

Content alignment memo

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To: Oklahoma State Department of Education

From: Janice Keizer and Elaine Mengyi, REL Southwest

Subject: Results from content alignment of New Mexico Kindergarten Observation Tool (KOT) and the Oklahoma Academic Standards (OAS) kindergarten

The Regional Educational Laboratory (REL) Southwest conducted a content alignment of the New Mexico Kindergarten Observation Tool (KOT) and the Oklahoma Academic Standards (OAS) to help the Oklahoma State Department of Education (OSDE) better understand the extent to which the KOT aligns to knowledge and skills taught in kindergarten as well as to three social and emotional competencies associated with student learning. OSDE is considering using all or portions of the KOT for a pilot study of an Early Learning Inventory (ELI) to be administered in a sample of participating schools at kindergarten entry in the 2020-2021 academic year.

REL Southwest previously conducted an alignment of the KOT and another measure to OAS standards on the basis of preK objectives because OSDE was considering using one of those measures as an Early Learning Inventory (ELI) to provide a snapshot of what children know at kindergarten entry. OSDE has since decided that the primary purpose of the ELI will be to help teachers understand and support children's knowledge and skills at the beginning of kindergarten and throughout the kindergarten year. As such, the REL Southwest examined alignment of the KOT to the OAS standards on the basis of the kindergarten objectives.

This memo includes a summary of the standards, a description of the content alignment approach, the results of the content alignment, and suggested next steps.

Oklahoma Academic Standards

The OAS guide expectations about what Oklahoma students should know at the completion of each grade. The OAS offer the following eight English language arts (ELA) standards:

- Standard 1. Speaking and Listening
- Standard 2. Reading Foundations with Reading and Writing Process
- Standard 3. Critical Reading and Writing
- Standard 4. Vocabulary
- Standard 5. Language
- Standard 6. Research
- Standard 7. Multimodal Literacies
- Standard 8. Independent Reading and Writing

For standard 2, OAS delineates two separate components: Reading Foundations and Reading and Writing Process. Each component has its own description and objectives. The eight standards exist for all grades, but the specific objectives associated with them are tailored to the skill level of the students in each grade. For example, the Speaking and Listening standard indicates that by the end of preK, students are expected to be able to follow simple oral directions. However, by the end of kindergarten, they are expected to follow one- and two-step directions. Thus, as children advance through the grades, the expectations for what they should know build on what was mastered in the previous year.

In mathematics, the standards are centered on four content areas:

Standard 1. Number and Operations

Standard 2. Algebraic Reasoning and Algebra

Standard 3. Geometry and Measurement

Standard 4. Data and Probability

Again, these standards are for all grades, but the specific objectives associated with them are tailored to the developmental levels of the students in each grade. The mathematics standards build on the previous year's standards, expanding on what children are expected to know as they advance grades.

In addition to the OAS kindergarten ELA and mathematics, OSDE requested that the content alignment also include an assessment of how well the KOT addresses specific social and emotional competencies. Because the current OAS do not address social and emotional competencies, OSDE staff examined the social and emotional standards in four other states (Alabama, Illinois, Massachusetts, and Missouri). Based on this review, OSDE identified the following three competencies to include in the content alignment:

Competency 1. Knowledge of Self (self-awareness and self-control)

Competency 2. Knowledge of Others (mutual trust and cooperation)

Competency 3. Approaches to Learning (task persistence and problem solving)

These three social and emotional competencies and their associated objectives are identical to the competencies and objectives examined when looking at alignment to OAS prekindergarten. As such, the prior social and emotional content alignment results from the previously conducted alignment of the KOT to OAS standards on the basis of preK objectives are included again in this memo.

New Mexico Kindergarten Observation Tool

The KOT was developed by the New Mexico Public Education Department (NMPED). A goal of the tool is to provide kindergarten teachers with a tool to better understand children's knowledge and skills to inform curricular and pedagogical decisions for individual children and groups of children (Dahlke et al., 2017).¹ Developers also aimed to use the tool to assess children's knowledge and skills at the beginning of kindergarten statewide in aggregate and identify disparities in knowledge and skills across subgroups. The KOT was developed from an existing measure (the PreKindergarten Observation Tool)² and aligned with the New Mexico Content Standards³ and the Common Core State Standards.⁴ NMPED worked with research partners and other experts in a multiphase development process.

¹ The field test version of the KOT is publicly available within Appendix A of the applied research methods report: <https://files.eric.ed.gov/fulltext/ED578166.pdf>.

² The two measures (preK and kindergarten) together are called the Early Childhood Observation Tool.

³ See <https://webnew.ped.state.nm.us/bureaus/instructional-materials/new-mexico-content-standards/>.

⁴ See <https://www.corecommonstandards.com/common-core-state-standards/state-standards/new-mexico-standards/>

In December 2018, multiple birth to kindergarten early learning guidelines and rubrics were compiled into one document now known as the *New Mexico Early Learning Guidelines: Essential Indicators with Rubrics for Preschool Children – Birth to Kindergarten*. The KOT is part of the new compilation and it was this version of the KOT that was used in this content alignment process. The KOT assesses development in six content areas: physical development, health, and well-being; literacy; mathematics; scientific conceptual understanding; self, family, and community; and approaches to learning. To administer the KOT, teachers observe their students in a variety of regular classroom activities during the first 30 instructional days of kindergarten. After collecting evidence through observation, teachers rate each child on the 26 items within the six above-mentioned domains using the scoring rubric. Teachers use the scoring rubric to determine each child's development for each item. For example, when rating the first item within the literacy domain *demonstrates the ability to attend, understand, and follow increasingly complex directions*, the teacher decides whether the child is *making progress for kindergarten, accomplished for kindergarten*, or *making progress for Grade 1* using the behavioral criteria specified in the rubric. Thus, the teacher relies on evidence gathered from his or her observations of the child in the natural classroom environment to determine the child's progress in terms of each behavioral indicator.

