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Connecticut Standards Alignment: Preschool Curriculum Framework, Kindergarten Science Curriculum Standards, and Kindergarten Social Studies Curriculum Framework

Final Report

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Executive Summary

Specifying what children are expected to know and do is widely recognized as a critical component of an effective educational system. Equally important is that these expectations form an aligned learning progression from one year to the next, including the age span from birth to kindergarten. Connecticut commissioned a study to examine the content and alignment of several of the state's standards for young children. The study looked at the alignment between the Preschool Curriculum Framework, the Kindergarten Science Curriculum Standards, and the Kindergarten Social Studies Curriculum Framework and standards for younger children.

To examine the content and alignment of the various sets of standards, 28 knowledgeable early childhood and kindergarten professionals from around the state met for 2 days. After being trained in the rating system, the participants coded the grade-level appropriateness and the content of the most specific statements of expectations in the standards document. The study referred to these as "objectives." For each objective, participants identified whether there was a corresponding objective in the standards for younger children, and, if so, rated the nature, relative difficulty, and clarity of the linkage. The review of standards was conducted first by pairs and then in teams of five or six. The teams were given the results of the pair work for use in their decision-making. Findings were based on team ratings with the exception of the content analysis findings, which were based on the work of the pairs.

Findings

Nearly all of the objectives were judged to be grade-level appropriate. Content analysis was completed by pairs of raters who selected up to four codes to describe the content of each objective in the standards. The findings for each standards document were as follows:

- *Preschool Curriculum Framework.* A total of 143 content codes were assigned across the 77 objectives, suggesting the raters saw multiple content areas in the objectives. The content areas with the strongest coverage across the objectives were social-emotional development, language development, and physical development, which correspond to major areas in the Preschool Curriculum Framework. Within each content area, some subareas received more coverage than others.

- *Kindergarten Science Curriculum Standards*. A total of 82 codes were assigned across the 54 objectives. The science objectives were dispersed across the content areas. The content areas with the strongest coverage across the objectives were life science, followed by earth and space science. Only one objective addressed science and technology, and none addressed history of science. Within each content area, one of the subareas received more coverage than the others.
- *Kindergarten Social Studies Curriculum Framework*. A total of 66 codes were assigned across the 31 objectives. The content area with the strongest coverage across the objectives was learning and innovation skills, followed by information, media, and technology skills. Within learning and innovation skills, most of the objectives addressed critical thinking and problem solving. The content of the objectives addressing information, media, and technology was fairly evenly split across the three subareas.

Alignment was examined by identifying objectives in the standards for younger children that addressed content similar to each objective in the standards for older children. The percentage of objectives in the standards for older children with related objectives in the standards for younger children varied considerably across the three standards documents and by the set of comparison standards for younger children:

- **97%** of the objectives in the Kindergarten Social Studies Curriculum Framework had a corresponding objective in the PreKindergarten Social Studies Curriculum Framework;
- **83%** of the objectives in the Kindergarten Science Curriculum Standards had a corresponding objective in the PreKindergarten Science Curriculum Standards;
- **54%** of the objectives in the Kindergarten Science Curriculum Standards had a corresponding objective in the Preschool Curriculum Framework;
- **53%** of the objectives in the Kindergarten Social Studies Curriculum Framework had a corresponding objective in the Preschool Curriculum Framework; and
- **49%** of the objectives in the Preschool Curriculum Framework had a corresponding objective in the 24- to 36-month Guidelines for the Development of Infant and Toddler Early Learning.

There was a clear linkage between most of the objectives judged to be aligned across the two sets of standards with the exception of the comparison between the Kindergarten Social Studies Curriculum Framework and Preschool Curriculum Framework. For this comparison, only 53% of objectives were aligned and of those, only half were judged a clear linkage. Finally, for all of the comparisons, most of the aligned objectives in each set of standards for the older children were considered more difficult than the corresponding objectives in each set of standards for the younger children.

Recommendations

To assist the state in its work toward a revised set of standards, the following recommendations are made with regard to the content and alignment issues addressed by this study:

- Develop a single categorization structure including labeling conventions that can be applied to standards documents across the entire birth through kindergarten span. This categorization system does not need to have identical main and subcategories at every age or grade level but it does need to show the relationship between categories at each age group. The uniqueness of the different age groups and the academic subject areas must be acknowledged and addressed appropriately, but uniqueness can be addressed within a cohesive structure.
- Approach revisions to any of the standards documents with a comprehensive framework for content analysis and continually map back to that framework. The content codes used in this study are examples of such frameworks, but other frameworks that address essential content areas also would be suitable.
- As decisions are made about what content to include or exclude and at what depth, repeatedly check to ensure that the resulting distribution of standards matches the state's vision of what children should know and do. For young children, that vision should be informed by the literature on the recommended content of early childhood standards.
- To the extent possible, develop or revise standards for adjacent age groups at the same time. Iteratively map the content from one age or grade level to the next, making intentional decisions about the connections across the age or grade levels. Good vertical alignment does not require that every objective have a parallel objective at the higher or lower age/grade level, but the foundations for all of the standards for older children should exist in the objectives for the younger children. Objectives for younger children might not have related objectives for older children when development in an objective is considered completed, requiring no further attention in later years. Developing separate objectives for three-year-olds and four-year-olds and gearing the objectives for the end of each age period will make it easier to construct and validate a smooth progression from one year to the next.

Chapter 1. Introduction

The state of Connecticut conducted a series of activities to examine alignment between sets of standards developed for children in kindergarten and younger. The state contracted with SRI International to examine the vertical alignment across five pairs of standards, including the following:

- The Preschool Curriculum Framework with the Guidelines for the Development of Infant and Toddler Early Learning
- The Kindergarten Science Curriculum Standards with the Prekindergarten Science Curriculum Standards and the Preschool Curriculum Framework
- The Kindergarten Social Studies Curriculum Framework with the Prekindergarten Social Studies Curriculum Framework and the Preschool Curriculum Framework.

This report describes the process that was used to examine alignment and what was learned through the process.

Questions Addressed by the Alignment Study

Martone and Sireci (2009) define alignment as the "means of understanding the degree to which different components of an educational system work together to support a common goal" (p. 1355). Referring specifically to assessment and standards, Webb (2002) noted that alignment refers to the "degree to which expectations and assessments are in agreement and serve in conjunction with one another to guide the system toward students learning what they are expected to know and do" (p. 1). Discussions of standards and alignment refer to two kinds of alignment: *vertical* and *horizontal*. Vertical alignment refers to the alignment of standards from one age year or grade level to the next and horizontal alignment refers to alignment across standards, assessment, curriculum, and instruction within an age or grade level. The goal is to have a system with both vertical and horizontal alignment, with standards aligning smoothly from one year to the next and with key components within a year aligned with each other. The findings in this report address activities undertaken to examine vertical alignment across several sets of standards.

Key concepts in examining standards are the *breadth* and *depth* of the standards, where breadth refers to the number of different topics covered and depth refers to the emphasis or intensity with which each topic is addressed. Studies that look across standards examine how different sets of standards compare relative to breadth and depth. Another important concept in alignment studies is the cognitive demand or cognitive complexity of the standards. For example, recalling information is less cognitively demanding than being asked to apply it. Alignment requires matching on both content and cognitive complexity; or, in the case of alignment across grade levels, good alignment requires an appropriate level of increase in cognitive demand.

A critical consideration for any effort looking at alignment across grade levels is the developmental or learning progression embedded in the performance indicators (or grade-level expectations). Obviously, it is important that the indicators at higher ages or grade levels be more cognitively challenging than those at younger ages or lower levels, but it also is important

that the sequencing be smooth, with the learning progression showing reasonable expectations for growth from one year to the next. Furthermore, for young children, it is critical that the placement of the indicators be developmentally appropriate at each age or grade level. Failure to attend to sequencing and developmental appropriateness has led to critiques of standards that push academic content into the preschool years because the standards for K–12 have already been determined and the only option for early childhood is how to build downward from them (e.g., Meisels, 2011).

One challenge in looking across standards documents is that the documents are organized into a different number of levels and use different names for those levels. For example, the Connecticut Preschool Framework uses Domains, Content Standards, and Performance Standards (Indicators), whereas the Science Curriculum Standards use Grade-Level Concepts and Grade-Level Expectations. For the alignment study, the finest level within the document was the focus. For ease of discussion, these are referred to as "objectives," regardless of how they are labeled in the document. Also, for ease of discussion, the objectives for the older age/grade level in each pairing was referred to as the "target" and the objectives from the younger age/grade level was described as the "companion" objectives.

The alignment study was focused on three sets of "target" documents: the Preschool Curriculum Framework, the Kindergarten Science Curriculum Standards, and the Kindergarten Social Studies Curriculum Framework. The following questions were addressed for each of the documents.

Content of the standards:

- What is the content of the target objectives?
- Is the target objective developmentally appropriate for the age/grade level?
- What are the breadth and depth of the content in each document and how do these compare across documents?

Articulation across ages and grades (vertical alignment):

- Is there an objective in the companion set that addresses content similar to that in the target document?
- If yes, what is the nature of the linkage?
- Is the objective at the higher age or grade-level topic more cognitively complex than the objective at the lower age/grade level?
- Where are the gaps and inconsistencies across each pair of standards?

Methodology

The study questions were answered by convening a two-day alignment institute attended by 28 experienced Connecticut early childhood professionals including infant toddler specialists, preschool and kindergarten teachers, and early childhood curriculum specialists. The group averaged over 13 years of experience working with children birth through 5 years, with a range of 1 to 36 years of experience. More specifically, 61% reported experience with the birth-to-three age group, 93% reported experience with 3 to 5 year olds, and 50% reported experience with kindergarten.

All participants were trained in the alignment methodology on the morning of the first day of the institute. The training addressed the following topics: the purpose of the institute; definitions of key terms; overview of the alignment process; instructions on each of the alignment items and the codes to be used in the process; and practice using the codes. Slides from the training institute are included in Appendix A. For the remainder of the institute, the participants applied the process to 5 sets of comparisons:

- Kindergarten Science Curriculum Standards compared to Prekindergarten Science Curriculum Standards
- Kindergarten Science Curriculum Standards compared to Preschool Curriculum Framework
- Kindergarten Social Studies Curriculum Framework compared to Prekindergarten Social Studies Curriculum Framework
- Kindergarten Social Studies Curriculum Framework compared to Preschool Curriculum Framework
- Preschool Curriculum Framework compared to the Guidelines for the Development of Infant Toddler Early Learning

The first document, the standards for the older children, was referred to as the target document and the second was the companion document.

A two-step process was used to examine the alignment between the target and companion documents. For the first step, the 28 participants worked in 14 pairs with pair assignments developed by research team. The pairs worked independently to complete all of the alignment items for the target documents. In the second step, the participants were divided into 6 teams.

The teams were given the results from the 14 pairs and independently completed the same alignment items. The only differences between steps 1 and 2 were: (1) step 1 was competed in pairs and the work for step 2 was completed in teams, and (2) the teams had available to them how the pairs had coded each of the alignment items. All pairs rated the Social Studies Curriculum Framework objectives but only half the pairs rated the other two target documents (Preschool Curriculum Framework and Kindergarten Science Curriculum Standards). The pair assignments for these comparisons were constructed to include individuals with expertise in the relevant age group. All teams reviewed all of the standards. Teams were constructed by the research team so that each team included expertise across the birth to five age span.

For each of the five comparisons between target and companion documents, the pairs and teams were asked to look at each target objective and make decisions about the content of the

target objective[1], the developmental appropriateness of the target objective, and the relationship of the target objective to the objectives the companion document. They recorded their decisions in an Excel ™ spreadsheet. Decisions that related only to the target objectives, which were the developmental appropriateness of the target objective and the content of the target objective, were addressed only once for each target document.

For each target objective, pairs and teams decided if any objective in the companion document addressed content related to the target objective. If they did not find any objective in the companion document that addressed content related to the target objective, they proceeded to the next target objective. If they found an objective in the companion set that addressed content related to the target objective, they rated the quality of the content linkage, the nature of the content linkage, and the relative difficulty of the target compared to the companion (Appendix A contains more information about these items. See “Basic Codes,” page A-13).

As the alignment institute progressed, it became clear that the teams would not be able to work through all of the standards in the allotted time. A few adjustments were made to maximize the data available such as asking the some teams to work from the back to the front of the target objectives. Teams worked through the comparisons at their own pace and some teams were not able to finish by the end of the second day. In the comparison of the Kindergarten Science Framework to Preschool Curriculum Framework, some teams did not finish all of the kindergarten objectives and one team did not finish any. For the comparison of the Preschool Curriculum Framework to the Infant Toddler Foundations, one team did not complete the ratings for the nature, clarity and difficulty of the alignment.

With the exception of the content analyses, all findings in this report are based on the responses given by the teams. Only responses with a high degree of agreement across teams are reported to ensure that the findings represent strong agreement. Table 1.1 summarizes the criteria used for agreement for each of the items. If criteria for agreement were not met, the data are reported as “Consensus not reached.” When there were not enough teams that rated the item, the data are reported as “Not enough ratings” which was a rare occurrence. Slightly different standards for agreement were adopted for the two comparisons that were not rated by the full contingent of teams.

An evaluation conducted at the end of the two days showed that the participants believed they were well trained (average rating of 3.3 out of 4) and found it easy to work in pairs (3.3 out of 4) and teams (3.4 out of 4). With one exception, they reported being comfortable with each of the items they were asked to code. All ratings were 3.0 or higher out of 4 except for the nature of the linkage between the target and the companion which was rated 2.4. Appendix C contains more information about the evaluation findings. Despite their discomfort with this code, there were very few instances for this or any of the items, where the majority of the teams did not independently reach the same decision.

[1] Due to limited time, decisions about content were only made by the pairs.

Table 1.1 Agreement Criteria for Inclusion in Findings

Item	Number that needed to agree on the same response
Content	2 or more pairs
Appropriateness for age/grade	4 or more of 6 teams
Companion objective with similar content	3 or more out of 5 teams* 4 or more of 6 teams
Clarity, nature of linkage, relative difficulty for target objectives with an identified companion**	3 out of 3*** 3 or more out of 4 3 or more out or 5 4 or more out of 6

* Only applies to the Kindergarten Science standards compared to Preschool Curriculum Framework where not all teams were able to finish.

** These items were analyzed when there was a companion objective selected by 4 or more teams so the number of teams ranged from 4 to 6 for these items.

*** Only applies to Kindergarten Science compared to Preschool Curriculum Framework and Preschool Curriculum Framework compared to Infant Toddler Guidelines where not all teams were able to finish.

Contents of the Report

Four chapters follow this introductory chapter. **Chapter 2** addresses the Preschool Curriculum Framework and presents the results of aligning the Preschool Curriculum Framework with the Guidelines for the Development of Infant and Toddler Early Learning. **Chapter 3** presents the findings for the alignment of the Kindergarten Science Curriculum Standards with the Prekindergarten Science Curriculum Standards and with the Preschool Curriculum Framework. **Chapter 4** presents the findings for aligning the Kindergarten Social Studies Framework with the Prekindergarten Social Studies Framework and the Preschool Curriculum Framework. The last chapter, **Chapter 5**, summarizes the findings across the five comparisons and presents recommendations. The appendices provide supplemental material including additional details about the methodology and the materials from the institute (Appendix A), supplemental tables showing the findings reported in chapters 2 through 4 for each objective (Appendix B) and additional findings from the evaluation of the institute (Appendix C).

Chapter 2. Preschool Curriculum Framework

The Preschool Curriculum Framework addresses four domains of development: personal and social development, physical development, cognitive development (which has two subdomains), and creative expression/aesthetic development. Within the domains, there are content standards and performance indicators. The introduction to the framework notes that there is interdependence among the domains and that the content standards and performance indicators reflect the overlap across the domains. Table 2.1 presents the number of content standards and performance indicators for each domain.

Table 2.1 Preschool Curriculum Framework: Number of Content Standards and Performance Indicators by Domain

Domain	Content Standards	Performance Indicators
Personal and social development	7	20
Physical development	5	12
Cognitive development		
Logical and mathematical thinking	3	19
Language and literacy	4	15
Creative expression/aesthetic development	5	11
Total Number	24	77

The alignment study focused on the 77 performance indicators (called objectives for the purposes of the study). The Preschool Curriculum Framework presents the indicator along with additional explanation about the indicator. For example, in the area of Personal and Social Development, the first indicator reads as follows:

Educational experiences will assure that preschool children will:

- **Engage in activities that they select or create and demonstrate self-direction in use of materials.**

  Children will make independent decisions about what learning center or materials to work with and will get and use the materials they need.

The participants in the alignment institute were given both the bolded description of the indicator ("Engage in activities…") along with the elaboration ("Children will make…") but were instructed to focus on the later piece of the indicator.

Appropriateness and Content

All 77 objectives were considered to be appropriate for preschool children. Table 2.2 shows the content areas of the Preschool Curriculum Framework objectives. Raters could assign up to four content areas per objective recognizing that some of the objectives might address multiple areas. Content areas were assigned at the finest level shown in the table (e.g., "Large muscles"). A total of 143 content codes were assigned across the 77 objectives or nearly 2 per

objective on average, suggesting the raters did see multiple content areas in the objectives. The breadth analysis shows that domains with the strongest coverage across the objectives were social-emotional development, language development, and physical development which correspond to major domains in the Preschool Curriculum Framework. Of the codes assigned, 18%, 16%, and 14%, respectively, were in these areas. The breadth analyses shows that in nearly all of the domains, some content received greater emphasis than others. A caution in interpreting the depth and breadth percentages is that the percentages are totally determined by the categorization system used. If, for example, one conceives of literacy and language as one domain, then this area would have had the greatest concentration of objectives. The study intentionally used a relatively fine-grained coding system because it is always possible to collapse across the finer areas to examine content at a less granular level. Table B-2.1 in Appendix B shows the content area(s) assigned to each of the objectives in the Preschool Curriculum Framework.

Table 2.2 Content Areas Addressed in the Preschool Curriculum Framework

Content Area		Objectives Addressing This Content		Breadth	Depth
		Number	% of All Codes (*n* = 143)	% of Codes Assigned to Domain	% Within Domain
pk1	**Physical Development**	**20**		**14.0**	
pk1.1	Large muscles	3	2.1		15.0
pk1.2	Small muscles	3	2.1		15.0
pk1.3	Coordination	7	4.9		35.0
pk1.4	Body awareness	3	2.1		15.0
pk1.5	Balance	3	2.1		15.0
pk1.6	Stamina	0	0.0		0.0
pk1.7	Fitness, exercise	1	0.7		5.0
pk1.8	Height, weight	0	0.0		0.0
pk1.9	Growth	0	0.0		0.0
pk2	**Health**	**1**		**0.7**	
pk2.1	Hygiene skills	1	0.7		NA
pk3	**Nutrition**	**1**		**0.7**	
pk3.1	Nutritious foods	1	0.7		NA
pk4	**Safety**	**0**		**0.0**	
pk4.1	Safety rules	0	0.0		NA
pk4.2	Harmful situations	0	0.0		
pk5	**Self-Care**	**2**		**1.4**	
pk5.1	Personal care routines	2	1.4		NA
pk6	**Social and Emotional Development**	**26**		**18.2**	
pk6.1	Interactions with adult	2	1.4		7.7
pk6.2	Interactions with peers	5	3.5		19.2
pk6.3	Social problem solving	2	1.4		7.7
pk6.4	Self-concept	3	2.1		11.5
pk6.5	Self-regulation	1	0.7		3.8
pk6.6	Rules and routines	5	3.5		19.2
pk6.7	Self-efficacy	0	0.0		0.0
pk6.8	Emotional expression	1	0.7		3.8
pk6.9	Recognizes emotions in others	1	0.7		3.8
pk6.10	Adaptability	0	0.0		0.0
pk6.11	Diversity	2	1.4		7.7
pk6.12	Socio-dramatic play	4	2.8		15.4

Table 2.2 Content Areas Addressed in the Preschool Curriculum Framework (continued)

Content Area		Objectives Addressing This Content		Breadth	Depth
		Number	% of All Codes (*n* = 143)	% of Codes Assigned to Domain	% Within Domain
pk7	**Cognition**	**9**		**6.3**	
pk7.1	Causation	0	0.0		0.0
pk7.2	Reasoning	3	2.1		33.3
pk7.3	Problem solving	5	3.5		55.6
pk7.4	Critical thinking	0	0.0		0.0
pk7.5	Symbolic representation	1	0.7		11.1
pk8	**Language Development**	**23**		**16.1**	
pk8.1	Speaking clearly	2	1.4		8.7
pk8.2	Social use of language	5	3.5		21.7
pk8.3	Complexity of language	1	0.7		4.3
pk8.4	Creative use of language	6	4.2		26.1
pk8.5	Questioning	1	0.7		4.3
pk8.6	Vocabulary	3	2.1		13.0
pk8.7	Listening comprehension	3	2.1		13.0
pk8.8	Non-verbal communication	2	1.4		8.7
pk9	**Literacy**	**12**		**8.4**	
pk9.1	Alphabet knowledge	1	0.7		8.3
pk9.2	Concepts about print	1	0.7		8.3
pk9.3	Sight word recognition	1	0.7		8.3
pk9.4	Letter-sound correspondence	1	0.7		8.3
pk9.5	Phonological awareness	2	1.4		16.7
pk9.6	Story sense	2	1.4		16.7
pk9.7	Early writing	4	2.8		33.3
pk10	**Mathematics**	**16**		**11.2**	
pk10.1	Numbers/number sense	2	1.4		12.5
pk10.2	Relationships and operations	1	0.7		6.3
pk10.3	Shapes	0	0.0		0.0
pk10.4	Patterns	2	1.4		12.5
pk10.5	Measurement	2	1.4		12.5
pk10.6	Sequencing	2	1.4		12.5
pk10.7	Comparing attributes	4	2.8		25.0
pk10.8	Classification	2	1.4		12.5
pk10.9	Spatial awareness	1	0.7		6.3

Table 2.2 Content Areas Addressed in the Preschool Curriculum Framework (concluded)

Content Area		Objectives Addressing This Content		Breadth	Depth
		Number	% of All Codes (*n* = 143)	% of Codes Assigned to Domain	% Within Domain
pk11	**Science**	**7**		**4.9**	
pk11.1	Scientific skills and methods	5	3.5		71.4
pk11.2	Objects and materials	1	0.7		14.3
pk11.3	Living organisms	0	0.0		0.0
pk11.4	Earth, sky, weather	0	0.0		0.0
pk11.5	Technology	1	0.7		14.3
pk12	**Social Studies**	**2**		**1.4**	
pk12.1	Family and community	2	1.4		100
pk12.2	History and events	0	0.0		0.0
pk12.3	People and their environment	0	0.0		0.0
pk12.4	Government	0	0.0		0.0
pk13	**Creative Arts**	**16**		**11.2**	
pk13.1	Expression and representation	6	4.2		37.5
pk13.2	Understanding and appreciation	1	0.7		6.3
pk13.3	Music	3	2.1		18.8
pk13.4	Art	3	2.1		18.8
pk13.5	Dance	1	0.7		6.3
pk13.6	Drama	2	1.4		12.5
pk14	**Approaches to Learning**	**8**		**5.6**	
pk14.1	Curiosity and interest	3	2.1		37.5
pk14.2	Initiative	1	0.7		12.5
pk14.3	Persistence and attentiveness	2	1.4		25.0
pk14.4	Creativity and inventiveness	1	0.7		12.5
pk14.5	Reflection	0	0.0		0.0
pk14.6	Joy of learning	1	0.7		37.5

Note: Number of preschool objectives was 77. An objective could be mapped to up to four content areas. The total number of objectives mapped to each content area is greater than the total number of objectives because some objectives were mapped to more than one content area. Numbers in bold are the sum of subcategories below them. The content categorization system was developed by the research team based on analyses of preschool standards from different states and reviews of other coding schemes.

