard links to earlier or later CCSS standards were noted where appropriate using parentheses (e.g., "See 5.G.A.1"). Within the Mathematics dataset, ADDITIONALS reflected not only variation within a cluster/topic but also extensions into grades not covered by the CCSS (e.g., first grade Counting and Cardinality).

States with numerous "ADDITIONALS" and deviations were considered Unique, and their data were contained within a separate spreadsheet tab to keep state and CCSS comparison manageable. Consequently, both ELA and Mathematics datasets have 3 separate tabs: **CCSS Adopted** (20- ELA & Math states), **CCSS Revised** (24- ELA, 28- Math states), and **State Unique** (6- ELA, 2- Math states). Partial matches, deviations, and non-CCSS standards can be found within both Revised and Unique data (i.e., they are not restricted to a particular grouping of states).

From April – May 2021, the databases were cleaned for consistency and ease of reporting; methods were documented.

K- 8 ELA-Specific Item Alignment Process
1) **DETERMINE INCLUSION/EXCLUSION for review** => <u>Three</u> steps were performed:

A) PRELIMINARY DOMAIN REVIEW: All K-8 ELA CCSS domains were evaluated for relevance with easyCBM$^©$ measurement. CCSS domains not measured by easyCBM$^©$ (e.g., Writing, Speaking & Listening, and all Language except for Vocabulary) were excluded from investigation.

B) ITEM ANALYSIS: Items on all ELA easyCBM$^©$ benchmark forms were reviewed by the lead author and classified as reflecting (or not) CCSS topics/clusters. Because easyCBM$^©$ reading measures were developed prior to the release of the CCSS, an item-level minimum criterion for inclusion was established to create an alignment baseline and avoid alignment ratings based on insufficient evidence. Therefore, evidence of CCSS topic/cluster representation on at least one item across 3/3

benchmarks (or 5/10 for Basic Reading progress monitoring forms) was required.

For each CCSS topic/cluster, evidence of easyCBM© test form and item coverage was documented (See FormsItems tab). Missing coverage was indicated by a blank cell. Insufficient coverage (< 3 benchmark forms with at least one CCSS-cluster corresponding item) was ~~crossed out~~.

A second file was created to summarize inclusion and preliminary alignment decisions based on item coverage (see AlignClusterMap tab), including for ADDITIONAL standards.

- See FormsItems tab in ELA K-8 by State v5 for easyCBM measure and item documentation for each CCSS cluster.
- See also AlignClusterMap tab in ELA K-8 by State v5

C) VERIFICATION: The test developer cross-checked preliminary item analysis results and indicated her agreement or disagreement with easyCBM© coverage for each CCSS topic/cluster, based on the alignment criteria (3 benchmark forms with at least one item of cluster correspondence found per form).

2) **DATASET CONSTRUCTION** => State standards were inputted into the ELA dataset using text analysis coding for all Revised and Unique designated states. <u>Four</u> steps were performed:

A) Information was retrieved from states' ELA achievement standards websites. Standards text and referent codes were copied and pasted into the dataset for each state, for all included CCSS clusters.

B) Exact text matches were saved in the dataset in their original state. Partial and deviant cases were coded as previously noted (see **General Alignment Criteria** section above).

C) Full cell/spreadsheet reviews were conducted three times to check for accuracy.

D) Non-CCSS were categorized into ADDITIONAL groups, organized by increasing difficulty, and provided a "meta" overarching standard to help index differences and eliminate redundancy.

3) **EasyCBM ALIGNMENT CODING** was applied to the dataset based on prior AlignClusterMap work. Each domain was color-coded, and ADDITIONAL sections are displayed in lighter domain-colored shades. CCSS Insufficiently aligned with easyCBM© were shown in gray colored cells across all domains. <u>One</u> step was performed: Use the AlignClusterMap to display alignment classifications within the dataset.