Content alignment method

We implemented an adapted version of the Webb method (Martone & Sireci, 2009) to examine content alignment for this project. The process involved the following basic steps:

1. **Initial objective-level ratings.** Two early childhood content experts independently rated the alignment of each KOT assessment item with the OAS kindergarten objectives within each standard (and, with the OSDE identified social and emotional competencies for the KOT). Raters noted whether the item partially or fully covered the objectives' content and difficulty. (It is possible for a single assessment item to demonstrate alignment to more than one objective.)
2. **Confirming objective-level ratings.** Then the two raters conferred and discussed places of disagreement. In this way, the raters adjudicated disagreements and decided on a common rating. For the KOT, raters' initial agreement on the Kindergarten ELA and mathematics were 86 percent and 100 percent respectively. As previously stated, the social and emotional competencies were included in an earlier content alignment of the OAS prekindergarten. Therefore, it was not necessary to conduct any further content alignment. The results of the initial content alignment for social and emotional competencies are presented later in this memo.
3. **Standard-level findings.** Finally, we determined if each standard is adequately covered by calculating the Range of Knowledge. The Range of Knowledge is defined as the percentage of objectives within a standard that are partially or fully aligned with the items in an assessment. If 50 percent or more of the objectives within a standard are measured at least partially by the items within a measure, then the standard is considered to have content alignment.

Each standard of the OAS consists of several objectives, and alignment ratings were first assigned at the objective level.

For example, OAS Kindergarten ELA Standard 1 (Speaking and Listening) includes six objectives:

1. Students will actively listen and speak using agreed-upon rules with guidance and support.
2. Students will ask and answer questions to seek help, get information, or clarify about information presented orally or through text or other media with guidance and support.
3. Students will engage in collaborative discussions about appropriate topics and texts with peers and adults in small and large groups with guidance and support.
4. Students will follow one- and two-step directions.
5. Students will orally describe personal interests or tell stories, facing the audience and speaking clearly in complete sentences and following implicit rules for conversation, including taking turns and staying on topic.
6. Students will work respectfully with others with guidance and support.

Results

The results of the content alignment between the KOT and the OAS Kindergarten are shown in Tables 1 – 3. Each table lists the standards, the number of objectives within each standard covered by the assessment, the total number of objectives in the standard, and the Range of the Knowledge (the percentage of objectives covered) for each standard. The standards with a Range of Knowledge of 50 percent or higher demonstrate alignment and are flagged with an asterisk. The Appendix provides information about which specific objectives were not covered by each assessment.

New Mexico Kindergarten Observation Tool

The KOT aligns with the following seven of eight ELA standards (see table 1):

- Standard 1. Speaking and Listening
- Standard 2. Reading Foundations with Reading and Writing Process⁵
- Standard 3. Critical Reading and Writing
- Standard 4. Vocabulary
- Standard 5. Language
- Standard 6. Research
- Standard 8: Independent Reading and Writing

The KOT does not align with one of the eight ELA standards (see table 1):

- Standard 7: Multimodal Literacies

Table 1. Range of Knowledge for the KOT on the Kindergarten ELA standards

English Language Arts	Number of objectives covered	Total number of objectives	Range of Knowledge
Standard 1. Speaking and Listening Students will speak and listen effectively in a variety of situations including, but not limited to, responses to reading and writing.	6	6	100%*
Standard 2. Reading Foundations^a Students will develop foundational skills for future reading success by working with sounds, letters, and text. Includes phonological awareness, print concepts, phonics and word study, and fluency. Standard 2. Reading and Writing Process^a Students will use a variety of recursive reading and writing processes.	26	27	96%*
Standard 3. Critical Reading and Writing Students will apply critical thinking skills to reading and writing.	5	5	100%*
Standard 4. Vocabulary Students will expand their working vocabularies to effectively communicate and understand texts.	5	5	100%*
Standard 5. Language Students will apply knowledge of grammar and rhetorical style to reading and writing.	3	6	50%*

⁵ OAS labels both Reading Foundations and Reading and Writing Process as standard 2.

English Language Arts	Number of objectives covered	Total number of objectives	Range of Knowledge
Standard 6. Research Students will engage in inquiry to acquire, refine, and share knowledge.	2	4	50%*
Standard 7. Multimodal Literacies Students will acquire, refine, and share knowledge through a variety of written, oral, visual, digital, non-verbal, and interactive texts.	1	4	25%
Standard 8. Independent Reading and Writing Students will read and write for a variety of purposes including, but not limited to, academic and personal.	2	2	100%*

Note: Range of Knowledge is the percentage of objectives per standard that align with an item, either fully or partially.

^a OAS label both Reading Foundations and Reading and Writing Process as standard 2.

* The threshold for alignment is met; that is, at least 50 percent of the objectives within a standard are measured at least partially by the items within a measure.

Sources: Oklahoma State Department of Education (2016a); New Mexico Public Education Department, (2018, December); REL Southwest, (2019).

The KOT aligns with all four mathematics standards (see table 2):

Standard 1. Number and Operations

Standard 2. Algebraic Reasoning and Algebra

Standard 3. Geometry and Measurement

Standard 4. Data and Probability

Table 2. Range of Knowledge for the KOT on the Kindergarten mathematics standards

Mathematics	Number of objectives covered	Total number of objectives	Range of Knowledge
Standard 1. Number and Operations Understand the relationship between quantities and whole numbers; Develop conceptual fluency with addition and subtraction (up to 10) using objects and pictures; Understand the relationship between whole numbers and fractions through fair share; Identify coins by name.	9	11	82%*
Standard 2. Algebraic Reasoning and Algebra Duplicate patterns in a variety of contexts.	1	2	50%*
Standard 3. Geometry and Measurement Recognize and sort basic two- dimensional shapes and use them to represent real-world objects; Compare and order objects according to location and measurable attributes; Tell time as it relates to daily life.	8	11	73%*
Standard 4. Data and Probability Collect, organize, and interpret categorical data.	2	3	67%*

Note: Range of Knowledge is the percentage of objectives per standard that align with an item, either fully or partially.

* The threshold for alignment is met; that is, at least 50 percent of the objectives within a standard are measured at least partially by the items within a measure.

