REPORT

Alignment Analysis of Science Standards and Assessments

Illinois

Grades 4 and 7

Norman L. Webb

November 8, 2006

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Acknowledgements

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Executive Summary

At a two-day alignment institute conducted September 27 and 28, 2006, in Springfield, Illinois, five reviewers analyzed the agreement between the three Illinois science state goals and assessments for grades 4 and 7. The five reviewers included content area experts, a state science curriculum coordinator, and science teachers. Two reviewers were from Illinois and three, including the group leader, were from other states.

The overall results from the study indicate that the alignment for grade 4 is acceptable whereas the alignment for grade 7 needs some improvement. At grade 4, the assessment had a sufficient number of items for each of the three state goals and at a comparable level of complexity as compared to the complexity of the 72 performance indicators. The grade 4 assessment also had an adequate coverage of content to meet the minimal acceptable level for Range with items appropriately distributed among the performance indicators.

At grade 7, similar to grade 4, the assessment had a sufficient number of items and at an appropriate level of complexity. However, the items on the grade 7 assessment only addressed about one-third of the 101 performance indicators under State Goal 12 (life, physical, and earth/space sciences). This is below the acceptable level of 50% for Range-of-Knowledge Correspondence used in this analysis. The very large number of performance indicators is a contributing factor to the failure to achieve Range at grade 7. If the analysis was done at the next level up, at the learning standard level, then all six of the learning standards under State Goal 12 had three to seven items and would fully meet having Range at that level. To achieve an acceptable Range at the performance indicator level would require replacing about 20 items, 12 from State Goal 12 and four each of the other two state goals. Also, at grade 7 the Balance was weak for State Goal 11, but this was not considered an issue because the other three alignment criteria were fully met for this learning goal. Two or more reviewers coded a relatively high number of items (17 or about 20%) on the grade 7 assessment to generic performance indicators signifying that they felt these items did not precisely match what was expected by the statement of the performance indicators. This suggests narrowly worded or performance indicators that do not fully cover the content under a learning standard. Overall, the alignment at grade 7 needs improvement either by reducing the number of performance indicators or replacing about 20 items.

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Introduction

The alignment of expectations for student learning with assessments for measuring students' attainment of these expectations is an essential attribute for an effective learning goals-based education system. Alignment is defined as the degree to which expectations and assessments are in agreement and serve in conjunction with one another to guide an education system toward students learning what they are expected to know and do. As such, alignment is a quality of the relationship between expectations and assessments and not an attribute of any one of these two system components. Alignment describes the match between expectations and assessment that can be legitimately improved by changing either student expectations or the assessments. As a relationship between two or more system components, alignment is determined by using the multiple criteria described in detail in a National Institute of Science Education (NISE) research monograph, *Criteria for Alignment of Expectations and Assessments in Mathematics and Science Education* (Webb, 1997).

A two-day Alignment Analysis Institute was conducted September 27 and 28, 2006 in Springfield, Illinois. Five people, including science content experts, a state science curriculum coordinator, and science teachers, met to analyze the agreement between the state's science learning goals and assessments for grades 4 and 8. Two of the reviewers were from Illinois and three, including the group leader, were from other states.

The State of Illinois uses the terminology of *state goals, learning standards, and performance indicators* in their science content expectations. The state had three science state goals (example: State Goal 11—Understand the process of scientific inquiry and technological design to investigate questions, conduct experiments and solve problems). Each of these state goals was further described using one to six learning standards. Each learning standard had from 2 to 30 performance indicators (or sometimes referred to as objectives). For this analysis, data were coded using the performance indicators (objectives) and reported by the three state goals. The state goals, learning standards, and performance indicators (objectives) are reproduced in Appendix A.

Reviewers were trained to identify the depth-of-knowledge of objectives and assessment items. This training included reviewing the definitions of the four depth-of-knowledge (DOK) levels and then reviewing examples of each. Then for each grade, the reviewers participated in 1) a consensus process to determine the depth-of-knowledge levels of the objectives and 2) individual analyses of the assessment items.

To derive the results from the analysis, the reviewers' responses are averaged. Any variance among reviewers is considered legitimate, with the true depth-of-knowledge level for the item falling somewhere in between the two or more assigned values. Such variation could signify a lack of clarity in how the objectives were written, the robustness of an item that can legitimately correspond to more than one objective, and/or a depth of knowledge that falls in between two of the four defined levels. Reviewers were allowed to identify one assessment item as corresponding to up to three objectives—one primary hit (objective) and up to two secondary hits. However, reviewers could only code one depth-of-knowledge level to each assessment item even if the item corresponded to more than one objective. Finally, in addition to learning the process, reviewers were asked to provide suggestions for improving the process.

Reviewers were instructed to focus primarily on the alignment between the state learning goals and assessments. However, they were encouraged to offer their opinion on the quality of the learning goals, or of the assessment activities/items, by writing a note about the item. Reviewers could also indicate whether there was a source-of-challenge issue with the item—i.e., a problem with the item that might cause the student who knows the material to give a wrong answer, or enable someone who does not have the knowledge being tested to answer the item correctly. For example, a science item that involves an excessive amount of reading may represent a source-of-challenge issue because the skill required to answer is more a reading skill than a science skill.

The results produced from the institute pertain only to the issue of agreement between the Illinois state goals and the state assessment instruments. Note that this alignment analysis does not serve as external verification of the general quality of the state's goals or assessments. Rather, only the degree of alignment is discussed in these results. For these results, the averages of the reviewers' coding were used to determine whether the alignment criteria were met.

This report describes the results of an alignment study of learning goals and grade- level operational tests in science for grades 3-8 in Illinois. The study addressed specific criteria related to the content agreement between the state learning goals and grade-level assessments. Four criteria received major attention: categorical concurrence, depth-of-knowledge consistency, range-of-knowledge correspondence, and balance of representation.

Alignment Criteria Used for This Analysis

This analysis judged the alignment between the standards and the assessments on the basis of four criteria. Information is also reported on the quality of items by identifying items with Sources-of-Challenge and other issues. For each alignment criterion, an acceptable level was defined by what would be required to assure that a student had met the standards.

Categorical Concurrence

An important aspect of alignment between standards and assessments is whether both address the same content categories. The categorical-concurrence criterion provides a very general indication of alignment if both documents incorporate the same content. *The criterion of categorical concurrence between standards and assessment is met if the same or consistent categories of content appear in both documents.* This criterion was judged by determining whether the assessment included items measuring content from each standard. The analysis assumed that the assessment had to have at least six items for measuring content from a standard in order for an acceptable level of categorical concurrence to exist between the standard and the assessment. The number of items, six, is based on estimating the number of items that could produce a reasonably reliable subscale for estimating students' mastery of content on that subscale. Of course, many factors have to be considered in determining what a reasonable number is, including the reliability of the subscale, the mean score, and cutoff score for determining mastery. Using a procedure developed by Subkoviak (1988) and assuming that the cutoff score is the mean and that the reliability of one item is .1, it was estimated that six items would produce an agreement coefficient of at least .63. This indicates that about 63% of the group would be consistently classified as masters or nonmasters if two equivalent test administrations were employed. The agreement coefficient would increase if the cutoff score is increased to one standard deviation from the mean to .77 and, with a cutoff score of 1.5 standard deviations from the mean, to .88. Usually states do not report student results by standards or require students to achieve a specified cutoff score on subscales related to a standard. If a state did do this, then the state would seek a higher agreement coefficient than .63. Six items were assumed as a minimum for an assessment measuring content knowledge related to a standard, and as a basis for making some decisions about students' knowledge of that standard. If the mean for six items is 3 and one standard deviation is one item, then a cutoff score set at 4 would produce an agreement coefficient of .77. Any fewer items with a mean of one-half of the items would require a cutoff that would only allow a student to miss one item. This would be a very stringent requirement, considering a reasonable standard error of measurement on the subscale.

Depth-of-Knowledge Consistency

Standards and assessments can be aligned not only on the category of content covered by each, but also on the basis of the complexity of knowledge required by each. *Depth-of-knowledge consistency between standards and assessment indicates alignment if what is elicited from students on the assessment is as demanding cognitively as what students are expected to know and do as stated in the standards.* For consistency to exist between the assessment and the standard, as judged in this analysis, at least 50% of the items corresponding to a standard had to be at or above the level of knowledge of the standard: 50%, a conservative cutoff point, is based on the assumption that a minimal passing score for any one standard of 50% or higher would require the student to successfully answer at least some items at or above the depth-of-knowledge level of the corresponding standard. For example, assume an assessment included six items related to one standard and students were required to answer correctly four of those items to be

judged proficient—i.e., 67% of the items. If three, 50%, of the six items were at or above the depth-of-knowledge level of the corresponding standards, then for a student to achieve a proficient score would require the student to answer correctly at least one item at or above the depth-of-knowledge level of one standard. Some leeway was used in this analysis on this criterion. If a standard had between 40% and 50% of items at or above the depth-of-knowledge levels of the standards, then it was reported that the criterion was "weakly" met.

Interpreting and assigning depth-of-knowledge levels to both objectives within standards and assessment items is an essential requirement of alignment analysis. These descriptions help to clarify what the different levels represent in science:

Level 1 (Recall and Reproduction) is the recall of information such as a fact, definition, term, or a simple procedure, as well as performance of a simple science process or procedure. Level 1 only requires students to demonstrate a rote response, use a well-known formula, follow a set procedure (e.g., a recipe), or perform a clearly defined series of steps. A "simple" procedure is well defined and typically involves only one step. Verbs such as "identify," "recall," "recognize," "use," "calculate," and "measure" generally represent cognitive work at the recall and reproduction level. Simple word problems that can be directly translated into and solved by a formula are considered Level 1. Verbs such as "describe" and "explain" could be classified at different DOK levels, depending on the complexity of what is to be described and explained.

A student answering a Level 1 item either knows the answer or does not: that is, the answer does *not* need to be "figured out," or "solved." In other words, if the knowledge necessary to answer an item automatically provides the answer to the item, then the item is at Level 1. If the knowledge necessary to answer the item does *not* automatically provide the answer, the item is at least at Level 2.

Level 2 (Skills and Concepts) includes the engagement of some mental processing beyond recalling or reproducing a response. The content knowledge or process involved is more complex than at Level 1. Items require students to make some decisions as to how to approach the question or problem. Keywords that generally distinguish a Level 2 item include "classify," "organize," "estimate," "make observations," "collect and display data," and "compare data." These actions imply more than one step. For example, to compare data requires first identifying characteristics of the objects or phenomenon and then grouping or ordering the objects. Level 2 activities include making observations and collecting data; classifying, organizing, and comparing data; and organizing and displaying data in tables, graphs, and charts.

Some action verbs, such as "explain," "describe," or "interpret," could be classified at different DOK levels, depending on the complexity of the action. For example, interpreting information from a simple graph, requiring reading information from the graph, is at Level 2. An item that requires interpretation from a complex graph, such as making decisions regarding features of the graph that need to be considered and how information from the graph can be aggregated, is at Level 3.

Level 3 (Strategic Thinking) requires reasoning, planning, using evidence, and a higher level of thinking than the previous two levels. The cognitive demands at Level 3 are complex and abstract. The complexity does *not* result only from the fact that there could be multiple answers, a possibility for both Levels 1 and 2, but because the multi-step task requires more demanding reasoning. In most instances, requiring students to explain their thinking is at Level 3; requiring a very simple explanation, or a word or two, should be at Level 2. An activity that has more than one possible answer and requires students to justify the response they give would most likely be at Level 3. Experimental designs in Level 3 typically involve more than one dependent variable. Other Level 3 activities include drawing conclusions from observations; citing evidence and developing a logical argument for concepts; explaining phenomena in terms of concepts; and using concepts to solve non-routine problems.

Level 4 (Extended Thinking). Tasks at Level 4 have high cognitive demands and are very complex. Students are required to make several connections—relate ideas within the content area or among content areas—and have to select or devise one approach among many alternatives on how the situation can be solved. Many on-demand assessment instruments will *not* include any assessment activities that could be classified as Level 4. However, standards, goals, and objectives can be stated in such a way as to expect students to perform extended thinking. "Develop generalizations of the results obtained and the strategies used and apply them to new problem situations," is an example of a grade 8 objective that is at Level 4. Many, but *not* all, performance assessments and open-ended assessment activities requiring significant thought will be Level 4.

Level 4 requires complex reasoning, experimental design and planning, and probably will require an extended period of time either for the science investigation required by an objective, or for carrying out the multiple steps of an assessment item. However, the extended time period is *not* a distinguishing factor if the required work is only repetitive and does not require applying significant conceptual understanding and higher-order thinking. For example, if a student has to take the water temperature from a river each day for a month and then construct a graph, this would be classified as a Level 2 activity. However, if the student conducts a river study that requires taking into consideration a number of variables, this would be at Level 4.

Range-of-Knowledge Correspondence

For standards and assessments to be aligned, the breadth of knowledge required on both should be comparable. *The range-of-knowledge criterion is used to judge whether a comparable span of knowledge expected of students by a standard is the same as, or corresponds to, the span of knowledge that students need in order to correctly answer the assessment items/activities.* The criterion for correspondence between span of knowledge for a standard and an assessment considers the number of objectives within the standard with one related assessment item/activity. Fifty percent of the objectives for a standard had to have at least one related assessment item in order for the alignment on

this criterion to be judged acceptable. This level is based on the assumption that students' knowledge should be tested on content from over half of the domain of knowledge for a standard. This assumes that each benchmark for a standard should be given equal weight. Depending on the balance in the distribution of items and the need to have a low number of items related to any one objective, the requirement that assessment items need to be related to more than 50% of the objectives for an standard increases the likelihood that students will have to demonstrate knowledge on more than one objective per standard to achieve a minimal passing score. As with the other criteria, a state may choose to make the acceptable level on this criterion more rigorous by requiring an assessment to include items related to a greater number of the objectives. However, any restriction on the number of items included on the test will place an upper limit on the number of objectives that can be assessed. Range-of-knowledge correspondence is more difficult to attain if the content expectations are partitioned among a greater number of standards and a large number of objectives. If 50% or more of the objectives for a standard had a corresponding assessment item, then the Range-of-knowledge correspondence criterion was met. If between 40% and 50% of the objectives for a standard had a corresponding assessment item, the criterion was "weakly" met.

Balance of Representation

In addition to comparable depth and breadth of knowledge, aligned standards and assessments require that knowledge be distributed equally in both. The range-of-knowledge criterion only considers the number of objectives within a standard hit (an standard with a corresponding item); it does not take into consideration how the hits (or assessment items/activities) are distributed among these objectives. *The balance-of-representation criterion is used to indicate the degree to which one objective is given more emphasis on the assessment than another.* An index is used to judge the distribution of assessment items. This index only considers the objectives for a standard that have at least one hit—i.e., one related assessment item per objective. The index is computed by considering the difference in the proportion of objectives and the proportion of hits assigned to the objective. An index value of 1 signifies perfect balance and is obtained if the hits (corresponding items) related to a standard are equally distributed among the objectives for the given standard. Index values that approach 0 signify that a large proportion of the hits are on only one or two of all of the objectives hit. Depending on the number of objectives and the number of hits, a unimodal distribution (most items related to one objective and only one item related to each of the remaining objectives) has an index value of less than .5. A bimodal distribution has an index value of around .55 or .6. Index values of .7 or higher indicate that items/activities are distributed among all of the objectives at least to some degree (e.g., every objective has at least two items) and is used as the acceptable level on this criterion. Index values between .6 and .7 indicate the balance-of-representation criterion has only been "weakly" met.

Source-of-Challenge Criterion

The Source-of-Challenge criterion is only used to identify items on which the major cognitive demand is inadvertently placed and is other than the targeted science

objective, concept, or application. Cultural bias or specialized knowledge could be reasons for an item to have a Source-of-Challenge problem. Such item characteristics may result in some students not answering an assessment item, or answering an assessment item incorrectly, or at a lower level, even though they possess the understanding and skills being assessed.

Findings

Standards

The consensus DOK value for each science performance indicator (objective) can be found in Appendix A. Table 1 shows the percentages of objectives at each DOK level. Reviewers judged that the majority of performance indicators at both grades had a DOK Level 1 (recall and reproduction). Interestingly, a higher percentage of the grade 4 than grade 7 performance indicators were judged to have higher DOK levels, level 2 (skill and concept) and level 3 (strategic thinking)—29% at grade 4 compared to 19% at grade 7. Reviewers' debriefing comments in Appendix D note that a large number of the performance indicators expect students to "understand" something. Reviewers generally coded understand as recall of a definition, principle, or cause and effect relationship rather than to explain and interpret the principle which would be a DOK level 2 (skill and concept).

Table 1
Percent of Objectives by Depth-of-Knowledge (DOK) Levels for Grades 4 and 7 Illinois Alignment Analysis for Science

Grade	Total number of performance indicators	DOK Level	# of objs by Level	% within std by Level
4	72	1 2 3	50 20 2	69 27 2
7	124	1 2 3	99 23 2	79 18 1

If no particular performance indicator is targeted by a given assessment item, reviewers are instructed to code the item at the level of a learning goal or a standard. This coding to a generic objective or performance indicator sometimes indicates that the item is inappropriate for the grade level. However, if the item is grade-appropriate, then this situation may instead indicate that there is a piece of content not expressly or precisely described in the objectives. These items may highlight areas in the performance indicators that should be changed or made more precise. Table 2 displays the assessment items coded to generic objectives by more than one reviewer. Two or more reviewers coded seven grade 4 items to the generic performance indicators. Five of these items

were coded to a generic performance indicator by three or more reviewers. Seventeen grade 7 items were coded by two or more reviewers to generic performance indicators. Reviewers' notes and comments in Appendix C do not reveal the precise reasons they did not feel a performance indicator precisely matched the item. The items should be reviewed to see if the science required by the item does not fully match the wording in the performance indicator, suggesting perhaps a need for rewording some of the performance indicators.