Alignment of the Preschool Curriculum Framework with the Guidelines for the Development of Infant and Toddler Early Learning

The objectives in the Guidelines for the Development of Infant and Toddler Early Learning are divided into seven age groups. Only the set of objectives for the 24- to 36-months age group was used for the alignment study because that is the age group adjacent to the preschool age period. There are 43 objectives in the Guidelines for the Development of Infant and Toddler Early Learning for the 24- to 36-months age group. Raters were asked to find the objective in the Development of Infant and Toddler Early Learning that represented the best content match for each of the Preschool Curriculum Framework objectives. Raters identified a corresponding infant and toddler objective for 38 (49%) of the Preschool Curriculum Framework objectives (see Table 2.3). Raters reported there was no match for 36 (47%) and did not reach consensus for 3 (4%) of the objectives. With regard to vertical alignment, the study found that about half of the Preschool Curriculum Framework objectives have an objective addressing similar content in Guidelines for the Development of Infant and Toddler Early Learning and about half do not.

For the 38 Preschool Curriculum Framework objectives with a corresponding objective in the Guidelines for the Development of Infant and Toddler Early Learning objectives, the teams reported a clear linkage for 28 (74%) pairs of objectives with only minor ambiguity in the linkage for most of the others. For nearly half of the Preschool Curriculum Framework objectives with a match in the Guidelines for the Development of Infant and Toddler Early Learning, raters reported that objectives addressed the content at the same level of specificity. For 21% of the objectives with a match, raters indicated that the infant toddler objective was more general than the preschool objective. For the great majority of the Preschool Curriculum Framework objectives with a corresponding infant and toddler objective (82%), the raters thought the preschool objective was the more difficult of the pair. Given the Preschool Curriculum Framework objectives are for 3- and 4-year-olds and the infant and toddler objectives are for 24-to 36-month-olds, it is somewhat surprising that not all of the Preschool Curriculum Framework objectives would have been considered more difficult. For two Preschool Curriculum Framework objectives, the corresponding infant and toddler objective was considered more difficult, and for two other preschool objectives, the infant and toddler match was judged to be of equal difficulty. Table B-2.2 in Appendix B lists each of the objectives in the Preschool Curriculum Framework and shows which objective from the Guidelines for the Development of Infant and Toddler Early Learning was considered the best match along with the additional information about the nature of the match.

Table 2.3 Preschool Curriculum Framework: Alignment to the Guidelines for the Development of Infant and Toddler Early Learning

	Number	%
For the 77 preschool objectives:		
Aligned objective	38	49
No aligned objective	36	47
Consensus not reached	3	4
Not enough ratings	0	0
For the 38 aligned objectives:		
Quality of the linkage		
Clear linkage	28	74
Minor ambiguity	7	18
Major ambiguity	0	0
Consensus not reached	2	5
Not enough ratings	1	3
Nature of the linkage		
Same concept, same level of specificity	17	45
Same concept, preschool is more general	2	5
Same concept, infant toddler is more general	8	21
Addresses related concept in different way	2	5
Indirect connection	1	3
Consensus not reached	4	11
Not enough ratings	4	11
Relative difficulty		
Preschool is more cognitively complex	31	82
Infant toddler is more cognitively complex	2	5
Same level of difficulty	2	5
Not direct progression	1	3
Can't tell; preschool objective imprecise	0	0
Can't tell: infant objective imprecise	0	0
Can't tell: both are imprecise	0	0
Consensus not reached	1	3
Not enough ratings	1	3

Chapter 3. Kindergarten Science Curriculum Standards

The Science Curriculum Standards include both Grade-Level Concepts (GLCs) and Grade-Level Expectations (GLEs). The GLCs describe what a student should know in order to understand the broad idea expressed by each content standard. The GLEs are examples of what students should be able to do to demonstrate their understanding of the science concepts. Table 3.1 summarizes the structure of the Kindergarten Science Curriculum Standards. The alignment study focused on the 54 objectives made up of the GLCs and the GLEs across the four content areas shown in the table.

Table 3.1. Kindergarten Science Curriculum Standards: Number of Grade-Level Concepts and Grade-Level Expectations for Each Standard

Standard	Number of GLCs	Number of GLEs	Total
Properties of Matter			
K.1 Objects have properties that can be observed and used to describe similarities and differences.			
K.1.a. Some properties can be observed with the senses, and others can be discovered by using simple tools or tests.	9	6	15
Heredity and Evolution			
K.2 Many different kinds of living things inhabit the earth.			
K.2.a. Living things have certain characteristics that distinguish them from nonliving things, including growth, movement, reproduction, and response to stimuli.	9	6	15
Energy in the Earth's Systems			
K.3 Weather conditions vary daily and seasonally.			
K.3.a. Daily and seasonal weather conditions affect what we do, what we wear, and how we feel.	8	5	13
Science and Technology in Society			
K.4 Some objects are natural, while others have been designed and made by people to improve the quality of life.			
K.4.a. Humans select both natural and man-made materials to build shelters based on local climate conditions, properties of the materials, and their availability in the environment.	8	3	11
Total			54

Appropriateness and Content

All 54 of the objectives were considered to be appropriate for children in kindergarten. Table 3.2 shows the content areas of the kindergarten science objectives. Raters could assign up to four content codes per objective. A total of 82 codes were assigned across the 54 objectives. The breadth analysis shows the contents of the science objectives is relatively well dispersed across the major areas with the largest proportion of objectives addressing life science (27%), followed by earth and space science (22%). Only one objective addresses

science and technology, and none addressed history of science. The depth analyses showed that within each of the major areas, one of the subareas received considerably more coverage than the others. For example, 86% of the objectives addressing life sciences focused on the characteristics of organisms. For earth and space science, 72% of the objectives in this area addressed changes in the earth and sky. The breadth and depth analyses are intended to give a summary picture of the content of the kindergarten science objectives. There is no implication that a perfectly even distribution in either breadth or depth is to be considered ideal. A content analysis provides a profile that can assist standards users in getting a summary picture of the standards and can help standard developers examine whether the actual content of the standards matches the intended content. Also, as noted in the preschool chapter, the percentages in the depth and breadth analyses are a function of the categorization system used. Table B-3.1 in Appendix B shows the content area(s) assigned to each of the kindergarten science objectives.

Alignment of the Kindergarten Science Curriculum Standards with the Prekindergarten Science Curriculum Standards

The prekindergarten science objectives are included in the same document with the kindergarten science objectives and follow a similar structure. Unlike the Kindergarten Science Curriculum Standards objectives, there are only Grade-Level Expectations (GLEs) at the prekindergarten level. There are 18 objectives in the PreKindergarten Science Curriculum Standards. Raters indicated that there was a Prekindergarten Science Curriculum Standards objective similar to the kindergarten objective for 45 of the 54 kindergarten objectives (83%) (see Table 3.3). Given that there were far more kindergarten objectives, raters matched the same prekindergarten science objective to more than one kindergarten objective. Five kindergarten objectives were considered to have no match in the Prekindergarten Science Curriculum Standards set, and the teams could not reach consensus on four of the kindergarten objectives. For the 45 kindergarten objectives that were aligned with a prekindergarten science objective, most were considered to be clearly linked. For about half of the matches (49%), both the kindergarten and prekindergarten science objectives were considered to be written at the same level of specificity. For another 42%, the prekindergarten science objective was considered to be written at a more general level. For most of the matches (89%), the kindergarten objective was considered more difficult than the prekindergarten science objective. For one kindergarten objective, its prekindergarten science companion was considered to be more difficult. For 4 kindergarten objectives, the kindergarten and prekindergarten objectives were considered to be at the same level of difficulty. Table B-3.2 in Appendix B lists each of the kindergarten science objectives and shows which prekindergarten science objective was considered the best match along with the additional information about the nature of the match.

Table 3.2. Content Areas Addressed in the Kindergarten Science Curriculum Standards

Content Area		Objectives Addressing This Content		Breadth	Depth
		N	% of Codes in Subareas (*n* = 82)	% Assigned to Major Area	% of Codes Within Major Area
SC1: Science as Inquiry		**13**		**16**	
SC1.1	Abilities necessary to do scientific inquiry	10	12		77
SC1.2	Understanding about scientific inquiry	3	4		23
SC2: Physical Science		**15**		**18**	
SC2.1	Properties of objects and materials	13	16		87
SC2.2	Position and motion of objects	0	0		0
SC2.3	Light, heat, electricity, and magnetism	2	2		13
SC3: Life Science		**22**		**27**	
SC3.1	The characteristics of organisms	19	23		86
SC3.2	Life cycles of organisms	3	4		14
SC3.3	Organisms and environments	0	0		0
SC4: Earth and Space Science		**18**		**22**	
SC4.1	Properties of earth materials	1	1		6
SC4.2	Objects in the sky	4	5		22
SC4.3	Changes in earth and sky	13	16		72
SC5: Science and Technology		**1**		**1**	
SC5.1	Abilities of technological design	0	0		0
SC5.2	Understanding about science and technology	0	0		0
SC5.3	Abilities to distinguish between natural objects and objects made by humans	1	1		100
SC6: Personal and Social Perspectives		**13**		**16**	
SC6.1	Personal health	0	0		0
SC6.2	Characteristics and changes in populations	0	0		0
SC6.3	Types of resources	11	13		85
SC6.4	Changes in environments	2	2		15
SC6.5	Science and technology in local challenges	0	0		0
SC7: History of Nature and Science		**0**		**0**	
SC7.1	Science as a human endeavor	0	0		NA
Total		**82**	**100**		

Note. Number of target objectives was 54. Target objectives could be mapped to up to four content areas. The total number of target objectives mapped to each content area is greater than the total number of target objective because some target objectives were mapped to more than one content area. Numbers in bold are the sum of subcategories below them.

Table 3.3. Kindergarten Science Curriculum Standards: Alignment to the Prekindergarten Science Curriculum Standards

	Number	%
For the 54 Kindergarten Science Objectives:		
Aligned objective	45	83
No aligned objective	5	9
Consensus not reached	4	7
Not enough ratings	0	0
For the 45 Aligned Objectives:		
Quality of the linkage		
Clear linkage	39	87
Minor ambiguity	6	13
Major ambiguity	0	0
Consensus not reached	0	0
Not enough ratings	0	0
Nature of the linkage		
Same concept, same level of specificity	22	49
Same concept, prekindergarten science is more general	20	45
Same concept, kindergarten science is more general	1	2
Addresses related concept in different way	2	4
Indirect connection	0	0
Consensus not reached	0	0
Not enough ratings	0	0
Relative difficulty		
Kindergarten is more cognitively complex	40	89
Prekindergarten is more cognitively complex	1	2
Same level of difficulty	4	9
Not direct progression	0	0
Can't tell; kindergarten science objective imprecise	0	0
Can't tell: prekindergarten science objective imprecise	0	0
Can't tell: both are imprecise	0	0
Consensus not reached	0	0
Not enough ratings	0	0

Alignment of the Kindergarten Science Curriculum Standards with the Preschool Curriculum Framework

The kindergarten science objectives also were aligned to the objectives in the Preschool Curriculum Framework. The 77 objectives in the Preschool Curriculum Framework are organized into six domains as discussed in Chapter 2. The alignment activity for this particular comparison was the last one conducted at the Alignment Institute. Because a few teams were not able to complete the activity in time, some of the kindergarten science objectives were not reviewed by all six teams. When all 6 teams reviewed the objective, the standard criterion of agreement among at least 4 out of 6 teams was used for the objective. To be able to use as much of the data as possible, when the objective was rated by 4 or 5 teams, an objective was considered to have a match when 3 out of 5 or 3 out of 4 teams identified the same companion objective.

Raters indicated there was a similar objective in the Preschool Curriculum Framework for less than half of the kindergarten science objectives (41%) using the study criteria of 4 out of 6 teams selecting the same match. Another 13% were indicated as having a match using the weaker criteria (3 out of 4 or 4 out of 5) for objectives not reviewed by all teams for a total of 29 or 54% of the kindergarten objectives which were judged to have a corresponding objective in the Preschool Curriculum Framework. For 11 of the 29 kindergarten objectives identified as having a similar objective in the preschool set, the teams found a clear linkage between the kindergarten objective and the preschool objective. There was minor ambiguity in the linkage for 3 kindergarten objectives and the remainder were not rated by enough teams to make a determination. For slightly more than half the aligned objectives, not enough teams were able to rate the nature of the linkage. For 6 of the 29 aligned objectives, the raters thought the preschool objective was more general than the kindergarten science objective and for 5, they thought the objectives addressed the concept at the same level of specificity. Level of difficulty information was not provided by enough teams for 15 of the kindergarten science objectives. For 13 of the objectives, the raters considered the kindergarten objective to be more difficult than the preschool objective. Table B3.3 in Appendix B lists each of the kindergarten science objectives and shows which objective from the Preschool Curriculum Framework was considered the best match along with the additional information about the nature of the match.

Table 3.4 Kindergarten Science Curriculum Standards: Alignment to the Preschool Curriculum Framework

	Number	%
For the 54 Kindergarten Science Objectives:		
Aligned objective	22	41
Objective aligned with 3 out of 4 or 3 out of 5 ratings	7	13
No aligned objective	20	37
Consensus not reached	5	9
For the 29 Aligned Objectives:		
Quality of the linkage		
Clear linkage	11	38
Minor ambiguity	3	10
Major ambiguity	0	0
Consensus not reached	0	0
Not enough ratings	15	52
Nature of the linkage		
Same concept, same level of specificity	5	17
Same concept, preschool curriculum framework is more general	6	21
Same concept, kindergarten science is more general	0	0
Addresses related concept in different way	2	7
Indirect connection	0	0
Consensus not reached	1	3
Not enough ratings	15	52
Relative difficulty		
Kindergarten science is more cognitively complex	13	45
Prekindergarten science is more cognitively complex	0	0
Same level of difficulty	0	0
Not direct progression	1	3
Can't tell: kindergarten objective imprecise	0	0
Can't tell; preschool objective imprecise	0	0
Can't tell: both are imprecise	0	0
Consensus not reached	1	3
Not enough ratings	15	52

Chapter 4. Kindergarten Social Studies Curriculum Framework

The Social Studies Curriculum Framework is organized around standards, stands, and grade-level expectations. The three standards and the number of strands and grade-level expectation for each is shown in Table 4.1. There are a total of 31 grade-level expectations, but one is repeated in two strands so the alignment study focused on the 30 unique grade-level expectations.

Table 4.1 Kindergarten Social Studies Curriculum Framework: Number of Strands and Grade-Level Expectations for Each Standard

Standard	Number of Strands	Number of Grade-Level Expectations
Standard 1: Content Knowledge Knowledge of concepts, themes, and information from history and social studies is necessary to promote understanding of our nation and our world.	13	22*
Standard 2: History/Social Studies Literacy Competence in literacy, inquiry, and research skills is necessary to analyze, evaluate, and present history and social studies information.	5	6
Standard 3: Civic Engagement Civic competence in analyzing historical issues and current problems requires the synthesis of information, skills, and perspective.	3	3
Total		31*

* The same grade-level expectation appears in two different strands. There are 30 unique grade-level expectations.

Appropriateness and Content

Of the 30 social studies objectives, 29 were considered appropriate for kindergarten children. One of the objectives, “Explain how one travels to and from school and other places in the community,” was judged too easy for kindergarten. Table 4.2 shows the content areas of the social studies objectives. Unlike the objectives discussed in the previous two chapters, the social studies objectives were not rated as part of the alignment meeting. The content of each objective is included in the standards document so the research team mapped the content provided in the standard document with each objective using the categories from the 21st-Century Skills Map, one of the national documents cited in the standards documents and to which the objectives were already mapped.

The raters applied multiple codes to the objectives which resulted in 66 codes being applied across the 31 objectives. Slightly over half of the objectives (53%) reflected learning and innovation skills, with about a fourth reflecting information, media, and technology skills, and another fourth reflecting 1 of the 10 content themes. The depth analysis showed that within learning and innovation skills, most of the objectives (43%) addressed critical thinking and problem solving. The content of the objectives addressing information, media, and technology was fairly evenly split across the three subareas. Within the theme, the themes addressed most strongly were time, continuity, and change; people, places, and environments; and productions,

distributions, and consumption. Table B-4.1 in Appendix B shows the content area(s) assigned to each of the kindergarten social studies objectives.

Alignment of the Kindergarten Social Studies Curriculum Framework with the Prekindergarten Social Studies Framework

The prekindergarten social studies objectives are included in the same standards document as the kindergarten social studies objectives and also are organized by content standard, strands, and grade-level expectations. There are 26 prekindergarten social studies grade-level expectations (called objectives for the alignment study). Raters indicated that there was a prekindergarten objective similar to the kindergarten objective for 29 of the 30 kindergarten objectives (97%, Table 4.3). For about three-fourths of the 29 objectives (76%), the linkage was considered to be clear with minor ambiguity for the others. Raters thought the objectives addressed the same concept at the same level of specificity for nearly 4 out of 5 (79%) of the aligned objectives. The raters saw the kindergarten objective as the more difficult for 21 of the 29 (72%) with 7 (24%) seen as being at the same level of difficulty and no direct progression noted for one (3%). Table B-4.2 in Appendix B lists each of the kindergarten social studies objectives and shows which prekindergarten social studies objectives were considered the best match along with the additional information about the nature of the match.

Alignment of the Kindergarten Social Studies Curriculum Framework with the Preschool Curriculum Framework

The 31 kindergarten social studies objectives also were aligned to the 77 objectives from the Preschool Curriculum Framework (see Chapter 2 for more information about the Preschool Curriculum Framework). A little over half of the kindergarten social studies objectives (16 or 53%) were found to have a related objective in the Preschool Curriculum Framework. Twelve (40%) were found to have no match and there was no consensus for 2 of the kindergarten social studies objectives. Of the 16 kindergarten objectives found to align with a preschool objective, raters found the linkage clear for half, with only minor ambiguity for 44%. Half of the matched objectives were considered to have addressed the same concept at the same level of specificity with 25% (4 objectives) addressing a related concept in a different way. For slightly over half of the objectives (56%), the kindergarten objective was considered to be more difficult than the preschool objective. For one-fourth, the preschool objective was considered more difficult. For two objectives, there was not a direct progression and for one objective, the kindergarten and preschool objective were at the same level of difficulty. Table B-4.3 in Appendix B lists each of the kindergarten social studies objectives and shows which objective from the Preschool Curriculum Framework was considered the best match along with the additional information about the nature of the match.

Table 4.2. Content Areas Addressed in the Kindergarten Social Studies Curriculum Framework

		Objectives Addressing This Content		Breadth	Depth
		Number	% of Codes in Subareas (*n* = 66)	% of Codes in Major Area	% Within Major Areas
SS1: Learning and Innovation Skills		**35**		**53**	
SS1.1	Creativity and innovation	10	15		29
SS1.2	Critical thinking and problem solving	15	23		43
SS1.3	Communication	7	11		20
SS1.4	Collaboration	3	5		9
SS2: Information, Media, and Technology Skills		**16**		**24**	
SS2.1	Information literacy	6	9		38
SS2.2	Media literacy	6	9		38
SS2.3	Information and communication technologies literacy	4	6		25
SS3: Life and Career Skills		**0**		**0**	
SS3.1	Flexibility and adaptability	0	0		
SS3.2	Initiative and self-direction	0	0		
SS3.3	Social and cross-cultural skills	0	0		
SS3.4	Productivity and accountability	0	0		
SS3.5	Leadership and responsibility	0	0		
SS4: Themes		**15**		**23**	
SS4.1	Culture	1	2		7
SS4.2	Time, continuity, and change	3	5		20
SS4.3	People, places, and environments	3	5		20
SS4.4	Individual development and identity	0	0		0
SS4.5	Individuals, groups, and institutions	1	2		7
SS4.6	Power, authority, and governance	2	3		13
SS4.7	Production, distribution, and consumption	3	5		20
SS4.8	Science, technology, and society	0	0		0
SS4.9	Global connections	1	2		7
SS4.10	Civic ideals and practices	1	2		7

Note: The mapping of the 30 objectives to content areas was completed by the state of Connecticut and reported in the draft *CT Social Studies Curriculum Framework Grades PK-12* document. For the study, objectives could be mapped to up to four content areas. The total number of objectives mapped to each content area is greater than the total number of objectives because some objectives were mapped to more than one content area. Numbers in bold are the sum of subareas below them.

Table 4.3. Kindergarten Social Studies Curriculum Framework: Alignment to the Prekindergarten Social Studies Curriculum Framework

	Number	%
For the 30 Kindergarten Social Studies Objectives:		
Aligned objective	29	97
No aligned objective	1	3
Consensus not reached	0	0
For the 29 Aligned Objectives:		
Quality of the linkage		
Clear linkage	22	76
Minor ambiguity	7	24
Major ambiguity	0	0
Consensus not reached	0	0
Not enough ratings	0	0
Nature of the linkage		
Same concept, same level of specificity	23	79
Same concept, prekindergarten social studies is more general	1	3
Same concept, kindergarten social studies is more general	1	3
Addresses related concept in different way	2	7
Indirect connection	2	7
Consensus not reached	0	0
Not enough ratings	0	0
Relative difficulty		
Kindergarten is more cognitively complex	21	72
Prekindergarten is more cognitively complex	0	0
Same level of difficulty	7	24
Not direct progression	1	3
Can't tell; preschool objective imprecise	0	0
Can't tell: infant objective imprecise	0	0
Can't tell: both are imprecise	0	0
Consensus not reached	0	0
Not enough ratings	0	0

Table 4.4. Kindergarten Social Studies Curriculum Framework: Alignment to the Preschool Curriculum Framework

	Number	%
For the 30 Kindergarten Social Studies Objectives:		
Aligned objective	16	53
No aligned objective	12	40
Consensus not reached	2	7
For the 16 Aligned Objectives:		
Quality of the linkage		
Clear linkage	8	50
Minor ambiguity	7	44
Major ambiguity	1	6
Consensus not reached	0	0
Not enough ratings	0	0
Nature of the linkage		
Same concept, same level of specificity	2	13
Same concept, preschool is more general	1	6
Same concept, kindergarten is more general	2	13
Addresses related concept in different way	4	25
Indirect connection	1	6
Consensus not reached	0	0
Not enough ratings	0	0
Relative difficulty		
Kindergarten is more cognitively complex	9	56
Preschool is more cognitively complex	4	25
Same level of difficulty	1	6
Not direct progression	2	13
Can't tell; preschool objective imprecise	0	0
Can't tell: infant objective imprecise	0	0
Can't tell: both are imprecise	0	0
Consensus not reached	0	0
Not enough ratings	0	0

Chapter 5. Summary and Recommendations

The alignment study focused on three sets of standards, the Preschool Curriculum Framework, the Kindergarten Science Curriculum Standards, and the Kindergarten Social Studies Curriculum Framework. The study analyzed the contents of these documents and compared their contents to standards developed for younger children to address questions about the content of the standards and the extent of vertical alignment between the standards and standards developed for younger children. The set of standards examined in the study are organized around multiple levels of what children should be able to know and do and use various terms to describe these levels. The study focused on the lowest level in the standards document and referred to this level as an "objective" regardless of the terminology in the document. The study involved convening 28 knowledgeable early childhood and kindergarten professionals from around the state for a 2-day meeting during which they were trained in the rating system and then worked through each of the sets of standards, first in pairs of two and then in teams of five or six. The teams were given the results of the pair work for use in their decision-making. With the exception of the content analyses which were based on the work of the pairs, all findings are based on team ratings for which there was substantial agreement across teams. The overall results of the study are summarized in Table 5.1.