Sources: Oklahoma State Department of Education (2016a); New Mexico Public Education Department, (2018, December); REL Southwest, (2019).

The KOT aligns with the following two social and emotional competencies (see table 3):

Competency 2. Knowledge of Others (mutual trust and cooperation)

Competency 3. Approaches to Learning (task persistence and problem solving)

The KOT does not align with the following social and emotional competency (see table 3):

Competency 1. Knowledge of Self (self-awareness and self-control)

Table 3. Range of Knowledge for the KOT on the social and emotional competencies

Social and emotional competency	Number of objectives covered	Total number of objectives	Range of Knowledge
Competency 1. Knowledge of Self Exhibits self-awareness and personal responsibility; develops self-control and follows simple rules.	3	7	43%
Competency 2. Knowledge of Others Builds relationships of mutual trust and respect with others; works cooperatively with children and adults.	4	5	80%*
Competency 3. Approaches to Learning Displays persistence; uses problem-solving skills.	2	4	50%*

Note: Range of Knowledge is the percentage of objectives per standard that align with an item, either fully or partially.

* The threshold for alignment is met; that is, at least 50 percent of the objectives within a standard are measured at least partially by the items within a measure.

Sources: Oklahoma State Department of Education (2016a); New Mexico Public Education Department, (2018, December); REL Southwest, (2019).

Conclusions

Overall, the KOT is well-aligned to the OAS expectations for children’s knowledge and skills at the beginning of kindergarten. Using an adapted version of the Webb method (Martone & Sireci, 2009), we learned that all but one OAS kindergarten ELA standard and all but one social and emotional competency are aligned to New Mexico’s KOT. These results indicate that only minor adaptations to a few items on the KOT would be necessary if OSDE decides to conduct a pilot study using this instrument. Tables 4 – 6 provide summaries of all academic standards and competencies that were reviewed.

Table 4. Summary of KOT alignment to OAS Kindergarten ELA standards

OAS kindergarten ELA standards	KOT items with full or partial alignment to objective(s)		Content alignment
	Number of items	KOT item	
<p>Standard 1. Speaking and Listening Students will speak and listen effectively in a variety of situations including, but not limited to, responses to reading and writing.</p>	3	<p>5.2 Demonstrates the ability to attend, understand, and follow increasingly complex directions.</p> <p>5.3 Demonstrates increasing abilities to understand and use language by the number, variety, and complexity of words across varied purposes.</p> <p>6.1 Demonstrates the ability to effectively engage in a range of conversational skills in his or her home language (including ASL) for a variety of purposes relating to real experiences and different audiences.</p>	Yes
<p>Standard 2. Reading Foundations^a Students will develop foundational skills for future reading success by working with sounds, letters, and text. Includes phonological awareness, print concepts, phonics and word study, and fluency.</p> <p>Standard 2. Reading and Writing Process^a Students will use a variety of recursive reading and writing processes.</p>	10	<p>2.1a Develops manual coordination to use writing and crafting tools.</p> <p>5.3 Demonstrates increasing abilities to understand and use language by the number, variety, and complexity of words across varied purposes.</p> <p>6.1 Demonstrates the ability to effectively engage in a range of conversational skills in his or her home language (including ASL) for a variety of purposes relating to real experiences and different audiences.</p> <p>7.3a Shows an understanding of the basic concepts of print.</p> <p>7.3b Understands that print carries meaning.</p> <p>7.4a Recognizes and generates rhyming sounds in spoken language.</p> <p>7.4b Demonstrates understanding of spoken words, syllables, and sounds (phonemes).</p> <p>7.5a Shows an understanding of alphabetic knowledge.</p> <p>7.5b Knows and applies letter-sound correspondence and beginning sound-recognition skills.</p> <p>8.3 Understands how to apply the early stages of drawing and writing to convey meaning.</p>	Yes
<p>Standard 3. Critical Reading and Writing Students will apply critical thinking skills to reading and writing.</p>	6	<p>2.1a Develops manual coordination to use writing and crafting tools.</p> <p>5.3 Demonstrates increasing abilities to understand and use language by the number, variety, and complexity of words across varied purposes.</p> <p>6.1 Demonstrates the ability to effectively engage in a range of conversational skills in his or her home language (including ASL) for a variety of purposes relating to real experiences and different audiences.</p>	Yes

OAS kindergarten ELA standards	KOT items with full or partial alignment to objective(s)		Content alignment
	Number of items	KOT item	
Standard 3. Critical Reading and Writing <i>(continued)</i>	6	7.3a Shows an understanding of the basic concepts of print. 7.3b Understands that print carries meaning. 8.3 Understands how to apply the early stages of drawing and writing to convey meaning.	Yes
Standard 4. Vocabulary Students will expand their working vocabularies to effectively communicate and understand texts.	3	5.3 Demonstrates increasing abilities to understand and use language by the number, variety, and complexity of words across varied purposes. 6.1 Demonstrates the ability to effectively engage in a range of conversational skills in his or her home language (including ASL) for a variety of purposes relating to real experiences and different audiences. 8.3 Understands how to apply the early stages of drawing and writing to convey meaning.	Yes
Standard 5. Language Students will apply knowledge of grammar and rhetorical style to reading and writing.	2	5.3 Demonstrates increasing abilities to understand and use language by the number, variety, and complexity of words across varied purposes. 8.3 Understands how to apply the early stages of drawing and writing to convey meaning.	Yes
Standard 6. Research Students will engage in inquiry to acquire, refine, and share knowledge.	1	7.3b Understands that print carries meaning.	Yes
Standard 7. Multimodal Literacies Students will acquire, refine, and share knowledge through a variety of written, oral, visual, digital, non-verbal, and interactive texts.	1	7.3a Shows an understanding of the basic concepts of print.	No
Standard 8. Independent Reading and Writing Students will read and write for a variety of purposes including, but not limited to, academic and personal.	3	2.1a Develops manual coordination to use writing and crafting tools. 7.3b Understands that print carries meaning. 8.3 Understands how to apply the early stages of drawing and writing to convey meaning.	Yes

^a OAS label both Reading Foundations and Reading and Writing Process as standard 2.