Table 2
Items Coded to Generic Objectives by More Than One Reviewer, Illinois Alignment Analysis for Science, Grades 4 and 7

Grade	Assessment Item	Generic Objective (Number of Reviewers)
4	53	11A (2)
4	14	12B (5)
4	38	12C (3)
4	8	12E (5)
4	21	12F (5)
4	54	12F (2)
4	5	13A (2)
7	1	12A (2)
7	11	12A (2)
7	27	12A (2)
7	67	12A (2)
7	13	12B (2)
7	51	12B (2)
7	73	12B (3)
7	23	12C (3)
7	52	12C (3)
7	72	12C (2)
7	40	12D (2)
7	43	12D (4)
7	5	12E (3)
7	36	12F (4)
7	69	12F (3)
7	45	13B (2)
7	62	13B (2)

Alignment of Curriculum Standards and Assessments

The results of the analysis for each of the four alignment criteria are summarized in Table 4.1 and 4.2. More detailed data on each of the criteria are given in the Appendix B in the first three tables. In Table 4, "YES" indicates that an acceptable level was

attained between the assessment and the standard on the criterion. “WEAK” indicates that the criterion was nearly met, within a margin that could simply be due to error in the system. “NO” indicates that the criterion was not met by a noticeable margin—10% over an acceptable level for Depth-of-Knowledge Consistency, 10% over an acceptable level for Range-of-Knowledge Correspondence, and .1 under an index value of .7 for Balance of Representation.

The assessment at each grade level had 75 items (Table 3). Each of these items was worth one point. Thus, the total possible points on both the grade 4 and grade 11 assessments was 75 points.

Table 3
Number of items and point value by grade for Illinois Assessments, Grades 4 and 7

Grade Level	Number of Items	Number of Multi-Point Items	Total Point Value
4	75	0	75
7	75	0	75

In general, the alignment between the three state goals for science and the assessments for grade 4 is reasonable, but needs improvement for grade 7. The alignment at grade 4 is acceptable with only one minor alignment issue with Range for State Goal 13. Otherwise the grade 4 assessment has a sufficient number of items for each of the three state goals at an appropriate level of complexity and coverage. The assessment and state goals for grade 7 meet most of the alignment criteria, but have an issue with Range for State Goal 12. The Range issue is in part due to the large number of performance indicators under State Goal 12. If the analysis was done at the learning standard level rather than the performance indicator level, then the coverage would be considered appropriate. There also is a weak Balance for State Goal 11, but this is not considered critical because of the other alignment criteria were fully met. More detail is given for each grade below.

Grade 4

Alignment at grade 4 between the three science state goals and the assessment is acceptable. The alignment issue found with a weak level on the Range-of-Knowledge Correspondence criterion (49% of the performance indicators) is within the accuracy of the process. With a reanalysis it is likely that this issue would be removed. At most one item corresponding to State Goal 13 needs to be replaced by an item that measures content related to a performance indicator not currently targeted. With this minor modification, the assessment and the state goals would be considered to have met all four alignment criteria and to be fully aligned.

Table 4
Summary of Acceptable Levels on Alignment Criteria for Science Grades 4 and 7 Standards and Assessments for Illinois Alignment Analysis

Table 4.1
Summary of Acceptable Levels on Alignment Criteria for Science Grade 4 Standards and Assessments for Illinois Alignment Analysis

Grade 4	***Alignment Criteria***			
Standards	*Categorical Concurrence*	*Depth-of-Knowledge Consistency*	*Range of Knowledge*	*Balance of Represent ation*
11 – Process of scientific inquiry and technological design	YES	YES	YES	YES
12 – Life, physical and earth/space sciences.	YES	YES	YES	YES
13 - Science, technology and society	YES	YES	WEAK	YES

Grade 7

At grade 7, the alignment among the three state goals and science assessment needs improvement by strengthening the Range for State Goal 12. State Goal 12 has 101 performance indicators. Even though the assessment had a fairly large number of items, 44, corresponding to State Goal 12, only about one-third of the performance indicators had a corresponding item. The main cause of the alignment issue is the large number of performance indicators under State Goal 12. If the analysis was performed at the learning standard level (12.A, 12.B, 12.C, 12.D, 12.E, and 12.F), then the range would be good. The majority of reviewers identified from three to seven items as targeting content under each of the six learning standards. These items also are distributed fairly evenly among the performance indicators under each standard. At most two items were identified as corresponding to any one performance indicator. Reviewers also did not find a precise match for all of the items corresponding to State Goal 12. Five of the six learning standards under State Goal 12 had at least one item assigned to the learning standard level (a generic performance indicator). Thus, the assessment does address a range of content under State Goal 12, but the large number of performance indicators places a large constraint in achieving full alignment when coding items to this most specific level.

Overall 20 more performance indicators under State Goal 12 need to be assessed to achieve an acceptable level for Range. Without changing the number of performance indicators under State Goal 12, at least 12 of the 44 items that measure students' content knowledge under that state goal needs to be replaced by items that each targets a performance indicator that currently does not have any items. In addition four items for each of the other two goals (11 and 13) need to be replaced by items that measure additional performance indicators under State Goal 12 in order to achieve full alignment.

The weak balance for State Goal 11 is not considered an important alignment issue because the assessment has an adequate number of items with an appropriate level of complexity that cover a sufficient number of the performance indicators. Overall, the alignment between the assessment and state goals for grade 7 is conditional. If the analysis is performed at the learning goal level, then the alignment is reasonable and acceptable. However, if the analysis is done at the performance indicator level, then the alignment needs improvement by increasing the coverage of performance indicators under State Goal 12 by replacing about 20 items on the assessment with items that measure untested performance indicators or by reducing the number of performance indicators under that state goal.

Table 4.2
Summary of Acceptable Levels on Alignment Criteria for Science Grade 7 Standards and Assessments for Illinois Alignment Analysis

Grade 7	***Alignment Criteria***			
Standards	*Categorical Concurrence*	*Depth-of-Knowledge Consistency*	*Range of Knowledge*	*Balance of Representation*
11 – Process of scientific inquiry and technological design	YES	YES	YES	WEAK
12 – Life, physical and earth/space sciences.	YES	YES	NO	YES
13 - Science, technology and society	YES	YES	YES	YES

Reviewers' Comments

Reviewers were instructed to document any Source-of-Challenge issue and to provide any other comments they may have. These comments can be found in Tables (grade).5 and (grade).7 in Appendix C. After coding each grade-level assessment, reviewers also were asked to respond to five debriefing questions. All of the comments made by the reviewers are given in Appendix D. The notes in general offer an opinion on the item or give an explanation of the reviewers' coding.

Reliability Among Reviewers

The overall intraclass correlation among the Science reviewers' assignment of DOK levels to items was moderately high (Table 5). An intraclass correlation value greater than 0.8 generally indicates a high level of agreement among the reviewers. A pairwise comparison is used to determine the degree of reliability of reviewer coding at the objective level and at the standard level. The standard pairwise comparison values are moderate, while the objective values for grade 4 is reasonable, but for grade 7 is a little low primarily because of the large number of performance indicators.

Table 5
Intraclass and Pairwise Comparisons, Illinois Alignment Analysis for Science Grades 3–8 Assessments

Grade	Intraclass Correlation	Pairwise Comparison:	Pairwise: Objective	Pairwise: Standard
4	.79	.66	.69	.92
7	.68	.65	.45	.84

Summary

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The overall results from the study indicate that the alignment for grade 4 is acceptable whereas the alignment for grade 7 needs some improvement. At grade 4, the assessment had a sufficient number of items for each of the three state goals and at a comparable level of complexity as compared to the complexity of the 72 performance indicators. The grade 4 assessment also had an adequate coverage of content to meet the minimal acceptable level for Range with items appropriately distributed among the performance indicators.

At grade 7, similar to grade 4, the assessment had a sufficient number of items and at an appropriate level of complexity. However, the items on the grade 7 assessment only addressed about one-third of the 101 performance indicators under State Goal 12 (life, physical, and earth/space sciences). This is below the acceptable level of 50% for Range-of-Knowledge Correspondence used in this analysis. The very large number of performance indicators is a contributing factor to the failure to achieve Range at grade 7. If the analysis was done at the next level up, at the learning standard level, then all six of the learning standards under State Goal 12 had three to seven items and would fully meet having Range at that level. To achieve an acceptable Range at the performance indicator level would require replacing about 20 items, 12 from State Goal 12 and four each of the other two state goals. Also, at grade 7 the Balance was weak for State Goal 11, but this was not considered an issue because the other three alignment criteria were fully met for this learning goal. Two or more reviewers coded a relatively high number of items (17 or about 20%) on the grade 7 assessment to generic performance indicators signifying that they felt these items did not precisely match what was expected by the statement of the performance indicators. This suggests narrowly worded or performance indicators that do not fully cover the content under a learning standard. Overall, the alignment at grade 7 needs improvement either by reducing the number of performance indicators or replacing about 20 items.

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Appendix A

Illinois
Grades 4 & 7 Science
Standards and Group Consensus
DOK Values

Table 4.14
Group Consensus
Illinois Science Assessment Framework, Science, Grade 4

Level	Description	DOK
11	Understand the process of scientific inquiry and technological design to investigate questions, conduct experiments and solve problems.	2
11A	SCIENTIFIC INQUIRY	2
11.4.01	Understand how to design and perform simple experiments.	1
11.4.02	Distinguish among and answer questions about performing the following: observing, drawing a conclusion based on observation, forming a hypothesis, conducting an experiment, organizing data, constructing and reading charts and graphs, and comparing data.	2
11.4.03	Compare observations of individual and group results.	2
11.4.04	Distinguish among the following: recording the data from an experiment,organizing the data into a more useful form, analyzing it to identify relevant patterns, and reporting and displaying results.	2
11B	TECHNOLOGICAL DESIGN	3
11.4.05	Identify a design problem and identify possible solutions. Assess designs or plans to build a prototype.	3
11.4.06	Assess given test results on a prototype (i.e., draw conclusions about the effectiveness of the design using given criteria). Analyze data and rebuild and retest prototype as necessary.	3
12	Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences.	1
12A	LIVING THINGS	2
12.4.01	Distinguish between living and non-living things.	2
12.4.02	Identify the basic divisions of animals and their common characteristics (e.g., define mammal, fish, bird, reptile, amphibian, insect, arachnid; give examples of each).	1
12.4.03	Identify the life cycle of familiar animals and compare their various stages: birth, growth and development, reproduction, and death. Understand that metamorphosis occurs in some animals (e.g., butterflies, frogs).	2
12.4.04	Identify the basic needs of living things: animals need air, water, food, and shelter; plants need air, water, nutrients, and light.	1
12.4.05	Understand the functions of component parts of living things.	1
12.4.06	Understand that some characteristics of living things are inherited from parents, such as the color of a flower in a plant, or the number of limbs on an animal. Understand that other features, however, are acquired by an organism through interactions with its environment (or learned) and cannot be passed down to the next generation merely through reproduction.	2
12B	ENVIRONMENT AND INTERACTION OF LIVING THINGS	1
12.4.07	Understand the concept of food chains and food webs and the related classifications of plants or animals (e.g., producers, decomposers, consumers, herbivores, carnivores).	1
12.4.08	Know that the world contains many kinds of environments, and that different animals and plants are suited to live in different environments.	1
12.4.09	Understand that each plant or animal has different structures that serve different functions in its growth, survival, and reproduction. Understand the concept of animal camouflage and how it relates to the survival of living things.	1

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Level	Description	DOK
12.4.10	Identify the basic classifications of animals based on how they interact with their environment [e.g., (a) Some animals are active in the daytime (diurnal), others in the night time (nocturnal). (b) Some animals have a body temperature that stays the same regardless of significant temperature changes in their immediate environment (warm blooded), others have a body temperature that rises and falls with the temperature changes of their environment (cold blooded). (c) Some animals are herbivores, others are carnivores].	1
12.4.11	Understand that an ecosystem is made of living and nonliving things.	1
12.4.12	Understand that some animals survive winter by being fitted for an active life during winter (e.g., penguins), others by hibernation (e.g., certain bears), and others by migration (e.g., monarch butterflies).	1
12.4.13	Understand that human activities can change the number of species in an area, whether by increasing it or decreasing it.	2
12C	MATTER AND ENERGY	1
12.4.14	Understand that matter is usually found in 3 states: liquid, solid, and gas and be able to identify the properties of each. Understand that water can be found in all three forms.	1
12.4.15	Understand that an increase in temperature generally causes things to expand, and that a decrease in temperature generally causes things to contract. Understand that particles move more slowly in a solid than they do in a liquid or a gas.	1
12.4.16	Understand that some substances will dissolve in water and some will not. Understand the property of density.	2
12.4.17	Understand that a magnet attracts iron, but not plastic, paper, and other nonmetals; nor does it attract all metals (since it does not attract copper or aluminum). Identify conductors and insulators.	1
12.4.18	Understand that rubbing together certain objects produces a static electrical charge; in particular, rubbing a balloon on someone's hair or walking in a dry room can build up a charge on the person walking (which is felt as a shock when that person touches someone else). Understand that objects can be positively charged, or negatively charged.	1
12.4.19	Understand that objects of like charge repel each other and that objects of opposite charge attract each other.	1
12.4.20	Understand that electrical energy can be converted to other types of energy such as heat, light, or mechanical energy.	1
12.4.21	Understand that besides static electricity, there is also such a thing as current electricity. For example, given a battery, bulb, and wire, students will understand the proper configuration to make the bulb light.	1
12.4.22	Understand that lighter colors reflect more light, darker absorb more, and that the color one sees depends on what kind of light is reflected (rather than absorbed) by the objectn seen.	2
12.4.23	Understand that white light can be broken into all the colors of the rainbow by means of prisms.	1
12.4.24	Understand that light travels in a straight line and can be reflected, refracted, transmitted, and absorbed by matter	1
12D	FORCE AND MOTION	2

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Level	Description	DOK
12.4.25	Define a force as a push or a pull that tends to move an object. Understand that forces may be balanced or unbalanced. Know that when the forces applied to an object are balanced, the motion or rest of that object does not change.	1
12.4.26	Identify the basic forces, such as friction, magnetism, and gravity. Identify which force is operative in a simple scenario.	2
12.4.27	Identify simple machines (lever, inclined plane, pulley, screw, and wheel and axle) and understand how they function. Understand know how they apply forces with advantage, and identify which machine is suited for accomplishing a simple task.	2
12.4.28	Identify equilibrium conditions (e.g., in a diagram of balanced weights on levers or pulleys).	2
12E	EARTH SCIENCE	1
12.4.29	Understand that Earth's basic materials are land, water, and air.	1
12.4.30	Understand that a natural resource is any material found on Earth that is used by people. Understand the difference between renewable and nonrenewable resources. Know that fossil fuels come from animals and plants, and that oil, coal, and natural gas are examples of fossil fuels.	1
12.4.31	Identify which everyday materials decompose most slowly (e.g., plastics, glass and ceramics decompose slower than metals, wood, or food substances).	2
12.4.32	Understand that the surface of the earth changes. Know that some changes are due to slow processes (e.g., erosion, weathering), whereas others are due to sudden events (e.g., landslides, volcanic eruptions, earthquakes, asteroid impacts).	1
12.4.33	Understand that some rocks contain plant and animal fossils. Know how they were formed.	2
12.4.34	Identify the three basic kinds of rocks: igneous, sedimentary, and metamorphic and the processes that created them. Use information to identify physical properties of minerals.	2
12.4.35	Understand that movement in parts of the earth's crust causes earthquakes.	1
12.4.36	Understand that the main cause of erosion is moving water. Understand that when water erodes landmasses, it carries the land away by rainfall and rivers and re-deposits it in the form of pebbles, sand, silt, and mud. Understand that the delta of a river is formed by such deposits. Understand that deposition of new soil over a flood plain is what makes a river valley fertile. Identify other causes of erosion besides erosion by water (e.g., wind, chemical erosion).	1
12.4.37	Understand that land formations (mountains, valleys, shorelines, and caves) change slowly over time, and identify the major natural causes of such changes: (a) Slow causes: erosion, caused by wind, rain, glaciers, water freezing inside cracks of rocks (which expands and splits the rocks), the growth of tree roots; (b) Sudden causes: rare catastrophes (e.g., earthquakes, volcanic activity, asteroid impacts, floods).	1
12.4.38	Name and distinguish the different kinds of clouds based on their appearance and place in the atmosphere: cirrus, cumulus, and stratus.	1
12.4.39	Identify types of precipitation and the conditions that cause them to form.	1
12.4.40	Understand that weather changes from day to day and over the seasons. Identify the order of the seasons and the different characteristics of each season.	1
12.4.41	Understand that weather is described using measurements of temperature, wind	1