The objectives in the three sets of standards were rated by the teams as appropriate for the age or grade level of the children for whom they were developed. The percentage of objectives in the standards documents for which there was a related objective in the standards for younger children varied considerably across the three standards documents and by the set of standards to which they were being compared. Not surprisingly, the best alignment, meaning the comparisons with the highest percentage of standards for which there was a match in the standards document for the younger age group, was found for the Kindergarten Science Curriculum Standards with the PreKindergarten Science Curriculum Standards and for the Kindergarten Social Studies Curriculum Framework with the PreKindergarten Social Studies Curriculum Framework. Each of these sets is contained in the same document, they are written to the same structure, and, presumably, they were developed at the same time by some of the same people. It is not surprising then to find a relatively high degree of concordance across the objectives contained in these standards. Even within these documents, however, there appears to be a need for refinement of a few of the objectives. For the Kindergarten Science Curriculum Standards, the linkage was considered to be clear for 89% of the objectives with a prekindergarten science objective that addressed the same content. For 89% of the matched standards, the kindergarten objective was rated the more difficult. The comparable numbers for the Kindergarten Social Studies Framework compared with the PreKindergarten Social Studies

Curriculum Framework were 76% and 72%. These are high numbers but suggest some room for improvement because all the linkages should be clear and the content for the higher grade should always be discernibly more difficult for all of the objectives.

Table 5.1 Overall Results of the Alignment Study

Standards	Appro-priate for age/ grade %	Objectives aligned to objectives for younger children		For aligned objectives:	
				Clear linkage	Objective for older children is more difficult
		N	%	%	%
Preschool Curriculum Framework (77)	100				
Guidelines for the Development of Infant and Toddler Early Learning, 24-36 months (43)		38	49	74	82
Kindergarten Science Curriculum Standards (54)	100				
PreKindergarten Science Curriculum Standards (18)		45	83	87	89
Preschool Curriculum Framework (77)		29*	54	38 (78)**	45 (93)**
Kindergarten Social Studies Curriculum Framework (30)	97				
PreKindergarten Social Studies Curriculum Framework (26)		29	97	76	72
Preschool Curriculum Framework (77)		16	53	50	56

Note: Number of objectives is shown in parentheses. The *N* in column 3 refers to the number of objectives from the standards for older children for which there was an objective with comparable content in the set of standards for younger children. For example, for 38 of the 77 objectives in the Preschool Curriculum Framework, there was an objective with comparable content in the Infant and Toddler Guidelines.

* Includes seven objectives considered aligned using a different criteria, because not all teams completed these comparisons.

** Several of the teams did not have time to complete all of the ratings for this comparison. The relatively low percentages occurred because the calculations include percentages for the number of objectives found to have insufficient data. The number in parentheses shows the results for the objectives with objectives with insufficient data excluded.

Less vertical alignment was found between the Kindergarten Science Curriculum Standards and the Preschool Curriculum Framework, with only 54% of the kindergarten objectives judged to have a similar objective in the preschool standards, and between the Kindergarten Social Studies Curriculum Framework and the Preschool Curriculum Framework, where a similar objective was identified for only 53% of the kindergarten objectives. The Preschool Curriculum Framework contains more objectives than the kindergarten science and social studies standards, but its objectives are dispersed over four domains areas with the Cognitive Development domain further subdivided into Logical and Mathematical Thinking and Language and Literacy. There is no major section in the Preschool Curriculum Framework structure that directly addresses the content areas of science or social studies, so it is not surprising that nearly half of the kindergarten science or social studies objectives did not have a corresponding

objective in the Preschool Curriculum Framework. The content analysis for the Preschool Curriculum Framework found that seven objectives addressed science content and only two addressed social studies content, which is further support for the limited coverage of science and social studies in the Preschool Curriculum Framework. Although only 7 preschool objectives were coded as science, 16 objectives in the Kindergarten Science Curriculum Standards were considered to have corresponding objectives in the Preschool Curriculum Framework. The process allowed teams to match the same preschool objective to more than 1 kindergarten objective, and they did. For example, “Children will classify objects by attributes they select” from the Preschool Curriculum Framework was considered the matching objective for both “Count, order, and sort objects by their observable properties” and “Things in our environment can be classified based on whether they are alive, were once alive, or whether they were never alive” from the Kindergarten Science Curriculum Standards.

Relatively limited alignment was found between the Preschool Curriculum Framework and the 24- to 36-month Guidelines for the Development of Infant and Toddler Early Learning. The teams found a corresponding infant and toddler objective for 38 of the 77 (49%) preschool objectives. The Guidelines for the Development of Infant and Toddler Early Learning and the Preschool Curriculum Framework are organized differently and were developed at different times. Unlike the science and social studies standards, both of the infant-toddler and the preschool standards documents are intended to cover all areas of development, but they organize standards around different domain structures, a factor which also could contribute to the limited alignment.

Across all of the comparisons for which a matching objective was found in the standards for the younger children, the quality of the linkage was rated as clear for the majority of the matches. The exception was the Kindergarten Social Studies Curriculum Framework compared to the Preschool Curriculum Framework. For this comparison, the nature of the linkage was considered clear for only half of the kindergarten objectives with a match in the preschool standards.

Finally, for those objectives with a related objective in the set for younger children, the majority of the objectives for the older children were considered more difficult than the objectives for the younger children for the preschool to infant and toddler comparison and the two comparisons involving kindergarten science. The findings for the Kindergarten Social Studies Curriculum Framework were not as strong. The kindergarten objective was identified as the more difficult of the two for only 76% of the Kindergarten Social Studies Curriculum Framework objectives compared to the PreKindergarten Social Studies Curriculum Framework. This finding is somewhat surprising because these two sets of standards are part of the same document, and one would expect that the standards developers would have addressed increasing difficulty as part of the development. For the objectives from the Preschool Curriculum Framework that were matched to the Kindergarten Social Studies Curriculum Framework, the relative difficulty was more problematic. The teams found that the kindergarten objective was the more difficult for only 56% of the kindergarten objectives with a related objective in the Preschool Curriculum Framework. The others showed a variety of relationships including 25% for which the preschool objective was deemed more difficult and 13% for which there was no direct progression.

A critical dimension of alignment related to relative difficulty that was not addressed in the alignment study is the smoothness of the progression. The goal is to have vertically aligned

standards that become increasingly more challenging in increments that correspond to the time span covered by the standards, for example, 1-year increments. This study did not examine the smoothness of the progression because of the multiple age spans examined and the lack of clarity in the standards as to where exactly in the span a child is expected to have mastered the objective. For example, the infant and toddler guidelines are written to suggest they address developments during the 24- to 36-month period, not necessarily at the end of it. The smoothness of the progression cannot be examined without more precision as to the intended placement of the objectives within the age span.

As Connecticut moves forward in developing an aligned system of standards, curricula, and assessments for young children, the state faces the same challenges being addressed by states around the country. Creating comprehensive, unified, coherent standards from multiple sets of standards developed by different authors, at different times, with different organizational structures, and different terminology is not an easy task. One challenge in bridging standards between preschool and kindergarten is how to merge a traditional birth-to-five categorization structure based on areas of development with a K-12 structure based on academic content areas. The relatively weak alignment of the kindergarten science and social studies with the Preschool Curriculum Framework reflects the problems presented by a domain structure compared to an academic content area structure. One possible consequence of not having an explicit category for science and social studies is that these areas received a less thorough treatment when the Preschool Curriculum Framework was developed. The Head Start Framework addressed the domain versus academic subject issue by creating a structure with 11 domains that are a blending of traditional developmental domains and academic content areas, which is one solution but not the only solution. This issue can be especially challenging when alignment work proceeds downward from kindergarten and results in the academic content categories being applied to very young children. The application of academic content categories to very young children can result in standard developers struggling, for example, to use categories like “social studies” in standards for 12-month-olds. A positive finding of the content analysis was that the Preschool Curriculum Framework was found to be fairly broad, addressing many of the domains considered important in early childhood such as social-emotional development; physical development; cognition, language, and literacy; and approaches to learning, and that the coverage was fairly even over these areas. It will be important for the state to continue to address the full range of content areas in any revisions to the preschool standards.

An aligned system of standards with sufficient breadth and depth does not require that the standards be presented in any particular categorization system. The number and labeling of the main categories in standards documents and how individual objectives are assigned to main categories is somewhat arbitrary. Critical features of a good early childhood system of

standards are that all of the essential areas have been adequately addressed at the objective level, that the breadth and depth of the standards reflects the knowledge base and recommended practice in early childhood, and that the organizational structure is understandable and useful for those who will be expected to implement the standards.

This alignment study is only one part of the work Connecticut is doing to examine standards alignment, and the findings do not speak to all of the considerations that will need to be addressed as the state moves forward. Some of these other issues are the need to identify and address domains included in the preschool standards that are not addressed in the kindergarten standards, such as social-emotional development, the appropriateness of the standards across the age spans for children with disabilities and dual language learners, and the usability and social validity of the standards for the intended audiences.

To assist the state in its work toward a revised set of standards, the following recommendations are made with regard to the content and alignment issues addressed by this study:

- Develop a single categorization structure including labeling conventions that can be applied to standards documents across the entire birth through kindergarten span. This categorization system does not need to have identical main and subcategories at every age or grade level, but it does need to be able to show how the categories at one age level relate to the categories at another. The uniqueness of the different age periods and the academic subject areas must be acknowledged and addressed appropriately, but this uniqueness can be addressed within a cohesive structure.
- Approach revisions to the any of the standards documents with a comprehensive framework for content analysis and continually map back to that framework. The content codes used in this study are examples of such frameworks, but other frameworks that address essential content areas also would be suitable.
- As decisions are made about what content to include or exclude and at what depth, repeatedly check to ensure that the resulting distribution of standards matches the state's vision of what children should know and do. For young children, that vision should be informed by the literature on the recommended content of early childhood standards.
- To the extent possible, develop or revise standards for adjacent age groups at the same time. Iteratively map the content from one age or grade level to the next, making intentional decisions about the connections across the grade levels. Good vertical alignment does not require that every objective have a parallel objective at the higher or lower age/grade level, but the foundations for all of the standards for older children should exist in the objectives for the younger children. Objectives for younger children might not have related objectives for older children when development in an objective is considered completed, requiring no further attention in later years. Developing separate objectives for three-year-olds and four-year-olds and gearing the objectives for the end of each age period will make it easier to construct and validate a smooth progression from one year to the next.

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Appendix A

Methodology

Connecticut Early Childhood Alignment Institute (Training Slides)

Agenda for Connecticut Alignment Institute

Basic Codes

Companion Objectives:

- Infant Toddler Guidelines
- PreKindergarten Social Studies
- PreKindergarten Science
- Preschool Curriculum Framework

Content Standards

- Science Content Codes
- Preschool Content Codes

Connecticut Early Childhood Alignment Institute

Kathleen Hebbeler
Cornelia Taylor

SRI International

March 2012

Goal of the Institute

- Identify the extent to which several sets of standards are aligned from one age/grade level to the next
- Over the next two days, you will be working with Connecticut's:
  - Infant and Toddler Guidelines
  - Preschool Curriculum Framework
  - PreK and K Social Studies Framework
  - PreK and K Science Curriculum Standards

2

You will notice right away…

- Lots of words used in different ways or the same words used to mean different things.
- Standards,
- Benchmarks
- Grade level expectations
- Indicators
- And on and on….

What tower is this?

3

You also might notice …

- Different systems for standards have different numbers of levels within them.
- Standards
  - Level 2
    - Level 3
      - Level 4
- And on and on…

4

For our purposes..

- **Standard** is a general statement about what children/students should be able to know and do.
- **Objective** refers the **finest or lowest** level in the hierarchy.

We are going to be working with objectives.

5

Keep in mind…

- There is no right way to organize standards.
- The goal is to have a system that provides an organizational and labeling structure that is useful to the teachers, parents and other who need to be working with the standards.

6

Role of Judgment and Values

- We want standards to be evidence based BUT there is more to be learned about how knowledge and skills progress in young children.
- Standards development involves applying what we know to create meaningful and effective learning progressions.
  - Element of human judgment
- Standards also make explicit what we value for young children.

7

Alignment

The degree to which expectations and assessments are in agreement and serve in conjunction with one another to guide the system toward students learning what is expected.

(Webb, 2002)

Types of alignment

- Horizontal – within the grade level, e.g.,
  - Standards to assessment
  - Assessment to curriculum
- Vertical – grade level to grade level, e.g.,
  - Grade 3 assessment with a Grade 4 assessment
  - Preschool standards with Kindergarten standards

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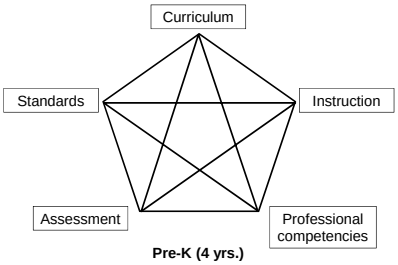
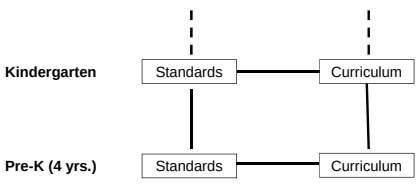
Horizontal Alignment

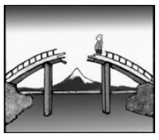


Vertical Alignment



A vertically aligned system should..

- Describe the content (what children are expected to know and do) in a **progression** from one grade level to the next
- Progression should be **smooth** with each grade level being "a year's more" more difficult than the one before it.
- Each objective should be **developmentally appropriately** for its grade level.



12

Standards might not be aligned from grade to grade if….

- A standard at an older age/grade level has no corresponding standard or foundational standard at the prior grade ("foundationless standard").
- A standard at a prior grade has no corresponding standard at the older age/grade ("disappearing standard")
- Related standards are not clearly differentiated.
  - What new knowledge or skill is required?
- The terminology for one or both standards is imprecise or unclear.
  - Differences in terminology are not explained.
  - Different words are used to describe the same skill
- .

13

You will be spending the next two days thinking about the structure of knowledge and how knowledge and skills develop over the early childhood years.

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Overview of the Alignment Institute

For each set of documents:

Phase 1. You will work in pairs to derive several ratings for each objective.

Phase 2. You will work in teams of 4-5 to review the work of the pairs and to arrive at a consensus rating for the team.

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Overview of the Alignment Process

Terminology

Targets – The objectives for the age/grade level that we are aligning **to**

E.g., Kindergarten Science

Companions – The objectives for the lower age/grade level that will be aligned to the target.

E.g., Preschool Curriculum Framework.

16

- We will be trying to find companions for the target objective ….

- …we don't want lonely targets.

17

What you will do

18

Overview - Ratings

1. Determine the content of the target objective.
2. Appropriate for the grade level?

3a. Is there a companion objective?

3b. Identify the companion objective.

4. Rate the nature of the linkage.
5. Rate the quality of the linkage.
6. Rate the relative difficulty level of the target and companion.

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Step 1. Rate the content of the target objective

- We will only rate the content of the Kindergarten Science Standards and the Preschool Curriculum Framework Standards.
- You will use a different set of codes for each.
- You can code up to **5** content codes.
- For most this will be one or two codes.
- **Always try to code at the lower level.**
- If you can't find a lower level code that applies, code at the higher level.
- If you use a lower level code, do not also code the higher level.

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Practice - Science Content Codes

What is the content of the following objective?

- Discuss the life cycle of a tree.
- Manipulate, observe, compare, describe, and group objects found in the classroom, on the playground, at home.

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Practice - Preschool Content Codes

- Identifies personal and family structure.
- Observes, describes, and discusses living things and natural processes.
- Cooperates with others.
- Sets goals and follows through on plans.
- Uses creativity and imagination to manipulate materials and assume roles in dramatic play situations.

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Activity 1: Selecting the content codes

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Step 2. Rate the placement of the target objective.

- Placement refers to whether the objective is appropriate for the grade level
- For Kindergarten objectives, ask yourselves:
  - Is this something a kindergarten child could reasonably be expected to know or do by the end of a good kindergarten program?
- For Preschool objectives, ask yourselves:
  - Is this something a preschool child who has had good early childhood learning experiences could reasonably be expected to know or do by the end of preschool?

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Is the objective appropriate for this grade level?

1	Yes
2	No, too easy for age/grade level
3	No, too difficult for age/age level
4	Not sufficiently specified to be able to ascertain a level of knowledge or performance

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Practice with the Placement Question

Pre-K:

- Identify and repeat initial sounds in words

Kindergarten:

- Students know plants use carbon dioxide (CO^2) and energy from sunlight to build molecules of sugar and release oxygen.

Kindergarten:

- Students can identify people important to the American political system.

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Step 3. Search the companion objectives for a match.

- The companion objectives have been compiled for you on a "cheat sheet."
- You will only be working off of one sheet at a time.
- Look for the objective that is closest in content and concept to the target objective.
- Look across all the objectives within the companion set. The closest match might not be listed under the most obvious heading.

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What constitutes a content match?

- The two objectives address the same content
  - The target talks about weather and the companion talks about weather
  - The targets talks members of a family and the companion talks about members of a family
  - The target talks about interest in books and the companion talks about enjoying having the teacher read a story.
- Is there a learning progression that connects the two objectives?

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Content Matching

- What is the topic or focus of the target objective?
- You can use all of the context information that is in the standards document if you want to look at how it is placed on the page. Use what is around it.
- If you can't figure out what the topic is, don't worry about it. It probably means the objective is not clear.
  - There will be multiple eyes looking at each of these objectives. If all these eyes can't figure it out, the problem is not with you.

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Content Matching (Continued)

- If you don't find a match, you don't find a match. That will be good information for the state to have going forward.
- You can record up to 3 if you find several matches.
  - But only record more than 1 if there are truly more matches.

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Step 3. Search the companion objectives for a match.

- Enter a code to indicate whether you have found a match.

1	Yes
2	No (Move to next target objective)

- If yes, code 1, and then record the code from the "cheat sheet" for the best companion match first .
- If no, code 2, and move on to the next target objective.

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Activity 2: Finding a content match

32

Step 4. Rate the nature of the content linkage

- Now that you have found the match, we want you to make some judgments about how good the match is.
- First, we are going to look at the "directness" the connection.

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Nature of the content linkage

1. Objectives address the same concept at the same level of specificity
   - Target: Counts to 100
   - Companion: Counts to 10

2. Objectives address the same concept but one is more general than the other
   - Target: Counts to 100
   - Companion: Knows number words in proper sequence.

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Nature of content linkage (Continued)

3. Addresses related features of the knowledge or skill but in a different way (the companion is "off-center")
   - Close but not quite there
   - Target: Counts to 100
   - Companion: Enjoys counting
4. Content connection is indirect. One addresses a foundational skill that is important to achieving the other
   - Target: Counts to 100
   - Companion: Knows beginning number words.

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Nature of the content linkage

- Don't focus too hard on trying to get these differences straight. Use your best judgment as you think about the focus of each of the objectives.
- The critical distinction here is #1 vs. all the rest. #1 is your way of saying this is a good progression across the sets.
- The others all say the pairing could be strengthened.

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Codes for the nature of the content linkage

1	Addresses the same concept at the same level of specificity.
2	Addresses same concept but target is more general than companion
3	Addresses the same concept but the companion is more general than the target
4	Addresses related aspects of the related features of the knowledge or skill but in a different way (companion is related but "off center")
5	Content connection is indirect. One addresses a foundational skill that is important to achieving the other.

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Practice with nature of the linkage

K Target:

- Recognize rules help promote fairness, responsible behavior, and privacy.

PK Companion:

- Schools and classrooms have rules and routines that govern daily life. Rules exist in families, schools and communities.

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Practice with nature of the linkage

P-K Target:

- Think of a different way to do something, when confronting a problem, with adult help.

I-T Companion:

- Explore and use trial and error to solve problems.

39

Step 5. Rate the quality of the content linkage

This code tells us how well you think the content and concept connection is between your pairs.

Clear linkage 

Minor ambiguity

Major ambiguity

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Step 5. Rate the quality of the content linkage

Clear linkage – The connection was obvious. The two are written in such a way that the connection is apparent and direct.

Minor ambiguity – There is definitely a connection but it could be tighter, for example, with a relatively minor re-write. Think blue circle of the target.

Major ambiguity– The connection is there but it could a lot tighter. For example, it would require a major re-write one of the set to get a clear linkage. Use this code if you struggled as to whether there was a connection. Think red circle of the target.

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Quality of the content linkage

- How easy was it for you to see the connection between the two?

1= Clear linkage (No problem!)

2= Minor ambiguity (I had to think a little bit about but they are definitely related in concept)

3= Major ambiguity (The two are connected – or I wouldn't have picked the companion as a match --but the connection could be a lot stronger).

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Practice with quality of the linkage

- K Target:

  Recognize rules help promote fairness, responsible behavior, and privacy.

- PK Companion:

  Schools and classrooms have rules and routines that govern daily life. Rules exist in families, schools and communities.

43

Practice with quality of the linkage

P-K Target:

Think of a different way to do something, when confronting a problem, with adult help.

Infant Toddler Companion:

Explore and use trial and error to solve problems.

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Step 6 (Last!). Rate the relative difficulty level of the objectives.

- Relative difficulty refers to which of the two objectives is the more challenging or difficult.
- Your task is to compare one to the other and decide.
- There are a number of codes because there are lots of reasons you might not be able to make a comparison.
- If you have a sense of the relative difficulty level, you don't need the other codes.

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Step 6 (Last!). Rate the relative difficulty level of the objectives.

1 = Target is broader/deeper/ more cognitively complex

2 = Companion is broader/deeper/more cognitively complex

3 = The two are at the same level of difficulty

4 = There is not a direct progression from one to the next.

5 = Can't tell. The target is unclear or imprecise.