EasyCBM© - Standard coverage/alignment was displayed using the following font variations:
- Strong (all 3 BM) = **Calibri 18 bold**
- Moderate (CCSS only, with at least ½ of PM forms) = **Calibri 16 bold**
- Limited (ADDITIONALS with some degree of representation) = Calibri 14
- Insufficient (< 3 BM or no ADDITIONAL representation) = ~~Calibri 12~~

The Moderate code for CCSS measurement was used for consistency with the math dataset.

K- 8 Math Item Alignment Process
1) **DETERMINE INCLUSION/EXCLUSION for review** => <u>Two</u> steps were performed:

A) Because the easyCBM© proficient math measures were written with the CCSS in mind, and earlier alignment work had been previously conducted during development, a preliminary domain review was unnecessary for determining inclusion (i.e., full math domain representation was already known). All CCSS mathematics domains were included for review.

B) However, the extent to which easyCBM© captured skills within each cluster/topic was undetermined. Therefore, using archived math development alignment files, an Alignment dataset was created to systematically document item coverage across clusters/topics (easyCBM CCSS Math Test Form Item Alignment Grades K-8_v5).

Evidence of easyCBM© test form and item coverage was summarized for each CCSS cluster/topic (See AlignItemMap tab). Missing representation was indicated by a blank cell. Insufficient representation (< 3 benchmark forms with at least one CCSS-cluster corresponding item) was ~~crossed out~~. Because of the math measures' design, a second step was undertaken to further assess CCSS coverage for cases of < 3 benchmarks: evidence of at least one item on 50% of the progress monitoring measures was. Therefore, for CCSS in which easyCBM© coverage was found on only 1 or 2 grade-level benchmark forms, follow-up analysis of progress monitoring coverage was conducted. In cases of no benchmark coverage, the standard was evaluated as Insufficiently aligned.

- See AlignItemMap tab in Math K-8 by State v5 for easyCBM measure and item summary for each CCSS cluster.
- See also easyCBM CCSS Math Test Form Item Alignment Grades K-8_v5 for item-level mapping for all benchmark and progress monitoring measures, based on previously conducted CCSS alignment development work.

2) **DATASET CONSTRUCTION**=> State standards were inputted into the math dataset using text analysis coding for all Revised and Unique designated states. Three steps were performed:

A) Information was retrieved from states' Mathematics achievement standards websites. Standards text and referent code were copied and pasted into the dataset for each state for all CCSS clusters.

B) Exact text matches were saved in the dataset in their original state. Partial, deviant, and ADDITIONAL cases were coded as previously noted (see **General Alignment Criteria** section above).

C) Full cell/spreadsheet reviews were conducted three times to check for accuracy.

3) **EasyCBM© ALIGNMENT CODING** was added to the dataset based on prior AlignItemMap work. Domains were color-coded, with ADDITIONALS displayed in a lighter domain-colored shade. CCSS not adequately covered by easyCBM© were shown in gray colored cells across all domains.
EasyCBM© - standard coverage/alignment is displayed as follows:

- Strong (all 3 BM) = **Calibri 18 bold**
- Moderate (2 BM + a minimum of 50% of PM form representation) = **Calibri 16 bold**
- Limited (2 BM + < 50% PM form representation) = Calibri 14
- Insufficient (< 2 BM) = ~~Calibri 12~~

Three coding steps were performed:
A) An initial alignment classification was assigned to all standards (CCSS and ADDITIONAL) by the first author.

B) A verification process was conducted by a second reviewer to check the a) AlignItemMap accuracy and b) agreement with alignment classifications, based on the criteria noted above for the CCSS.

C) An additional review process was undertaken to evaluate easyCBM© alignment among ADDITIONAL standards. This entailed the first author and second reviewer separately evaluating ADDITIONALS based on inspection of items on the Fall benchmark form

(benchmark forms were designed to have similar item types at each time point).