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Level	Description	DOK
	direction and speed, amounts of precipitation, humidity, and air pressure.	
12.4.42	Understand that weather systems can be tracked—and their motions roughly predicted.	1
12.4.43	Understand the stages of the water cycle: evaporation, condensation, and precipitation.	1
12.4.44	Understand that most of Earth's surface is covered by water, and identify the major kinds of land and water formations: continent, mountain, valley, island, cave, ocean, lake, and river.	1
12F	ASTRONOMY	1
12.4.45	Understand that moons and planets do not produce their own light—the light we see when we look at them is the sunlight which they reflect.	1
12.4.46	Identify the relative positions of the earth, moon, and sun during a solar eclipse, a lunar eclipse, a full moon, a half moon, and a new moon. Given a diagram of the earth, moon, and sun, identify which of these is depicted.	2
12.4.47	Identify the order of planets from the sun, and know that the further planets take longer to go around the sun. Understand that all planets in our solar system revolve around the sun. Because Earth revolves around the sun, objects (e.g., stars, planets, constellations) in the sky appear to change positions throughout the year. Know that it takes Earth 365 ¼ days to revolve around the sun.	1
12.4.48	Understand that the earth rotates on its axis and this is responsible for the change from day to night. Understand that the tilt of the earth is responsible for the seasons.	1
12.4.49	Define a constellation as a group of stars that form a pattern in the sky. Understand that constellations are useful in the study of space because they help create a map of the sky. Know that locations in the sky are often described using the names of constellations.	1
12.4.50	Understand that the Milky Way is our galaxy, so-called because there appears to be a milky-white path or road in the sky.	1
12.4.51	Understand that the mass of a body stays the same on different planets but the weight changes depending on the mass of the planet.	1
13	Understand the relationships among science, technology and society in historical and contemporary contexts.	1
13A	SAFETY AND PRACTICES OF SCIENCE	1
13.4.01	Identify the basic safety equipment used in science, (e.g., gloves, goggles, lab coats, tongs).	1
13.4.02	Identify the basic safety procedures (e.g., “Keep your clothes and hair away from open flames,” “Don’t taste substances without permission.”) when conducting science activities.	1
13.4.03	Explain why similar results are expected when procedures are done the same way. Understand the importance of recording observations accurately and honestly.	2
13.4.04	Know that scientific results must be reproducible. Know that different scientists study different subjects but work in similar ways.	1
13.4.05	Know that scientists accept a theory that is supported by tests and experiments until it is disproved or improved upon.	1
13.4.06	Recognize that scientists share results so that each scientist may build upon what he or she learns from others.	1
13.4.07	Understand that when an experiment is performed a few times and yields	1

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Level	Description	DOK
	conflicting results, one must repeat it many times. Understand that one should also try to find an explanation for the conflicting results.	
13.4.08	Identify important contributions men and women have made to science and technology.	1
13.4.09	Understand the impact of different scientific discoveries on society.	2
13.4.10	Identify occupations in the field of science.	1
13.4.11	Identify ways that science and technology affect people's lives (e.g., in transportation, medicine, agriculture, communication) and careers.	2
13.4.12	Identify ways that technology has changed local, national, or global environments.	2
13.4.13	Identify ways to reduce, reuse, and recycle materials.	1
13.4.14	Know that using measuring tools results in greater accuracy than making estimates.	1
13.4.15	Identify basic scientific instruments and their functions (e.g., ruler, balance, graduated cylinder, clock, stopwatch, thermometer, microscope, telescope).	1

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Level	Description	DOK
11	Understand the processes of scientific inquiry and technological design to investigate questions, conduct experiments and solve problems.	2
11A	SCIENTIFIC INQUIRY	2
11.7.01	Understand how to follow procedures relating to scientific investigations including formulating hypotheses, controlling variables, collecting and recording and analyzing data, interpreting results, and reporting and displaying results.	2
11.7.02	Distinguish among and answer questions about performing the following: observing, drawing a conclusion based on observation, forming a hypothesis, conducting an experiment, organizing data, constructing and reading charts and graphs, and comparing data. Recognize the common units of the metric system.	2
11.7.03	Define a theory as an explanation or model based on observation, experimentation, and reasoning; especially one that has been tested and confirmed as a general principle helping to explain and predict natural phenomena.	1
11.7.04	Define a variable as some factor which changes in different phases of an experiment. Define a constant as something kept the same in every phase of the experiment. Understand that most scientific experiments are designed so that only one variable is tested in each experiment. Identify constants and variables in described experiments.	1
11.7.05	Define the control group or control setup as a group of subjects that are the same in all important ways as the subjects on which we are performing the experiment, except that the control is isolated from what we suspect to be the cause we are seeking to evaluate—the control helps to increase our certainty that the suspected cause really is the cause.	1
11.7.06	Analyze patterns in data from an experiment to determine whether the information gathered helps to answer a given question or hypothesis (e.g., all of the plants fertilized in a vegetable garden grew taller than the ones not fertilized. Understand that this is an indication that the fertilizer caused the plants to grow taller.)	2
11B	TECHNOLOGICAL DESIGN	2
11.7.07	Identify a design problem and establish criteria for determining the success of a solution.	2
11.7.08	Compare design solutions; select which one is best given certain restrictions on available materials, tools, cost effectiveness, and safety.	2
11.7.09	Given certain tests which could be performed on a prototype, identify which one is testing for a given feature (e.g., “Given certain tests to be performed on a car, which one is testing for its fuel efficiency?”).	2
11.7.10	Identify improvements to a prototype indicated by given test results.	2
12	Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences.	1
12A	LIVING THINGS	1
12.7.01	Understand how scientists classify organisms. Identify common insects, flowers, birds, reptiles, and mammals using a dichotomous key.	1
12.7.02	Understand that all living things are composed of cells: small parts which function similarly in all living things. Understand that different tissues have different, specialized cells with specific functions. Understand the levels of organization in living organisms—	1

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Level	Description	DOK
	cells, tissues, organs, and organ systems.	
12.7.03	Identify the main differences between plant cells and animal cells, namely that plant cells have chloroplasts and cell walls (which provide rigidity to the plant, since plants have no skeletons). Identify the basic cell organelles and their functions.	1
12.7.04	Understand that some organisms are unicellular, others multi-cellular. Understand that some unicellular organisms are like tiny animals, able to propel themselves or change their shape and that they are endowed with sensation.	1
12.7.05	Understand that the nucleus of cell contains the genetic information for the plant or animal to which it belongs.	1
12.7.06	Understand that cells divide to increase their numbers, and the process of cell division called mitosis results in two daughter cells each with identical sets of chromosomes.	1
12.7.07	Understand that multi-cellular organisms begin as zygotes (a single egg cell fertilized by a single sperm cell) and that a zygote grows by cell division and that as the cells multiply, they also differentiate. Understand the process of meiosis.	1
12.7.08	Understand the distinction between sexual and asexual reproduction. Understand that the offspring of sexual reproduction inherits half its genes from each parent.	1
12.7.09	Understand that only some animals are capable of limb-regeneration (e.g., sea stars, some amphibians, many crustaceans).	1
12.7.10	Understand that an inherited trait can be determined by one or more genes.	1
12.7.11	Understand that DNA (deoxyribonucleic acid) is the genetic material of each living thing—like a blueprint or set of instructions for building the organism—and that it is located in the chromosomes of each cell.	1
12.7.12	Understand that heredity is based on the probability of inheriting a given trait for which one or both of the parents carries a gene, and that this probability can be calculated given the genetic make-up of the parents with regard to that kind of trait (e.g., blue eyes)using a Punnett Square.	1
12.7.13	Understand that male animals produce sperm cells, and females produce egg cells, and that the combination of these cells results in fertilization.	1
12.7.14	Understand the basics of plant reproduction and define and state the purposes of pollen, ovules, seeds, and fruit.	1
12.7.15	Identify the common characteristics of plants and plant growth. Understand the purpose of various plant parts such as roots, stems, and leaves.	1
12.7.16	Understand that energy for life primarily derives from the sun; understand the process of photosynthesis.	1
12.7.17	Identify the basic anatomy of leaves: blade, vein, and petiole; classify leaves as dicot or monocot, simple or compound, and palmately compound or pinnately compound.	1
12.7.18	Classify roots as either fibrous roots or tap roots.	1
12.7.19	Understand that flowers are the reproductive organs of flowering plants and that their function is to produce male gametes (sperm) and female gametes (eggs) and to provide a structure for fertilization.	1
12.7.20	Understand that some of the structures of flowers are adaptations that enable plants	1

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Level	Description	DOK
	to reproduce sexually while they remain stationary. Understand that a plant's production of pollen is one such adaptation, since it can be transported (by wind, water, insects or other organisms) to the parts of the flowers that contain eggs. Know that this process is called pollination.	
12.7.21	Identify a seed as a reproductive structure consisting of a plant embryo and its stored food. Understand that in flowering plants the seeds develop in a structure called a fruit, which houses and protect seeds and may also help to disperse them to new locations.	1
12.7.22	Understand natural selection or survival of the fittest, and understand that this is thought to be one of the explanations for how animals and plants change over time and that it was the explanation given by Charles Darwin.	1
12.7.23	Understand that fossils of complete skeletons are rare, and that many skeletons have to be reconstructed based on what scientists believed the whole body to look like. Understand that the fossil record is not complete or representative of the times in which the fossilized animals and plants lived.	1
12.7.24	Understand how fossils provide evidence that animals and plants have changed over time, and that new species of organisms changed over time out of older ones.	2
12B	ENVIRONMENT AND INTERACTION OF LIVING THINGS	1
12.7.25	Understand that three important cycles for the survival of living things in Earth's ecosystems are the carbon dioxide-oxygen cycle, the water cycle, and the nitrogen cycle.	1
12.7.26	Understand that the number of organisms an ecosystem can support depends on the resources available and abiotic factors (e.g., the quantity of light and water, the range of temperatures, soil composition). Know that given adequate biotic and abiotic resources and no disease or predators, populations can increase at rapid rates. Understand that lack of resources and other factors (e.g., predation, climate) limit the growth of populations in specific niches in the ecosystem.	1
12.7.27	Understand that competitive feeding habits between species can have a negative effect on their populations. Understand that animals and plants compete for food, shelter, mates, and other things necessary for life and reproduction.	1
12.7.28	Distinguish the various members of a food web and identify the order of dependence among these members.	2
12.7.29	Understand that many plants depend upon certain animals for pollination and the spreading out of their seeds, and therefore to reproduce. Conversely, understand that animals depend on plants for food (either immediately, like herbivores; or intermediately, like carnivores) and shelter.	1
12.7.30	Understand that the behavior of different organisms influences and is influenced by their environment (e.g., hunger, changes in available resources).	1
12.7.31	Understand that animals have parts well suited to the places they live in and to their needs.	1
12.7.32	Identify and describe the major biomes and habitats and their characteristics: desert, grassland, savannah, tropical forest, coniferous forest, tundra, freshwater, and saltwater.	1
12C	MATTER AND ENERGY	1
12.7.33	Understand that matter can be changed in different ways. 1. Physically, a change in the	1

Table 7.14
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Level	Description	DOK
	size shape or state of matter (e.g., the melting of an ice cube, tearing of paper). 2. Chemically, where matter can change into another kind of matter (e.g., burning of wood, rusting of iron).	
12.7.34	Define and distinguish the properties of matter: mass, weight, volume, density, color, odor, shape, texture, and hardness.	2
12.7.35	Understand the phases of matter and how they depend on how the atoms and molecules of a substance move.	1
12.7.36	Understand the concepts of melting point, boiling point, and freezing point, and understand the concepts of evaporation, condensation, and sublimation.	1
12.7.37	Understand that there is another state of matter called plasma, which can be produced under artificial conditions on Earth. The sun's matter is in the plasma state, as is the matter of the other stars.	1
12.7.38	Understand that substances can be grouped by similarities in their physical properties.	1
12.7.39	Define element as a substance that cannot be broken down into simpler substances by chemical interactions. Understand that there are over 100 known elements that combine in many ways to form many kinds of compounds. Each element has its own number on the periodic table.	1
12.7.40	Identify the properties common to most metals (e.g., luster, malleability, ductility, the ability to conduct electricity).	1
12.7.41	Identify simple compounds (e.g., H2O, NaCl).	1
12.7.42	Define atom as the smallest part of an element that still has the properties of that element.	1
12.7.43	Identify the 3 subatomic building blocks and their properties. Know that the electron has a negative charge, the proton has a positive charge, and the neutron is electrically neutral.	1
12.7.44	Understand that a molecule made of two or more atoms.	1
12.7.45	Identify the number of different kinds of elements in a chemical formula.	1
12.7.46	Understand that during a chemical change atoms are neither created nor destroyed but are rearranged to make new substances.	1
12.7.47	Identify the basic properties of acids and bases. Know the relationship between acids, bases, and indicators (e.g., blue litmus paper changes to red when placed in an acid).	1
12.7.48	Know the laws of the conservation of matter and energy. Apply the conservation of matter as a reason why the number and kinds of atoms in a chemical change remains constant.	1
12.7.49	Understand that energy appears in many forms, such as heat, light, sound, chemical, mechanical, solar, nuclear, and electromagnetic energy. Understand the basic characteristics of each of these kinds of energy. Understand the nature of kinetic and potential energy.	1
12.7.50	Understand that heat moves in predictable ways, flowing from warmer objects to cooler ones, until both reach the same temperature (thermal equilibrium).	1
12.7.51	Understand that energy can be transferred by radiation, conduction, and convection.	1
12.7.52	Identify electrical conductors and insulators. Define and give examples of each. Understand that electricity can be converted into heat and light by forcing an electrical	1

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Level	Description	DOK
	current through a conductor. Understand that this is what happens in a toaster and in a light bulb.	
12.7.53	Understand that light travels in straight lines as long as it is traveling through one uniform medium.	1
12.7.54	Understand that almost all of Earth's energy comes from the sun. Understand that this energy is in the form of visible and invisible light with a range of wavelengths (electromagnetic spectrum).	1
12.7.55	Understand that visible light is a small band within a very broad electromagnetic spectrum.	1
12.7.56	Understand that when a light beam hits an object and is reflected off of it, the angle of incidence equals the angle of reflection.	1
12.7.57	Understand that light travels at different speeds in different materials. Understand that this is why light refracts—or changes direction—namely because it goes from one material in which it moves at one speed into another material through which it moves at a different speed.	1
12.7.58	Understand that the angle of refraction is determined by (1) the angle of incidence and (2) the index of refraction of the new material which the light is entering.	1
12.7.59	Understand that many lenses operate by refracting light beams that hit their surface in such a way that they will all meet at one point called a focal point. Understand that this is the way refracting telescopes increase the ability of an image to be magnified, and this is also how they magnify it with another lens. Likewise, know that light microscopes and magnifying glasses work in the same way.	1
12.7.60	Understand that light has a dual nature—exhibiting particle properties and also wave properties—depending on the situation.	1
12.7.61	Identify the basic properties of waves: frequency, wavelength, and velocity.	1
12.7.62	Understand that in the spectrum of visible light, lower frequency colors are toward red, and higher frequency colors are toward blue.	1
12D	FORCE AND MOTION	1
12.7.63	Understand the concept of force as any influence that tends to accelerate an object. Know that a force, for example, can speed up an object, or slow it down, or change its direction. Understand that forces can be measured in various ways. Understand how to calculate the acceleration of an object.	1
12.7.64	Identify and understand Newton’s laws of motion. The first law of motion states that things at rest or in motion tend to stay at rest or continue in motion unless some force is applied to them. Newton's second law of motion (force = mass × acceleration) shows how force, mass, and acceleration are related. The third law states that for every action there is an equal and opposite reaction.	1
12.7.65	Understand the concept of work. A force acting through distance is work. Recognize applications of simple machines (wedge, lever, inclined plane, pulley, screw, and wheel and axle) in common tools.	2
12.7.66	Understand that density is mass per volume, and that what is denser than something else at the same volume will have more mass, but at the same mass it will have less volume.	1

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Level	Description	DOK
	Understand that less dense bodies have greater buoyant force in water.	
12.7.67	Understand that the gravitational force between two bodies decreases as the bodies get farther apart from each other. Know that the gravitational force between two bodies decreases as their masses decrease.	1
12.7.68	Understand how to calculate average speeds, given the distance traveled and the time taken.	1
12.7.69	Distinguish between mass and weight. Know that the mass of a body remains the same regardless of where it is but that the weight of it depends on how strong the force of gravity is in its current location.	1
12E	EARTH SCIENCE	1
12.7.70	Understand that lithospheric plates constantly move at rates of centimeters per year in response to movements in the mantle. Understand that major geological events, such as earthquakes, volcanic eruptions, and mountain building, result from these plate motions. Understand that over very longs periods of time (millions of years), old mountains wear down, but new ones arise from catastrophic volcanic and earthquake activity.	1
12.7.71	Understand that land forms are the result of combination of constructive and destructive forces. Understand that constructive forces include crustal deformation, volcanic eruption, and deposition of sediment, whereas destructive forces include weathering and erosion.	1
12.7.72	Understand that soil consists of weathered rocks and decomposed organic material from dead plants, animals, and bacteria. Understand that soils are often found in layers, with each having a different chemical composition and texture.	1
12.7.73	Understand that glaciers can move at a rate of centimeters per year (sometimes faster), and that in the past, glacial movement has carved new geological features on various continents.	1
12.7.74	Understand that radioactive elements are useful for dating materials because the time it takes for the atoms in them to break apart is known. Know that this information can be used to determine the age of a rock within a certain number of years.	1
12.7.75	Understand that that there are strata (layers) in many places in the crust of the earth. Understand that the crust of the earth is mostly igneous/metamorphic, with a relatively thin veneer of sedimentary rock layers in many, but not all places. Understand the principle of superposition: in a layered sedimentary sequence, the oldest rocks are usually at the bottom.	1
12.7.76	Compare seasonal climates in major regions of the globe, considering effects of latitude, altitude, and geography. (e.g., 1. Higher altitude generally means colder temperatures and lower air pressure; 2. Places along the equator have a 12–hour day and a 12–hour night every day of the year and do not have strict seasons; 3. Places along latitudes between the equator and one of the earth's poles have seasons and differing amounts of daylight throughout the year: they have a longest day, a shortest day, and two equinoxes on which the daylight lasts for 12 hours; 4. Places along the Arctic and Antarctic circles have one day of exactly 24–hour daylight and one day of exactly 24–hour darkness each year).	2
12.7.77	Understand that the solid Earth is layered with a crust, under which is a hot convecting	1