6 = Can't tell. The companion is unclear or imprecise.

7= Can't tell. Both are unclear or imprecise.

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Relationships between standards from one age/ grade level to the next

- Knowledge or skills broadened to wider range of content
  - Same skills applied to wider content
- Deeper understanding or different cognitive processes for the same content
- Watch the verbs
  - recognize => explain
  - Identify => describe
- Content is new

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Increasing complexity

↓	Respond	point, attend, acknowledge
	Reproduce	copy, match, repeat, mirror, imitate
	Recall	recall facts, definitions, or terms
	Procedures/ Applications	compare, classify, describe, predict, organize, estimate or order
	Problem Solving	explain, generalize, connect ideas, draw conclusions

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Codes for difficulty

1	Target is broader/deeper/more cognitively complex
2	Companion is broader/deeper/more cognitively complex
3	The two are at the same level of difficulty
4	There is not a direct progression from one to the other.
5	Can't tell; the target is unclear or imprecise
6	Can't tell; the companion is unclear or imprecise
7	Can't tell; both are unclear or imprecise

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Practice with relative difficulty

P-K Target:

Think of a different way to do something, when confronting a problem, with adult help.

I-T Companion:

Explore and use trial and error to solve problems.

50

Practice with relative difficulty

- K Target:

  Recognize rules help promote fairness, responsible behavior, and privacy.

- PK Companion:

  Schools and classrooms have rules and routines that govern daily life. Rules exist in families, schools and communities.

51

Activity 3: Nature and quality of the linkage and relative difficulty

52

Overview of the Alignment Process – Pair Work

1. You will be assigned to a partner
2. You and your partner will work through all the objectives in the "target" document one at a time.
3. For each target objective, you will provide ratings. You will look to see if there are one or more "companion" objectives that align with the target.
4. If you find a "match", you will provide some information about the nature of the match.
5. You will record you ratings in Excel.

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Overview of the Alignment Process – Team Work

1. You will be assigned to a team of 4 or 5.
2. Your team will be given the ratings that the pairs assigned.
3. Your team will look at the information from the pairs and reach a consensus judgment on the same things the pairs rated.

The team process is just like the pair process only the team will have the pairs' ratings available to them.

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Ground rules of working in pairs and teams

- Give each objective its due.
- Listen to each other.
- Respect each other's position.
- Question when you don't understand someone's position. If you don't understand the person's logic, it is ok to say so.
- Disagree out loud if you do disagree.
- Do not resolve all differences by putting down all possible choices.

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Remember

- Ratings are judgments – there are no "right" answers
- There will be lots of eyes and lots of minds looking at the same thing.
  - If there is not a clear match for an objective in the companion set, what will we get?
  - If there is a clear match, what would we expect to find?

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Go Pairs and Teams!

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Agenda for Connecticut Alignment Institute
March 28 and 29, 2012

Kathy Hebbeler
Cornelia Taylor
SRI International

Day 1 – March 28

8:30 - 10:15	Welcome and Introductions Overview and Training	
10:15 – 10:30	BREAK	
10:30- 12:00	Social Studies Pair Ratings (Pair 1)	Target: Kindergarten Social Studies Companion: Preschool Curriculum Framework Pre-kindergarten Social Studies
12 – 12:45	LUNCH	
12:45 - 2:45	Social Studies Team Rating (Team 1)	Target: Kindergarten Social Studies Companion: Preschool Curriculum Framework Pre-kindergarten Social Studies
2:45 – 3:00	BREAK	
3:00 – 3:15	Questions and Clarifications	
3:15 - 4:30	Preschool Pair Ratings (Pair 2) Kindergarten Science Pair Ratings (Pair 3)	Pair 2 Target: Preschool Curriculum Framework Companion: Infant and Toddlers Early Learning Guidelines Pair 3 Target: Kindergarten Science Companion: Preschool Curriculum Framework Pre-Kindergarten Science
4:30	Adjourn	

Day 2 – March 29

8:30 – 9:15	Continue from Day 1 Preschool Pair Ratings (Pair 2) Kindergarten Science Pair Ratings (Pair 3)	
9:15 – 10:15	Preschool Team Ratings (Team 2)	Target: Preschool Curriculum Framework Companion: Infant and Toddlers Early Learning Guidelines
10:15 - 10:30	BREAK	
10:15 - 12:00	Preschool Team Ratings (Team 2)	
12:00 - 12:45	LUNCH	
12:45 – 2:30	Kindergarten Science Team Ratings (Team 2)	Target: Kindergarten Science Companion: Preschool Curriculum Framework Pre-Kindergarten Science
2:30 – 2:45		
2:45 – 4:15	Kindergarten Science Team Ratings (Team 2)	
4:15 - 4:30	Evaluation and debrief	
4:30	Adjourn	

Basic Codes

1. Content Codes (See handouts) (Can code up to 5)

2. Is the objective appropriate for this grade level?

1	Yes
2	No, too easy for age/grade level
3	No, too difficult for age/age level
4	Not sufficiently specified to be able to ascertain a level of knowledge or performance

3. Do any objectives in the companion set address content that is related to the target objective?

1	Yes
2	No (Move to next target objective)

4. Most similar objective in the companion set (See handouts) (Can code up to 3)

5. Nature of the content linkage:

1	Addresses the same concept at the same level of specificity.
2	Addresses same concept but target is more general than companion
3	Addresses the same concept but the companion is more general than the target
4	Addresses related aspects of the knowledge or skill but in a different way (companion is related but "off center")
5	Content connection is indirect. One addresses a foundational skill that is important to achieving the other.

6. Quality of the content linkage:

1	Clear linkage
2	Minor ambiguity
3	Major ambiguity

7. Relative difficulty:

1	Target is broader/deeper/more cognitively complex
2	Companion is broader/deeper/more cognitively complex
3	The two are at the same level of difficulty
4	There is not a direct progression from one to the other.
5	Can't tell; the target is unclear or imprecise
6	Can't tell; the companion is unclear or imprecise
7	Can't tell; both are unclear or imprecise

Companion Objectives
Infant Toddler Guidelines
Age 24-36 Months

PERSONAL AND SOCIAL DEVELOPMENT

Personal and social development

	Companion objective
it1	May want to keep what belongs to him close by and often will not want to share.
it2	Will play for longer and longer periods of time.
it3	Is more involved and interacts more in play with other children.
it4	Begins to seek out play with other children on his own.
it5	Plays make believe with one or more children.

Feelings of self-awareness

	Companion objective
it6	Begins to understand the idea of personal property and may say, “That’s mine.”
it7	Begins to show independence and continues to show pride in his accomplishments.
it8	May say “no” at first, even to something she wants.
it9	Still finds it hard to describe how he feels even though his vocabulary is growing and he is able to put more words together. This can be frustrating for him.

PHYSICAL DEVELOPMENT

Large muscle development

	Companion objective
it10	Enjoys running but may have difficulty stopping and turning. He also likes hopping, skipping, jumping and climbing.
it11	Walks up and down stairs using one foot then the other
it12	Throws a ball and kicks it with one foot.
it13	Begins to balance on one foot.
it14	Pedals a tricycle.

Small muscle development

	Companion objective
it15	Helps to dress herself with clothing that’s easy to put on. She may still need your help with snaps, buttons and zippers.
it16	Begins to brush his own teeth with help.
it17	Can use a spoon, fork and cup but may still spill.
it18	Can turn pages of a book one by one.
it19	Enjoys messy, creative play such as painting with a paint brush, finger painting, scribbling, gluing and taping under your careful supervision.
it20	Begins to favor one hand over the other
it21	Begins to cut with safety scissors, draws straight lines, and can copy a circle.

Cognitive development

	Companion objective
it22	Is beginning to solve many problems on his own and will try many ways to solve a problem that he is facing.
it23	Will stay focused on a task for longer periods of time.
it24	Enjoys simple puzzles (4-5 pieces), and simple jokes.
it25	Knows most of her body parts and can name them on dolls and people.
it26	May count two or three things.
it27	Enjoys comparing sizes—"big" and "small."
it28	Notices differences in size, shape and color, and enjoys matching and grouping things that are alike.
it29	Remembers events and places he has been and enjoys telling others about his experiences.
it30	Begins to explain WHY she wants to do something. For example, "Why do you want the apple?" "Because I'm hungry."

Language development and communication

	Companion objective
it31	Enjoys expressing himself through language. He talks about what he is doing while doing it, trying out what he has learned about communicating with others in new contexts. He expects even strangers to be language partners with him.
it32	Can talk about the past.
it33	Can say her own first and last name.
it34	Has mastered vowel sounds and many consonant sounds although he still may have trouble with articulation.
it35	Will use personal pronouns such as I, me and you, although not always correctly.
it36	Enjoys telling and retelling stories and short jokes (sometimes forgetting the punch line).
it37	Takes cues from others, laughing out loud when others are laughing.
it38	Enjoys talking on the phone and pretending to talk on the phone.
it39	Enjoys "reading" familiar books to you and other playmates.
it40	Understands "how" and "why" questions.
it41	Uses phrases or sentences to ask a question about something she wants to do (e.g., "Go to playground?") with inflection.
it42	Has conversations with adults and peers that make sense, often with four or more back and forth comments on a variety of topics.
it43	May speak between 800-900 words and understands more than 1,000 words by the end of this period.

PreKindergarten Companion Objectives Social Studies
AKA (Grade Level Expectations [GLEs])

Standard 1: Content Knowledge: Knowledge of concepts, themes, and information from history and social studies is necessary to promote understanding of our nation and our world

Code		Companion Objectives
ssp1	Significant events and themes in United States history.	Sequence events and describe time periods using terms such as morning, afternoon, night, yesterday, today and tomorrow.
ssp2	Significant events in local and Connecticut history and their connections to United States history.	Sequence events and describe time periods using terms such as morning afternoon, night, yesterday, today and tomorrow.
ssp3	Significant events and themes in world history/international studies.	Recognize that there are other cultures with different languages, foods, art, music, customs, and forms of shelter
ssp4	Geographical space and place.	Place familiar objects in appropriate geographical locations (e.g., bead in a bedroom, slide on a playground, etc.).
ssp5	Geographical space and place.	Describe locations using positional words (e.g., on, under, behind, next to, between.
ssp6	Interaction of humans and the environment	Investigate one's impact on immediate environment (e.g., why we need to pick up toys).
ssp7	Patterns of human movement across time and place.	Describe different means of transportation one has experienced.
ssp8	The purpose, structures and functions of government and law at the local, state, national and international levels.	Follow classroom rules with prompts.
ssp9	The purpose, structures and functions of government and law at the local, state, national and international levels.	Explain some reasons for classroom rules.
ssp10	The interactions between citizens and their government in the making and implementation of laws.	Work collaboratively to develop classroom rules (with adult prompting and guidance).
ssp11	The rights and responsibilities of citizens	Dramatize roles of authority figures (e.g., teacher, firefighter, police officer).
ssp12	The rights and responsibilities of citizens	Understand and discuss why certain responsibilities are important (e.g., cleaning up, caring for pets).
ssp13	How limited resources influence economic decisions.	Participate in discussions related to the benefits of sharing.
ssp14	How limited resources influence economic decisions.	Resolve conflicts related to limited resources with teacher support.
ssp15	How different economic systems organize resources.	Identify and role-play different jobs using associated materials.
ssp16	The interdependence of local, national and global economies.	Dramatize the difference between purchasing and selling items.
ssp17	The characteristics of and interactions among culture, social systems and institutions.	Identify similarities and differences in personal and physical characteristics of self and others.

Standard 2: History/Social Studies Literacy: Competence in literacy, inquiry, and research skills is necessary to analyze, evaluate, and present history and social studies information.

		Companion Objectives
ssp18	Access and gather information from a variety of primary and secondary sources including electronic media (maps, charts, graphs, images, artifacts, recordings and text).	Gather information using various senses.
ssp19	Access and gather information from a variety of primary and secondary sources including electronic media (maps, charts, graphs, images, artifacts, recordings and text).	Name or access one source of information (e.g., an adult, a book, the Internet).
ssp20	Interpret information from a variety of primary and secondary sources, including electronic media (e.g., maps, charts, graphs, images, artifacts, recordings and text).	Share information gathered from senses, print or media sources in a variety of ways (e.g., retell a story, create a simple graph with assistance, draw a picture to represent an experience).
ssp21	Create various forms of written work (e.g., journal, essay, blog, Web page, brochure) to demonstrate an understanding of history and social studies issues.	Express personal events related to social studies topics using pictures and letter-like approximations.
ssp22	Demonstrate an ability to participate in social studies discourse through informed discussion, debate and effective oral presentation.	Share personal experiences through group discussions and dramatization.
ssp23	Create and present relevant social studies materials using both print and electronic media (e.g., maps, charts, models, displays).	Represent geographic or community locations using classroom materials (e.g., use blocks to build a school, make a hill out of sand, draw a picture of one's house).

Standard 3: Civic Engagement: Civic competence in analyzing historical issues and current problems requires the synthesis of information, skills, and perspective.

		Companion Objectives
ssp24	Use evidence to identify, analyze and evaluate historical interpretations	Identify basic emotions in self and others.
ssp25	Analyze and evaluate human action in historical and/or contemporary contexts from alternative points of view	Describe similarities of their feelings with those of others.
ssp26	Apply appropriate historical, geographic, political, economic and cultural concepts and methods in proposing and evaluation solutions to contemporary problems	Participate in teacher-led discussion to generate solutions to classroom problems or situations.

PreKindergarten Science Companion Objectives
AKA Grade Level Expectations (GLEs)

PK.1—Objects have properties that can be observed and used to describe similarities and differences. Some properties can be observed with the senses, and others can be discovered by using simple tools or tests.

Codes	Companion Objectives
scp1	Use senses to make observations of objects and materials within the child's immediate environment.
scp2	Use simple tools (e.g., balances and magnifiers) and nonstandard measurement units to observe and compare properties of objects and materials.
scp3	Make comments or express curiosity about observed phenomena (e.g., "I notice that…" or "I wonder if…").
scp4	Count, order and sort objects (e.g. blocks, crayons, toys) based on one visible property (e.g., color, shape, size).
scp5	Conduct simple tests to determine if objects roll, slide or bounce.

PK.2—Many different kinds of living things inhabit the earth.

PK.2.a. —Living things have certain characteristics that distinguish them from nonliving things, including growth, movement, reproduction and response to stimuli.

scp6	Use the senses and simple tools to make observations of characteristics and behaviors of living and nonliving things.
scp7	Give examples of living things and nonliving things.
scp8	Make observations and distinguish between the characteristics of plants and animals.
scp9	Compare attributes of self, family members or classmates, and describe how they are similar and different.

PK.3—Weather conditions vary daily and seasonally.

PK.3.a. —Daily and seasonal weather conditions affect what we do, what we wear and how we feel.

scp10	Use the senses to observe and describe evidence of current or recent weather conditions (e.g., flags blowing, frost on window, puddles after rain, etc.)
scp11	Notice weather conditions and use words and numbers to describe and analyze conditions over time (e.g., "it rained 5 times this month".)
scp12	Identify the season that corresponds with observable conditions (e.g., falling leaves, snow vs. rain, buds on trees or greener grass).
scp13	Make judgments about appropriate clothing and activities based on weather conditions.

PK.4—Some objects are natural, while others have been designed and made by people to improve the quality of life.

PK.4.a. —Humans select materials with which to build structures based on the properties of the materials.

scp14	Observe, describe and sort building materials by properties such as strength, weight, stiffness or flexibility.
scp15	Pose questions and conduct simple tests to compare the effectiveness of different building materials (e.g., blocks of wood, plastic, foam or cardboard) for constructing towers, bridges and buildings.
scp16	Make judgments about the best building materials to use for different purposes (e.g., making the tallest tower or the longest bridge).
scp17	Invent and explain techniques for stabilizing a structure.
scp18	Compare block structures to pictures and to real structures in the neighborhood.

Preschool Curriculum Framework

PERSONAL AND SOCIAL DEVELOPMENT

Exhibit curiosity, creativity, self-direction and persistence in learning situations.

Codes		Companion Objective
pcf1	Engage in activities that they select or create and demonstrate self-direction in use of materials	Children will make independent decisions about what learning center or materials to work with and will get and use the materials they need.
pcf2	Sustain attention to task;	Children can remain engaged in an activity that they have selected for a minimum of 15 minutes.
pcf3	Demonstrate the ability to use a minimum of two different strategies to attempt to solve a problem;	Children will attempt several different strategies when encountering difficulty while they are using materials.
pcf4	Demonstrate delight or satisfaction when completing a task or solving a problem;	Children receive pleasure or gratification when completing a task or solving a problem by themselves.

Describe themselves using several basic characteristics.

pcf5	Refer to themselves by first and last name; and	Children will state whether they are a girl or a boy. They will identify the members of their family by their roles in the family, e.g., mother, brother, grandmother, uncle
pcf6	Identify themselves by family and by gender.	Children will state whether they are a girl or a boy. They will identify the members of their family by their roles in the family, e.g., mother, brother, grandmother, uncle

Demonstrate awareness of one's own and others' feelings.

pcf7	Use words to express emotions or feelings.	Children move from more physical displays of emotions and begin to verbalize them.

Participate in and exhibit self-control in group situations.

pcf8	Participate in small- and large-group activities;	Children will participate in a variety of small-group activities such as cooking and reading together, and in large-group activities such as circle time and creative movement.
pcf9	Manage transition from one activity to the next;	Children will clean up and put away materials in appropriate places and move to the next activity with few verbal prompts.
pcf10	Follow classroom and playground rules; and	Children will demonstrate an understanding of classroom and playground rules. They will also participate in the development of rules.
pcf11	Be aware of and follow the classroom schedule and routines.	Children will be familiar with and follow the daily schedule and routines. They will be able to tell another person what activity comes next and about any special activity planned for the day.

Interact appropriately with peers and familiar adults.

pcf12	Interact with one or more children, beginning to play or work cooperatively;	Children are moving from parallel to cooperative play. Children will engage in activities that involve interactions with one or more children to enhance sociodramatic play or to work together to build or complete a project.
pcf13	Enter into or initiate a play situation;	Children will enter into a play situation. Children will initiate a play theme with peers.
pcf14	Demonstrate empathy and caring for others; and	Children assist other children in clean-up or work together to complete a project. If one child gets injured, other children will acknowledge how that child might be feeling and offer help.
pcf15	Seek help from peers or adults.	When children need assistance with a self-help task or in solving a problem, they will ask for help from adults or peers in the classroom.

Use age-appropriate conflict-resolution strategies.

pcf16	Use words to identify the conflict;	Children will use words to identify the problem they are having with a peer.
pcf17	Engage in developing solutions and work to resolve conflicts; and	Children will participate in the facilitation of a conflict resolution by an adult, agree to a solution and follow it.
pcf18	Seek adult help when involved in a conflict	If a child cannot resolve a conflict with another child, he or she will ask an adult for assistance.

Recognize similarities and appreciate differences in people.

pcf19	State at least two ways in which children are similar and two ways in which they are different; and	Children notice similarities and differences between themselves and others. Children verbalize these similarities and differences.
pcf20	Interact with a variety of children in the program	Children will choose to engage in activities with a variety of peers. They will play with others regardless of gender, race or ability.

PHYSICAL DEVELOPMENT

Engage in a wide variety of gross-motor activities that are child selected and teacher initiated.

pcf21	Demonstrate competence in a variety of activities that require coordinated movement using large muscles;
pcf22	Perform activities that combine large-muscle movements with equipment;
pcf23	Combine a sequence of several motor skills in an organized way; and
pcf24	Choose to engage in physical activity that is child selected or teacher initiated.

Use a variety of materials that promote eye-hand coordination and small-muscle development.

pcf25	Perform fine-motor tasks that require small-muscle strength and control;
pcf26	Use eye-hand coordination to successfully perform fine-motor tasks; and
pcf27	Show beginning control of writing, drawing and art tools

Demonstrate spatial awareness in both fine- and gross-motor activities.

pcf28	Move through an environment with body control; and	Children develop motor control, coordination and balance in the early years. A child should be able to walk in the classroom and not bump into furniture or people.
pcf29	Demonstrate spatial awareness in fine-motor activities.	Children will demonstrate an awareness of top and bottom, up and down.

Opportunities to choose nutritious meals and snacks.

pcf30	Recognize and eat a variety of nutritious foods	When presented with several foods, children will be able to tell which are considered healthy foods to eat.

Practice basic hygiene and self-help skills.

pcf31	Practice personal hygiene; and	Children will wash hands, brush teeth, toilet independently and use tissues appropriately.
pcf32	Use self-help skills	Children will put on and take off clothes. They will select, use and put away materials.

COGNITIVE DEVELOPMENT: LOGICAL MATHEMATICAL THINKING

Express wonder, ask questions and seek answers about the natural world.

pcf33	Ask questions about and comment on observations and experimentation;	Children are naturally curious. When provided with opportunities to observe and investigate the environment, they will ask questions about and comment on their observations and what they discover.
pcf34	Collect, describe and record information; and	Children will make comparisons among different objects using different senses. They will use words to describe their experiences.
pcf35	Use equipment for investigation.	Children will use a variety of materials for investigation and data collection.

Recognize and solve problems through active exploration, including trial and error and interacting with peers and adults.

pcf36	Make and verify predictions about what will occur;	Children will make predictions about what will occur based on observations, manipulation and previous experiences. They will use resources such as experiments, books, computer software, peers and adults to verify their predictions.
pcf37	Compare and contrast objects and events;	Children will identify attributes for comparison, compare characters of stories or events of stories, note similarities and differences, or find patterns.
pcf38	Classify objects and events based on self-selected criteria; and	Children will identify ways to organize objects or information and provide the rationale for their method of classification.
pcf39	Use language that shows understanding of scientific principles to explain why things happen;	Children will use vocabulary that indicates their understanding of scientific principles.
pcf40	Engage in a scientific experiment with a peer or with a small group.	Children will conduct observations or experiments with one peer or with a small group using sharing and turn-taking skills.

Organize and express their understanding of common properties and attributes of things.

pcf41	Recognize simple patterns and duplicate or extend them;	Children will use a variety of manipulatives and art media to create or imitate visual or auditory patterns.
pcf42	Create and duplicate patterns and shapes using a variety of materials;	Building on their recognition of patterns, children will create their own patterns with a variety of materials and duplicate patterns presented to them.
pcf43	Sort objects by one or more attributes and regroup the objects based on a new attribute;	Children will classify objects by attributes that they select.
pcf44	Order several objects on the basis of one attribute;	Children will arrange objects in a sequence that they can explain.
pcf45	Show spatial awareness by demonstrating an understanding of position and order;	Children will use vocabulary to indicate their knowledge of position and order.
pcf46	Use common instruments to measure things;	Children will use a variety of instruments to measure weight, volume, height, distance and temperature.
pcf47	Demonstrate understanding of one-to-one correspondence while counting.	Children will count objects and make the connection between number and quantity.
pcf48	Show curiosity and independent interest in number-related activities;	Children will engage in counting and discussing quantity as they play.
pcf49	Estimate and verify the number of objects;	Children will make estimates of quantity, distance, weight and length, and use measuring tools and other ways to verify the estimation.
pcf50	Demonstrate an understanding of sequence of events and time periods; and	Children will describe or represent a series of events in the appropriate sequence. Children will use words to denote time periods or a sequence of events.
pcf51	Collect, organize and display information.	Children will demonstrate a variety of strategies to share information.