Four levels of alignment classifications were used: **Strong** (> 50% of Fall items reflected the ADDITIONAL standard; **Moderate** = approximately 50% of Fall items reflected the ADDITIONAL standard; **Limited** = between 25% - 49% ADDITIONAL standard Fall coverage; **Insufficient** = < 25% of Fall items reflected the ADDITIONAL standard).

The exact number of items that corresponded with each classification level varied in conjunction with the number of test items and domains in each grade level. See the spreadsheet legend for the number of items corresponding to each classification at each grade.

Disagreements in alignment ratings between the PI and reviewer were discussed in a follow-up meeting and classifications were revised to reflect revised ratings of agreement.

Both easyCBM© *Basic Math* (known generically as *Math* or *NCTM Math* prior to the 2021-2022 school year) and easyCBM© *Proficient Math* (known as *CCSS Math* prior to the 2021-2022 school year) were included in this alignment study.

The following easyCBM© English-language literacy measures were included in this alignment study: *Phoneme Segmenting*, *Letter Names*, *Letter Sounds*, *Word* and *Passage Reading Fluency*, *Vocabulary*, and both *Basic Reading* (known as *CCSS Reading* prior to the 2021-2022 school year) and easyCBM© *Proficient Reading* (known as *MCRC Reading* prior to the 2021-2022 school year).

Results

We present the results for the mathematics alignment study first, followed by the results of the English language arts (ELA) measures.

At the time of the study, the following states had fully adopted the CCSS Standards: Colorado, Connecticut, Delaware, Hawaii, Illinois, Kansas, Maine, Maryland, Michigan, New Hampshire, Nevada, New Mexico, North Carolina, Oregon, Pennsylvania, Rhode Island, Vermont, Washington, Wisconsin, and Wyoming. The results of the alignment study for these 20 states are presented first. Because all 20 states had fully adopted the CCSS Standards, the alignment study results apply equally to all 20 of the states.

The following states had some combination of CCSS and their own unique state standards: Alabama, Alaska, Arizona, Arkansas, California, Florida, Georgia, Kentucky, Idaho, Iowa, Indiana, Louisiana, Massachusetts, Missouri, Minnesota, Mississippi, Montana, New Jersey, North Dakota, Nebraska, New York, Ohio, Oklahoma, South Carolina, South Dakota, Tennessee, Utah, West Virginia. The results of the alignment study for these 28 states are presented second. To accurately represent the alignment between the easyCBM© assessments and these 28 states' standards, we present results unique to each of the states, with substantial crossover in areas where the states' standards aligned with one another.

Missouri, Nebraska, Oklahoma, South Carolina, Texas, and Virginia had their own unique standards, and the results of the alignment study for those six states are presented last. Because all six of these states had unique standards, they each required individual alignment studies. Their results are presented individually.

The full results of the mathematics alignment study are presented on a series of worksheets, accessible through the following Google Sheet:

https://drive.google.com/file/d/132gtRz42P
BWKX1UNULVBZ5bc7Kv8ieBV/view?us
p=sharing

The full results of the English language
arts alignment study are presented on a
series of worksheets accessible through the
following Google Sheet:

https://drive.google.com/file/d/1CjzDpfN4p
Ek_iQGRfXCuRThhF4r7mnL0/view?usp=s
haring

Discussion

This state-by-state alignment study
represents the most in-depth review of the
alignment between state content standards
and the measures available on the
easyCBM© system. The depth of the review
is both a strength and a challenge. The
strength is that educators from across the
fifty states will now be able to evaluate the
alignment between the measures and their
individual state's content standards (as of
2020). The challenge is that there is so much
information to convey that sharing it in a
traditional paper format is untenable.

Thus, we encourage readers to review
the relevant Google Sheets for the content
area and state in which they are interested.
Uniformly, we found substantial alignment
between the easyCBM© assessments and
state content standards. Of course, the
alignment between the different states'
content standards varies by grade level and
content area, and this variability is reflected
in the alignment between easyCBM© and
the states' content standards as well.