Note: An item can align to multiple standards, therefore the total number of items in the table might exceed the total number of items on the KOT (26 items).

Sources: Oklahoma State Department of Education (2016a); New Mexico Public Education Department, (2018, December); REL Southwest, (2019).

Table 5. Summary of KOT alignment to OAS Kindergarten mathematics standards

OAS kindergarten mathematics standards	KOT items with full or partial alignment to objective(s)		Content alignment
	Number of items	KOT item	
Standard 1. Number and Operations Understand the relationship between quantities and whole numbers; develop conceptual fluency with addition and subtraction (up to 10) using objects and pictures; understand the relationship between whole numbers and fractions through fair share; identify coins by name.	4	9.1 Uses numbers and counting as means for solving problems and determining quantity. 9.3a Rote counts in sequence. 9.3b Names and identifies written numerals. 12.1 Sorts, classifies, and groups materials by one or more attributes.	Yes
Standard 2. Algebraic Reasoning and Algebra Duplicate patterns in a variety of contexts.	1	12.1 Sorts, classifies, and groups materials by one or more attributes.	Yes
Standard 3. Geometry and Measurement Recognize and sort basic two-dimensional shapes and use them to represent real-world objects; compare and order objects according to location and measurable attributes; tell time as it relates to daily life.	4	11.3 Demonstrates emerging knowledge of measurement. 12.1 Sorts, classifies, and groups materials by one or more attributes. 14.1 Uses senses to investigate characteristics and behaviors in the physical and natural worlds and begins to form explanations of observations and explorations. 16.1 Investigates, compares, and contrasts seasonal and weather changes in the immediate environment.	Yes
Standard 4. Data and Probability Collect, organize, and interpret categorical data.	2	14.1 Uses senses to investigate characteristics and behaviors in the physical and natural worlds and begins to form explanations of observations and explorations. 16.1 Investigates, compares, and contrasts seasonal and weather changes in the immediate environment.	Yes

Note: An item can align to multiple standards, therefore the total number of items in the table might exceed the total number of items on the KOT (26 items).

Sources: Oklahoma State Department of Education (2016a); New Mexico Public Education Department, (2018, December); REL Southwest, (2019).

Table 6. Summary of KOT alignment to social and emotional competencies

Social and emotional competencies	KOT full or partial alignment to objective(s)		Content alignment
	Number of items	KOT item	
Competency 1. Knowledge of Self Exhibits self-awareness and personal responsibility; develops self-control and follows simple rules.	3	18.1 Adapts behavior to fit different situations (for example, accepts transitions, follows daily routines, and/or incorporates cultural expectations). 19.1 Cares for personal and group possessions. 24.2 Develops increasing independence during activities, routines, and play.	No
Competency 2. Knowledge of Others Builds relationships of mutual trust and respect with others; works cooperatively with children and adults.	3	20.1 Plays and interacts with various children, sharing experiences and ideas with others. 20.2 Uses and accepts negotiations, compromise, and discussion to resolve conflicts. 21.2 Accepts guidance and direction from classroom and school personnel and seeks their support when needed.	Yes
Competency 3. Approaches to Learning Displays persistence; uses problem-solving skills.	1	27.1 Focuses and completes a variety of tasks, activities, projects and experiences.	Yes

Note: An item can align to multiple standards, therefore the total number of items in the table might exceed the total number of items on the KOT (26 items).

Sources: Oklahoma State Department of Education (2016a); New Mexico Public Education Department, (2018, December); REL Southwest, (2019).

Considerations for next steps

OSDE would like to use the KOT for the pilot study to gather information about children across multiple domains (ELA, mathematics, and social and emotional competencies) to inform instruction and support student learning, with a focus on the whole child. With these considerations in mind and based on the content alignment, the following potential next steps are offered:

- 1. Proceed with plans to use the KOT with minimal adjustments for the ELI pilot study in Fall 2020.** The KOT is closely aligned to the OAS kindergarten. With minimal adjustments, the KOT could be used in its current version after obtaining permission from NMPED. One of these adjustments will be to update the KOT Essential Indicators rubrics to reference Oklahoma standards instead of New Mexico standards.
- 2. Develop supplemental items for the KOT.** In order to assess all of the OSDE priority objectives in the OAS kindergarten, OSDE may need to develop supplemental items to measure additional standards and objectives to which the KOT is not currently aligned (shown in appendix A) and use those supplemental items along with the KOT items in an updated rubric. Next steps are to examine the list of objectives that do not demonstrate alignment as well as consider which objectives are critical for teachers to have information about to tailor instruction to children's individual needs.

References

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Appendix

Table A1. Objectives not covered by the KOT on the Kindergarten ELA standards

Standard	Total number of objectives	Range of Knowledge	Objectives not covered
Standard 1. Speaking and Listening	6	100%*	
Standard 2. Reading Foundations with Reading and Writing Process ^a	27	96%*	<i>K.2.R.2 Students will discriminate between fiction and nonfiction/informational text with guidance and support.</i>
Standard 3. Critical Reading and Writing	5	100%*	
Standard 4. Vocabulary	5	100%*	
Standard 5. Language	6	50%*	<i>K.5.R.1 Students will begin to understand the function of grammar through exposure to conversations, read-alouds, and interactive reading.</i> <i>K.5.R.2 Students will recognize concrete objects as persons, places or things (i.e., nouns) with guidance and support.</i> <i>K.5.R.3 Students will recognize words as actions (i.e., verbs) with guidance and support.</i>
Standard 6. Research	4	50%*	<i>K.6.W.1 Students will generate topics of interest and decide if a friend, teacher, or expert can answer their questions with guidance and support.</i> <i>K.6.W.2 Students will find information from provided sources during group research with guidance and support.</i>
Standard 7. Multimodal Literacies	4	25%	<i>K.7.R.2 Students will explore how ideas and topics are depicted in a variety of media and formats.</i> <i>K.7.W.1 Students will use appropriate technology to communicate with others with guidance and support.</i> <i>K.7.W.2 Students will use appropriate props, images, or illustrations to support verbal communication.</i>
Standard 8. Independent Reading and Writing	2	100%*	

Note Range of Knowledge is the percentage of objectives per standard that align with an item, either fully or partially.