COGNITIVE DEVELOPMENT: LANGUAGE AND LITERACY

Communicate their experiences, ideas and feelings by speaking.

pcf53	Speak clearly, including appropriate tone and inflection	Children will moderate volume, speaking so that their words will be understood by peers and adults.
pcf53	Use multiple-word sentences to describe ideas, feelings and actions	Children will use several sentences, with at least five words in each sentence, to respond to a question or express, ideas, thoughts and feelings.
pcf54	Speak to initiate a conversation or enter into a play situation	Children will use language to engage in conversation b y making statements or by asking questions.
pcf55	Speak for a variety of purposes	Children use language to retell stories and experiences, make up stories, describe, ask questions, get information, and ask for assistance.

Listen with understanding to directions, conversations and stories.

pcf56	Demonstrate understanding of basic conversational vocabulary;	Children will respond to their names, requests for action or information, and follow two-step directions.
pcf57	Demonstrate understanding of messages in conversation; and	Children will attend to conversation and indicate understanding by their behavior.
pcf58	Retell information from a story.	After listening to a story, children will retell the basic story line and will recall characters and location.

Provide children with opportunities to exhibit interest in reading.

pcf59	Show independent interest in reading-related activities;	Children will choose to read a book or engage in reading-related activities during learning-center time.
pcf60	Attend to a story;	Children will listen with interest to a story read or told by an adult or another child.
pcf61	Demonstrate book awareness;	Children will hold a book upright, turn pages from the front of the book to the back, and scan pages from top to bottom and left to right.
pcf62	Recognize matching sounds and some printed letters; and	Children will begin to become aware of the connection between letters and sounds.
pcf63	Recognize several printed words.	Children will name several words that are familiar to them in their environment.

Use different forms of writing such as drawing, letter-like forms, invented spelling and conventional forms.

pcf64	Use symbols or drawings to express thoughts, feelings and ideas;	Children will draw or "write" about their experiences.
pcf65	Print or copy their first names; and	Children will use a sample or will independently print their first name.
pcf66	Use letter-like approximations to write words or ideas.	Children will develop an awareness of letters and the connection between oral language and writing. They will "write" words on paper without a sense of top or bottom, left to right or letter order in a word. Children may also use letter or word stamps, a computer or a typewriter.

CREATIVE EXPRESSION/AESTHETIC DEVELOPMENT

Exhibit curiosity about and explore how materials function and affect the senses.

pcf67	Use a variety of art materials and activities for sensory experience and exploration; and	Children will experiment with different ways to use art materials. Children will experience materials of different textures and smells.
pcf68	Elect to use the art media	During learning center or choice time, children will choose to engage in a creative art activity.

Create (imagine, experiment, plan, make, evaluate, refine and present/exhibit) works that express or represent experiences, ideas, feelings and fantasy using various media.

pcf69	Demonstrate the ability to represent experiences, thoughts and ideas using several art forms; and	Children will select different art materials (e.g., tempera paints, items for collages, markers, wood) to represent thoughts, ideas and experiences, using a few details.
pcf70	Use a variety of visual art media for self-expression.	Children will select different media to express emotions and ideas.

Represent fantasy and real-life experiences through pretend play.

pcf71	Assume the role of someone or something else and talk in the language/tone appropriate for that person or thing; and	
pcf72	Engage in cooperative pretend play with another child.	A child will take on a role in pretend play, interact with another child who is also in a pretend role, and will engage in a play sequence.

Opportunities to engage in musical and creative movement activities.

pcf73	Participate in group musical experiences, which may include listening to music, singing songs, doing finger plays and using musical instruments;	Children will willingly participate in singing songs, finger plays, musical games and other musical activities.
pcf74	Initiate the singing of songs, finger plays, the use of musical instruments or the use of tapes or compact discs; and	Children will select musical instruments or use tape recorders during learning center time. They will spontaneously sing songs.
pcf75	Participate in creative movement and dance.	Children will engage in a variety of movement and dance activities individually and in a group.

Describe or respond to their own creative work or the creative work of others.

pcf76	Use oral language to explain or describe or ask questions about a work of art; and	When asked "Can you tell me about your picture", children will describe the drawing or painting. When asked "What do you think this picture is about," children will give an explanation.
pcf77	Express interest in and show appreciation for the creative work of others.	Children will respond in various ways to the creative work of others, e.g., through body language, facial expression or oral language.

Content Standards
Science Content Codes

Directions: Code at the finest level possible. Do not use the upper code if you have used the lower code from the same family. You can record up to 5 codes.

sc1	**Science as Inquiry**
sc1.1	Abilities necessary to do scientific inquiry
sc1.2	Understanding about scientific inquiry
sc2	**Physical Science**
sc2.1	Properties of objects and materials
sc2.2	Position and motion of objects
sc2.3	Light, heat, electricity, and magnetism
sc3	**Life Science**
sc3.1	The characteristics of organisms
sc3.2	Life cycles of organisms
sc3.3	Organisms and environments
sc4	**Earth and Space Science**
sc4.1	Properties of earth materials
sc4.2	Objects in the sky
sc4.3	Changes in earth and sky
sc5	**Science and Technology**
sc5.1	Abilities of technological design
sc5.2	Understanding about science and technology
sc5.3	Abilities to distinguish between natural objects and objects made by humans
sc6	**Personal and Social Perspectives**
sc6.1	Personal health
sc6.2	Characteristics and changes in populations
sc6.3	Types of resources
sc6.4	Changes in environments
sc6.5	Science and technology in local challenges
sc7	**History of Nature and Science**
sc7.1	Science as a human endeavor

Content Codes for Preschool Guidelines

Directions: Code at the finest level possible. Do not use the upper code if you have used the lower code from the same family. You can record up to 5 codes.

pk1	**Physical Development**
pk1.1	Large muscles
pk1.2	Small muscles
pk1.3	Coordination
pk1.4	Body awareness
pk1.5	Balance
pk1.6	Stamina
pk1.7	Fitness, exercise
pk1.8	Height, weight
pk1.9	Growth
pk2	**Health**
pk2.1	Hygiene skills
pk3	**Nutrition**
pk3.1	Nutritious foods
pk4	**Safety**
pk4.1	Safety rules
pk4.2	Harmful situations
pk5	**Self Care**
pk5.1	Personal care routines
pk6	**Social and Emotional Development**
pk6.1	Interactions with adult
pk6.2	Interactions with peers
pk6.3	Social problem solving
pk6.4	Self-concept
pk6.5	Self-regulation
pk6.6	Rules and routines
pk6.7	Self-efficacy
pk6.8	Emotional expression
pk6.9	Recognizes emotions in others
pk6.10	Adaptability
pk6.11	Diversity
pk6.12	Socio-dramatic play

pk7	**Cognition**
pk7.1	Causation
pk7.2	Reasoning
pk7.3	Problem solving
pk7.4	Critical thinking
pk7.5	Symbolic representation
pk8	**Language Development**
pk8.1	Speaking clearly
pk8.2	Social use of language
pk8.3	Complexity of language
pk8.4	Creative use of language
pk8.5	Questioning
pk8.6	Vocabulary
pk8.7	Listening comprehension
pk8.8	Non-verbal communication
pk9	**Literacy**
pk9.1	Alphabet knowledge
pk9.2	Concepts about print
pk9.3	Sight word recognition
pk9.4	Letter- sound correspondence
pk9.5	Phonological awareness
pk9.6	Story sense
pk9.7	Early writing
pk10	**Mathematics**
pk10.1	Numbers/number sense
pk10.2	Relationships and operations
pk10.3	Shapes
pk10.4	Patterns
pk10.5	Measurement
pk10.6	Sequencing
pk10.7	Comparing attributes
pk10.8	Classification
pk10.9	Spatial awareness
pk11	**Science**
pk11.1	Scientific skills and methods
pk11.2	Objects and materials
pk11.3	Living organisms
pk11.4	Earth, sky, weather
pk11.5	Technology

pk12	**Social Studies**
pk12.1	Family and community
pk12.2	History and events
pk12.3	People and their environment
pk12.4	Government
pk13	**Creative Arts**
pk13.1	Expression and representation
pk13.2	Understanding and appreciation
pk13.3	Music
pk13.4	Art
pk13.5	Dance
pk13.6	Drama
pk14	**Approaches to Learning**
pk14.1	Curiosity and interest
pk14.2	Initiative
pk14.3	Persistence and attentiveness
pk14.4	Creativity and inventiveness
pk14.5	Reflection
pk14.6	Joy of learning

Appendix B

Additional Tables for Chapters 2, 3, and 4

Table B-2.1 Preschool Curriculum Framework: Content Areas of Target Objectives

Target Objectives: Personal and Social Development	Frequency of Mapping (# selected / # of pairs completing the mapping)		
	Most	**Second**	**Third**
Exhibit curiosity, creativity, self-direction and persistence in learning situations.			
Engage in activities that they select or create and demonstrate self-direction in use of materials; Children will make independent decisions about what learning center or materials to work with and will get and use the materials they need.	14.2 (3/8)*; 6.7 (3/8)		
Sustain attention to task; Children can remain engaged in an activity that they have selected for a minimum of 15 minutes.	14.3 (6/8)		
Demonstrate the ability to use a minimum of two different strategies to attempt to solve a problem; Children will attempt several different strategies when encountering difficulty while they are using materials.	7.3 (5/8)	14.3 (4/8)	14.4 (2/8)
Demonstrate delight or satisfaction when completing a task or solving a problem; Children receive pleasure or gratification when completing a task or solving a problem by themselves.	14.6 (6/8)	7.3 (2/8)	
Describe themselves using several basic characteristics.			
Refer to themselves by first and last name; Children will state whether they are a girl or a boy. They will identify the members of their family by their roles in the family, e.g., mother, brother, grandmother, uncle.	6.4 (4/8)	12.1 (3/8)	
Identify themselves by family and by gender; Children will state whether they are a girl or a boy. They will identify the members of their family by their roles in the family, e.g., mother, brother, grandmother, uncle.	12.1 (4/8)	6.4 (2/8)	
Demonstrate awareness of one's own and others' feelings.			
Use words to express emotions or feelings; Children move from more physical displays of emotions and begin to verbalize them.	6.5 (4/8); 6.8 (4/8)	8.3 (3/8)	
Participate in and exhibit self-control in group situations.			
Participate in small- and large-group activities; Children will participate in a variety of small-group activities such as cooking and reading together, and in large-group activities such as circle time and creative movement.	6.2 (5/8)	6.6 (2/8); 13.5 (2/8)	
Manage transition from one activity to the next; Children will clean up and put away materials in appropriate places and move to the next activity with few verbal prompts.	6.6 (5/8)		
Follow classroom and playground rules; Children will demonstrate an understanding of classroom and playground rules. They will also participate in the development of rules.	6.6 (5/8)		

Target Objectives: Personal and Social Development	Frequency of Mapping (# selected / # of pairs completing the mapping)		
	Most	**Second**	**Third**
Be aware of and follow the classroom schedule and routines; Children will be familiar with and follow the daily schedule and routines. They will be able to tell another person what activity comes next and about any special activity planned for the day.	6.6 (6/8)	8.2 (2/8)	
Interact appropriately with peers and familiar adults.			
Interact with one or more children, beginning to play or work cooperatively; Children are moving from parallel to cooperative play. Children will engage in activities that involve interactions with one or more children to enhance sociodramatic play or to work together to build or complete a project.	6.2 (5/8)	6.12 (5/8)	
Enter into or initiate a play situation; Children will enter into a play situation. Children will initiate a play theme with peers.	6.2 (4/8)	6.12 (3/8)	
Demonstrate empathy and caring for others; Children assist other children in clean-up or work together to complete a project. If one child gets injured, other children will acknowledge how that child might be feeling and offer help.	6.9 (6/8)		
Seek help from peers or adults; When children need assistance with a self-help task or in solving a problem, they will ask for help from adults or peers in the classroom.	7.3 (4/8)	6.1 (3/8)	6.2 (2/8)
Use age-appropriate conflict-resolution strategies.			
Use words to identify the conflict; Children will use words to identify the problem they are having with a peer.	6.8 (2/8); 6.5 (2/8)		
Engage in developing solutions and work to resolve conflicts; Children will participate in the facilitation of a conflict resolution by an adult, agree to a solution and follow it.	6.3 (6/8)	7.3 (2/8); 6.1 (2/8)	
Seek adult help when involved in a conflict; If a child cannot resolve a conflict with another child, he or she will ask an adult for assistance.	6.3 (6/8)	6.1 (3/8)	
Recognize similarities and appreciate differences in people.			
State at least two ways in which children are similar and two ways in which they are different; Children notice similarities and differences between themselves and others. Children verbalize these similarities and differences.	6.11 (5/8)	8.2 (2/8)	
Interact with a variety of children in the program; Children will choose to engage in activities with a variety of peers. They will play with others regardless of gender, race or ability.	6.11 (4/8); 6.2 (4/8)		

Target Objectives: Physical Development	Frequency of Mapping (# selected / # of pairs completing the mapping)		
	Most	**Second**	**Third**
Engage in a wide variety of gross-motor activities that are child selected and teacher initiated.			
Demonstrate competence in a variety of activities that require coordinated movement using large muscles.	1.1 (5/8)	1.3 (4/8)	1.5 (2/8); 1.4 (2/8)
Perform activities that combine large-muscle movements with equipment.	1.1 (6/8)	1.3 (5/8)	1.5 (2/8); 1.4 (2/8)
Combine a sequence of several motor skills in an organized way.	1.3 (6/8)	1.1 (3/8); 1.4 (3/8); 1.5 (3/8)	
Choose to engage in physical activity that is child selected or teacher initiated.	1.7; 14.2 (3/8)		
Use a variety of materials that promote eye-hand coordination and small-muscle development.			
Perform fine-motor tasks that require small-muscle strength and control.	1.2 (6/8)	1.3 (2/8); 1.4 (2/8)	
Use eye-hand coordination to successfully perform fine-motor tasks.	1.2 (5/8)	1.3 (4/8)	1.4 (2/8)
Show beginning control of writing, drawing and art tools.	1.2 (5/8)	1.3 (4/8)	9.7 (2/8)
Move through an environment with body control; Children develop motor control, coordination and balance in the early years. A child should be able to walk in the classroom and not bump into furniture or people.	1.4 (5/8)	1.3 (4/8)	1.5 (3/8)
Demonstrate spatial awareness in fine-motor activities; Children will demonstrate an awareness of top and bottom, up and down.	1.4 (3/8); 10.9 (3/8)		
Opportunities to choose nutritious meals and snacks.			
Recognize and eat a variety of nutritious foods; When presented with several foods, children will be able to tell which are considered healthy foods to eat.	3.1 (6/8)		
Practice basic hygiene and self-help skills.			
Practice personal hygiene; Children will wash hands, brush teeth, toilet independently and use tissues appropriately.	2.1 (5/8)	5.1 (3/8)	
Use self-help skills; Children will put on and take off clothes. They will select, use and put away materials.	5.1 (6/8)		

Target Objectives: Cognitive Development-Logical Mathematical Thinking	Frequency of mapping (# selected / # of pairs completing the mapping)		
	Most	**Second**	**Third**
Express wonder, ask questions and seek answers about the natural world.			
Ask questions about and comment on observations and experimentation; Children are naturally curious. When provided with opportunities to observe and investigate the environment, they will ask questions about and comment on their observations and what they discover.	11.1 (4/8)	14.1 (3/8); 8.5 (3/8)	
Collect, describe and record information; Children will make comparisons among different objects using different senses. They will use words to describe their experiences.	10.7 (4/8)	11.1 (2/8); 8.4 (2/8); 14.5 (2/8)	
Use equipment for investigation; Children will use a variety of materials for investigation and data collection.	11.1 (4/8)	11.2 (3/8)	14.1 (2/8); 14.4 (2/8)
Recognize and solve problems through active exploration, including trial and error and interacting with peers and adults.			
Make and verify predictions about what will occur; Children will make predictions about what will occur based on observations, manipulation and previous experiences. They will use resources such as experiments, books, computer software, peers and adults to verify their predictions.	7.2 (5/8); 7.4 (5/8)	11.1 (4/8)	
Compare and contrast objects and events; Children will identify attributes for comparison, compare characters of stories or events of stories, note similarities and differences, or find patterns.	10.7 (4/8)		
Classify objects and events based on self-selected criteria; Children will identify ways to organize objects or information and provide the rationale for their method of classification.	10.8 (5/8)	10.7 (2/8)	
Use language that shows understanding of scientific principles to explain why things happen; Children will use vocabulary that indicates their understanding of scientific principles.	11.1 (3/8); 8.3 (3/8)		
Engage in a scientific experiment with a peer or with a small group; Children will conduct observations or experiments with one peer or with a small group using sharing and turn-taking skills.	6.2 (5/8); 11.1 (5/8)	6.6 (2/8)	
Organize and express their understanding of common properties and attributes of things.			
Recognize simple patterns and duplicate or extend them; Children will use a variety of manipulatives and art media to create or imitate visual or auditory patterns.	10.4 (3/8); 13.1 (3/8); 13.4 (3/8)	13.3 (2/8); 13.4 (2/8); 14.4 (2/8)	
Create and duplicate patterns and shapes using a variety of materials; Building on their recognition of patterns, children will create their own patterns with a variety of materials and duplicate patterns presented to them.	10.4 (5/8)		
Sort objects by one or more attributes and regroup the objects based on a new attribute; Children will classify objects by attributes that they select.	10.8 (4/8)	10.7 (3/8)	
Order several objects on the basis of one attribute; Children will arrange objects in a sequence that they can explain.	10.6 (4/8)	7.2 (2/8); 8.4 (2/8)	

Target Objectives: Cognitive Development-Logical Mathematical Thinking	Frequency of mapping (# selected / # of pairs completing the mapping)		
	Most	**Second**	**Third**
Show spatial awareness by demonstrating an understanding of position and order; Children will use vocabulary to indicate their knowledge of position and order.	10.9 (5/8)	8.6 (2/8); 10.6 (2/8)	
Use common instruments to measure things; Children will use a variety of instruments to measure weight, volume, height, distance and temperature.	10.5 (4/8)		
Demonstrate understanding of one-to-one correspondence while counting; Children will count objects and make the connection between number and quantity.	10.1 (5/8)	10.2 (4/8)	
Show curiosity and independent interest in number-related activities; Children will engage in counting and discussing quantity as they play.	10.1 (4/8)	8.4 (2/8); 10.2 (2/8)	
Estimate and verify the number of objects; Children will make estimates of quantity, distance, weight and length, and use measuring tools and other ways to verify the estimation.	10.5 (5/8)	7.2 (3/8); 11.1 (3/8)	
Demonstrate an understanding of sequence of events and time periods; Children will describe or represent a series of events in the appropriate sequence. Children will use words to denote time periods or a sequence of events.	10.6 (4/8)	8.6 (3/8)	8.4 (2/8)
Collect, organize and display information; Children will demonstrate a variety of strategies to share information.	7.3 (2/8); 8.2 (2/8); 14.4 (2/8)		

Target Objectives: Cognitive Development-Language and Literacy	Frequency of Mapping (# selected / # of pairs completing the mapping)		
	Most	**Second**	**Third**
Communicate their experiences, ideas and feelings by speaking.			
Speak clearly, including appropriate tone and inflection; Children will moderate volume, speaking so that their words will be understood by peers and adults.	8.1 (6/8)	8.2 (5/8); 8.3 (5/8)	8.4 (3/8)
Use multiple-word sentences to describe ideas, feelings and actions; Children will use several sentences, with at least five words in each sentence, to respond to a question or express, ideas, thoughts and feelings.	8.2 (4/8)	8.5 (3/8)	8.1 (2/8)
Speak to initiate a conversation or enter into a play situation; Children will use language to engage in conversation b y making statements or by asking questions.	8.4 (5/8)	8.2 (2/8); 8.5 (2/8)	
Speak for a variety of purposes; Children use language to retell stories and experiences, make up stories, describe, ask questions, get information, and ask for assistance.	8.1 (6/8)	8.2 (5/8); 8.3 (5/8)	8.4 (3/8)
Listen with understanding to directions, conversations and stories.			
Demonstrate understanding of basic conversational vocabulary; Children will respond to their names, requests for action or information, and follow two-step directions.	8.7 (5/8)	6.4 (2/8)	
Demonstrate understanding of messages in conversation; Children will attend to conversation and indicate understanding by their behavior.	8.7 (4/8)	8.8 (3/8)	
Retell information from a story; After listening to a story, children will retell the basic story line and will recall characters and location.	9.6 (4/8)	8.4 (3/8)	
Provide children with opportunities to exhibit interest in reading.			
Show independent interest in reading-related activities; Children will choose to read a book or engage in reading-related activities during learning-center time.	9.5 (2/8); 9.6 (2/8); 14.1 (2/8); 14.2 (2/8)		
Attend to a story; Children will listen with interest to a story read or told by an adult or another child.	9.6 (3/8)	8.7 (2/8)	
Demonstrate book awareness; Children will hold a book upright, turn pages from the front of the book to the back, and scan pages from top to bottom and left to right.	9.2 (5/8)		
Recognize matching sounds and some printed letters; Children will begin to become aware of the connection between letters and sounds.	9.4 (5/8)	9.5 (3/8)	
Recognize several printed words; Children will name several words that are familiar to them in their environment.	9.3 (5/8)	8.6 (2/8)	

Target Objectives: Cognitive Development-Language and Literacy	Frequency of Mapping (# selected / # of pairs completing the mapping)		
	Most	**Second**	**Third**
Use different forms of writing such as drawing, letter-like forms, invented spelling and conventional forms.			
Use symbols or drawings to express thoughts, feelings and ideas; Children will draw or "write" about their experiences.	9.7 (5/8)	13.1 (4/8)	7.5 (3/8)
Print or copy their first names; Children will use a sample or will independently print their first name.	9.7 (5/8)	9.1 (3/8)	
Use letter-like approximations to write words or ideas; Children will develop an awareness of letters and the connection between oral language and writing. They will "write" words on paper without a sense of top or bottom, left to right or letter order in a word. Children may also use letter or word stamps, a computer or a typewriter.	9.7 (4/8)	11.5 (3/8)	

Target Objectives: Creative Expression/Aesthetic Development	Frequency of Mapping (# selected / # of pairs completing the mapping)		
	Most	**Second**	**Third**
Exhibit curiosity about and explore how materials function and affect the senses.			
Use a variety of art materials and activities for sensory experience and exploration; Children will experiment with different ways to use art materials. Children will experience materials of different textures and smells.	13.4 (4/8)	13.1 (3/8); 14.4 (3/8)	
Elect to use the art media; During learning center or choice time, children will choose to engage in a creative art activity.	13.4 (5/8)	13.1 (2/8); 14.2 (2/8); 14.4 (2/8)	
Create (imagine, experiment, plan, make, evaluate, refine and present/exhibit) works that express or represent experiences, ideas, feelings and fantasy using various media.			
Demonstrate the ability to represent experiences, thoughts and ideas using several art forms; Children will select different art materials (e.g., tempera paints, items for collages, markers, wood) to represent thoughts, ideas and experiences, using a few details.	13.4 (5/8)	13.1 (3/8)	14.1 (2/8); 14.4 (2/8)
Use a variety of visual art media for self-expression; Children will select different media to express emotions and ideas.	13.1 (5/8)		
Represent fantasy and real-life experiences through pretend play.			
Assume the role of someone or something else and talk in the language/tone appropriate for that person or thing.	13.6 (4/8)	6.12 (2/8)	
Engage in cooperative pretend play with another child; A child will take on a role in pretend play, interact with another child who is also in a pretend role, and will engage in a play sequence.	6.12 (3/8)	13.6 (2/8)	
Opportunities to engage in musical and creative movement activities.			
Participate in group musical experiences, which may include listening to music, singing songs, doing finger plays and using musical instruments; Children will willingly participate in singing songs, finger plays, musical games and other musical activities.	13.3 (4/8)		
Initiate the singing of songs, finger plays, the use of musical instruments or the use of tapes or compact discs; Children will select musical instruments or use tape recorders during learning center time. They will spontaneously sing songs.	13.3 (4/8)		
Participate in creative movement and dance; Children will engage in a variety of movement and dance activities individually and in a group.	13.5 (4/8)		
Describe or respond to their own creative work or the creative work of others.			
Use oral language to explain or describe or ask questions about a work of art; When asked "Can you tell me about your picture", children will describe the drawing or painting. When asked "What do you think this picture is about," children will give an explanation.	8.4 (3/8)	13.1 (2/8)	

Target Objectives: Creative Expression/Aesthetic Development	Frequency of Mapping (# selected / # of pairs completing the mapping)		
	Most	Second	Third
Express interest in and show appreciation for the creative work of others; Children will respond in various ways to the creative work of others, e.g., through body language, facial expression or oral language.	13.2 (3/8)	8.8 (2/8)	

Note. GLC = Grade Level Concept; GLE = Grade Level Expectation.