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Level	Description	DOK
	mantle, and that at the center of the earth is a dense, metallic core.	
12.7.78	Understand that some changes in the solid earth can be described as the rock cycle: rocks at the earth's surface weather, forming sediments that are buried, then compacted, heated, and often recrystalized into new rock. Eventually, those new rocks may be brought to the surface by the forces that drive plate motions, and thus the rock cycle continues. Identify the three basic kinds of rock. Igneous rock is the result of cooled magma; granite, pumice, and scoria are examples. Sedimentary rock is the result of fine particles from eroded rocks being re-deposited by water or wind; sandstone and limestone are examples. Metamorphic rock is the result of rocks being changed by high temperatures and/or pressures; marble is an example.	1
12.7.79	Understand that the theory of plate tectonics explains the formation and movement of the earth's plates. Understand that the similar contours of the continents, seafloor spreading, and the location of frequent earthquakes and volcanoes provide evidence for plate tectonics.	1
12.7.80	Understand that movements of the earth's continental and oceanic plates have affected the distribution of living things on Earth. Understand that major earthquake and volcanic activity can give rise to new mountain ranges, severing different species from each other, which from then on undergo independent lines of gradual change, each adapting to its own, new ecosystem.	1
12.7.81	Understand that changes in climate (e.g., the ice ages) have affected the distribution of living things on Earth. A change in climate from warm to cold might force many animals to move closer to the equator in order to survive. Identify dynamic forces that affect land and water distributions between solid Earth, oceans, atmosphere, and organisms.	1
12.7.82	Understand that geologic layers and radioactive dating of rocks and meteorites provide evidence that the earth is about 4.6 billion years old, and that life has existed on Earth for over 3 billion years. Understand how to use a geologic time table.	2
12.7.83	Understand that life on Earth has been changed by major catastrophes (e.g., the impacts of asteroids, volcanic eruptions).	1
12.7.84	Understand that the atmosphere is a mixture of nitrogen, oxygen, argon, and trace gases that include water vapor and carbon dioxide. Understand that atmospheric conditions vary as one changes latitude and altitude. Understand that the atmosphere consists of layers and be able to distinguish the layers and their significance. Understand that the ozone layer protects life on Earth by absorbing ultraviolet radiation from the sun.	2
12.7.85	Understand that clouds, formed by the condensation of water vapor, affect weather and climate. Understand that clouds cause precipitation and lightning and that they insulate heat and moisture in the air.	1
12.7.86	Understand how jet streams affect weather. Identify weather fronts and understand how they are formed. Understand how to read and interpret weather maps.	2
12.7.87	Understand patterns of atmospheric movement and how they influence weather. Understand that oceans have a major affect on climate because water in the oceans holds and distributes a large amount of heat.	2
12.7.88	Understand the stages in the water cycle on Earth: evaporation, condensation, and precipitation.	1

Table 7.14
Group Consensus
Illinois Science Assessment Framework, Science, Grade 7

Level	Description	DOK
12.7.89	Understand that water below the surface is groundwater and it forms when precipitation moves slowly downward through rocks and soil.	1
12.7.90	Know that about three fourths of the earth is covered with water. Understand that most of the earth's water is salt water (oceans), and only about 3 percent of the earth's water is freshwater. Know that freshwater is found mainly in icecaps, glaciers, lakes, groundwater, rivers, and the atmosphere.	1
12F	ASTRONOMY	1
12.7.91	Understand that objects in the solar system are for the most part in regular and predictable motion. Know that those motions explain such phenomena as the day, the year, the phases of the moon, and eclipses.	1
12.7.92	Understand that gravity is the force that keeps planets in orbit around the sun and governs the rest of the motion in the solar system. Know that changes in gravitational forces explain the phenomenon of the tides. Know that what an object weighs on Earth is different than what it weighs on the moon or other planets in our solar system. This is due to gravity.	1
12.7.93	Identify the differences among the planets in our solar system: the four closest planets to the Sun are called the inner planets. The inner planets are small and have rocky surfaces. The five farthest planets from the Sun are called the outer planets. All outer planets except Pluto are much larger than Earth, are made of gases, and have no solid surfaces.	1
12.7.94	Understand that rock samples taken by astronauts walking on the moon show that the earth and moon have a common history.	1
12.7.95	Understand that because it takes the moon the same amount of time to rotate on its axis as it does to revolve around the earth, the same side of the moon always faces the earth. Understand that the tides are affected by the positions of the moon.	1
12.7.96	Understand that valleys on the surface of a planet or moon might be evidence that water is or once was there.	1
12.7.97	Understand that the speed of a planet's rotation is one cause of the daily variations in temperature on its surface.	1
12.7.98	Understand that the cause of the earth's seasons and the change in the amount of daylight throughout the year is the tilt of its axis of rotation with respect to the plane of its orbit. Given a diagram of the earth depicting (1) its relative position to the sun and (2) the orientation of its axis of rotation and (3) some circle of latitude, identify the following: (a) the season of the year (if the circle of latitude is other than the equator), and (b) whether there is more daylight or more dark hours at that time of year. Understand why the seasons and daylight hours in opposite hemispheres are opposite to each other.	2
12.7.99	Understand that the sun is an average star. Know that a solar system consists of a sun and planets and other objects that revolve around it. Know that the planets closest to the sun are hotter than the planets farther away from the sun. Understand that the color of a star depends on its temperature.	1
12.7.100	Identify the relative positions of the earth, moon, and sun when the moon appears full, new, half, and when a lunar or solar eclipse occurs. Given a diagram of the sun and the earth in some definite position with its axis of rotation drawn (and with the poles	2

Table 7.14
Group Consensus
Illinois Science Assessment Framework, Science, Grade 7

Level	Description	DOK
	labeled), identify the earth in the positions of summer solstice, winter solstice, spring equinox, and fall equinox (for the northern hemisphere).	
12.7.101	Define light year, how many kilometers it is, and know that galactic distances may be measured in millions and billions of light years.	1
13	Understand the relationships among science, technology and society in historical and contemporary contexts.	2
13A	SAFETY AND PRACTICES OF SCIENCE	1
13.7.01	Identify potential hazards in the laboratory and the means of reducing them.	1
13.7.02	Explain how peer review helps to assure the accurate use of data and improves the scientific process. Results from scientific investigations can be discussed.	2
13.7.03	Indicate that repeatability of results is necessary for the scientific community to accept someone's findings.	1
13.7.04	Understand that one set of data is not sufficient evidence for making a generalization. Identify the kind of reasoning called induction, and know that the more cases that are seen, the greater the certainty of the generalization drawn from those cases.	1
13.7.05	Understand that the scientific community has a standard procedure for determining nomenclature, units of measurement, and ways of presenting data.	1
13.7.06	Understand that important social decisions are made on the basis of risk/benefit analysis (e.g., whether to administer a smallpox vaccine or not).	1
13B	SCIENCE, TECHNOLOGY, SOCIETY	2
13.7.07	Compare the knowledge, skills, and methods of early and modern scientists.	2
13.7.08	Understand that the introduction of a new technology can affect human activities worldwide.	1
13.7.09	Describe how occupations use scientific and technological knowledge and skills.	2
13.7.10	Analyze the interaction of resource acquisitions, technological development and ecosystem impact.	3
13.7.11	Compare the effectiveness of reducing, reusing, and recycling in actual situations.	3
13.7.12	Analyze the effects of policies on science and technology issues.	2
13.7.13	Select appropriate scientific instruments and technological devices to take measurements, perform calculations, organize data, or make observations.	2

Appendix B

Data Analysis Tables

Illinois
Grades 4 & 7 Science

Brief Explanation of Data in the Alignment Tables by Column

Tables *grade*.1

Standards #	Number of standards plus one for a generic standard for each standard.
Standards #	Average number of standards for reviewers. If the number is greater than the actual number in the standard, then at least one reviewer coded an item for the standard/standard but did not find any standard in the standard that corresponded to the item.
Level	The Depth-of-Knowledge level coded by the reviewers for the standards for each standard.
# of standards by Level	The number of standards coded at each level
% w/in std by Level	The percent of standards coded at each level
Hits Mean & SD	Mean and standard deviation number of items reviewers coded as corresponding to standard. The total is the total number of coded hits.
Cat. Conc. Accept.	"Yes" indicates that the standard met the acceptable level for criterion. "Yes" if mean is six or more. "Weak" if mean is five to six. "No" if mean is less than five.

Tables *grade*.2

	First five columns repeat columns from Table 1.
Level of Item w.r.t. Stand	Mean percent and standard deviation of items coded as "under" the Depth-of-Knowledge level of the corresponding standard, as "at" (the same) the Depth-of-Knowledge level of the corresponding standard, and as "above" the Depth-of-Knowledge level of the corresponding standard.
Depth-of-Know. Consistency Accept.	"Yes" indicates that 50% or more of the items were rated as "at" or "above" the Depth-of-Knowledge level of the corresponding standards. "Weak" indicates that 40% to 50% of the items were rated as "at" or "above" the Depth-of-Knowledge level of the corresponding standards. "No" indicates that less than 40% items were rated as "at" or "above" the Depth-of-Knowledge level of the corresponding standards.

Tables *grade*.3

First five columns repeat columns from Table 1 and 2.

Range of Standards

Standards Hit — Average number and standard deviation of the standards hit coded by reviewers.

% of Total — Average percent and standard deviation of the total standards that had at least one item coded.

Range of Know.

Accept. — "Yes" indicates that 50% or more of the standards had at least one coded standard.
"Weak" indicates that 40% to 50% of the standards had at least one coded standard.
"No" indicates that 40% or less of the standards had at least one coded standard.

Balance Index

% Hits in Std/Ttl Hits — Average and standard deviation of the percent of the items hit for a standard of total number of hits (see total under the Hits column).

Index — Average and standard deviation of the Balance Index.

Note: BALANCE INDEX $1 - (\sum_{k=1} \left| 1/(O) - I_{(k)} /(H) \right|)/2$

Where O = Total number of standards hit for the standard
$I_{(k)}$ = Number of items hit corresponding to standard (k)
H = Total number of items hit for the standard

Bal. of Rep Accept. — "Yes" indicates that the Balance Index was .7 or above (items evenly distributed among standards).
"Weak" indicates that the Balance Index was .6 to .7 (a high percentage of items coded as corresponding to two or three standards).
"No" indicates that the Balance Index was .6 or less (a high percentage of items coded as corresponding to one standard.)

Tables *grade*.4

Summary if standard met the acceptable level for the four criteria by each standard.

Tables *grade*.6

The DOK value for each assessment item given by each reviewer. The intraclass correlation for the group of reviewers is given on the last row.

Tables *grade*.8

The DOK level and standard code assigned by each reviewer for each item.

Tables *grade*.9

This list for each item all of the standards coded by the group of reviewers as corresponding to the item. Repeat of a standard indicates the number of reviewers who coded that standard as corresponding to the item.

Tables *grade*.10

This lists for each standard all of the items coded by the group of reviewers as corresponding to the standard. Repeat of an item indicates the number of reviewers who coded the item as corresponding to the standard.

Tables *grade*.12

This table summarizes the number of reviewers who coded an item as corresponding to a standard. It contains the same information as in Table 10.

Tables *grade*.13

This table can be used to compare the DOK level of a standard to the average DOK level of the items reviewers assigned to the standard. This table is helpful to identify items with a lower DOK level that should be replaced by an item with a higher DOK level to improve the Depth-of-Knowledge Consistency.

Table 4.1
Categorical Concurrence Between Standards and Assessment as Rated by Five Reviewers
IL Science Grade 4 Spring 2006
Number of Assessment Items - 75

Standards			Level by Objective			Hits		Cat. Concurr.
Title	Goals #	Objs #	Level	# of objs by Level	% w/in std by Level	Mean	S.D.	
11 - Understand the process of scientific inquiry and t ...	2	6.4	1 2 3	1 3 2	16 50 33	16.8	1.6	YES
12 - Understand the fundamental concepts, principles an ...	6	54.8	1 2	38 13	74 25	47.6	1.50	YES
13 - Understand the relationships among science, techno ...	1	15.4	1 2	11 4	73 26	12.4	0.49	YES
Total	9	76.6	1 2 3	50 20 2	69 27 2	76.8	0.75	

Table 4.2
Depth-of-Knowledge Consistency Between Standards and Assessment as Rated by Five Reviewers
IL Science Grade 4 Spring 2006
Number of Assessment Items - 75

Standards			Hits		Level of Item w.r.t. Standard						DOK Consistency
					% Under		% At		% Above		
Title	Goals #	Objs #	M	S.D.	M	S.D.	M	S.D.	M	S.D.	
11 - Understand the process of scientific inquiry and t ...	2	6.4	16.8	1.6	41	47	45	45	13	30	YES
12 - Understand the fundamental concepts, principles an ...	6	54.8	47.6	1.50	15	34	59	45	25	40	YES
13 - Understand the relationships among science, techno ...	1	15.4	12.4	0.49	0	0	93	23	7	23	YES
Total	9	76.6	76.8	0.75	16	35	63	44	21	38	

Table 4.3

Range-of-Knowledge Correspondence and Balance of Representation Between Standards and Assessment as Rated by Five Reviewers

IL Science Grade 4 Spring 2006

Number of Assessment Items - 75

Standards			Hits		Range of Objectives				Rng. of Know.	Balance Index				Bal. of Represent.
					# Objs Hit		% of Total			% Hits in Std/Ttl Hits		Index		
Title	Goals #	Objs #	Mean	S.D.	Mean	S.D.	Mean	S.D.		Mean	S.D.	Mean	S.D.	
11 - Understand the process of scientific inquiry and t ...	2	6.4	16.8	1.6	5.8	0.4	91	7	YES	22	2	0.79	0.05	YES
12 - Understand the fundamental concepts, principles an ...	6	54.8	47.6	1.50	32.6	0.8	60	2	YES	62	2	0.79	0.01	YES
13 - Understand the relationships among science, techno ...	1	15.4	12.4	0.49	7.6	1.2	49	6	WEAK	16	1	0.81	0.03	YES
Total	9	76.6	76.8	0.75	15.33	12.26	67	19		33	20	0.80	0.04	

Table 4.4
Summary of Attainment of Acceptable Alignment Level on Four Content Focus Criteria as Rated by Five Reviewers
IL Science Grade 4 Spring 2006
Number of Assessment Items - 75

Standards	Alignment Criteria			
	Categorical Concurrence	Depth-of-Knowledge Consistency	Range of Knowledge	Balance of Representation
11 - Understand the process of scientific inquiry and t ...	YES	YES	YES	YES
12 - Understand the fundamental concepts, principles an ...	YES	YES	YES	YES
13 - Understand the relationships among science, techno ...	YES	YES	WEAK	YES

Table 4.6
Depth-of-Knowledge Levels by Item and Reviewers
Intraclass Correlation
IL Science Grade 4 Spring 2006

Item	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5
1	2	2	2	2	2
2	1	2	2	1	1
3	1	2	2	1	2
4	2	2	2	2	2
5	1	1	1	1	1
6	1	2	2	1	1
7	2	1	2	2	1
8	1	1	1	1	1
9	1	2	2	2	1
10	2	2	2	2	2
11	1	1	1	2	2
12	1	1	1	1	2
13	1	1	1	2	2
14	2	2	2	2	1
15	1	1	2	2	1
16	1	2	2	1	1
17	2	2	2	2	2
18	1	1	1	2	2
19	2	2	2	2	1
20	2	2	2	2	2
21	2	2	2	2	1
22	1	1	1	1	1
23	2	2	2	2	2
24	2	1	2	2	1
25	1	2	2	2	2
26	1	1	2	1	1
27	2	2	2	1	1
28	1	2	1	2	1
29	2	2	3	2	2
30	1	1	1	1	1
31	2	2	2	2	2
32	1	2	2	2	2
33	1	1	1	1	1
34	1	1	1	1	1
35	1	1	1	1	1
36	1	1	2	2	2
37	1	1	1	1	1
38	1	1	2	2	2
39	1	1	2	1	1
40	2	2	2	2	2

Table 4.6
Depth-of-Knowledge Levels by Item and Reviewers
Intraclass Correlation
IL Science Grade 4 Spring 2006

Item	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5
41	1	1	2	1	1
42	1	1	2	1	2
43	1	2	2	2	1
44	1	1	1	1	1
45	2	1	2	2	2
46	1	1	1	1	1
47	1	1	1	1	1
48	2	2	3	2	2
49	1	1	1	1	1
50	1	1	1	1	1
51	2	2	3	2	2
52	1	1	1	1	1
53	1	1	2	2	2
54	1	2	2	2	1
55	1	1	1	1	1
56	2	2	2	2	2
57	1	2	2	1	1
58	1	1	2	2	1
59	1	2	2	1	1
60	1	1	1	2	1
61	1	1	1	1	1
62	1	1	2	1	1
63	1	2	1	1	1
64	2	2	3	2	1
65	1	2	2	2	1
66	1	1	2	2	1
67	1	1	1	2	1
68	1	1	2	1	1
69	1	1	1	1	1
70	1	1	1	1	1
71	1	2	1	2	1
72	1	2	2	2	1
73	1	2	2	2	1
74	1	2	1	1	1
75	2	2	2	1	1

Intraclass Correlation: 0.7871
Pairwise Comparison: 0.6653

Table 4.8
DOK Levels and Objectives Coded by Each Reviewer
IL Science Grade 4 Spring 2006