^aOAS label both Reading Foundations and Reading and Writing Process as standard 2.

*Threshold for good alignment met, that is, at least 50 percent of the objectives within a standard are measured at least partially by the items within a measure.

Source: Oklahoma State Department of Education (2016a); New Mexico Kindergarten Observation Tool (KOT), December 2018; Researchers' content analysis of these documents.

Table A2. Objectives not covered by the KOT on the Kindergarten mathematics standards

Standard	Total number of objectives	Range of Knowledge	Objectives not covered
Standard 1. Number and Operations	11	82%*	<i>K.N.1.4 Recognize without counting (subitize) the quantity of a small group of objects in organized and random arrangements up to 10.</i> <i>K.N.4.1 Identify pennies, nickels, dimes, and quarters by name.</i>
Standard 2. Algebraic Reasoning and Algebra	2	50%*	<i>K.A.1.2 Recognize, duplicate, complete, and extend repeating, shrinking and growing patterns involving shape, color, size, objects, sounds, movement, and other contexts.</i>
Standard 3. Geometry and Measurement	11	73%*	<i>K.GM.1.1 Recognize squares, circles, triangles, and rectangles.</i> <i>K.GM.1.4 Use smaller shapes to form a larger shape when there is an outline to follow.</i> <i>K.GM.1.5 Compose free-form shapes with blocks.</i>
Standard 4. Data and Probability	3	67%*	<i>K.D.1.2 Use categorical data to create real-object and picture graphs.</i>

Note: Range of Knowledge is the percentage of objectives per standard that align with an item, either fully or partially.

*Threshold for good alignment met, that is, at least 50 percent of the objectives within a standard are measured at least partially by the items within a measure.

Source: Oklahoma State Department of Education (2016b); New Mexico Kindergarten Observation Tool (KOT), December 2018; Researchers' content analysis of these documents.

Table A3. Objectives not covered by the KOT on the social and emotional competencies

Standard	Total number of objectives	Range of Knowledge	Objectives not covered
Competency 1. Knowledge of Self	7	43%	<i>SA.1 Shows respect for self.</i> <i>SA.2 Knows personal information.</i> <i>SA.4 Begins to accept the consequences of his or her own actions.</i> <i>SC.2 Expresses feelings through appropriate gestures, actions and language.</i>
Competency 2. Knowledge of Others	5	80%*	<i>BR.3 Uses courteous words and actions.</i>
Competency 3. Approaches to Learning	4	50%*	<i>DP.2 Copes with frustration.</i> <i>PS.2 Works with others to solve problems.</i>

Note: Range of Knowledge is the percentage of objectives per standard that align with an item, either fully or partially.

Note: SA stands for self-awareness. SC stands for self-control. BR stands for builds relationships. DP stands for displays persistence. PS stands for problem-solving.

*Threshold for good alignment met, that is, at least 50 percent of the objectives within a standard are measured at least partially by the items within a measure.

Source: Staff, Oklahoma State Department of Education, personal communication, December 20, 2018; New Mexico Kindergarten Observation Tool (KOT), December 2018; Researchers' content analysis of these documents.

Table A4. Standards and objectives by KOT item

KOT item (“essential indicator”)	Standard to which it demonstrates alignment	Objective to which it demonstrates alignment ^a
KOT physical development, health, and well-being items		
1.1 Coordination and Strength. Demonstrates body coordination and strength in activities such as climbing stairs with alternating feet, marching, running, jumping, hopping, dancing, riding tricycles and scooters.	na	na
2.1a Fine Motor Tools. Develops manual coordination to use writing and crafting tools.	ELA Standard 2: Reading Foundations ELA Standard 2: Reading and Writing Process ELA Standard 3: Critical Reading and Writing ELA Standard 8: Independent Reading and Writing	<i>K.2.PC.1 Students will correctly form letters to write their first and last name and most uppercase and lowercase letters correctly.</i> <i>K.2.W.1 Students will begin to develop first drafts by expressing themselves through drawing and emergent writing.</i> <i>K.3.W Students will use drawing, labeling, dictating, and writing to tell a story, share information, or express an opinion with guidance and support.</i> <i>K.8.W Students will express their ideas through a combination of drawing and emergent writing with guidance and support.</i>
KOT literacy items		
5.2 Follows Directions. Demonstrates the ability to attend, understand, and follow increasingly complex directions.	ELA Standard 1: Speaking and Listening	<i>K.1.R.1 Students will actively listen and speak using agreed-upon rules with guidance and support.</i> <i>K.1.R.4 Students will follow one- and two-step directions.</i> <i>K.1.W.2 Students will work respectfully with others with guidance and support.</i>
5.3 Vocabulary. Demonstrates increasing abilities to understand and use language by the number, variety, and complexity of words across varied purposes.	ELA Standard 1: Speaking and Listening ELA Standard 2: Reading Foundations ELA Standard 2: Reading and Writing Process ELA Standard 3: Critical Reading and Writing ELA Standard 4: Vocabulary ELA Standard 5: Language	<i>K.1.R.2 Students will ask and answer questions to seek help, get information, or clarify about information presented orally or through text or other media with guidance and support.</i> <i>K.1.W.1 Students will orally describe personal interests or tell stories, facing the audience and speaking clearly in complete sentences and following implicit rules for conversation, including taking turns and staying on topic.</i> <i>K.1.W.2 Students will work respectfully with others with guidance and support.</i> <i>K.2.PA.1 Students will distinguish spoken words in a sentence.</i> <i>K.2.F.2 Students will read common high-frequency grade-level words by sight (e.g., not, was, to, have, you, he, is, with, are).</i>