* The text descriptors for the content codes are located in Appendix A.

Table B-2.2 Preschool Curriculum Framework to Guidelines for the Development of Infant and Toddler Early Learning: Aligned Objectives

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
pcf1	Children will make independent decisions about what learning center or materials to work with and will get and use the materials they need.	it7	Begins to show independence and continues to show pride in his accomplishments.	Addresses the same concept but the companion is more general than the target	Minor ambiguity	Companion is broader deeper more cognitively complex
pcf2	Children can remain engaged in an activity that they have selected for a minimum of 15 minutes.	it2	Will play for longer and longer periods of time.	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex
pcf3	Children will attempt several different strategies when encountering difficulty while they are using materials.	it22	Is beginning to solve many problems on his own and will try many ways to solve a problem that he is facing.	Addresses the same concept at the same level of specificity.	Clear linkage	The two are at the same level of difficulty
pcf4	Children receive pleasure or gratification when completing a task or solving a problem by themselves.	it7	Begins to show independence and continues to show pride in his accomplishments.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
pcf5	Children will state whether they are a girl or a boy. They will identify the members of their family by their roles in the family, e.g., mother, brother, grandmother, uncle.	No match		Not applicable	Not applicable	Not applicable
pcf6	Children will state whether they are a girl or a boy. They will identify the members of their family by their roles in the family, e.g., mother, brother, grandmother, uncle.	No match		Not applicable	Not applicable	Not applicable

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
pcf7	Children move from more physical displays of emotions and begin to verbalize them.	it9	May say “no” at first, even to something she wants.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
pcf8	Children will participate in a variety of small-group activities such as cooking and reading together, and in large-group activities such as circle time and creative movement.	it3	Is more involved and interacts more in play with other children.	Content connection is indirect. One addresses a foundational skill that is important to achieving the other.	Clear linkage	Target is broader deeper more cognitively complex
pcf9	Children will clean up and put away materials in appropriate places and move to the next activity with few verbal prompts.	No match		Not applicable	Not applicable	Not applicable
pcf10	Children will demonstrate an understanding of classroom and playground rules. They will also participate in the development of rules.	No match		Not applicable	Not applicable	Not applicable
pcf11	Children will be familiar with and follow the daily schedule and routines. They will be able to tell another person what activity comes next and about any special activity planned for the day.	No match		Not applicable	Not applicable	Not applicable
pcf12	Children are moving from parallel to cooperative play. Children will engage in activities that involve interactions with one or more children to enhance sociodramatic play or to work together to build or complete a project.	it4	Begins to seek out play with other children on his own.	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex
pcf13	Children will enter into a play situation. Children will initiate a play theme with peers.	it4	Begins to seek out play with other children on his own.	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
pcf14	Children assist other children in clean-up or work together to complete a project. If one child gets injured, other children will acknowledge how that child might be feeling and offer help.	No match		Not applicable	Not applicable	Not applicable
pcf15	When children need assistance with a self-help task or in solving a problem, they will ask for help from adults or peers in the classroom.	it22	Is beginning to solve many problems on his own and will try many ways to solve a problem that he is facing.	Addresses the same concept at the same level of specificity.	Minor ambiguity	Target is broader deeper more cognitively complex
pcf16	Children will use words to identify the problem they are having with a peer.	No match		Not applicable	Not applicable	Not applicable
pcf17	Children will participate in the facilitation of a conflict resolution by an adult, agree to a solution and follow it.	No match		Not applicable	Not applicable	Not applicable
pcf18	If a child cannot resolve a conflict with another child, he or she will ask an adult for assistance.	No match		Not applicable	Not applicable	Not applicable
pcf19	Children notice similarities and differences between themselves and others. Children verbalize these similarities and differences.	No match		Not applicable	Not applicable	Not applicable
pcf20	Children will choose to engage in activities with a variety of peers. They will play with others regardless of gender, race or ability.	No match		Not applicable	Not applicable	Not applicable
pcf21	Demonstrate competence in a variety of activities that require coordinated movement using large muscles;	it10	Enjoys running but may have difficulty stopping and turning. He also likes hopping, skipping, jumping and climbing.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
pcf22	Perform activities that combine large-muscle movements with equipment;	it12	Throws a ball and kicks it with one foot.	Addresses the same concept at the same level of specificity.	Clear linkage	The two are at the same level of difficulty
pcf23	Combine a sequence of several motor skills in an organized way; and	No consensus		Not applicable	Not applicable	Not applicable
pcf24	Choose to engage in physical activity that is child selected or teacher initiated.	No match		Not applicable	Not applicable	Not applicable
pcf25	Perform fine-motor tasks that require small-muscle strength and control;	it21	Begins to cut with safety scissors, draws straight lines, and can copy a circle.	Addresses same concept but target is more general than companion	Clear linkage	Companion is broader deeper more cognitively complex
pcf26	Use eye-hand coordination to successfully perform fine-motor tasks; and	it21	Begins to cut with safety scissors, draws straight lines, and can copy a circle.	Addresses same concept but target is more general than companion	Clear linkage	Target is broader deeper more cognitively complex
pcf27	Show beginning control of writing, drawing and art tools	it19	Enjoys messy, creative play such as painting with a paint brush, finger painting, scribbling, gluing and taping under your careful supervision.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
pcf28	Children develop motor control, coordination and balance in the early years. A child should be able to walk in the classroom and not bump into furniture or people.	No consensus		Not Enough Data	Not Enough Data	Not Enough Data
pcf29	Children will demonstrate an awareness of top and bottom, up and down.	No match		Not applicable	Not applicable	Not applicable
pcf30	When presented with several foods, children will be able to tell which are considered healthy foods to eat.	No match		Not applicable	Not applicable	Not applicable

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
pcf31	Children will wash hands, brush teeth, toilet independently and use tissues appropriately.	it16	Begins to brush his own teeth with help.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
pcf32	Children will put on and take off clothes. They will select, use and put away materials.	it15	Helps to dress herself with clothing that's easy to put on. She may still need your help with snaps, buttons and zippers.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
pcf33	Children are naturally curious. When provided with opportunities to observe and investigate the environment, they will ask questions about and comment on their observations and what they discover.	No match		Not applicable	Not applicable	Not applicable
pcf34	Children will make comparisons among different objects using different senses. They will use words to describe their experiences.	it28	Notices differences in size, shape and color, and enjoys matching and grouping things that are alike.	No Consensus	Clear linkage	Target is broader deeper more cognitively complex
pcf35	Children will use a variety of materials for investigation and data collection.	No match		Not applicable	Not applicable	Not applicable
pcf36	Children will make predictions about what will occur based on observations, manipulation and previous experiences. They will use resources such as experiments, books, computer software, peers and adults to verify their predictions.	No match		Not applicable	Not applicable	Not applicable
pcf37	Children will identify attributes for comparison, compare characters of stories or events of stories, note similarities and differences, or find patterns.	it28	Notices differences in size, shape and color, and enjoys matching and grouping things that are alike.	Not Enough Data	Minor ambiguity	Target is broader deeper more cognitively complex

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
pcf38	Children will identify ways to organize objects or information and provide the rationale for their method of classification.	it28	Notices differences in size, shape and color, and enjoys matching and grouping things that are alike.	Addresses the same concept at the same level of specificity.	No Consensus	Target is broader deeper more cognitively complex
pcf39	Children will use vocabulary that indicates their understanding of scientific principles.	No match		Not applicable	Not applicable	Not applicable
pcf40	Children will conduct observations or experiments with one peer or with a small group using sharing and turn-taking skills.	No match		Not applicable	Not applicable	Not applicable
pcf41	Children will use a variety of manipulatives and art media to create or imitate visual or auditory patterns.	No match		Not applicable	Not applicable	Not applicable
pcf42	Building on their recognition of patterns, children will create their own patterns with a variety of materials and duplicate patterns presented to them.	No match		Not applicable	Not applicable	Not applicable
pcf43	Children will classify objects by attributes that they select.	it28	Notices differences in size, shape and color, and enjoys matching and grouping things that are alike.	No Consensus	Minor ambiguity	Target is broader deeper more cognitively complex
pcf44	Children will arrange objects in a sequence that they can explain.	No match		Not applicable	Not applicable	Not applicable
pcf45	Children will use vocabulary to indicate their knowledge of position and order.	No match		Not applicable	Not applicable	Not applicable
pcf46	Children will use a variety of instruments to measure weight, volume, height, distance and temperature.	No match		Not applicable	Not applicable	Not applicable

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
pcf47	Children will count objects and make the connection between number and quantity.	it26	May count two or three things.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
pcf48	Children will engage in counting and discussing quantity as they play.	it26	May count two or three things.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
pcf49	Children will make estimates of quantity, distance, weight and length, and use measuring tools and other ways to verify the estimation.	No match		Not applicable	Not applicable	Not applicable
pcf50	Children will describe or represent a series of events in the appropriate sequence. Children will use words to denote time periods or a sequence of events.	it29	Remembers events and places he has been and enjoys telling others about his experiences.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
pcf51	Children will demonstrate a variety of strategies to share information.	it31	Enjoys expressing himself through language. He talks about what he is doing while doing it, trying out what he has learned about communicating with others in new contexts. He expects even strangers to be language partners with him.	Addresses related aspects of the knowledge or skill but in a different way (companion is related but "off center")	Minor ambiguity	Target is broader deeper more cognitively complex
pcf52	Children will moderate volume, speaking so that their words will be understood by peers and adults.	No match		Not applicable	Not applicable	Not applicable

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
pcf53	Children will use several sentences, with at least five words in each sentence, to respond to a question or express, ideas, thoughts and feelings.	it31	Enjoys expressing himself through language. He talks about what he is doing while doing it, trying out what he has learned about communicating with others in new contexts. He expects even strangers to be language partners with him.	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex
pcf54	Children will use language to engage in conversation by making statements or by asking questions.	it42	Has conversations with adults and peers that make sense, often with four or more back and forth comments on a variety of topics.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
pcf55	Children use language to retell stories and experiences, make up stories, describe, ask questions, get information, and ask for assistance.	it36	Enjoys telling and retelling stories and short jokes (sometimes forgetting the punch line).	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
pcf56	Children will respond to their names, requests for action or information, and follow two-step directions.	No match		Not applicable	Not applicable	Not applicable
pcf57	Children will attend to conversation and indicate understanding by their behavior.	it42	Has conversations with adults and peers that make sense, often with four or more back and forth comments on a variety of topics.	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex
pcf58	After listening to a story, children will retell the basic story line and will recall characters and location.	it36	Enjoys telling and retelling stories and short jokes (sometimes forgetting the punch line).	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
pcf59	Children will choose to read a book or engage in reading-related activities during learning-center time.	it39	Enjoys “reading” familiar books to you and other playmates.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
pcf60	Children will listen with interest to a story read or told by an adult or another child.	it39	Enjoys “reading” familiar books to you and other playmates.	Addresses related aspects of the knowledge or skill but in a different way (companion is related but "off center")	Minor ambiguity	There is not a direct progression from one to the other.
pcf61	Children will hold a book upright, turn pages from the front of the book to the back, and scan pages from top to bottom and left to right.	it18	Can turn pages of a book one by one.	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex
pcf62	Children will begin to become aware of the connection between letters and sounds.	No match		Not applicable	Not applicable	Not applicable
pcf63	Children will name several words that are familiar to them in their environment.	No match		Not applicable	Not applicable	Not applicable
pcf64	Children will draw or "write" about their experiences.	No match		Not applicable	Not applicable	Not applicable
pcf65	Children will use a sample or will independently print their first name.	No consensus		Not applicable	Not applicable	Not applicable
pcf66	Children will develop an awareness of letters and the connection between oral language and writing. They will "write" words on paper without a sense of top or bottom, left to right or letter order in a word. Children may also use letter or word stamps, a	No match		Not applicable	Not applicable	Not applicable

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
pcf67	Children will experiment with different ways to use art materials. Children will experience materials of different textures and smells.	it19	Enjoys messy, creative play such as painting with a paint brush, finger painting, scribbling, gluing and taping under your careful supervision.	No Consensus	Minor ambiguity	Target is broader deeper more cognitively complex
pcf68	During learning center or choice time, children will choose to engage in a creative art activity.	it19	Enjoys messy, creative play such as painting with a paint brush, finger painting, scribbling, gluing and taping under your careful supervision.	Not Enough Data	Clear linkage	Target is broader deeper more cognitively complex
pcf69	Children will select different art materials (e.g., tempera paints, items for collages, markers, wood) to represent thoughts, ideas and experiences, using a few details.	it19	Enjoys messy, creative play such as painting with a paint brush, finger painting, scribbling, gluing and taping under your careful supervision.	Not Enough Data	Clear linkage	Target is broader deeper more cognitively complex
pcf70	Children will select different media to express emotions and ideas.	No match		Not applicable	Not applicable	Not applicable
pcf71	Assume the role of someone or something else and talk in the language/tone appropriate for that person or thing; and	it5	Plays make believe with one or more children.	Not Enough Data	Not Enough Data	Not Enough Data
pcf72	A child will take on a role in pretend play, interact with another child who is also in a pretend role, and will engage in a play sequence.	it5	Plays make believe with one or more children.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
pcf73	Children will willingly participate in singing songs, finger plays, musical games and other musical activities.	No match		Not applicable	Not applicable	Not applicable
pcf74	Children will select musical instruments or use tape recorders during learning center time. They will spontaneously sing songs.	No match		Not applicable	Not applicable	Not applicable

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
pcf75	Children will engage in a variety of movement and dance activities individually and in a group.	No match		Not applicable	Not applicable	Not applicable
pcf76	When asked "Can you tell me about your picture", children will describe the drawing or painting. When asked "What do you think this picture is about," children will give an explanation.	it31	Enjoys expressing himself through language. He talks about what he is doing while doing it, trying out what he has learned about communicating with others in new contexts. He expects even strangers to be language partners with him.	No Consensus	No Consensus	No Consensus
pcf77	Children will respond in various ways to the creative work of others, e.g., through body language, facial expression or oral language.	No match		Not applicable	Not applicable	Not applicable

Table B-3.1 Kindergarten Science Curriculum Standards: Content Areas of Target Objectives

Target Objectives	Frequency of mapping (# selected / # of pairs completing the mapping)		
	Most	**Second**	**Third**
K.1 – Objects have properties that can be observed and used to describe similarities and differences.			
GLC – 1. Humans have five senses that they use to observe their environment. A specific sense organ is associated with each sense.	3.1* (7/7)		
GLC – 2. Objects have properties that can be observed using the senses. Examples include size, weight, shape, color, texture, transparency, etc. An object's observable properties do not include the object's name or its uses.	2.1 (5/7)	3.1 (2/7)	
GLC – 3. Sorting objects into groups based on one (or more) of their properties makes it possible to observe and describe their similarities and differences.	2.1 (7/7)		
GLC – 4. Placing objects in order based on their size or weight makes it possible to observe patterns and describe relationships among the objects in a group.	2.1 (6/7)	1.1 (2/7)	
GLC – 5. Objects can be described and sorted based on the materials from which they are made (for example, wood, paper, fabric, plastic, glass or metal). Objects can be made of a mixture of materials.	2.1 (7/7)	4.1 (2/7)	
GLC – 6. Objects can be described and sorted based on the results of simple tests. Simple tests include actions such as bending, squeezing, holding it near a magnet or putting it in water. Objects can be described as magnetic/nonmagnetic, flexible/not flexible, hard/soft, a floater/sinker, etc.	2.1 (5/7)	1.2 (3/7)	1.1 (2/7); 2.3 (2/7)
GLC – 7. The heaviness of objects can be compared using the sense of touch. Balances and scales are measurement tools that allow people to observe and compare the heaviness of objects more accurately.	2.1 (7/7)	1.1 (2/7); 1.2 (2/7)	
GLC – 8. The temperature of the air, water or bodies can be compared using the sense of touch. A thermometer is a measurement tool that allows people to compare temperatures more accurately.	6.4 (3/7)	1.1 (2/7); 2.3 (2/7); 4.3 (2/7)	
GLC – 9. Objects can be sorted into groups based on measurements of their size. Nonstandard units for measuring size include hands, footsteps, pennies or paper clips.	2.1 (7/7)		
GLE – 1. Match each of the five senses with its associated body part and the kind of information it perceives.	3.1 (6/7)		
GLE – 2. Make scientific observations using the senses, and distinguish between an object's observable properties and its name or its uses.	1.2 (3/7)	2.1 (2/7)	
GLE – 3. Classify organisms or objects by one and two observable properties and explain the rule used for sorting (e.g., size, color, shape, texture or flexibility).	2.1 (5/7)	3.1 (4/7)	1.1 (2/7)
GLE – 4. Use simple tools and nonstandard units to estimate or predict properties such as size, heaviness, magnetic attraction and float/sink.	2.1 (4/7)	1.1 (2/7); 1.2 (2/7)	

Target Objectives	Frequency of mapping (# selected / # of pairs completing the mapping)		
	Most	**Second**	**Third**
GLE – 5. Describe properties of materials such as wood, plastic, metal, cloth or paper, and sort objects by the material from which they are made.	2.1 (5/7)	5.3 (2/7)	
GLE – 6. Count, order and sort objects by their observable properties.	2.1 (7/7)		
K.2 – Many different kinds of living things inhabit the earth.			
GLC –1. Things in our environment can be classified based on whether they are alive, were once alive or whether they were never alive.	3.1 (7/7)		
GLC – 2. Growing, responding to stimuli, and breathing are characteristics of many living things. Many living things move, but movement alone is not evidence of life. For example, cars and the wind both move, but they are not alive.	3.1 (7/7)		
GLC – 3. Reproduction is a characteristic of living things. Living things can be classified into groups based on the different ways they reproduce. For example, some living things lay eggs, while others produce seeds or give birth.	3.2 (5/7)	3.1 (3/7)	
GLC – 4. Living things can be classified as plants or animals. Plants have characteristics (such as roots, stems, leaves and flowers) that animals do not have. Animals have characteristics (such as body parts and body coverings) that plants do not have.	3.1 (6/7)		
GLC – 5. Animals can be classified into groups based on generally similar characteristics such as number of legs, type of body covering, or way of moving. Some animal groups are reptiles, insects, birds, fish and mammals.	3.1 (6/7)		
GLC – 6. Offspring generally resemble their parents but are not identical to them.	3.1 (6/7)	3.2 (2/7)	
GLC – 7. Members of the same group of animals can look and act very differently from each other. For example, goldfish and sharks are both fish, but there are distinct differences in their size, color and lifestyle. In addition, all goldfish are not identical to each other and neither are all sharks.	3.1 (7/7)		
GLC – 8. Plants can be classified into groups based on similarities in the appearance of their leaves, stems, blossoms or fruits. Some plant groups are grasses, vegetables, flowering plants and trees.	3.1 (7/7)		
GLC – 9. Members of the same group of plants can look and act very differently from each other. For example, although oaks and palms are both trees, their size, shape, leaves and growth habits are very different. In addition, all oak trees are not identical to each other and neither are all palms.	3.1 (7/7)		
GLE – 1. Observe and describe differences between living and nonliving things in terms of growth, offspring and need for energy from “food.”	3.1 (5/7)		
GLE – 2. Sort, count, and classify living and nonliving things in the classroom, the schoolyard and in pictures.	3.1 (5/7)	1.1 (2/7)	
GLE – 3. Use nonstandard measures to estimate and compare the height, length or weight of different kinds of plants and animals.	3.1 (7/7)		

Target Objectives	Frequency of mapping (# selected / # of pairs completing the mapping)		
	Most	**Second**	**Third**
GLE – 4. Observe and write, speak or draw about similarities and differences between plants and animals.	3.1 (6/7)	1.1 (3/7)	
GLE – 5. Match pictures or models of adults with their offspring (animals and plants).	3.1 (4/7)	3.2 (3/7)	
GLE – 6. Classify varied individuals of the same species by one and two attributes (e.g., rabbits or cats with different fur colors; rabbits or dogs with upright or floppy ears, etc.).	3.1 (7/7)		
K.3 – Weather conditions vary daily and seasonally.			
GLC – 1. The sun is the source of heat and light that warms the land, air and water. Variations in the amount of sunlight that reaches the earth cause the weather.	4.2 (4/7); 4.3 (4/7)		
GLC – 2. Weather conditions can be observed and described as sunny, cloudy, rainy, foggy, snowy, stormy, windy, hot or cold. Weather observations can be made based on how we feel, what we see or hear, or by using weather measurement instruments such as thermometers.	4.3 (7/7)		
GLC – 3. Changes in weather conditions can be recorded during different times of day, from day to day, and over longer periods of time (seasonal cycle). Repeated observations can show patterns that can be used to predict general weather conditions. For example, temperatures are generally cooler at night than during the day and colder in winter than in spring, summer or fall.	4.3 (7/7)		
GLC – 4. Weather influences how we dress, how we feel, and what we do outside.	4.3 (6/7)		
GLC – 5. Weather affects the land, animals and plants, and bodies of water.	4.3 (6/7)		
GLC – 6. When the temperature is below “freezing,” water outside freezes to ice and precipitation falls as snow or ice; when the temperature is above freezing, ice and snow melt and precipitation falls as rain.	4.3 (6/7)		
GLC – 7. Clouds and fog are made of tiny drops of water. Clouds have different shapes, sizes and colors that can be observed and compared. Some cloud types are associated with precipitation and some with fair weather.	4.3 (4/7)	4.2 (2/7)	
GLC – 8. Wind is moving air. Sometimes air moves fast and sometimes it hardly moves at all. Wind speed can be estimated by observing the things that it moves, such as flags, tree branches or sailboats.	4.3 (5/7)		
GLE – 1. Use the senses to observe daily weather conditions and record data systematically using organizers such as tables, charts, picture graphs or calendars.	4.3 (5/7)		
GLE – 2. Analyze weather data collected over time (during the day, from day to day, and from season to season) to identify patterns and make comparisons and predictions.	4.3 (6/7)		
GLE – 3. Observe, compare and contrast cloud shapes, sizes and colors, and relate the appearance of clouds to fair weather or precipitation.	4.2 (4/7)	4.2 (2/7)	
GLE – 4. Write, speak or draw ways that weather influences humans, other animals and plants.	4.3 (4/7)	1.2 (2/7)	
GLE – 5. Make judgments about appropriate clothing and activities based on weather conditions.	4.3 (4/7)	6.4 (2/7)	

Target Objectives	Frequency of mapping (# selected / # of pairs completing the mapping)		
	Most	**Second**	**Third**
K.4 – Some objects are natural, while others have been designed and made by people to improve the quality of life.			
GLC – 1. People need shelters to keep warm or cool, dry and safe. Shelters are made of materials whose properties make them useful for different purposes.	6.3 (4/7)		
GLC – 2. People in different regions of the world build different kinds of shelters, depending on the materials available to them, the local climate and their customs.	6.3 (6/7)		
GLC – 3. Traditionally, people have built shelters using materials that they find nearby. Today, people build houses from materials that may come from far away.	6.3 (5/7)		
GLC – 3.a. People who live in forested regions have traditionally built shelters using wood and/or leaves from nearby trees.	6.3 (4/7)		
GLC – 3.b. People who live in regions with clay soils have traditionally built shelters using bricks or adobe made from clay.	6.3 (4/7)		
GLC – 3.c. People who live in snowy regions have traditionally built shelters using snow and ice.	6.3 (4/7)		
GLC – 3.d. People who live in regions with large animals have traditionally built shelters using animal skins.	6.3 (4/7)		
GLC – 4. Although they may look quite different, most shelters have walls, roofs and an entrance/exit; some shelters have doors, windows and floors. Walls, roofs and windows are made of materials that have specific properties. For example, walls require materials that are rigid, windows require materials that are transparent, and roofs require materials that are water-resistant.	6.3 (3/7)		
GLE – 1. Conduct simple tests to compare the properties of different materials and their usefulness for making roofs, windows, walls or floors (e.g., waterproof, transparent, strong).	6.3 (3/7)	1.1 (2/7); 2.1 (2/7)	
GLE – 2. Seek information in books, magazines and pictures that describes materials used to build shelters by people in different regions of the world.	6.3 (3/7)	1.1 (2/7)	
GLE – 3. Compare and contrast the materials used by humans and animals to build shelters.	1.2 (2/7); 6.3 (2/7)		

Note. GLC = Grade Level Concept; GLE = Grade Level Expectation.