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
1	2	11.4.02		2	12.4.14		2	11.4.02		2	11.4.02		2	11A	
2	1	12.4.46		2	12.4.46		2	12.4.06		1	12.4.46		1	12.4.46	
3	1	12.4.46		2	12.4.39		2	12.4.39		1	12.4.39		2	12.4.39	
4	2	12.4.24		2	11.4.02		2	12.4.24		2	11.4.02		2	12C	
5	1	13.4.15		1	13.4.15		1	13.4.14		1	13A		1	13A	
6	1	12.4.17		2	12.4.17		2	12.4.21		1	12.4.17		1	12.4.17	
7	2	12.4.07		1	12.4.06		2	12.4.07	12.4.13	2	12.4.07		1	12.4.07	
8	1	12E		1	12E		1	12E		1	12E		1	12E	
9	1	12.4.16		2	11.4.02		2	12.4.16		2	12.4.16		1	12.4.16	
10	2	11.4.02		2	11.4.02		2	11.4.02		2	11.4.02		2	11A	
11	1	12.4.08		1	12.4.08		1	12.4.08		2	12.4.08		2	12.4.08	
12	1	12.4.38		1	12.4.38		1	12.4.38		1	12.4.38		2	12.4.38	
13	1	12.4.14		1	12.4.14		1	12.4.14		2	12.4.14		2	12.4.14	
14	2	12B		2	12B		2	12B		2	12B		1	12B	
15	1	12.4.33		1	12.4.33		2	12.4.33		2	12.4.33		1	12.4.33	
16	1	12.4.34		2	12.4.17		2	12.4.34		1	12.4.17		1	12.4.17	
17	2	11.4.02		2	11.4.02		2	11.4.02		2	11.4.02		2	11.4.02	
18	1	12.4.04		1	12.4.09		1	12.4.09		2	12.4.09		2	12.4.09	
19	2	12.4.25		2	12.4.25		2	12.4.25		2	12.4.28		1	12.4.25	
20	2	12.4.04		2	12.4.06		2	12.4.04		2	12.4.04		2	12.4.04	
21	2	12F		2	12F		2	12F		2	12F		1	12F	
22	1	12.4.26		1	12.4.26		1	12.4.26		1	12.4.26		1	12.4.26	
23	2	11.4.02		2	11.4.02		2	11.4.02		2	11.4.02		2	11.4.02	
24	2	12.4.05		1	12.4.09		2	12.4.05		2	12.4.09		1	12.4.09	
25	1	12.4.47		2	12.4.47		2	12.4.47		2	11.4.02		2	11.4.02	
26	1	12.4.14		1	12.4.15		2	12.4.14		1	12.4.15		1	12.4.15	
27	2	12.4.13		2	12.4.13		2	12.4.13		1	12.4.13		1	12.4.13	
28	1	12.4.03		2	12.4.03		1	12.4.03		2	12.4.03		1	12.4.03	
29	2	11.4.02		2	11.4.02		3	11.4.02		2	11.4.02		2	12C	
30	1	12.4.05	12.4.09	1	12.4.05		1	12.4.09		1	12.4.05		1	12.4.05	12.4.09
31	2	11.4.01		2	11.4.04		2	11.4.01		2	11.4.02		2	11.4.01	
32	1	11.4.03		2	13.4.03		2	11.4.03		2	13.4.03		2	13.4.03	
33	1	12.4.50		1	12.4.50		1	12.4.50		1	12.4.05		1	12.4.50	
34	1	13.4.10		1	13.4.10		1	13.4.10		1	13.4.10		1	13.4.10	
35	1	13.4.01		1	13.4.01		1	13.4.01		1	13.4.01		1	13.4.01	
36	1	12.4.27		1	12.4.28		2	12.4.28		2	12.4.20		2	12.4.28	
37	1	13.4.14		1	13.4.14		1	13.4.14		1	13.4.14		1	13.4.14	
38	1	12C		1	11.4.01		2	12.4.15		2	12C		2	12C	

Table 4.8
DOK Levels and Objectives Coded by Each Reviewer
IL Science Grade 4 Spring 2006

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
39	1	12.4.36		1	12.4.36		2	12.4.36		1	12.4.36		1	12.4.36	
40	2	11.4.05	12.4.26	2	11.4.05	12.4.26	2	12.4.26		2	11.4.05	12.4.26	2	11.4.05	
41	1	12.4.01		1	12.4.01		2	12.4.01		1	12.4.01		1	12.4.01	
42	1	12.4.09		1	12.4.09		2	12.4.09		1	12.4.09		2	12B	
43	1	13.4.06		2	11.4.04		2	11.4.03		2	11.4.03		1	11.4.03	
44	1	12.4.24		1	12.4.24		1	12.4.24		1	12.4.24		1	12.4.24	
45	2	11.4.01		1	11.4.01		2	11.4.05	11.4.06	2	11.4.01		2	11.4.01	
46	1	12.4.50		1	12.4.50		1	12.4.50		1	12.4.05		1	12.4.50	
47	1	13.4.15		1	13.4.15		1	13.4.15		1	13.4.15		1	13.4.15	
48	2	12.4.26		2	11.4.06		3	11.4.06		2	11.4.01		2	11.4.02	
49	1	12.4.02		1	12.4.02		1	12.4.02		1	12.4.02		1	12.4.02	
50	1	12.4.04		1	12.4.04		1	12.4.04		1	12.4.04		1	12.4.04	
51	2	11.4.06		2	11.4.06		3	11.4.06		2	11.4.06		2	11.4.06	
52	1	13.4.08		1	13.4.08		1	13.4.08		1	13.4.08		1	13.4.08	
53	1	11.4.05		1	11.4.01		2	11.4.05		2	11A		2	11A	
54	1	12.4.48		2	12.4.48		2	12.4.48		2	12F		1	12F	
55	1	13.4.10		1	13.4.10		1	13.4.10		1	13.4.01		1	13.4.10	
56	2	12.4.27		2	12.4.27		2	12.4.27		2	12.4.27		2	12.4.27	
57	1	11.4.02		2	11.4.04		2	11.4.04		1	11.4.01		1	11.4.01	
58	1	13.4.14		1	13.4.14		2	13.4.15		2	13.4.15		1	13.4.14	
59	1	12.4.34		2	12.4.34		2	12.4.34		1	12.4.34		1	12.4.34	
60	1	12.4.49		1	12.4.49		1	12.4.49		2	12.4.49		1	12.4.49	
61	1	13.4.15		1	13.4.15		1	13.4.15		1	13.4.15		1	13.4.15	
62	1	12.4.48		1	12.4.48		2	12.4.48		1	12.4.48		1	12.4.48	
63	1	12.4.18		2	12.4.18		1	12.4.18		1	12.4.18		1	12.4.18	
64	2	11.4.01		2	11.4.03		3	11.4.03		2	11.4.03		1	11.4.03	
65	1	12.4.26		2	12.4.26		2	11.4.05		2	12.4.26		1	12.4.26	
66	1	12.4.15		1	12.4.15		2	12.4.15		2	12.4.15		1	12.4.15	
67	1	12.4.12		1	12.4.12		1	12.4.12		2	12A		1	12.4.12	
68	1	11.4.03		1	11.4.03		2	11.4.04		1	13.4.06		1	13.4.06	
69	1	12.4.17		1	12.4.17		1	12.4.17		1	12.4.17		1	12.4.17	
70	1	13.4.01		1	13.4.01		1	13.4.15	13.4.01	1	13.4.15		1	13.4.01	
71	1	13.4.02		2	13.4.02		1	13.4.02		2	13.4.02		1	13.4.02	
72	1	12.4.25		2	12.4.28		2	12.4.28		2	12.4.28		1	12.4.28	
73	1	11.4.05		2	11.4.05		2	11.4.05		2	11.4.05		1	11.4.05	
74	1	12.4.09		2	12.4.09		1	12.4.09		1	12.4.09		1	12.4.09	
75	2	12.4.25		2	12.4.28	11.4.02	2	12B		1	12.4.28		1	12.4.28	

Table 4.8
DOK Levels and Objectives Coded by Each Reviewer
IL Science Grade 4 Spring 2006

Objective Pairwise Comparison: 0.6893
Standard Pairwise Comparison: 0.9174

Table 4.9
Objectives Coded to Each Item by Reviewers
IL Science Grade 4 Spring 2006

Low		Medium		High
5		5.12		8

1	11A	11.4.02	11.4.02	11.4.02	12.4.14	
2	12.4.06	12.4.46	12.4.46	12.4.46	12.4.46	
3	12.4.39	12.4.39	12.4.39	12.4.39	12.4.46	
4	11.4.02	11.4.02	12C	12.4.24	12.4.24	
5	13A	13A	13.4.14	13.4.15	13.4.15	
6	12.4.17	12.4.17	12.4.17	12.4.17	12.4.21	
7	12.4.06	12.4.07	12.4.07	12.4.07	12.4.07	12.4.13
8	12E	12E	12E	12E	12E	
9	11.4.02	12.4.16	12.4.16	12.4.16	12.4.16	
10	11A	11.4.02	11.4.02	11.4.02	11.4.02	
11	12.4.08	12.4.08	12.4.08	12.4.08	12.4.08	
12	12.4.38	12.4.38	12.4.38	12.4.38	12.4.38	
13	12.4.14	12.4.14	12.4.14	12.4.14	12.4.14	
14	12B	12B	12B	12B	12B	
15	12.4.33	12.4.33	12.4.33	12.4.33	12.4.33	
16	12.4.17	12.4.17	12.4.17	12.4.34	12.4.34	
17	11.4.02	11.4.02	11.4.02	11.4.02	11.4.02	
18	12.4.04	12.4.09	12.4.09	12.4.09	12.4.09	
19	12.4.25	12.4.25	12.4.25	12.4.25	12.4.28	
20	12.4.04	12.4.04	12.4.04	12.4.04	12.4.06	
21	12F	12F	12F	12F	12F	

Table 4.9
Objectives Coded to Each Item by Reviewers
IL Science Grade 4 Spring 2006

22	12.4.26	12.4.26	12.4.26	12.4.26	12.4.26			
23	11.4.02	11.4.02	11.4.02	11.4.02	11.4.02			
24	12.4.05	12.4.05	12.4.09	12.4.09	12.4.09			
25	11.4.02	11.4.02	12.4.47	12.4.47	12.4.47			
26	12.4.14	12.4.14	12.4.15	12.4.15	12.4.15			
27	12.4.13	12.4.13	12.4.13	12.4.13	12.4.13			
28	12.4.03	12.4.03	12.4.03	12.4.03	12.4.03			
29	11.4.02	11.4.02	11.4.02	11.4.02	12C			
30	12.4.05	12.4.05	12.4.05	12.4.05	12.4.09	12.4.09	12.4.09	
31	11.4.01	11.4.01	11.4.01	11.4.02	11.4.04			
32	11.4.03	11.4.03	13.4.03	13.4.03	13.4.03			
33	12.4.05	12.4.50	12.4.50	12.4.50	12.4.50			
34	13.4.10	13.4.10	13.4.10	13.4.10	13.4.10			
35	13.4.01	13.4.01	13.4.01	13.4.01	13.4.01			
36	12.4.20	12.4.27	12.4.28	12.4.28	12.4.28			
37	13.4.14	13.4.14	13.4.14	13.4.14	13.4.14			
38	11.4.01	12C	12C	12C	12.4.15			
39	12.4.36	12.4.36	12.4.36	12.4.36	12.4.36			
40	11.4.05	11.4.05	11.4.05	11.4.05	12.4.26	12.4.26	12.4.26	12.4.26
41	12.4.01	12.4.01	12.4.01	12.4.01	12.4.01			
42	12B	12.4.09	12.4.09	12.4.09	12.4.09			
43	11.4.	11.4.	11.4.	11.4.	13.4.			

Table 4.9
Objectives Coded to Each Item by Reviewers
IL Science Grade 4 Spring 2006

	03	03	03	04	06	
44	12.4.24	12.4.24	12.4.24	12.4.24	12.4.24	
45	11.4.01	11.4.01	11.4.01	11.4.01	11.4.05	11.4.06
46	12.4.05	12.4.50	12.4.50	12.4.50	12.4.50	
47	13.4.15	13.4.15	13.4.15	13.4.15	13.4.15	
48	11.4.01	11.4.02	11.4.06	11.4.06	12.4.26	
49	12.4.02	12.4.02	12.4.02	12.4.02	12.4.02	
50	12.4.04	12.4.04	12.4.04	12.4.04	12.4.04	
51	11.4.06	11.4.06	11.4.06	11.4.06	11.4.06	
52	13.4.08	13.4.08	13.4.08	13.4.08	13.4.08	
53	11A	11A	11.4.01	11.4.05	11.4.05	
54	12F	12F	12.4.48	12.4.48	12.4.48	
55	13.4.01	13.4.10	13.4.10	13.4.10	13.4.10	
56	12.4.27	12.4.27	12.4.27	12.4.27	12.4.27	
57	11.4.01	11.4.01	11.4.02	11.4.04	11.4.04	
58	13.4.14	13.4.14	13.4.14	13.4.15	13.4.15	
59	12.4.34	12.4.34	12.4.34	12.4.34	12.4.34	
60	12.4.49	12.4.49	12.4.49	12.4.49	12.4.49	
61	13.4.15	13.4.15	13.4.15	13.4.15	13.4.15	
62	12.4.48	12.4.48	12.4.48	12.4.48	12.4.48	
63	12.4.18	12.4.18	12.4.18	12.4.18	12.4.18	
64	11.4.01	11.4.03	11.4.03	11.4.03	11.4.03	

Table 4.9
Objectives Coded to Each Item by Reviewers
IL Science Grade 4 Spring 2006

65	11.4.05	12.4.26	12.4.26	12.4.26	12.4.26	
66	12.4.15	12.4.15	12.4.15	12.4.15	12.4.15	
67	12A	12.4.12	12.4.12	12.4.12	12.4.12	
68	11.4.03	11.4.03	11.4.04	13.4.06	13.4.06	
69	12.4.17	12.4.17	12.4.17	12.4.17	12.4.17	
70	13.4.01	13.4.01	13.4.01	13.4.01	13.4.15	13.4.15
71	13.4.02	13.4.02	13.4.02	13.4.02	13.4.02	
72	12.4.25	12.4.28	12.4.28	12.4.28	12.4.28	
73	11.4.05	11.4.05	11.4.05	11.4.05	11.4.05	
74	12.4.09	12.4.09	12.4.09	12.4.09	12.4.09	
75	11.4.02	12B	12.4.25	12.4.28	12.4.28	12.4.28

Table 4.10
Items Coded by Reviewers to Each Objective
IL Science Grade 4 Spring 2006

Low		Medium		High
0		4.517647		30

11																				
11A	1	10	53	53																
11.4.01	31	31	31	38	45	45	45	45	48	53	57	57	64							
11.4.02	1	1	1	4	4	9	10	10	10	10	17	17	17	17	17	23	23	23	23	23
	25	25	29	29	29	29	31	48	57	75										
11.4.03	32	32	43	43	43	64	64	64	64	68	68									
11.4.04	31	43	57	57	68															
11B																				
11.4.05	40	40	40	40	45	53	53	65	73	73	73	73	73							
11.4.06	45	48	48	51	51	51	51	51												
12																				
12A	67																			
12.4.01	41	41	41	41	41															
12.4.02	49	49	49	49	49															
12.4.03	28	28	28	28	28															
12.4.04	18	20	20	20	20	50	50	50	50	50										
12.4.05	24	24	30	30	30	30	33	46												
12.4.06	2	7	20																	
12B	14	14	14	14	14	42	75													
12.4.07	7	7	7	7																
12.4.08	11	11	11	11	11															
12.4.09	18	18	18	18	24	24	24	30	30	30	42	42	42	42	74	74	74	74	74	
12.4.10																				
12.4.11																				
12.4.12	67	67	67	67																
12.4.13	7	27	27	27	27	27														
12C	4	29	38	38	38															
12.4.14	1	13	13	13	13	13	26	26												
12.4.15	26	26	26	38	66	66	66	66	66											
12.4.16	9	9	9	9																
12.4.17	6	6	6	6	16	16	16	69	69	69	69	69								
12.4.18	63	63	63	63	63															
12.4.19																				
12.4.20	36																			
12.4.21	6																			
12.4.22																				
12.4.23																				
12.4.24	4	4	44	44	44	44	44													

Table 4.10
Items Coded by Reviewers to Each Objective
IL Science Grade 4 Spring 2006

12D														
12.4.25	19	19	19	19	72	75								
12.4.26	22	22	22	22	22	40	40	40	40	48	65	65	65	65
12.4.27	36	56	56	56	56	56								
12.4.28	19	36	36	36	72	72	72	72	75	75	75			
12E	8	8	8	8	8									
12.4.29														
12.4.30														
12.4.31														
12.4.32														
12.4.33	15	15	15	15	15									
12.4.34	16	16	59	59	59	59	59							
12.4.35														
12.4.36	39	39	39	39	39									
12.4.37														
12.4.38	12	12	12	12	12									
12.4.39	3	3	3	3										
12.4.40														
12.4.41														
12.4.42														
12.4.43														
12.4.44														
12F	21	21	21	21	21	54	54							
12.4.45														
12.4.46	2	2	2	2	3									
12.4.47	25	25	25											
12.4.48	54	54	54	62	62	62	62	62						
12.4.49	60	60	60	60	60									
12.4.50	33	33	33	33	46	46	46	46						
12.4.51														
13														
13A	5	5												
13.4.01	35	35	35	35	35	55	70	70	70	70				
13.4.02	71	71	71	71	71									
13.4.03	32	32	32											
13.4.04														
13.4.05														
13.4.06	43	68	68											
13.4.07														
13.4.08	52	52	52	52	52									
13.4.09														
13.4.10	34	34	34	34	34	55	55	55	55					