KOT item (“essential indicator”)	Standard to which it demonstrates alignment	Objective to which it demonstrates alignment ^a
<p>5.3 Vocabulary. <i>(continued)</i></p>	<p>ELA Standard 1: Speaking and Listening ELA Standard 2: Reading Foundations ELA Standard 2: Reading and Writing Process ELA Standard 3: Critical Reading and Writing ELA Standard 4: Vocabulary ELA Standard 5: Language</p>	<p><i>K.2.R.1 Students will retell or reenact major events from a read-aloud with guidance and support to recognize the main idea.</i></p> <p><i>K.2.W.3 Students will begin to edit first drafts using appropriate spacing between letters and words.</i></p> <p><i>K.3.R.2 Students will describe characters and setting in a story with guidance and support.</i></p> <p><i>K.3.R.3 Students will tell what is happening in a picture or illustration.</i></p> <p><i>K.3.R.4 Students will ask and answer basic questions (e.g., who, what, where, and when) about texts during shared reading or other text experiences with guidance and support.</i></p> <p><i>K.4.R.1 Students will acquire new academic, content-specific, grade-level vocabulary and relate new words to prior knowledge with guidance and support.</i></p> <p><i>K.4.R.2 Students will begin to develop an awareness of context clues through read-alouds and other text experiences.</i></p> <p><i>K.4.R.3 Students will name and sort pictures of objects into categories based on common attributes with guidance and support.</i></p> <p><i>K.4.W.1 Students will use new vocabulary to produce and expand complete sentences in shared language activities with guidance and support.</i></p> <p><i>K.4.W.2 Students will select appropriate language according to purpose with guidance and support.</i></p> <p><i>K.5.R.4 Students will group pictures and movement, and determine spatial and time relationships such as up, down, before, and after with guidance and support.</i></p>
<p>6.1 Conversational Ability. Demonstrates the ability to effectively engage in a range of conversational skills in his or her home language (including ASL) for a variety of purposes relating to real experiences and different audiences.</p>	<p>ELA Standard 1: Speaking and Listening ELA Standard 2: Reading and Writing Process ELA Standard 3: Critical Reading and Writing ELA Standard 4: Vocabulary</p>	<p><i>K.1.R.1 Students will actively listen and speak using agreed-upon rules with guidance and support.</i></p> <p><i>K.1.R.3 Students will engage in collaborative discussions about appropriate topics and texts with peers and adults in small and large groups with guidance and support.</i></p> <p><i>K.1.W.1 Students will orally describe personal interests or tell stories, facing the audience and speaking clearly in complete sentences and following implicit rules for conversation, including taking turns and staying on topic.</i></p> <p><i>K.1.W.2 Students will work respectfully with others with guidance and support.</i></p>

KOT item (“essential indicator”)	Standard to which it demonstrates alignment	Objective to which it demonstrates alignment ^a
<p>6.1 Conversational Ability. <i>(continued)</i></p>	<p>ELA Standard 1: Speaking and Listening ELA Standard 2: Reading and Writing Process ELA Standard 3: Critical Reading and Writing ELA Standard 4: Vocabulary</p>	<p><i>K.2.R.1 Students will retell or reenact major events from a read-aloud with guidance and support to recognize the main idea.</i> <i>K.3.R.2 Students will describe characters and setting in a story with guidance and support.</i> <i>K.3.R.3 Students will tell what is happening in a picture or illustration.</i> <i>K.3.R.4 Students will ask and answer basic questions (e.g., who, what, where, and when) about texts during shared reading or other text experiences with guidance and support.</i> <i>K.4.W.1 Students will use new vocabulary to produce and expand complete sentences in shared language activities with guidance and support.</i> <i>K.4.W.2 Students will select appropriate language according to purpose with guidance and support.</i></p>
<p>7.3a Concepts of Print. Shows an understanding of the basic concepts of print.</p>	<p>ELA Standard 2: Reading Foundations ELA Standard 2: Reading and Writing Process ELA Standard 3: Critical Reading and Writing ELA Standard 7: Multimodal Literacies</p>	<p><i>K.2.PC.2 Students will demonstrate their understanding that print carries a message by recognizing labels, signs, and other print in the environment.</i> <i>K.2.PC.3 Students will demonstrate correct book orientation and identify the title, title page, and the front and back covers of a book.</i> <i>K.2.PC.4 Students will recognize that written words are made up of letters and are separated by spaces.</i> <i>K.2.PC.5 Students will recognize that print moves from top to bottom, left to right, and front to back (does not have to be matched to voice).</i> <i>K.2.PC.6 Students will recognize the distinguishing features of a sentence. (e.g., capitalization of the first word, ending punctuation: period, exclamation mark, question mark) with guidance and support.</i> <i>K.2.W.3 Students will begin to edit first drafts using appropriate spacing between letters and words.</i> <i>K.3.R.1 Students will name the author and illustrator and explain the roles of each in a particular story.</i> <i>K.7.R.1 Students will recognize formats of print and digital text with guidance and support.</i></p>