* The text descriptors for the content codes are located in Appendix A.

B-3.2 Kindergarten Science Curriculum Standards to Prekindergarten Science Curriculum Standards: Aligned Objectives

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
sck1	1. Humans have five senses that they use to observe their environment. A specific sense organ is associated with each sense.	scp1	Use senses to make observations of objects and materials within the child's immediate environment.	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex
sck2	2. Objects have properties that can be observed using the senses. Examples include size, weight, shape, color, texture, transparency, etc. An object's observable properties do not include the object's name or its uses.	scp1	Use senses to make observations of objects and materials within the child's immediate environment.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
sck3	3. Sorting objects into groups based on one (or more) of their properties makes it possible to observe and describe their similarities and differences.	scp4	Count, order and sort objects (e.g. blocks, crayons, toys) based on one visible property (e.g., color, shape, size).	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
sck4	4. Placing objects in order based on their size or weight makes it possible to observe patterns and describe relationships among the objects in a group.	scp4	Count, order and sort objects (e.g. blocks, crayons, toys) based on one visible property (e.g., color, shape, size).	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
sck5	5. Objects can be described and sorted based on the materials from which they are made (for example, wood, paper, fabric, plastic, glass or metal). Objects can be made of a mixture of materials.	scp14	Observe, describe and sort building materials by properties such as strength, weight, stiffness or flexibility.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
sck6	6. Objects can be described and sorted based on the results of simple tests. Simple tests include actions such as bending, squeezing, holding it near a magnet or putting it in water. Objects can be described as magnetic/nonmagnetic, flexible/not flexible.	scp5	Conduct simple tests to determine if objects roll, slide or bounce.	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
sck7	7. The heaviness of objects can be compared using the sense of touch. Balances and scales are measurement tools that allow people to observe and compare the heaviness of objects more accurately.	scp2	Use simple tools (e.g., balances and magnifiers) and nonstandard measurement units to observe and compare properties of objects and materials.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
sck8	8. The temperature of the air, water or bodies can be compared using the sense of touch. A thermometer is a measurement tool that allows people to compare temperatures more accurately.	scp10	Use the senses to observe and describe evidence of current or recent weather conditions (e.g., flags blowing, frost on window, puddles after rain, etc.)	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex
sck9	9. Objects can be sorted into groups based on measurements of their size. Nonstandard units for measuring size include hands, footsteps, pennies or paper clips.	scp2	Use simple tools (e.g., balances and magnifiers) and nonstandard measurement units to observe and compare properties of objects and materials.	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex
sck10	1. Match each of the five senses with its associated body part and the kind of information it perceives.	scp1	Use senses to make observations of objects and materials within the child's immediate environment.	Addresses the same concept but the companion is more general than the target	Minor ambiguity	Target is broader deeper more cognitively complex
sck11	2. Make scientific observations using the senses, and distinguish between an object's observable properties and its name or its uses.	scp1	Use senses to make observations of objects and materials within the child's immediate environment.	Addresses the same concept but the companion is more general than the target	Minor ambiguity	Target is broader deeper more cognitively complex
sck12	3. Classify organisms or objects by one and two observable properties and explain the rule used for sorting (e.g., size, color, shape, texture or flexibility).	scp4	Count, order and sort objects (e.g. blocks, crayons, toys) based on one visible property (e.g., color, shape, size).	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
sck13	4. Use simple tools and nonstandard units to estimate or predict properties such as size, heaviness, magnetic attraction and float/sink.	scp2	Use simple tools (e.g., balances and magnifiers) and nonstandard measurement units to observe and compare properties of objects and materials.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
sck14	5. Describe properties of materials such as wood, plastic, metal, cloth or paper, and sort objects by the material from which they are made.	scp14	Observe, describe and sort building materials by properties such as strength, weight, stiffness or flexibility.	Addresses related aspects of the knowledge or skill but in a different way (companion is related but "off center")	Minor ambiguity	Target is broader deeper more cognitively complex
sck15	6. Count, order and sort objects by their observable properties.	scp4	Count, order and sort objects (e.g. blocks, crayons, toys) based on one visible property (e.g., color, shape, size).	Addresses the same concept at the same level of specificity.	Clear linkage	The two are at the same level of difficulty
sck16	1. Things in our environment can be classified based on whether they are alive, were once alive or whether they were never alive.	scp6	Use the senses and simple tools to make observations of characteristics and behaviors of living and nonliving things.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
sck17	2. Growing, responding to stimuli, and breathing are characteristics of many living things. Many living things move, but movement alone is not evidence of life. For example, cars and the wind both move, but they are not alive.	scp6	Use the senses and simple tools to make observations of characteristics and behaviors of living and nonliving things.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
sck18	3. Reproduction is a characteristic of living things. Living things can be classified into groups based on the different ways they reproduce. For example, some living things lay eggs, while others produce seeds or give birth.	No consensus		Not applicable	Not applicable	Not applicable

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
sck19	4. Living things can be classified as plants or animals. Plants have characteristics (such as roots, stems, leaves and flowers) that animals do not have. Animals have characteristics (such as body parts and body coverings) that plants do not have.	scp8	Make observations and distinguish between the characteristics of plants and animals.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
sck20	5. Animals can be classified into groups based on generally similar characteristics such as number of legs, type of body covering, or way of moving. Some animal groups are reptiles, insects, birds, fish and mammals.	scp8	Make observations and distinguish between the characteristics of plants and animals.	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex
sck21	6. Offspring generally resemble their parents but are not identical to them.	scp9	Compare attributes of self, family members or classmates, and describe how they are similar and different.	Addresses same concept but target is more general than companion	Clear linkage	Target is broader deeper more cognitively complex
sck22	7. Members of the same group of animals can look and act very differently from each other. For example, goldfish and sharks are both fish, but there are distinct differences in their size, color and lifestyle. In addition, all goldfish are not identical.	scp8	Make observations and distinguish between the characteristics of plants and animals.	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex
sck23	8. Plants can be classified into groups based on similarities in the appearance of their leaves, stems, blossoms or fruits. Some plant groups are grasses, vegetables, flowering plants and trees.	scp8	Make observations and distinguish between the characteristics of plants and animals.	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
sck24	9. Members of the same group of plants can look and act very differently from each other. For example, although oaks and palms are both trees, their size, shape, leaves and growth habits are very different. In addition, all oak trees are not identical to	scp8	Make observations and distinguish between the characteristics of plants and animals.	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex
sck25	1. Observe and describe differences between living and nonliving things in terms of growth, offspring and need for energy from “food.”	scp7	Give examples of living things and nonliving things.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
sck26	2. Sort, count, and classify living and nonliving things in the classroom, the schoolyard and in pictures.	scp7	Give examples of living things and nonliving things.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
sck27	3. Use nonstandard measures to estimate and compare the height, length or weight of different kinds of plants and animals.	scp8	Make observations and distinguish between the characteristics of plants and animals.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
sck28	4. Observe and write, speak or draw about similarities and differences between plants and animals.	scp8	Make observations and distinguish between the characteristics of plants and animals.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
sck29	5. Match pictures or models of adults with their offspring (animals and plants).	scp8	Make observations and distinguish between the characteristics of plants and animals.	Addresses related aspects of the knowledge or skill but in a different way (companion is related but "off center")	Minor ambiguity	Target is broader deeper more cognitively complex
sck30	6. Classify varied individuals of the same species by one and two attributes (e.g., rabbits or cats with different fur colors; rabbits or dogs with upright or floppy ears, etc.).	scp8	Make observations and distinguish between the characteristics of plants and animals.	Addresses the same concept but the companion is more general than the target	Minor ambiguity	Target is broader deeper more cognitively complex

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
sck31	1. The sun is the source of heat and light that warms the land, air and water. Variations in the amount of sunlight that reaches the earth cause the weather.	scp10	Use the senses to observe and describe evidence of current or recent weather conditions (e.g., flags blowing, frost on window, puddles after rain, etc.)	Addresses the same concept but the companion is more general than the target	Minor ambiguity	Target is broader deeper more cognitively complex
sck32	2. Weather conditions can be observed and described as sunny, cloudy, rainy, foggy, snowy, stormy, windy, hot or cold. Weather observations can be made based on how we feel, what we see or hear, or by using weather measurement instruments such as thermometer.	scp10	Use the senses to observe and describe evidence of current or recent weather conditions (e.g., flags blowing, frost on window, puddles after rain, etc.)	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
sck33	3. Changes in weather conditions can be recorded during different times of day, from day to day, and over longer periods of time (seasonal cycle). Repeated observations can show patterns that can be used to predict general weather conditions. For example,	scp11	Notice weather conditions and use words and numbers to describe and analyze conditions over time (e.g., “it rained 5 times this month”.)	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
sck34	4. Weather influences how we dress, how we feel, and what we do outside.	scp13	Make judgments about appropriate clothing and activities based on weather conditions.	Addresses the same concept at the same level of specificity.	Clear linkage	The two are at the same level of difficulty
sck35	5. Weather affects the land, animals and plants, and bodies of water.	No consensus		Not applicable	Not applicable	Not applicable
sck36	6. When the temperature is below “freezing,” water outside freezes to ice and precipitation falls as snow or ice; when the temperature is above freezing, ice and snow melt and precipitation falls as rain.	scp10	Use the senses to observe and describe evidence of current or recent weather conditions (e.g., flags blowing, frost on window, puddles after rain, etc.)	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
sck37	7. Clouds and fog are made of tiny drops of water. Clouds have different shapes, sizes and colors that can be observed and compared. Some cloud types are associated with precipitation and some with fair weather.	scp10	Use the senses to observe and describe evidence of current or recent weather conditions (e.g., flags blowing, frost on window, puddles after rain, etc.)	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex
sck38	8. Wind is moving air. Sometimes air moves fast and sometimes it hardly moves at all. Wind speed can be estimated by observing the things that it moves, such as flags, tree branches or sailboats.	scp10	Use the senses to observe and describe evidence of current or recent weather conditions (e.g., flags blowing, frost on window, puddles after rain, etc.)	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex
sck39	1. Use the senses to observe daily weather conditions and record data systematically using organizers such as tables, charts, picture graphs or calendars.	scp11	Notice weather conditions and use words and numbers to describe and analyze conditions over time (e.g., “it rained 5 times this month”.)	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
sck40	2. Analyze weather data collected over time (during the day, from day to day, and from season to season) to identify patterns and make comparisons and predictions.	scp11	Notice weather conditions and use words and numbers to describe and analyze conditions over time (e.g., “it rained 5 times this month”.)	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
sck41	3. Observe, compare and contrast cloud shapes, sizes and colors, and relate the appearance of clouds to fair weather or precipitation.	scp10	Use the senses to observe and describe evidence of current or recent weather conditions (e.g., flags blowing, frost on window, puddles after rain, etc.)	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
sck42	4. Write, speak or draw ways that weather influences humans, other animals and plants.	scp13	Make judgments about appropriate clothing and activities based on weather conditions.	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex
sck43	5. Make judgments about appropriate clothing and activities based on weather conditions.	scp13	Make judgments about appropriate clothing and activities based on weather conditions.	Addresses the same concept at the same level of specificity.	Clear linkage	The two are at the same level of difficulty
sck44	1. People need shelters to keep warm or cool, dry and safe. Shelters are made of materials whose properties make them useful for different purposes.	scp16	Make judgments about the best building materials to use for different purposes (e.g., making the tallest tower or the longest bridge).	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex
sck45	2. People in different regions of the world build different kinds of shelters, depending on the materials available to them, the local climate and their customs.	No consensus		Not applicable	Not applicable	Not applicable
sck46	3. Traditionally, people have built shelters using materials that they find nearby. Today, people build houses from materials that may come from far away.	No consensus		Not applicable	Not applicable	Not applicable
sck47	a. People who live in forested regions have traditionally built shelters using wood and/or leaves from nearby trees.	No match		Not applicable	Not applicable	Not applicable
sck48	b. People who live in regions with clay soils have traditionally built shelters using bricks or adobe made from clay.	No match		Not applicable	Not applicable	Not applicable
sck49	c. People who live in snowy regions have traditionally built shelters using snow and ice.	No match		Not applicable	Not applicable	Not applicable

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
sck50	d. People who live in regions with large animals have traditionally built shelters using animal skins.	No match		Not applicable	Not applicable	Not applicable
sck51	4. Although they may look quite different, most shelters have walls, roofs and an entrance/exit; some shelters have doors, windows and floors. Walls, roofs and windows are made of materials that have specific properties. For example, walls require material.	scp16	Make judgments about the best building materials to use for different purposes (e.g., making the tallest tower or the longest bridge).	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex
sck52	1. Conduct simple tests to compare the properties of different materials and their usefulness for making roofs, windows, walls or floors (e.g., waterproof, transparent, strong).	scp15	Pose questions and conduct simple tests to compare the effectiveness of different building materials (e.g., blocks of wood, plastic, foam or cardboard) for constructing towers, bridges and buildings.	Addresses the same concept at the same level of specificity.	Clear linkage	The two are at the same level of difficulty
sck53	2. Seek information in books, magazines and pictures that describes materials used to build shelters by people in different regions of the world.	No match		Not applicable	Not applicable	Not applicable
sck54	3. Compare and contrast the materials used by humans and animals to build shelters.	scp16	Make judgments about the best building materials to use for different purposes (e.g., making the tallest tower or the longest bridge).	Addresses the same concept but the companion is more general than the target	Clear linkage	Companion is broader deeper more cognitively complex

Table B-3.3 Kindergarten Science Curriculum Standards to Preschool Curriculum Framework: Aligned Objectives

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
sck1	1. Humans have five senses that they use to observe their environment. A specific sense organ is associated with each sense.	pcf34	Children will make comparisons among different objects using different senses. They will use words to describe their experiences.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
sck2	2. Objects have properties that can be observed using the senses. Examples include size, weight, shape, color, texture, transparency, etc. An object's observable properties do not include the object's name or its uses.	pcf34	Children will make comparisons among different objects using different senses. They will use words to describe their experiences.	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex
sck3	3. Sorting objects into groups based on one (or more) of their properties makes it possible to observe and describe their similarities and differences.	pcf43	Children will classify objects by attributes that they select.	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex
sck4	4. Placing objects in order based on their size or weight makes it possible to observe patterns and describe relationships among the objects in a group.	pcf44	Children will arrange objects in a sequence that they can explain.	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex
sck5	5. Objects can be described and sorted based on the materials from which they are made (for example, wood, paper, fabric, plastic, glass or metal). Objects can be made of a mixture of materials.	pcf43	Children will classify objects by attributes that they select.	Addresses related aspects of the knowledge or skill but in a different way (companion is related but "off center")	Clear linkage	Target is broader deeper more cognitively complex

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
sck6	6. Objects can be described and sorted based on the results of simple tests. Simple tests include actions such as bending, squeezing, holding it near a magnet or putting it in water. Objects can be described as magnetic/nonmagnetic, flexible/not flexible,	pcf43	Children will classify objects by attributes that they select.	Addresses the same concept but the companion is more general than the target	Minor ambiguity	Target is broader deeper more cognitively complex
sck7	7. The heaviness of objects can be compared using the sense of touch. Balances and scales are measurement tools that allow people to observe and compare the heaviness of objects more accurately.	pcf46	Children will use a variety of instruments to measure weight, volume, height, distance and temperature.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
sck8	8. The temperature of the air, water or bodies can be compared using the sense of touch. A thermometer is a measurement tool that allows people to compare temperatures more accurately.	pcf46	Children will use a variety of instruments to measure weight, volume, height, distance and temperature.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
sck9	9. Objects can be sorted into groups based on measurements of their size. Nonstandard units for measuring size include hands, footsteps, pennies or paper clips.	pcf46	Children will use a variety of instruments to measure weight, volume, height, distance and temperature.	No Consensus	Clear linkage	Target is broader deeper more cognitively complex
sck10	1. Match each of the five senses with its associated body part and the kind of information it perceives.	No match		Not applicable	Not applicable	Not applicable
sck11	2. Make scientific observations using the senses, and distinguish between an object's observable properties and its name or its uses.	pcf34	Children will make comparisons among different objects using different senses. They will use words to describe their experiences.	Addresses the same concept but the companion is more general than the target	Minor ambiguity	Target is broader deeper more cognitively complex

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
sck12	3. Classify organisms or objects by one and two observable properties and explain the rule used for sorting (e.g., size, color, shape, texture or flexibility).	pcf43	Children will classify objects by attributes that they select.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
sck13	4. Use simple tools and nonstandard units to estimate or predict properties such as size, heaviness, magnetic attraction and float/sink.	pcf49	Children will make estimates of quantity, distance, weight and length, and use measuring tools and other ways to verify the estimation.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
sck14	5. Describe properties of materials such as wood, plastic, metal, cloth or paper, and sort objects by the material from which they are made.	No consensus		Not applicable	Not applicable	Not applicable
sck15	6. Count, order and sort objects by their observable properties.	pcf43	Children will classify objects by attributes that they select.	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex
sck16	1. Things in our environment can be classified based on whether they are alive, were once alive or whether they were never alive.	pcf43	Children will classify objects by attributes that they select.	Addresses related aspects of the knowledge or skill but in a different way (companion is related but "off center")	Minor ambiguity	There is not a direct progression from one to the other.
sck17	2. Growing, responding to stimuli, and breathing are characteristics of many living things. Many living things move, but movement alone is not evidence of life. For example, cars and the wind both move, but they are not alive.	No match		Not applicable	Not applicable	Not applicable

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
sck18	3. Reproduction is a characteristic of living things. Living things can be classified into groups based on the different ways they reproduce. For example, some living things lay eggs, while others produce seeds or give birth.	No match		Not applicable	Not applicable	Not applicable
sck19	4. Living things can be classified as plants or animals. Plants have characteristics (such as roots, stems, leaves and flowers) that animals do not have. Animals have characteristics (such as body parts and body coverings) that plants do not have.	No consensus		Not applicable	Not applicable	Not applicable
sck20	5. Animals can be classified into groups based on generally similar characteristics such as number of legs, type of body covering, or way of moving. Some animal groups are reptiles, insects, birds, fish and mammals.	No consensus		Not applicable	Not applicable	Not applicable
sck21	6. Offspring generally resemble their parents but are not identical to them.	No match		Not applicable	Not applicable	Not applicable
sck22	7. Members of the same group of animals can look and act very differently from each other. For example, goldfish and sharks are both fish, but there are distinct differences in their size, color and lifestyle. In addition, all goldfish are not identical t	No consensus		Not applicable	Not applicable	Not applicable
sck23	8. Plants can be classified into groups based on similarities in the appearance of their leaves, stems, blossoms or fruits. Some plant groups are grasses, vegetables, flowering plants and trees.	pcf43*	Children will classify objects by attributes that they select.*	Not Enough Data	Not Enough Data	Not Enough Data

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
sck24	9. Members of the same group of plants can look and act very differently from each other. For example, although oaks and palms are both trees, their size, shape, leaves and growth habits are very different. In addition, all oak trees are not identical to	No match		Not applicable	Not applicable	Not applicable
sck25	1. Observe and describe differences between living and nonliving things in terms of growth, offspring and need for energy from “food.”	pcf33*	Children are naturally curious. When provided with opportunities to observe and investigate the environment, they will ask questions about and comment on their observations and what they discover.*	Not Enough Data	Not Enough Data	Not Enough Data
sck26	2. Sort, count, and classify living and nonliving things in the classroom, the schoolyard and in pictures.	pcf43	Children will classify objects by attributes that they select.	Not Enough Data	Not Enough Data	Not Enough Data
sck27	3. Use nonstandard measures to estimate and compare the height, length or weight of different kinds of plants and animals.	pcf49*	Children will make estimates of quantity, distance, weight and length, and use measuring tools and other ways to verify the estimation.*	Not Enough Data	Not Enough Data	Not Enough Data
sck28	4. Observe and write, speak or draw about similarities and differences between plants and animals.	pcf34*	Children will make comparisons among different objects using different senses. They will use words to describe their experiences.*	Not Enough Data	Not Enough Data	Not Enough Data
sck29	5. Match pictures or models of adults with their offspring (animals and plants).	No match		Not applicable	Not applicable	Not applicable