Table 4.10
Items Coded by Reviewers to Each Objective
IL Science Grade 4 Spring 2006

13.4.11																
13.4.12																
13.4.13																
13.4.14	5	37	37	37	37	37	58	58	58							
13.4.15	5	5	47	47	47	47	47	58	58	61	61	61	61	61	70	70

Table 4.11
Number of Reviewers Coding an Item by Objective (Item Number: Number of Reviewers)
IL Science Grade 4 Spring 2006

Low		Medium		High
1		2		5

11												
11A	1:1	10:1	53:2									
11.4.01	31:3	38:1	45:4	48:1	53:1	57:2	64:1					
11.4.02	1:3	4:2	9:1	10:4	17:5	23:5	25:2	29:4	31:1	48:1	57:1	75:1
11.4.03	32:2	43:3	64:4	68:2								
11.4.04	31:1	43:1	57:2	68:1								
11B												
11.4.05	40:4	45:1	53:2	65:1	73:5							
11.4.06	45:1	48:2	51:5									
12												
12A	67:1											
12.4.01	41:5											
12.4.02	49:5											
12.4.03	28:5											
12.4.04	18:1	20:4	50:5									
12.4.05	24:2	30:4	33:1	46:1								
12.4.06	2:1	7:1	20:1									
12B	14:5	42:1	75:1									
12.4.07	7:4											
12.4.08	11:5											
12.4.09	18:4	24:3	30:3	42:4	74:5							
12.4.10												
12.4.11												
12.4.12	67:4											
12.4.13	7:1	27:5										
12C	4:1	29:1	38:3									
12.4.14	1:1	13:5	26:2									
12.4.15	26:3	38:1	66:5									
12.4.16	9:4											
12.4.17	6:4	16:3	69:5									
12.4.18	63:5											
12.4.19												
12.4.20	36:1											
12.4.21	6:1											
12.4.22												
12.4.23												
12.4.24	4:2	44:5										
12D												

Table 4.11
Number of Reviewers Coding an Item by Objective (Item Number: Number of Reviewers)
IL Science Grade 4 Spring 2006

12.4.25	19:4	72:1	75:1	
12.4.26	22:5	40:4	48:1	65:4
12.4.27	36:1	56:5		
12.4.28	19:1	36:3	72:4	75:3
12E	8:5			
12.4.29				
12.4.30				
12.4.31				
12.4.32				
12.4.33	15:5			
12.4.34	16:2	59:5		
12.4.35				
12.4.36	39:5			
12.4.37				
12.4.38	12:5			
12.4.39	3:4			
12.4.40				
12.4.41				
12.4.42				
12.4.43				
12.4.44				
12F	21:5	54:2		
12.4.45				
12.4.46	2:4	3:1		
12.4.47	25:3			
12.4.48	54:3	62:5		
12.4.49	60:5			
12.4.50	33:4	46:4		
12.4.51				
13				
13A	5:2			
13.4.01	35:5	55:1	70:4	
13.4.02	71:5			
13.4.03	32:3			
13.4.04				
13.4.05				
13.4.06	43:1	68:2		
13.4.07				
13.4.08	52:5			
13.4.09				
13.4.10	34:5	55:4		
13.4.11				

Table 4.11
Number of Reviewers Coding an Item by Objective (Item Number: Number of Reviewers)
IL Science Grade 4 Spring 2006

13.4.12					
13.4.13					
13.4.14	5:1	37:5	58:3		
13.4.15	5:2	47:5	58:2	61:5	70:2

Table 4.12
Number of Reviewers Coding an Objective by Item (Objective: Number of Reviewers)
IL Science Grade 4 Spring 2006

Low		Medium		High
1		2		5

1	11A:1	11.4.02:3	12.4.14:1
2	12.4.06:1	12.4.46:4	
3	12.4.39:4	12.4.46:1	
4	11.4.02:2	12C:1	12.4.24:2
5	13A:2	13.4.14:1	13.4.15:2
6	12.4.17:4	12.4.21:1	
7	12.4.06:1	12.4.07:4	12.4.13:1
8	12E:5		
9	11.4.02:1	12.4.16:4	
10	11A:1	11.4.02:4	
11	12.4.08:5		
12	12.4.38:5		
13	12.4.14:5		
14	12B:5		
15	12.4.33:5		
16	12.4.17:3	12.4.34:2	
17	11.4.02:5		
18	12.4.04:1	12.4.09:4	
19	12.4.25:4	12.4.28:1	
20	12.4.04:4	12.4.06:1	
21	12F:5		
22	12.4.26:5		
23	11.4.02:5		
24	12.4.05:2	12.4.09:3	
25	11.4.02:2	12.4.47:3	
26	12.4.14:2	12.4.15:3	
27	12.4.13:5		
28	12.4.03:5		
29	11.4.02:4	12C:1	
30	12.4.05:4	12.4.09:3	
31	11.4.01:3	11.4.02:1	11.4.04:1
32	11.4.03:2	13.4.03:3	
33	12.4.05:1	12.4.50:4	
34	13.4.10:5		
35	13.4.01:5		
36	12.4.20:1	12.4.27:1	12.4.28:3
37	13.4.14:5		
38	11.4.01:1	12C:3	12.4.15:1

Table 4.12
Number of Reviewers Coding an Objective by Item (Objective: Number of Reviewers)
IL Science Grade 4 Spring 2006

39	12.4.36:5			
40	11.4.05:4	12.4.26:4		
41	12.4.01:5			
42	12B:1	12.4.09:4		
43	11.4.03:3	11.4.04:1	13.4.06:1	
44	12.4.24:5			
45	11.4.01:4	11.4.05:1	11.4.06:1	
46	12.4.05:1	12.4.50:4		
47	13.4.15:5			
48	11.4.01:1	11.4.02:1	11.4.06:2	12.4.26:1
49	12.4.02:5			
50	12.4.04:5			
51	11.4.06:5			
52	13.4.08:5			
53	11A:2	11.4.01:1	11.4.05:2	
54	12F:2	12.4.48:3		
55	13.4.01:1	13.4.10:4		
56	12.4.27:5			
57	11.4.01:2	11.4.02:1	11.4.04:2	
58	13.4.14:3	13.4.15:2		
59	12.4.34:5			
60	12.4.49:5			
61	13.4.15:5			
62	12.4.48:5			
63	12.4.18:5			
64	11.4.01:1	11.4.03:4		
65	11.4.05:1	12.4.26:4		
66	12.4.15:5			
67	12A:1	12.4.12:4		
68	11.4.03:2	11.4.04:1	13.4.06:2	
69	12.4.17:5			
70	13.4.01:4	13.4.15:2		
71	13.4.02:5			
72	12.4.25:1	12.4.28:4		
73	11.4.05:5			
74	12.4.09:5			
75	11.4.02:1	12B:1	12.4.25:1	12.4.28:3

Table 4.13
Assessment Item DOK vs Consensus DOK (Item Number: Number of Reviewers [Average DOK])
IL Science Grade 4 Spring 2006

Low DOK		Matched DOK		High DOK
1		2		5

11 [2]:												
11A [2]:	1:1[2]	10:1 [2]	53:2 [2]									
11.4.01 [1]:	31:3 [2]	38:1 [1]	45:4 [1.75]	48:1 [2]	53:1 [1]	57:2 [1]	64:1 [2]					
11.4.02 [2]:	1:3[2]	4:2[2]	9:1[2]	10:4 [2]	17:5 [2]	23:5 [2]	25:2 [2]	29:4 [2.25]	31:1 [2]	48:1 [2]	57:1 [1]	75:1 [2]
11.4.03 [2]:	32:2 [1.5]	43:3 [1.67]	64:4 [2]	68:2 [1]								
11.4.04 [2]:	31:1 [2]	43:1 [2]	57:2 [2]	68:1 [2]								
11B [3]:												
11.4.05 [3]:	40:4 [2]	45:1 [2]	53:2 [1.5]	65:1 [2]	73:5 [1.6]							
11.4.06 [3]:	45:1 [2]	48:2 [2.5]	51:5 [2.2]									
12 [1]:												
12A [2]:	67:1 [2]											
12.4.01 [2]:	41:5 [1.2]											
12.4.02 [1]:	49:5 [1]											
12.4.03 [2]:	28:5 [1.4]											
12.4.	18:1	20:4	50:5									

Table 4.13
Assessment Item DOK vs Consensus DOK (Item Number: Number of Reviewers [Average DOK])
IL Science Grade 4 Spring 2006

04 [1]:	[1]	[2]	[1]		
12.4.05 [1]:	24:2 [2]	30:4 [1]	33:1 [1]	46:1 [1]	
12.4.06 [2]:	2:1[2]	7:1[1]	20:1 [2]		
12B [1]:	14:5 [1.8]	42:1 [2]	75:1 [2]		
12.4.07 [1]:	7:4[1.75]				
12.4.08 [1]:	11:5 [1.4]				
12.4.09 [1]:	18:4 [1.5]	24:3 [1.33]	30:3 [1]	42:4 [1.25]	74:5 [1.2]
12.4.10 [1]:					
12.4.11 [1]:					
12.4.12 [1]:	67:4 [1]				
12.4.13 [2]:	7:1[2]	27:5 [1.6]			
12C [1]:	4:1[2]	29:1 [2]	38:3 [1.67]		
12.4.14 [1]:	1:1[2]	13:5 [1.4]	26:2 [1.5]		
12.4.15 [1]:	26:3 [1]	38:1 [2]	66:5 [1.4]		
12.4.16 [2]:	9:4[1.5]				

Table 4.13

Assessment Item DOK vs Consensus DOK (Item Number: Number of Reviewers [Average DOK])

IL Science Grade 4 Spring 2006

12.4.17 [1]:	6:4[1.25]	16:3 [1.33]	69:5 [1]	
12.4.18 [1]:	63:5 [1.2]			
12.4.19 [1]:				
12.4.20 [1]:	36:1 [2]			
12.4.21 [1]:	6:1[2]			
12.4.22 [2]:				
12.4.23 [1]:				
12.4.24 [1]:	4:2[2]	44:5 [1]		
12D [2]:				
12.4.25 [1]:	19:4 [1.75]	72:1 [1]	75:1 [2]	
12.4.26 [2]:	22:5 [1]	40:4 [2]	48:1 [2]	65:4 [1.5]
12.4.27 [2]:	36:1 [1]	56:5 [2]		
12.4.28 [2]:	19:1 [2]	36:3 [1.67]	72:4 [1.75]	75:3 [1.33]
12E [1]:	8:5[1]			
12.4.29 [1]:				

Table 4.13
Assessment Item DOK vs Consensus DOK (Item Number: Number of Reviewers [Average DOK])
IL Science Grade 4 Spring 2006

12.4.30 [1]:		
12.4.31 [2]:		
12.4.32 [1]:		
12.4.33 [2]:	15:5 [1.4]	
12.4.34 [2]:	16:2 [1.5]	59:5 [1.4]
12.4.35 [1]:		
12.4.36 [1]:	39:5 [1.2]	
12.4.37 [1]:		
12.4.38 [1]:	12:5 [1.2]	
12.4.39 [1]:	3:4[1.75]	
12.4.40 [1]:		
12.4.41 [1]:		
12.4.42 [1]:		
12.4.43 [1]:		
12.4.		

Table 4.13
Assessment Item DOK vs Consensus DOK (Item Number: Number of Reviewers [Average DOK])
IL Science Grade 4 Spring 2006

44 [1]:				
12F [1]:	21:5 [1.8]	54:2 [1.5]		
12.4.45 [1]:				
12.4.46 [2]:	2:4[1.25]	3:1[1]		
12.4.47 [1]:	25:3 [1.67]			
12.4.48 [1]:	54:3 [1.67]	62:5 [1.2]		
12.4.49 [1]:	60:5 [1.2]			
12.4.50 [1]:	33:4 [1]	46:4 [1]		
12.4.51 [1]:				
13 [1]:				
13A [1]:	5:2[1]			
13.4.01 [1]:	35:5 [1]	55:1 [1]	70:4 [1]	
13.4.02 [1]:	71:5 [1.4]			
13.4.03 [2]:	32:3 [2]			
13.4.04 [1]:				
13.4.05				

Table 4.13
Assessment Item DOK vs Consensus DOK (Item Number: Number of Reviewers [Average DOK])
IL Science Grade 4 Spring 2006

[1]:					
13.4.06 [1]:	43:1 [1]	68:2 [1]			
13.4.07 [1]:					
13.4.08 [1]:	52:5 [1]				
13.4.09 [2]:					
13.4.10 [1]:	34:5 [1]	55:4 [1]			
13.4.11 [2]:					
13.4.12 [2]:					
13.4.13 [1]:					
13.4.14 [1]:	5:1[1]	37:5 [1]	58:3 [1]		
13.4.15 [1]:	5:2[1]	47:5 [1]	58:2 [2]	61:5 [1]	70:2 [1]

Table 7.1
Categorical Concurrence Between Standards and Assessment as Rated by Five Reviewers
IL Science Grade 7 Spring 2006
Number of Assessment Items - 75

Standards			Level by Objective			Hits		Cat. Concurr.
Title	Goals #	Objs #	Level	# of objs by Level	% w/in std by Level	Mean	S.D.	
11 - Understand the processes of scientific inquiry and ...	2	10.8	1 2	3 7	30 70	17.2	1.72	YES
12 - Understand the fundamental concepts, principles an ...	6	105.2	1 2	90 11	89 10	44.4	1.36	YES
13 - Understand the relationships among science, techno ...	2	13.8	1 2 3	6 5 2	46 38 15	14.8	1.47	YES
Total	10	129.8	1 2 3	99 23 2	79 18 1	76.4	1.02	

Table 7.2
Depth-of-Knowledge Consistency Between Standards and Assessment as Rated by Five Reviewers
IL Science Grade 7 Spring 2006
Number of Assessment Items - 75

Standards			Hits		Level of Item w.r.t. Standard						DOK Consistency
					% Under		% At		% Above		
Title	Goals #	Objs #	M	S.D.	M	S.D.	M	S.D.	M	S.D.	
11 - Understand the processes of scientific inquiry and ...	2	10.8	17.2	1.72	26	36	59	41	15	34	YES
12 - Understand the fundamental concepts, principles an ...	6	105.2	44.4	1.36	9	27	62	45	29	43	YES
13 - Understand the relationships among science, techno ...	2	13.8	14.8	1.47	40	48	49	47	10	27	YES
Total	10	129.8	76.4	1.02	17	35	59	45	23	40	

Table 7.3

Range-of-Knowledge Correspondence and Balance of Representation Between Standards and Assessment as Rated by Five Reviewers
IL Science Grade 7 Spring 2006
Number of Assessment Items - 75

Standards			Hits		Range of Objectives				Rng. of Know.	Balance Index				Bal. of Represent.
					# Objs Hit		% of Total			% Hits in Std/Ttl Hits		Index		
Title	Goals #	Objs #	Mean	S.D.	Mean	S.D.	Mean	S.D.		Mean	S.D.	Mean	S.D.	
11 - Understand the processes of scientific inquiry and ...	2	10.8	17.2	1.72	6.2	1.17	58	14	YES	23	2	0.63	0.07	WEAK
12 - Understand the fundamental concepts, principles an ...	6	105.2	44.4	1.36	31.8	1.94	30	2	NO	58	2	0.80	0.03	YES
13 - Understand the relationships among science, techno ...	2	13.8	14.8	1.47	8.4	1.02	61	7	YES	19	2	0.78	0.05	YES
Total	10	129.8	76.4	1.02	15.47	11.67	50	17		33	18	0.74	0.09	

Table 7.4
Summary of Attainment of Acceptable Alignment Level on Four Content Focus Criteria as Rated by Five Reviewers
IL Science Grade 7 Spring 2006
Number of Assessment Items - 75

Standards	Alignment Criteria			
	Categorical Concurrence	Depth-of-Knowledge Consistency	Range of Knowledge	Balance of Representation
11 - Understand the processes of scientific inquiry and ...	YES	YES	YES	WEAK
12 - Understand the fundamental concepts, principles an ...	YES	YES	NO	YES
13 - Understand the relationships among science, techno ...	YES	YES	YES	YES

Table 7.6
Depth-of-Knowledge Levels by Item and Reviewers
Intraclass Correlation
IL Science Grade 7 Spring 2006

Item	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5
1	2	2	1	1	1
2	2	1	2	1	1
3	1	1	1	2	2
4	1	2	1	1	1
5	1	1	2	1	1
6	2	1	2	1	1
7	2	2	1	1	2
8	2	1	1	1	1
9	2	1	1	2	2
10	2	1	1	2	2
11	1	1	1	1	1
12	1	1	1	1	1
13	1	1	1	1	1
14	2	2	2	2	2
15	2	1	1	1	2
16	1	1	2	2	1
17	2	1	1	2	2
18	2	1	2	2	2
19	1	1	2	2	2
20	1	1	2	2	1
21	2	1	2	2	2
22	2	2	2	2	2
23	2	1	2	2	1
24	1	1	1	1	1
25	1	1	1	1	1
26	2	2	1	2	2
27	1	1	1	1	1
28	2	1	2	1	2
29	2	2	2	2	2
30	1	1	1	1	1
31	2	1	1	1	1
32	2	1	2	2	1
33	1	1	1	1	1
34	2	1	1	2	2
35	1	1	1	1	2
36	1	2	2	2	1
37	1	1	2	2	1
38	1	1	1	1	1
39	1	1	2	1	1
40	2	2	1	2	1

Table 7.6
Depth-of-Knowledge Levels by Item and Reviewers
Intraclass Correlation
IL Science Grade 7 Spring 2006