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<p>7.3b Print Meaning. Understands that print carries meaning.</p>	<p>ELA Standard 2: Reading Foundations ELA Standard 2: Reading and Writing Process ELA Standard 3: Critical Reading and Writing ELA Standard 6: Research ELA Standard 8: Independent Reading and Writing</p>	<p><i>K.2.PC.2 Students will demonstrate their understanding that print carries a message by recognizing labels, signs, and other print in the environment.</i></p> <p><i>K.2.R.1 Students will retell or reenact major events from a read-aloud with guidance and support to recognize the main idea.</i></p> <p><i>K.2.R.3 Students will sequence the events/plot (i.e., beginning, middle, and end) of a story or text with guidance and support.</i></p> <p><i>K.3.R.2 Students will describe characters and setting in a story with guidance and support.</i></p> <p><i>K.3.R.3 Students will tell what is happening in a picture or illustration.</i></p> <p><i>K.3.R.4 Students will ask and answer basic questions (e.g., who, what, where, and when) about texts during shared reading or other text experiences with guidance and support</i></p> <p><i>K.6.R.1 Students will identify relevant pictures, charts, grade-appropriate texts, or people as sources of information on a topic of interest.</i></p> <p><i>K.6.R.2 Students will identify graphic features to understand a text including photos, illustrations, and titles to understand a text.</i></p> <p><i>K.8.R. Students will demonstrate interest in books during read-alouds and shared reading, and interact independently with books.</i></p>
<p>7.4a Rhyme. Recognizes and generates rhyming sounds in spoken language.</p>	<p>ELA Standard 2: Reading Foundations</p>	<p><i>K.2.PA.2 Students will recognize and produce pairs of rhyming words, and distinguish them from non-rhyming pairs.</i></p> <p><i>K.2.PA.5 Students will count, pronounce, blend, segment, and delete syllables in spoken words.</i></p> <p><i>K.2.PA.6 Students will blend and segment onset and rime in one-syllable spoken words (e.g., blending: /ch/+at =chat; segmenting: cat = /c/+at).</i></p> <p><i>K.2.PA.9 Students will add, delete, and substitute phonemes in one syllable spoken words (e.g., add /c/ to the beginning of “at” to say “cat”; remove the /p/ from “pin” to say “in”; change the /d/ in “dog” to /f/ /r/ to say “frog”).</i></p>
<p>7.4b Phonological Awareness. Demonstrates understanding of spoken words, syllables, and sounds (phonemes).</p>	<p>ELA Standard 2: Reading Foundations</p>	<p><i>K.2.PA.2 Students will recognize and produce pairs of rhyming words, and distinguish them from non-rhyming pairs.</i></p> <p><i>K.2.PA.3 Students will isolate and pronounce the same initial sounds in a set of spoken words (i.e., alliteration) (e.g., “the puppy pounces”).</i></p> <p><i>K.2.PA.4 Students will recognize the short or long vowel sound in one syllable words.</i></p>

KOT item (“essential indicator”)	Standard to which it demonstrates alignment	Objective to which it demonstrates alignment ^a
<p>7.4b Phonological Awareness. <i>(continued)</i></p>	<p>ELA Standard 2: Reading Foundations</p>	<p><i>K.2.PA.5 Students will count, pronounce, blend, segment, and delete syllables in spoken words.</i></p> <p><i>K.2.PA.6 Students will blend and segment onset and rime in one syllable spoken words (e.g., blending: /ch/ + at = chat; segmenting: cat = /c/+ at).</i></p> <p><i>K.2.PA.7 Students will blend phonemes to form one syllable spoken words with 3 to 5 phonemes (e.g., /f/ /a/ /s/ /t/= fast)</i></p> <p><i>K.2.PA.8 Students will segment phonemes in one syllable spoken words with 3 to 5 phonemes (e.g., “fast” = /f/ /a/ /s/ /t/).</i></p> <p><i>K.2.PA.9 Students will add, delete, and substitute phonemes in one syllable spoken words (e.g., “add /c/ to the beginning of “at” to say “cat;” “remove the /p/ from “pin,” to say “in;” “change the /d/ in “dog” to /f/ /r/ to say “frog”).</i></p> <p><i>K.2.PWS.3 Students will produce the primary or most common sound for each consonant and short and long vowel sounds (e.g., c = /k/, c = /s/, s = /s/, s = /z/, x = /ks/, x = /z/).</i></p> <p><i>K.2.PWS.4 Students will blend letter sounds to decode simple vowel/consonant (VC) and consonant/vowel/consonant (CVC) words (e.g., VC words =at, in, up; CVC words = pat, hen, lot).</i></p>
<p>7.5a Letter Naming. Shows an understanding of alphabetic knowledge.</p>	<p>ELA Standard 2: Reading Foundations</p>	<p><i>K.2.PC.1 Students will correctly form letters to write their first and last name and most uppercase and lowercase letters correctly.</i></p> <p><i>K.2.PWS.1 Students will name all uppercase and lowercase letters.</i></p> <p><i>K.2.PWS.2 Students will sequence the letters of the alphabet.</i></p> <p><i>K.2.F.1 Students will read first and last name in print.</i></p>
<p>7.5b Letter-Sound Correspondence. Knows and applies letter-sound correspondence and beginning sound-recognition skills.</p>	<p>ELA Standard 2: Reading Foundations</p>	<p><i>K.2.PWS.3 Students will produce the primary or most common sound for each consonant, short and long vowel sounds (e.g., c = /k/, c = /s/, s = /s/, s = /z/, x = /ks/, x = /z/).</i></p> <p><i>K.2.PWS.4 Students will blend letter sounds to decode simple vowel/consonant (VC) and consonant/vowel/consonant (CVC) words (e.g., VC words=at, in, up; CVC words=pat, hen, lot).</i></p>

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<p>8.3 Writing. Understands how to apply the early stages of drawing and writing to convey meaning.</p>	<p>ELA Standard 2: Reading Foundations ELA Standard 2: Reading and Writing Process ELA Standard 3: Critical Reading and Writing ELA Standard 4: Vocabulary ELA Standard 5: Language ELA Standard 8: Independent Reading and Writing</p>	<p><i>K.2.PC.1 Students will correctly form letters to write their first and last name and most uppercase and lowercase letters correctly.</i> <i>K.2.W.1 Students will begin to develop first drafts by expressing themselves through drawing and emergent writing.</i> <i>K.2.W.2 Students will begin to develop first drafts by sequencing the action or details of stories/texts.</i> <i>K.2.W.3 Students will begin to edit first drafts using appropriate spacing between letters and words.</i> <i>K.3.W Students will use drawing, labeling, dictating, and writing to tell a story, share information, or express an opinion with guidance and support.</i> <i>K.4.W.1 Students will use new vocabulary to produce and expand complete sentences in shared language activities with guidance and support.</i> <i>K.4.W.2 Students will select appropriate language according to purpose with guidance and support.</i> <i>K.5.W.1 Students will capitalize, with guidance and support:</i> - their first name - the pronoun “I” <i>K.5.W.2 Students will begin to compose simple sentences that begin with a capital letter and end with a period or question mark.</i> <i>K.8.W Students will express their ideas through a combination of drawing and emergent writing with guidance and support.</i></p>
<p>KOT mathematics items</p>		
<p>9.1 One-to-one correspondence. Uses numbers and counting as means for solving problems and determining quantity.</p>	<p>Math Standard 1. Number and Operations</p>	<p><i>K.N.1.2 Recognize that a number can be used to represent how many objects are in a set up to 10.</i> <i>K.N.1.8 Using the words more than, less than, or equal to compare and order whole numbers, with and without objects, from 0 to 10.</i> <i>K.N.2.1 Compose and decompose numbers up to 10 with objects and pictures.</i> <i>K.N.3.1 Distribute equally a set of objects into at least two smaller equal sets.</i></p>
<p>9.3a Rote counting. Rote counts in sequence.</p>	<p>Math Standard 1. Number and Operations</p>	<p><i>K.N.1.1 Count aloud forward in sequence to 100 by 1’s and 10’s.</i> <i>K.N.1.3 Use ordinal numbers to represent the position of an object in a sequence up to 10.</i> <i>K.N.1.5 Count forward, with and without objects, from any given number up to 10.</i> <i>K.N.1.7 Find a number that is 1 more or 1 less than a given number up to 10.</i></p>