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
sck30	6. Classify varied individuals of the same species by one and two attributes (e.g., rabbits or cats with different fur colors; rabbits or dogs with upright or floppy ears, etc.).	pcf43	Children will classify objects by attributes that they select.	Not Enough Data	Not Enough Data	Not Enough Data
sck31	1. The sun is the source of heat and light that warms the land, air and water. Variations in the amount of sunlight that reaches the earth cause the weather.	No match		Not applicable	Not applicable	Not applicable
sck32	2. Weather conditions can be observed and described as sunny, cloudy, rainy, foggy, snowy, stormy, windy, hot or cold. Weather observations can be made based on how we feel, what we see or hear, or by using weather measurement instruments such as thermome	pcf33*	Children are naturally curious. When provided with opportunities to observe and investigate the environment, they will ask questions about and comment on their observations and what they discover.*	Not Enough Data	Not Enough Data	Not Enough Data
sck33	3. Changes in weather conditions can be recorded during different times of day, from day to day, and over longer periods of time (seasonal cycle). Repeated observations can show patterns that can be used to predict general weather conditions. For example,	pcf33*	Children are naturally curious. When provided with opportunities to observe and investigate the environment, they will ask questions about and comment on their observations and what they discover.*	Not Enough Data	Not Enough Data	Not Enough Data
sck34	4. Weather influences how we dress, how we feel, and what we do outside.	No match		Not applicable	Not applicable	Not applicable

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
sck35	5. Weather affects the land, animals and plants, and bodies of water.	pcf33	Children are naturally curious. When provided with opportunities to observe and investigate the environment, they will ask questions about and comment on their observations and what they discover.	Not Enough Data	Not Enough Data	Not Enough Data
sck36	6. When the temperature is below “freezing,” water outside freezes to ice and precipitation falls as snow or ice; when the temperature is above freezing, ice and snow melt and precipitation falls as rain.	pcf33*	Children are naturally curious. When provided with opportunities to observe and investigate the environment, they will ask questions about and comment on their observations and what they discover.*	Not Enough Data	Not Enough Data	Not Enough Data
sck37	7. Clouds and fog are made of tiny drops of water. Clouds have different shapes, sizes and colors that can be observed and compared. Some cloud types are associated with precipitation and some with fair weather.	No match		Not applicable	Not applicable	Not applicable
sck38	8. Wind is moving air. Sometimes air moves fast and sometimes it hardly moves at all. Wind speed can be estimated by observing the things that it moves, such as flags, tree branches or sailboats.	pcf33	Children are naturally curious. When provided with opportunities to observe and investigate the environment, they will ask questions about and comment on their observations and what they discover.	Not Enough Data	Not Enough Data	Not Enough Data

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
sck39	1. Use the senses to observe daily weather conditions and record data systematically using organizers such as tables, charts, picture graphs or calendars.	pcf34	Children will make comparisons among different objects using different senses. They will use words to describe their experiences.	Not Enough Data	Not Enough Data	Not Enough Data
sck40	2. Analyze weather data collected over time (during the day, from day to day, and from season to season) to identify patterns and make comparisons and predictions.	pcf36	Children will make predictions about what will occur based on observations, manipulation and previous experiences. They will use resources such as experiments, books, computer software, peers and adults to verify their predictions.	Not Enough Data	Not Enough Data	Not Enough Data
sck41	3. Observe, compare and contrast cloud shapes, sizes and colors, and relate the appearance of clouds to fair weather or precipitation.	pcf33	Children are naturally curious. When provided with opportunities to observe and investigate the environment, they will ask questions about and comment on their observations and what they discover.	Not Enough Data	Not Enough Data	Not Enough Data
sck42	4. Write, speak or draw ways that weather influences humans, other animals and plants.	No match		Not applicable	Not applicable	Not applicable
sck43	5. Make judgments about appropriate clothing and activities based on weather conditions.	No match		Not applicable	Not applicable	Not applicable
sck44	1. People need shelters to keep warm or cool, dry and safe. Shelters are made of materials whose properties make them useful for different purposes.	No match		Not applicable	Not applicable	Not applicable

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
sck45	2. People in different regions of the world build different kinds of shelters, depending on the materials available to them, the local climate and their customs.	No match		Not applicable	Not applicable	Not applicable
sck46	3. Traditionally, people have built shelters using materials that they find nearby. Today, people build houses from materials that may come from far away.	No match		Not applicable	Not applicable	Not applicable
sck47	a. People who live in forested regions have traditionally built shelters using wood and/or leaves from nearby trees.	No match		Not applicable	Not applicable	Not applicable
sck48	b. People who live in regions with clay soils have traditionally built shelters using bricks or adobe made from clay.	No match		Not applicable	Not applicable	Not applicable
sck49	c. People who live in snowy regions have traditionally built shelters using snow and ice.	No match		Not applicable	Not applicable	Not applicable
sck50	d. People who live in regions with large animals have traditionally built shelters using animal skins.	No match		Not applicable	Not applicable	Not applicable
sck51	4. Although they may look quite different, most shelters have walls, roofs and an entrance/exit; some shelters have doors, windows and floors. Walls, roofs and windows are made of materials that have specific properties. For example, walls require material.	No match		Not applicable	Not applicable	Not applicable
sck52	1. Conduct simple tests to compare the properties of different materials and their usefulness for making roofs, windows, walls or floors (e.g., waterproof, transparent, strong).	pcf40	Children will conduct observations or experiments with one peer or with a small group using sharing and turn-taking skills.	Not Enough Data	Not Enough Data	Not Enough Data

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
sck53	2. Seek information in books, magazines and pictures that describes materials used to build shelters by people in different regions of the world.	No match		Not applicable	Not applicable	Not applicable
sck54	3. Compare and contrast the materials used by humans and animals to build shelters.	No consensus		Not applicable	Not applicable	Not applicable

Table B-4.1 Kindergarten Social Studies Curriculum Framework: Content Areas of Target Objectives

Target Objectives	Mapped Content Codes
Content knowledge	
Significant events and themes in United States history	SS1.1, SS1.3, SS4.2,
Significant events in local and Connecticut history and their connections to United States history	SS4.2
Significant events and themes in world history/international studies	SS4.2
Geographical space and place	SS1.1, SS1.3, SS2.1, SS2.2 SS4.3
Interaction of humans and the environment.	SS1.1, SS1.3, SS4.3
Patterns of human movement across time and place	SS4.3
The purpose, structures and functions of government and law at the local, state, national and international levels	SS1.3, SS4.6
The interactions between citizens and their government in the making and implementation of laws	SS1.4, SS4.6
The rights and responsibilities of citizens	SS1.1, SS1.3, SS1.4, SS4.10
How limited resources influence economic decisions	SS1.1, SS4.7
How different economic systems organize resources	SS1.2, SS4.5, SS4.7
The interdependence of local, national and global economies	SS4.7, SS4.9
The characteristics of and interactions among culture, social systems and institutions	SS1.1, SS4.1
History/social studies literacy	
Access and gather information from a variety of primary and secondary sources including electronic media (maps, charts, graphs, images, artifacts, recordings and text)	SS2.2, SS2.3
Interpret information from a variety of primary and secondary sources, including electronic media (e.g. maps, charts, graphs, images, artifacts, recordings and text)	SS2.2, SS2.3
Create various forms of written work (e.g. journal, essay, blog, Web page, brochure) to demonstrate an understanding of history and social studies issues	SS1.1, SS1.3, SS2.2
Demonstrate an ability to participate in social studies discourse through informed discussion, debate and effective oral presentation	SS1.4
Create and present relevant social studies materials using both print and electronic media (e.g. maps, charts, models, displays)	SS1.1, SS2.2, SS2.3
Civic engagement	
Use evidence to identify, analyze and evaluate historical interpretations.	SS2.2 SS2.3
Analyze and evaluate human action in historical and/or contemporary contexts from alternative points of view.	
Apply appropriate historical, geographic, political, economic and cultural concepts and methods in proposing and evaluating solutions to contemporary problems.	SS1.2

Note. The mapping of target objectives to content areas was completed by the state of CT and reported in the draft *CT Social Studies Curriculum Framework Grades PK-12* document. The frequency of mapping by target objective was not available in the document.

Table B-4.2 Kindergarten Social Studies Curriculum Framework to Prekindergarten Social Studies Curriculum Framework: Aligned Objectives

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
ssk1	1. Recognize events that reoccur and the frequency of reoccurrence.	ssp1	Sequence events and describe time periods using terms such as morning, afternoon, night, yesterday, today and tomorrow.	Addresses same concept but target is more general than companion	Minor ambiguity	Target is broader deeper more cognitively complex
ssk2	2. Compare past and present experiences (e.g. explain what was different when parents were little or what they were like as babies).	ssp1	Sequence events and describe time periods using terms such as morning, afternoon, night, yesterday, today and tomorrow.	Content connection is indirect. One addresses a foundational skill that is important to achieving the other.	Minor ambiguity	Target is broader deeper more cognitively complex
ssk4	4. Locate yesterday, today and tomorrow on a calendar to sequence events.	ssp1	Sequence events and describe time periods using terms such as morning, afternoon, night, yesterday, today and tomorrow.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
ssk5	5. Use terms such as before and after to compare events.	ssp1	Sequence events and describe time periods using terms such as morning, afternoon, night, yesterday, today and tomorrow.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
ssk6	6. Examine similarities and differences between one's own culture and other cultures to which students are exposed through personal experience or media.	ssp3	Recognize that there are other cultures with different languages, foods, art, music, customs, and forms of shelter.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
ssk7	7. Explain the geographical relationships of familiar places in one's own community (e.g. home to school, home to store).	ssp4	Place familiar objects in appropriate geographical locations (e.g., bead in a bedroom, slide on a playground, etc.).	Addresses the same concept but the companion is more general than the target	Minor ambiguity	Target is broader deeper more cognitively complex

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
ssk8	8. Identify and explain the significance of important locations in one's neighborhood.	ssp23	Represent geographic or community locations using classroom materials (e.g., use blocks to build a school, make a hill out of sand, draw a picture of one's house).	Addresses related aspects of the knowledge or skill but in a different way (companion is related but "off center")	Minor ambiguity	Target is broader deeper more cognitively complex
ssk9	9. Discuss how people's actions affect the environment (e.g. why we recycle or conserve energy).	ssp6	Investigate one's impact on immediate environment (e.g., why we need to pick up toys).	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
ssk10	10. Describe types of transportation and related geographical features (e.g. boats go in the water, cars have wheels to drive on land).	ssp7	Describe different means of transportation one has experienced.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
ssk11	11. Explain how one travels to and from school and other places in the community.	ssp7	Describe different means of transportation one has experienced.	Addresses the same concept at the same level of specificity.	Clear linkage	The two are at the same level of difficulty
ssk12	12. State basic classroom, school, family and community rules/laws.	ssp8	Follow classroom rules with prompts.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
ssk13	13. Explain the reason for rules related to basic safety and fairness.	ssp9	Explain some reasons for classroom rules.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
ssk14	14. Work collaboratively to develop classroom rules.	ssp10	Work collaboratively to develop classroom rules (with adult prompting and guidance).	Addresses the same concept at the same level of specificity.	Clear linkage	The two are at the same level of difficulty
ssk15	15. Participate in leadership roles within classroom.	No match		Not applicable	Not applicable	Not applicable
ssk16	16. Give basic reasons for the functions of classroom leaders (e.g. line leader, messenger).	ssp12	Understand and discuss why certain responsibilities are important (e.g., cleaning up, caring for pets).	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
ssk17	17. Discuss responsibilities students have to classmates and school community	ssp12	Understand and discuss why certain responsibilities are important (e.g., cleaning up, caring for pets).	Addresses the same concept at the same level of specificity.	Minor ambiguity	Target is broader deeper more cognitively complex
ssk18	18. Problem-solve when materials are limited with teacher support as needed.	ssp14	Resolve conflicts related to limited resources with teacher support.	Addresses the same concept at the same level of specificity.	Clear linkage	The two are at the same level of difficulty
ssk19	19. Identify and role-play diverse jobs.	ssp15	Identify and role-play different jobs using associated materials.	Addresses the same concept at the same level of specificity.	Clear linkage	The two are at the same level of difficulty
ssk20	20. Describe basic functions of key community roles (e.g. police officer, mail carrier, farmer, merchant).	ssp11	Dramatize roles of authority figures (e.g., teacher, firefighter, police officer).	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
ssk21	21. Understand that money is represented by different forms (coins, currency, credit cards, checks).	ssp16	Dramatize the difference between purchasing and selling items.	Content connection is indirect. One addresses a foundational skill that is important to achieving the other.	Minor ambiguity	Target is broader deeper more cognitively complex
ssk22	22. Identify cultural characteristics of self and family (e.g. food, language, religion, traditions).	ssp17	Identify similarities and differences in personal and physical characteristics of self and others.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
ssk23	1. Find a relevant source of information related to a specific topic (e.g. book about a particular topic, map or globe to find a location).	ssp19	Name or access one source of information (e.g., an adult, a book, the Internet).	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
ssk24	2. Actively engage in group social studies reading activities with purpose and understanding.	ssp20	Share information gathered from senses, print or media sources in a variety of ways (e.g., retell a story, create a simple graph with assistance, draw a picture to represent an experience).	Addresses related aspects of the knowledge or skill but in a different way (companion is related but "off center")	Minor ambiguity	There is not a direct progression from one to the other.

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
ssk25	3. Share and interpret information gathered from senses, print or media sources in a variety of ways (e.g. retell a story, create a simple graph, draw a picture or write to represent an experience).	ssp20	Share information gathered from senses, print or media sources in a variety of ways (e.g., retell a story, create a simple graph with assistance, draw a picture to represent an experience).	Addresses the same concept at the same level of specificity.	Clear linkage	The two are at the same level of difficulty
ssk26	4. Draw and write in journals to reflect on one's own histories.	ssp21	Express personal events related to social studies topics using pictures and letter-like approximations.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
ssk27	5. Share personal past and future events or experiences through group discussions and dramatization.	ssp22	Share personal experiences through group discussions and dramatization.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
ssk28	6. Represent geographic or community locations, including relevant details, using classroom materials.	ssp23	Represent geographic or community locations using classroom materials (e.g., use blocks to build a school, make a hill out of sand, draw a picture of one's house).	Addresses the same concept at the same level of specificity.	Clear linkage	The two are at the same level of difficulty
ssk29	1. Predict how another person might feel given a simple scenario.	ssp24	Identify basic emotions in self and others.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
ssk30	2. Describe similarities and differences of their own feelings compared with others.	ssp25	Describe similarities of their feelings with those of others.	Addresses the same concept at the same level of specificity.	Clear linkage	The two are at the same level of difficulty
ssk31	3. Solve conflicts and classroom issues using appropriate strategies.	ssp26	Participate in teacher-led discussion to generate solutions to classroom problems or situations.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex

Table B-4.3 Kindergarten Social Studies Curriculum Framework to Preschool Curriculum Framework: Aligned Objectives

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
ssk1	1. Recognize events that reoccur and the frequency of reoccurrence.	pcf50	Children will describe or represent a series of events in the appropriate sequence. Children will use words to denote time periods or a sequence of events.	Addresses same concept but target is more general than companion	Minor ambiguity	Companion is broader deeper more cognitively complex
ssk2	2. Compare past and present experiences (e.g. explain what was different when parents were little or what they were like as babies).	pcf50	Children will describe or represent a series of events in the appropriate sequence. Children will use words to denote time periods or a sequence of events.	Addresses related aspects of the knowledge or skill but in a different way (companion is related but "off center")	Minor ambiguity	There is not a direct progression from one to the other.
ssk4	4. Locate yesterday, today and tomorrow on a calendar to sequence events.	pcf50	Children will describe or represent a series of events in the appropriate sequence. Children will use words to denote time periods or a sequence of events.	Addresses the same concept but the companion is more general than the target	Clear linkage	Target is broader deeper more cognitively complex
ssk5	5. Use terms such as before and after to compare events.	pcf50	Children will describe or represent a series of events in the appropriate sequence. Children will use words to denote time periods or a sequence of events.	Addresses same concept but target is more general than companion	Minor Ambiguity	Companion is broader deeper more cognitively complex
ssk6	6. Examine similarities and differences between one's own culture and other cultures to which students are exposed through personal experience or media.	pcf19	Children notice similarities and differences between themselves and others. Children verbalize these similarities and differences.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
ssk7	7. Explain the geographical relationships of familiar places in one's own community (e.g. home to school, home to store).	No match		Not applicable	Not applicable	Not applicable
ssk8	8. Identify and explain the significance of important locations in one's neighborhood.	No match		Not applicable	Not applicable	Not applicable
ssk9	9. Discuss how people's actions affect the environment (e.g. why we recycle or conserve energy).	No match		Not applicable	Not applicable	Not applicable
ssk10	10. Describe types of transportation and related geographical features (e.g. boats go in the water, cars have wheels to drive on land).	No match		Not applicable	Not applicable	Not applicable
ssk11	11. Explain how one travels to and from school and other places in the community.	No match		Not applicable	Not applicable	Not applicable
ssk12	12. State basic classroom, school, family and community rules/laws.	pcf10	Children will demonstrate an understanding of classroom and playground rules. They will also participate in the development of rules.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
ssk13	13. Explain the reason for rules related to basic safety and fairness.	pcf10	Children will demonstrate an understanding of classroom and playground rules. They will also participate in the development of rules.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex
ssk14	14. Work collaboratively to develop classroom rules.	pcf10	Children will demonstrate an understanding of classroom and playground rules. They will also participate in the development of rules.	Addresses the same concept at the same level of specificity.	Clear linkage	Companion is broader deeper more cognitively complex

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
ssk15	15. Participate in leadership roles within classroom.	No match		Not applicable	Not applicable	Not applicable
ssk16	16. Give basic reasons for the functions of classroom leaders (e.g. line leader, messenger).	No match		Not applicable	Not applicable	Not applicable
ssk17	17. Discuss responsibilities students have to classmates and school community	No match		Not applicable	Not applicable	Not applicable
ssk18	18. Problem-solve when materials are limited with teacher support as needed.	pcf17	Children will participate in the facilitation of a conflict resolution by an adult, agree to a solution and follow it.	Addresses related aspects of the knowledge or skill but in a different way (companion is related but "off center")	Clear linkage	Companion is broader deeper more cognitively complex
ssk19	19. Identify and role-play diverse jobs.	pcf72	A child will take on a role in pretend play, interact with another child who is also in a pretend role, and will engage in a play sequence.	Addresses related aspects of the knowledge or skill but in a different way (companion is related but "off center")	Minor ambiguity	There is not a direct progression from one to the other.
ssk20	20. Describe basic functions of key community roles (e.g. police officer, mail carrier, farmer, merchant).	No match		Not applicable	Not applicable	Not applicable
ssk21	21. Understand that money is represented by different forms (coins, currency, credit cards, checks).	No match		Not applicable	Not applicable	Not applicable
ssk22	22. Identify cultural characteristics of self and family (e.g. food, language, religion, traditions).	pcf6	Children will state whether they are a girl or a boy. They will identify the members of their family by their roles in the family, e.g., mother, brother, grandmother, uncle.	Content connection is indirect. One addresses a foundational skill that is important to achieving the other.	Major ambiguity	Target is broader deeper more cognitively complex

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
ssk23	1. Find a relevant source of information related to a specific topic (e.g. book about a particular topic, map or globe to find a location).	No match		Not applicable	Not applicable	Not applicable
ssk24	2. Actively engage in group social studies reading activities with purpose and understanding.	No consensus		Not applicable	Not applicable	Not applicable
ssk25	3. Share and interpret information gathered from senses, print or media sources in a variety of ways (e.g. retell a story, create a simple graph, draw a picture or write to represent an experience).	No consensus		Not applicable	Not applicable	Not applicable
ssk26	4. Draw and write in journals to reflect on one's own histories.	pcf64	Children will draw or "write" about their experiences.	Addresses the same concept at the same level of specificity.	Clear linkage	The two are at the same level of difficulty
ssk27	5. Share personal past and future events or experiences through group discussions and dramatization.	pcf55	Children use language to retell stories and experiences, make up stories, describe, ask questions, get information, and ask for assistance.	Addresses the same concept at the same level of specificity.	Minor ambiguity	Target is broader deeper more cognitively complex
ssk28	6. Represent geographic or community locations, including relevant details, using classroom materials.	No match		Not applicable	Not applicable	Not applicable
ssk29	1. Predict how another person might feel given a simple scenario.	pcf14	Children assist other children in clean-up or work together to complete a project. If one child gets injured, other children will acknowledge how that child might be feeling and offer help.	Addresses related aspects of the knowledge or skill but in a different way (companion is related but "off center")	Minor ambiguity	Target is broader deeper more cognitively complex

Target Objective Code	Target Objective	Best Match Code	Best Math	Nature	Clarity	Relative Difficulty
ssk30	2. Describe similarities and differences of their own feelings compared with others.	pcf19	Children notice similarities and differences between themselves and others. Children verbalize these similarities and differences.	Addresses the same concept at the same level of specificity.	Minor ambiguity	Target is broader deeper more cognitively complex
ssk31	3. Solve conflicts and classroom issues using appropriate strategies.	pcf17	Children notice similarities and differences between themselves and others. Children verbalize these similarities and differences.	Addresses the same concept at the same level of specificity.	Clear linkage	Target is broader deeper more cognitively complex

Appendix C

Evaluation Findings

Table C.1 Evaluation Findings

	Mean	Minimum	Maximum
How well do you feel the orientation and training prepared you for the process? 1 = Not at all well to 4 = Very well	3.3	2	4
How comfortable did you feel applying the content codes? 1 = Not at all comfortable to 4 = Very comfortable	3.2	2	4
How comfortable did you feel deciding the appropriate placement of the target objective? 1 = Not at all comfortable to 4 = Very comfortable	3.2	2	4
How comfortable did you feel finding a matching objective in the companion set? 1 = Not at all comfortable to 4 = Very comfortable	3.1	2	4
How comfortable did you feel rating the nature of the linkage? 1 = Not at all comfortable to 4 = Very comfortable	2.4	1	3
How comfortable did you feel rating the quality of the linkage? 1 = Not at all comfortable to 4 = Very comfortable	3.1	2	4
How comfortable did you feel rating the relative difficulty level of the objectives? 1 = Not at all comfortable to 4 = Very comfortable	3.0	2	4
How easy was it to make decisions as a pair? 1 = Not at all easy to 4 = Very easy	3.3	3	4
How easy was it to make decisions as a team? 1 = Not at all easy to 4 = Very easy	3.4	2	4