Item	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5
41	1	1	1	1	1
42	1	1	2	2	1
43	1	1	1	1	1
44	2	2	2	1	2
45	1	1	2	1	1
46	1	1	2	2	1
47	1	1	1	1	1
48	1	1	1	1	1
49	1	2	2	2	2
50	1	1	1	1	1
51	1	1	2	1	1
52	1	1	2	1	1
53	2	1	2	2	1
54	1	1	1	1	1
55	2	2	2	2	1
56	1	1	2	2	1
57	1	1	1	1	1
58	1	1	1	1	1
59	2	2	2	2	1
60	1	1	1	1	1
61	2	2	1	1	1
62	1	1	2	1	1
63	1	1	1	1	1
64	2	1	1	1	2
65	1	1	1	1	1
66	2	1	2	1	2
67	1	2	1	1	1
68	1	1	1	1	1
69	2	2	2	2	1
70	1	1	2	1	1
71	2	1	2	2	1
72	2	2	2	2	1
73	1	1	2	1	2
74	1	1	1	1	2
75	2	2	3	2	2

Intraclass Correlation: 0.6754
Pairwise Comparison: 0.6533

Table 7.8
DOK Levels and Objectives Coded by Each Reviewer
IL Science Grade 7 Spring 2006

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
1	2	12.7.01		2	11.7.02		1	12.7.01		1	12A		1	12A	
2	2	12E		1	12.7.83	11.7.02	2	12.7.80		1	11.7.02		1	11.7.02	
3	1	12.7.64		1	12.7.64		1	12.7.34		2	12.7.64		2	12.7.64	
4	1	12.7.43		2	12.7.43	11.7.02	1	12.7.39		1	11.7.02		1	11.7.02	
5	1	12.7.78		1	12.7.66		2	12E		1	12E		1	12E	
6	2	12.7.100		1	12.7.100		2	12.7.91		1	12.7.10		1	12.7.100	
7	2	12.7.02		2	11.7.02		1	12.7.82		1	11.7.02		2	11.7.02	
8	2	11.7.04		1	11.7.02		1	12.7.16		1	12.7.15		1	12.7.30	
9	2	11.7.02		1	11.7.02		1	12.7.76		2	11.7.02		2	12.7.76	
10	2	11.7.02		1	11.7.02		1	11.7.01		2	11.7.02		2	11.7.02	
11	1	12.7.15		1	12.7.31		1	12.7.15		1	12A		1	12A	
12	1	12.7.35		1	12.7.35		1	12.7.35		1	12.7.35		1	12.7.35	
13	1	13.7.01		1	13.7.11		1	13.7.11		1	12B		1	12B	
14	2	12.7.52		2	11.7.09		2	11.7.08		2	12.7.52		2	11A	
15	2	11.7.02		1	11.7.02		1	11.7.02		1	12.7.68		2	11.7.02	
16	1	12.7.26		1	12.7.26		2	11.7.02		2	12.7.26		1	11.7.02	
17	2	12.7.25	12.7.36	1	12.7.25		1	12.7.88		2	12.7.88		2	12.7.88	
18	2	11.7.02		1	11.7.02		2	11.7.02		2	11.7.02		2	11.7.02	
19	1	11.7.02		1	11.7.02		2	12.7.06		2	11.7.02		2	11.7.02	
20	1	12.7.36		1	12.7.36		2	12.7.50		2	12.7.36		1	12C	
21	2	11.7.05		1	11.7.01		2	11.7.01		2	13.7.04		2	13.7.04	
22	2	12.7.30		2	12.7.30		2	12.7.30		2	12.7.30		2	12.7.30	
23	2	12C		1	12.7.61		2	12.7.61		2	12C		1	12C	
24	1	12.7.78		1	12.7.78		1	12.7.78		1	12.7.71		1	12.7.78	
25	1	12.7.79		1	12.7.80		1	12.7.80		1	12.7.80		1	12.7.80	
26	2	11.7.01		2	11.7.02		1	11.7.02		2	11.7.01		2	11.7.02	
27	1	12.7.17		1	12.7.15		1	12.7.31		1	12A		1	12A	
28	2	12.7.56		1	12.7.56		2	12.7.56		1	12.7.56		2	12.7.56	
29	2	11.7.02		2	12.7.63		2	12.7.63		2	11.7.02		2	11.7.02	
30	1	12.7.98		1	12.7.98		1	12.7.98		1	12.7.98		1	12.7.98	
31	2	11.7.06		1	13.7.04		1	13.7.03		1	13.7.03		1	13.7.04	
32	2	12.7.34		1	11.7.08		2	11B		2	12C		1	12.7.34	
33	1	12.7.03		1	12.7.03		1	12.7.03		1	12.7.03		1	12.7.03	
34	2	12B		1	11.7.02		1	13.7.11		2	11.7.02		2	11.7.02	
35	1	12.7.65		1	12.7.65		1	12.7.63		1	12.7.65		2	12.7.65	
36	1	12F		2	12F		2	12.7.98		2	12F		1	12F	
37	1	12C		1	13.7.13		2	13.7.13		2	11A		1	12.7.66	
38	1	13A		1	13.7.09		1	13.7.09		1	13.7.09		1	13.7.09	

Table 7.8
DOK Levels and Objectives Coded by Each Reviewer
IL Science Grade 7 Spring 2006

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
39	1	13.7.03		1	13.7.02		2	13.7.03		1	13.7.03		1	13.7.03	
40	2	11.7.08		2	12.7.63		1	12.7.63		2	12D		1	12D	
41	1	12.7.02		1	12.7.02		1	12.7.02		1	12.7.02		1	12.7.02	
42	1	12.7.26		1	12.7.27		2	12.7.27		2	12.7.26		1	12.7.26	
43	1	12D		1	12.7.64		1	12D		1	12D		1	12D	
44	2	11.7.01		2	11.7.06		2	11.7.05		1	13.7.03		2	11.7.06	
45	1	13.7.10		1	13.7.10		2	13.7.11		1	13B		1	13B	
46	1	12.7.98		1	12.7.98		2	12.7.98		2	12.7.98		1	12.7.98	
47	1	12.7.05		1	12.7.05		1	12.7.05		1	12.7.11		1	12.7.05	
48	1	11.7.01		1	11.7.01		1	11.7.02		1	11A		1	11.7.01	
49	1	12.7.48		2	12.7.45		2	12.7.46		2	12.7.46		2	12.7.33	
50	1	11.7.01		1	11.7.01		1	11.7.01		1	11.7.01		1	11.7.01	
51	1	12.7.72		1	12.7.28		2	12.7.28		1	12B		1	12B	
52	1	12C		1	12.7.35		2	12.7.35		1	12C		1	12C	
53	2	13.7.06		1	13.7.08		2	13.7.06		2	13.7.12	12.7.06	1	13.7.06	
54	1	12.7.99		1	12.7.99		1	12.7.99		1	12.7.99		1	12.7.99	
55	2	12.7.65		2	12.7.65		2	12.7.65		2	12.7.65		1	12.7.65	
56	1	12.7.92		1	12.7.92		2	12.7.10		2	12.7.92		1	12.7.92	
57	1	13.7.02		1	13.7.03		1	13.7.03		1	13.7.03		1	13.7.03	
58	1	12.7.04		1	12.7.04		1	12.7.02		1	12.7.04		1	12A	
59	2	11.7.10		2	11.7.07		2	11.7.07		2	11		1	11.7.07	
60	1	12.7.16		1	12.7.16		1	12.7.16		1	12A		1	12.7.16	
61	2	12.7.68		2	12.7.68		1	12.7.63		1	12D		1	12.7.68	
62	1	13B		1	13.7.10		2	13.7.11		1	13B		1	12.7.89	
63	1	13.7.01		1	13.7.01		1	13.7.01	13.7.13	1	13.7.01		1	13.7.01	
64	2	11.7.04		1	11.7.04		1	11.7.04		1	11A		2	11.7.04	
65	1	12.7.34		1	12.7.34		1	12.7.34		1	12.7.34		1	12.7.34	
66	2	13.7.12		1	13.7.10		2	13.7.12		1	13B		2	13.7.10	
67	1	12B		2	12.7.30		1	12.7.30		1	12A		1	12A	
68	1	13.7.01		1	13.7.01		1	13.7.01		1	13.7.01		1	13.7.01	
69	2	12.7.98		2	12F		2	12.7.10		2	12F		1	12F	
70	1	13.7.04		1	13.7.02	13.7.03	2	11.7.01		1	13.7.04		1	13.7.04	
71	2	13B		1	13.7.08		2	13.7.08		2	13.7.02	13.7.03	1	13.7.04	
72	2	12.7.40		2	12.7.40		2	12.7.40		2	12C		1	12C	
73	1	12B		1	12.7.26		2	12B		1	12B		2	12.7.26	
74	1	13.7.11		1	13.7.11		1	13.7.11		1	13B		2	13.7.11	
75	2	11.7.10		2	12.7.63		3	11.7.08		2	11		2	11A	

Table 7.8
DOK Levels and Objectives Coded by Each Reviewer
IL Science Grade 7 Spring 2006

Objective Pairwise Comparison: 0.4537
Standard Pairwise Comparison: 0.836

Table 7.9
Objectives Coded to Each Item by Reviewers
IL Science Grade 7 Spring 2006

Low		Medium		High
5		5.093333		6

1	11.7.02	12A	12A	12.7.01	12.7.01	
2	11.7.02	11.7.02	11.7.02	12E	12.7.80	12.7.83
3	12.7.34	12.7.64	12.7.64	12.7.64	12.7.64	
4	11.7.02	11.7.02	11.7.02	12.7.39	12.7.43	12.7.43
5	12.7.66	12E	12E	12E	12.7.78	
6	12.7.10	12.7.91	12.7.100	12.7.100	12.7.100	
7	11.7.02	11.7.02	11.7.02	12.7.02	12.7.82	
8	11.7.02	11.7.04	12.7.15	12.7.16	12.7.30	
9	11.7.02	11.7.02	11.7.02	12.7.76	12.7.76	
10	11.7.01	11.7.02	11.7.02	11.7.02	11.7.02	
11	12A	12A	12.7.15	12.7.15	12.7.31	
12	12.7.35	12.7.35	12.7.35	12.7.35	12.7.35	
13	12B	12B	13.7.01	13.7.11	13.7.11	
14	11A	11.7.08	11.7.09	12.7.52	12.7.52	
15	11.7.02	11.7.02	11.7.02	11.7.02	12.7.68	
16	11.7.02	11.7.02	12.7.26	12.7.26	12.7.26	
17	12.7.25	12.7.25	12.7.36	12.7.88	12.7.88	12.7.88
18	11.7.02	11.7.02	11.7.02	11.7.02	11.7.02	
19	11.7.02	11.7.02	11.7.02	11.7.02	12.7.06	
20	12C	12.7.36	12.7.36	12.7.36	12.7.50	
21	11.7.01	11.7.01	11.7.05	13.7.04	13.7.04	
22	12.7.30	12.7.30	12.7.30	12.7.30	12.7.30	
23	12C	12C	12C	12.7.61	12.7.61	
24	12.7.71	12.7.78	12.7.78	12.7.78	12.7.78	
25	12.7.79	12.7.80	12.7.80	12.7.80	12.7.80	
26	11.7.01	11.7.01	11.7.02	11.7.02	11.7.02	
27	12A	12A	12.7.15	12.7.17	12.7.31	
28	12.7.56	12.7.56	12.7.56	12.7.56	12.7.56	
29	11.7.02	11.7.02	11.7.02	12.7.63	12.7.63	
30	12.7.98	12.7.98	12.7.98	12.7.98	12.7.98	
31	11.7.06	13.7.03	13.7.03	13.7.04	13.7.04	
32	11B	11.7.08	12C	12.7.34	12.7.34	
33	12.7.03	12.7.03	12.7.03	12.7.03	12.7.03	
34	11.7.02	11.7.02	11.7.02	12B	13.7.11	
35	12.7.63	12.7.65	12.7.65	12.7.65	12.7.65	
36	12F	12F	12F	12F	12.7.98	
37	11A	12C	12.7.66	13.7.13	13.7.13	
38	13A	13.7.09	13.7.09	13.7.09	13.7.09	

Table 7.9
Objectives Coded to Each Item by Reviewers
IL Science Grade 7 Spring 2006

39	13.7.02	13.7.03	13.7.03	13.7.03	13.7.03	
40	11.7.08	12D	12D	12.7.63	12.7.63	
41	12.7.02	12.7.02	12.7.02	12.7.02	12.7.02	
42	12.7.26	12.7.26	12.7.26	12.7.27	12.7.27	
43	12D	12D	12D	12D	12.7.64	
44	11.7.01	11.7.05	11.7.06	11.7.06	13.7.03	
45	13B	13B	13.7.10	13.7.10	13.7.11	
46	12.7.98	12.7.98	12.7.98	12.7.98	12.7.98	
47	12.7.05	12.7.05	12.7.05	12.7.05	12.7.11	
48	11A	11.7.01	11.7.01	11.7.01	11.7.02	
49	12.7.33	12.7.45	12.7.46	12.7.46	12.7.48	
50	11.7.01	11.7.01	11.7.01	11.7.01	11.7.01	
51	12B	12B	12.7.28	12.7.28	12.7.72	
52	12C	12C	12C	12.7.35	12.7.35	
53	12.7.06	13.7.06	13.7.06	13.7.06	13.7.08	13.7.12
54	12.7.99	12.7.99	12.7.99	12.7.99	12.7.99	
55	12.7.65	12.7.65	12.7.65	12.7.65	12.7.65	
56	12.7.10	12.7.92	12.7.92	12.7.92	12.7.92	
57	13.7.02	13.7.03	13.7.03	13.7.03	13.7.03	
58	12A	12.7.02	12.7.04	12.7.04	12.7.04	
59	11	11.7.07	11.7.07	11.7.07	11.7.10	
60	12A	12.7.16	12.7.16	12.7.16	12.7.16	
61	12D	12.7.63	12.7.68	12.7.68	12.7.68	
62	12.7.89	13B	13B	13.7.10	13.7.11	
63	13.7.01	13.7.01	13.7.01	13.7.01	13.7.01	13.7.13
64	11A	11.7.04	11.7.04	11.7.04	11.7.04	
65	12.7.34	12.7.34	12.7.34	12.7.34	12.7.34	
66	13B	13.7.10	13.7.10	13.7.12	13.7.12	
67	12A	12A	12B	12.7.30	12.7.30	
68	13.7.01	13.7.01	13.7.01	13.7.01	13.7.01	
69	12.7.10	12F	12F	12F	12.7.98	
70	11.7.01	13.7.02	13.7.03	13.7.04	13.7.04	13.7.04
71	13.7.02	13.7.03	13.7.04	13B	13.7.08	13.7.08
72	12C	12C	12.7.40	12.7.40	12.7.40	
73	12B	12B	12B	12.7.26	12.7.26	
74	13B	13.7.11	13.7.11	13.7.11	13.7.11	
75	11	11A	11.7.08	11.7.10	12.7.63	

Table 7.10
Items Coded by Reviewers to Each Objective
IL Science Grade 7 Spring 2006

Low		Medium		High
0		2.768116		43

11	59	75																		
11A	14	37	48	64	75															
11.7.01	10	21	21	26	26	44	48	48	48	50	50	50	50	50	70					
11.7.02	1	2	2	2	4	4	4	7	7	7	8	9	9	9	10	10	10	10	15	15
	15	15	16	16	18	18	18	18	18	19	19	19	19	26	26	26	29	29	29	
	34	34	34	48																
11.7.03																				
11.7.04	8	64	64	64	64															
11.7.05	21	44																		
11.7.06	31	44	44																	
11B	32																			
11.7.07	59	59	59																	
11.7.08	14	32	40	75																
11.7.09	14																			
11.7.10	59	75																		
12																				
12A	1	1	11	11	27	27	58	60	67	67										
12.7.01	1	1																		
12.7.02	7	41	41	41	41	41	58													
12.7.03	33	33	33	33	33															
12.7.04	58	58	58																	
12.7.05	47	47	47	47																
12.7.06	19	53																		
12.7.07																				
12.7.08																				
12.7.09																				
12.7.10	6	56	69																	
12.7.11	47																			
12.7.12																				
12.7.13																				
12.7.14																				
12.7.15	8	11	11	27																
12.7.16	8	60	60	60	60															
12.7.17	27																			
12.7.18																				
12.7.19																				
12.7.20																				
12.7.21																				

Table 7.10
Items Coded by Reviewers to Each Objective
IL Science Grade 7 Spring 2006

12.7.22											
12.7.23											
12.7.24											
12B	13	13	34	51	51	67	73	73	73		
12.7.25	17	17									
12.7.26	16	16	16	42	42	42	73	73			
12.7.27	42	42									
12.7.28	51	51									
12.7.29											
12.7.30	8	22	22	22	22	22	67	67			
12.7.31	11	27									
12.7.32											
12C	20	23	23	23	32	37	52	52	52	72	72
12.7.33	49										
12.7.34	3	32	32	65	65	65	65	65			
12.7.35	12	12	12	12	12	52	52				
12.7.36	17	20	20	20							
12.7.37											
12.7.38											
12.7.39	4										
12.7.40	72	72	72								
12.7.41											
12.7.42											
12.7.43	4	4									
12.7.44											
12.7.45	49										
12.7.46	49	49									
12.7.47											
12.7.48	49										
12.7.49											
12.7.50	20										
12.7.51											
12.7.52	14	14									
12.7.53											
12.7.54											
12.7.55											
12.7.56	28	28	28	28	28						
12.7.57											
12.7.58											
12.7.59											
12.7.60											
12.7.61	23	23									