KOT item (“essential indicator”)	Standard to which it demonstrates alignment	Objective to which it demonstrates alignment ^a
9.3b Numerals. Names and identifies written numerals.	Math Standard 1. Number and Operations	<i>K.N.1.6 Read, write, discuss, and represent whole numbers from 0 to at least 10. Representations may include numerals, pictures, real objects and picture graphs, spoken words, and manipulatives.</i>
11.3 Measurement. Demonstrates emerging knowledge of measurement.	Math Standard 3. Geometry and Measurement	<i>K.GM.1.2 Sort two-dimensional objects using characteristics such as shape, size, color, and thickness.</i> <i>K.GM.2.1 Use words to compare objects according to length, size, weight, position, and location.</i> <i>K.GM.2.2 Order up to 6 objects using measurable attributes, such as length and weight.</i> <i>K.GM.2.4 Compare the number of objects needed to fill two different containers.</i>
12.1 Sorting. Sorts, classifies, and groups materials by one or more attributes.	Math Standard 1. Number and Operations Math Standard 2. Algebraic Reasoning and Algebra Math Standard 3. Geometry and Measurement	<i>K.N.1.8 Using the words more than, less than or equal to compare and order whole numbers, with and without objects, from 0 to 10</i> <i>K.A.1.1 Sort and group up to 10 objects into a set based upon characteristics such as color, size, and shape. Explain verbally what the objects have in common.</i> <i>K.GM.1.2 Sort two-dimensional objects using characteristics such as shape, size, color, and thickness</i> <i>K.GM.1.3 Identify attributes of two-dimensional shapes using informal and formal geometric language interchangeably</i> <i>K.GM.2.2 Order up to 6 objects using measurable attributes, such as length and weight.</i> <i>K.GM.2.3 Sort objects into sets by more than one attribute.</i>
KOT scientific conceptual understanding items		
14.1 Investigations. Uses senses to investigate characteristics and behaviors in the physical and natural worlds and begins to form explanations of observations and explorations.	Math Standard 3. Geometry and Measurement Math Standard 4. Data and Probability	<i>K.GM.1.6 Use basic shapes and spatial reasoning to represent objects in the real world.</i> <i>K.D.1.1 Collect and sort information about objects and events in the environment.</i> <i>K.D.1.3 Draw conclusions from real-object and picture graphs</i>
16.1 Earth science. Investigates, compares, and contrasts seasonal and weather changes in the immediate environment.	Math Standard 3. Geometry and Measurement Math Standard 4. Data and Probability	<i>K.GM.3.1 Develop an awareness of simple time concepts using words such as yesterday, today, tomorrow, morning, afternoon, and night within his/her daily life.</i> <i>K.D.1.1 Collect and sort information about objects and events in the environment.</i>

KOT item (“essential indicator”)	Standard to which it demonstrates alignment	Objective to which it demonstrates alignment ^a
KOT self, family, and community items		
18.1 Self-control. Adapts behavior to fit different situations (for example, accepts transitions, follows daily routines, and/or incorporates cultural expectations).	SE Standard 1: Knowledge of Self	<i>SC.1 Accepts transitions and follows daily routines.</i> <i>SC.3 Adapts to different environments.</i>
19.1 Cares for possessions. Cares for personal and group possessions.	SE Standard 1: Knowledge of Self	<i>SA.3 Cares for personal and group possessions.</i>
20.1 Cooperative play. Plays and interacts with various children, sharing experiences and ideas with others.	SE Standard 2: Knowledge of Others	<i>BR.1 Respects the rights of others.</i> <i>WC.1 Participates successfully as a member of a group.</i>
20.2 Social problem solving. Uses and accepts negotiations, compromise, and discussion to resolve conflicts.	SE Standard 2: Knowledge of Others	<i>WC.2 Resolves conflicts with others.</i>
21.2 Guidance and support. Accepts guidance and direction from classroom and school personnel and seeks their support when needed.	SE Standard 2: Knowledge of Others	<i>BR.2 Respects adult leadership.</i>
KOT approaches to learning items		
24.2 Independence. Develops increasing independence during activities, routines, and play.	SE Standard 1: Knowledge of Self	<i>SC.1 Accepts transitions and follows daily routines.</i>
27.1 Focus. Focuses and completes a variety of tasks, activities, projects and experiences.	SE Standard 3: Approaches to Learning	<i>DP.1 Sustains attention to a task or activity appropriate for age.</i> <i>PS.1 Recognizes problems.</i>

^a Objectives can be associated with its affiliated standard using the numbering and lettering scheme in the objective identifier.

Note: SA stands for self-awareness. SC stands for self-control. BR stands for builds relationships. WC stands for works cooperatively. DP stands for displays persistence. PS stands for problem-solving.

Source: Oklahoma State Department of Education (2016a, b); Staff, Oklahoma State Department of Education, personal communication, December 20, 2018; New Mexico Kindergarten Observation Tool (KOT), December 2018; Researchers’ content analysis of these documents.