Table 7.10
Items Coded by Reviewers to Each Objective
IL Science Grade 7 Spring 2006

12.7.62												
12D	40	40	43	43	43	43	61					
12.7.63	29	29	35	40	40	61	75					
12.7.64	3	3	3	3	43							
12.7.65	35	35	35	35	55	55	55	55	55			
12.7.66	5	37										
12.7.67												
12.7.68	15	61	61	61								
12.7.69												
12E	2	5	5	5								
12.7.70												
12.7.71	24											
12.7.72	51											
12.7.73												
12.7.74												
12.7.75												
12.7.76	9	9										
12.7.77												
12.7.78	5	24	24	24	24							
12.7.79	25											
12.7.80	2	25	25	25	25							
12.7.81												
12.7.82	7											
12.7.83	2											
12.7.84												
12.7.85												
12.7.86												
12.7.87												
12.7.88	17	17	17									
12.7.89	62											
12.7.90												
12F	36	36	36	36	69	69	69					
12.7.91	6											
12.7.92	56	56	56	56								
12.7.93												
12.7.94												
12.7.95												
12.7.96												
12.7.97												
12.7.98	30	30	30	30	30	36	46	46	46	46	46	69
12.7.99	54	54	54	54	54							
12.7.100	6	6	6									

Table 7.10
Items Coded by Reviewers to Each Objective
IL Science Grade 7 Spring 2006

12.7.101													
13													
13A	38												
13.7.01	13	63	63	63	63	63	68	68	68	68	68		
13.7.02	39	57	70	71									
13.7.03	31	31	39	39	39	39	44	57	57	57	57	70	71
13.7.04	21	21	31	31	70	70	70	71					
13.7.05													
13.7.06	53	53	53										
13B	45	45	62	62	66	71	74						
13.7.07													
13.7.08	53	71	71										
13.7.09	38	38	38	38									
13.7.10	45	45	62	66	66								
13.7.11	13	13	34	45	62	74	74	74	74				
13.7.12	53	66	66										
13.7.13	37	37	63										

Table 7.11
Number of Reviewers Coding an Item by Objective (Item Number: Number of Reviewers)
IL Science Grade 7 Spring 2006

Low		Medium		High
1		2		5

11	59:1	75:1											
11A	14:1	37:1	48:1	64:1	75:1								
11.7.01	10:1	21:2	26:2	44:1	48:3	50:5	70:1						
11.7.02	1:1	2:3	4:3	7:3	8:1	9:3	10:4	15:4	16:2	18:5	19:4	26:3	29:3
	34:3	48:1											
11.7.03													
11.7.04	8:1	64:4											
11.7.05	21:1	44:1											
11.7.06	31:1	44:2											
11B	32:1												
11.7.07	59:3												
11.7.08	14:1	32:1	40:1	75:1									
11.7.09	14:1												
11.7.10	59:1	75:1											
12													
12A	1:2	11:2	27:2	58:1	60:1	67:2							
12.7.01	1:2												
12.7.02	7:1	41:5	58:1										
12.7.03	33:5												
12.7.04	58:3												
12.7.05	47:4												
12.7.06	19:1	53:1											
12.7.07													
12.7.08													
12.7.09													
12.7.10	6:1	56:1	69:1										
12.7.11	47:1												
12.7.12													
12.7.13													
12.7.14													
12.7.15	8:1	11:2	27:1										
12.7.16	8:1	60:4											
12.7.17	27:1												
12.7.18													
12.7.19													
12.7.20													
12.7.21													
12.7.22													

Table 7.11
Number of Reviewers Coding an Item by Objective (Item Number: Number of Reviewers)
IL Science Grade 7 Spring 2006

12.7.23						
12.7.24						
12B	13:2	34:1	51:2	67:1	73:3	
12.7.25	17:2					
12.7.26	16:3	42:3	73:2			
12.7.27	42:2					
12.7.28	51:2					
12.7.29						
12.7.30	8:1	22:5	67:2			
12.7.31	11:1	27:1				
12.7.32						
12C	20:1	23:3	32:1	37:1	52:3	72:2
12.7.33	49:1					
12.7.34	3:1	32:2	65:5			
12.7.35	12:5	52:2				
12.7.36	17:1	20:3				
12.7.37						
12.7.38						
12.7.39	4:1					
12.7.40	72:3					
12.7.41						
12.7.42						
12.7.43	4:2					
12.7.44						
12.7.45	49:1					
12.7.46	49:2					
12.7.47						
12.7.48	49:1					
12.7.49						
12.7.50	20:1					
12.7.51						
12.7.52	14:2					
12.7.53						
12.7.54						
12.7.55						
12.7.56	28:5					
12.7.57						
12.7.58						
12.7.59						
12.7.60						
12.7.61	23:2					
12.7.62						

Table 7.11
Number of Reviewers Coding an Item by Objective (Item Number: Number of Reviewers)
IL Science Grade 7 Spring 2006

12D	40:2	43:4	61:1		
12.7.63	29:2	35:1	40:2	61:1	75:1
12.7.64	3:4	43:1			
12.7.65	35:4	55:5			
12.7.66	5:1	37:1			
12.7.67					
12.7.68	15:1	61:3			
12.7.69					
12E	2:1	5:3			
12.7.70					
12.7.71	24:1				
12.7.72	51:1				
12.7.73					
12.7.74					
12.7.75					
12.7.76	9:2				
12.7.77					
12.7.78	5:1	24:4			
12.7.79	25:1				
12.7.80	2:1	25:4			
12.7.81					
12.7.82	7:1				
12.7.83	2:1				
12.7.84					
12.7.85					
12.7.86					
12.7.87					
12.7.88	17:3				
12.7.89	62:1				
12.7.90					
12F	36:4	69:3			
12.7.91	6:1				
12.7.92	56:4				
12.7.93					
12.7.94					
12.7.95					
12.7.96					
12.7.97					
12.7.98	30:5	36:1	46:5	69:1	
12.7.99	54:5				
12.7.100	6:3				
12.7.101					

Table 7.11
Number of Reviewers Coding an Item by Objective (Item Number: Number of Reviewers)
IL Science Grade 7 Spring 2006

13						
13A	38:1					
13.7.01	13:1	63:5	68:5			
13.7.02	39:1	57:1	70:1	71:1		
13.7.03	31:2	39:4	44:1	57:4	70:1	71:1
13.7.04	21:2	31:2	70:3	71:1		
13.7.05						
13.7.06	53:3					
13B	45:2	62:2	66:1	71:1	74:1	
13.7.07						
13.7.08	53:1	71:2				
13.7.09	38:4					
13.7.10	45:2	62:1	66:2			
13.7.11	13:2	34:1	45:1	62:1	74:4	
13.7.12	53:1	66:2				
13.7.13	37:2	63:1				

Table 7.12
Number of Reviewers Coding an Objective by Item (Objective: Number of Reviewers)
IL Science Grade 7 Spring 2006

Low		Medium		High
1		2		5

1	11.7.02:1	12A:2	12.7.01:2		
2	11.7.02:3	12E:1	12.7.80:1	12.7.83:1	
3	12.7.34:1	12.7.64:4			
4	11.7.02:3	12.7.39:1	12.7.43:2		
5	12.7.66:1	12E:3	12.7.78:1		
6	12.7.10:1	12.7.91:1	12.7.100:3		
7	11.7.02:3	12.7.02:1	12.7.82:1		
8	11.7.02:1	11.7.04:1	12.7.15:1	12.7.16:1	12.7.30:1
9	11.7.02:3	12.7.76:2			
10	11.7.01:1	11.7.02:4			
11	12A:2	12.7.15:2	12.7.31:1		
12	12.7.35:5				
13	12B:2	13.7.01:1	13.7.11:2		
14	11A :1	11.7.08:1	11.7.09:1	12.7.52:2	
15	11.7.02:4	12.7.68:1			
16	11.7.02:2	12.7.26:3			
17	12.7.25:2	12.7.36:1	12.7.88:3		
18	11.7.02:5				
19	11.7.02:4	12.7.06:1			
20	12C:1	12.7.36:3	12.7.50:1		
21	11.7.01:2	11.7.05:1	13.7.04:2		
22	12.7.30:5				
23	12C:3	12.7.61:2			
24	12.7.71:1	12.7.78:4			
25	12.7.79:1	12.7.80:4			
26	11.7.01:2	11.7.02:3			
27	12A:2	12.7.15:1	12.7.17:1	12.7.31:1	
28	12.7.56:5				
29	11.7.02:3	12.7.63:2			
30	12.7.98:5				
31	11.7.06:1	13.7.03:2	13.7.04:2		
32	11B:1	11.7.08:1	12C:1	12.7.34:2	
33	12.7.03:5				
34	11.7.02:3	12B:1	13.7.11:1		
35	12.7.63:1	12.7.65:4			
36	12F:4	12.7.98:1			
37	11A :1	12C:1	12.7.66:1	13.7.13:2	
38	13A:1	13.7.09:4			

Table 7.12
Number of Reviewers Coding an Objective by Item (Objective: Number of Reviewers)
IL Science Grade 7 Spring 2006

39	13.7.02:1	13.7.03:4			
40	11.7.08:1	12D:2	12.7.63:2		
41	12.7.02:5				
42	12.7.26:3	12.7.27:2			
43	12D:4	12.7.64:1			
44	11.7.01:1	11.7.05:1	11.7.06:2	13.7.03:1	
45	13B:2	13.7.10:2	13.7.11:1		
46	12.7.98:5				
47	12.7.05:4	12.7.11:1			
48	11A :1	11.7.01:3	11.7.02:1		
49	12.7.33:1	12.7.45:1	12.7.46:2	12.7.48:1	
50	11.7.01:5				
51	12B:2	12.7.28:2	12.7.72:1		
52	12C:3	12.7.35:2			
53	12.7.06:1	13.7.06:3	13.7.08:1	13.7.12:1	
54	12.7.99:5				
55	12.7.65:5				
56	12.7.10:1	12.7.92:4			
57	13.7.02:1	13.7.03:4			
58	12A:1	12.7.02:1	12.7.04:3		
59	11:1	11.7.07:3	11.7.10:1		
60	12A:1	12.7.16:4			
61	12D:1	12.7.63:1	12.7.68:3		
62	12.7.89:1	13B:2	13.7.10:1	13.7.11:1	
63	13.7.01:5	13.7.13:1			
64	11A :1	11.7.04:4			
65	12.7.34:5				
66	13B:1	13.7.10:2	13.7.12:2		
67	12A:2	12B:1	12.7.30:2		
68	13.7.01:5				
69	12.7.10:1	12F:3	12.7.98:1		
70	11.7.01:1	13.7.02:1	13.7.03:1	13.7.04:3	
71	13.7.02:1	13.7.03:1	13.7.04:1	13B:1	13.7.08:2
72	12C:2	12.7.40:3			
73	12B:3	12.7.26:2			
74	13B:1	13.7.11:4			
75	11:1	11A :1	11.7.08:1	11.7.10:1	12.7.63:1

Table 7.13

Assessment Item DOK vs Consensus DOK (Item Number: Number of Reviewers [Average DOK])

IL Science Grade 7 Spring 2006

Low DOK		Matched DOK		High DOK
1		2		5

11 [2]:	59:1[2]	75:1[2]									
11A [2]:	14:1[2]	37:1[2]	48:1[1]	64:1[1]	75:1[2]						
11.7.01 [2]:	10:1[1]	21:2[1.5]	26:2[2]	44:1[2]	48:3[1]	50:5[1]	70:1[2]				
11.7.02 [2]:	1:1[2]	2:3[1]	4:3[1.33]	7:3[1.67]	8:1[1]	9:3[1.67]	10:4[1.75]	15:4[1.5]	16:2[1.5]	18:5[1.8]	19:4[1.5]
	26:3[1.67]	29:3[2]	19:4[1.5]	26:3[1.67]	29:3[2]	34:3[1.67]	48:1[1]				
11.7.03 [1]:											
11.7.04 [1]:	8:1[2]	64:4[1.5]									
11.7.05 [1]:	21:1[2]	44:1[2]									
11.7.06 [2]:	31:1[2]	44:2[2]									
11B [2]:	32:1[2]										
11.7.07 [2]:	59:3[1.67]										
11.7.08 [2]:	14:1[2]	32:1[1]	40:1[2]	75:1[3]							
11.7.09 [2]:	14:1[2]										
11.7.10 [2]:	59:1[2]	75:1[2]									
12 [1]:											
12A [1]:	1:2[1]	11:2[1]	27:2[1]	58:1[1]	60:1[1]	67:2[1]					
12.7.01 [1]:	1:2[1.5]										
12.7.02 [1]:	7:1[2]	41:5[1]	58:1[1]								
12.7.03 [1]:	33:5[1]										
12.7.04 [1]:	58:3[1]										
12.7.05 [1]:	47:4[1]										
12.7.06 [1]:	19:1[2]	53:1[2]									
12.7.07 [1]:											
12.7.08 [1]:											
12.7.09 [1]:											
12.7.10 [1]:	6:1[1]	56:1[2]	69:1[2]								
12.7.11 [1]:	47:1[1]										
12.7.12 [1]:											
12.7.13 [1]:											
12.7.14 [1]:											

Table 7.13

Assessment Item DOK vs Consensus DOK (Item Number: Number of Reviewers [Average DOK])

IL Science Grade 7 Spring 2006

12.7.15 [1]:	8:1[1]	11:2[1]	27:1[1]			
12.7.16 [1]:	8:1[1]	60:4[1]				
12.7.17 [1]:	27:1[1]					
12.7.18 [1]:						
12.7.19 [1]:						
12.7.20 [1]:						
12.7.21 [1]:						
12.7.22 [1]:						
12.7.23 [1]:						
12.7.24 [2]:						
12B [1]:	13:2[1]	34:1[2]	51:2[1]	67:1[1]	73:3[1.33]	
12.7.25 [1]:	17:2[1.5]					
12.7.26 [1]:	16:3[1.33]	42:3[1.33]	73:2[1.5]			
12.7.27 [1]:	42:2[1.5]					
12.7.28 [2]:	51:2[1.5]					
12.7.29 [1]:						
12.7.30 [1]:	8:1[1]	22:5[2]	67:2[1.5]			
12.7.31 [1]:	11:1[1]	27:1[1]				
12.7.32 [1]:						
12C [1]:	20:1[1]	23:3[1.67]	32:1[2]	37:1[1]	52:3[1]	72:2[1.5]
12.7.33 [1]:	49:1[2]					
12.7.34 [2]:	3:1[1]	32:2[1.5]	65:5[1]			
12.7.35 [1]:	12:5[1]	52:2[1.5]				
12.7.36 [1]:	17:1[2]	20:3[1.33]				
12.7.37 [1]:						
12.7.38 [1]:						
12.7.39 [1]:	4:1[1]					
12.7.40 [1]:	72:3[2]					
12.7.41 [1]:						
12.7.42 [1]:						
12.7.43 [1]:	4:2[1.5]					
12.7.44 [1]:						
12.7.45	49:1[2]					

Table 7.13

Assessment Item DOK vs Consensus DOK (Item Number: Number of Reviewers [Average DOK])

IL Science Grade 7 Spring 2006

[1]:					
12.7.46 [1]:	49:2[2]				
12.7.47 [1]:					
12.7.48 [1]:	49:1[1]				
12.7.49 [1]:					
12.7.50 [1]:	20:1[2]				
12.7.51 [1]:					
12.7.52 [1]:	14:2[2]				
12.7.53 [1]:					
12.7.54 [1]:					
12.7.55 [1]:					
12.7.56 [1]:	28:5[1.6]				
12.7.57 [1]:					
12.7.58 [1]:					
12.7.59 [1]:					
12.7.60 [1]:					
12.7.61 [1]:	23:2[1.5]				
12.7.62 [1]:					
12D [1]:	40:2[1.5]	43:4[1]	61:1[1]		
12.7.63 [1]:	29:2[2]	35:1[1]	40:2[1.5]	61:1[1]	75:1[2]
12.7.64 [1]:	3:4[1.5]	43:1[1]			
12.7.65 [2]:	35:4[1.25]	55:5[1.8]			
12.7.66 [1]:	5:1[1]	37:1[1]			
12.7.67 [1]:					
12.7.68 [1]:	15:1[1]	61:3[1.67]			
12.7.69 [1]:					
12E [1]:	2:1[2]	5:3[1.33]			
12.7.70 [1]:					
12.7.71 [1]:	24:1[1]				
12.7.72 [1]:	51:1[1]				
12.7.73 [1]:					
12.7.74 [1]:					
12.7.75 [1]:					

Table 7.13

Assessment Item DOK vs Consensus DOK (Item Number: Number of Reviewers [Average DOK])

IL Science Grade 7 Spring 2006

12.7.76 [2]:	9:2[1.5]					
12.7.77 [1]:						
12.7.78 [1]:	5:1[1]	24:4[1]				
12.7.79 [1]:	25:1[1]					
12.7.80 [1]:	2:1[2]	25:4[1]				
12.7.81 [1]:						
12.7.82 [2]:	7:1[1]					
12.7.83 [1]:	2:1[1]					
12.7.84 [2]:						
12.7.85 [1]:						
12.7.86 [2]:						
12.7.87 [2]:						
12.7.88 [1]:	17:3[1.67]					
12.7.89 [1]:	62:1[1]					
12.7.90 [1]:						
12F [1]:	36:4[1.5]	69:3[1.67]				
12.7.91 [1]:	6:1[2]					
12.7.92 [1]:	56:4[1.25]					
12.7.93 [1]:						
12.7.94 [1]:						
12.7.95 [1]:						
12.7.96 [1]:						
12.7.97 [1]:						
12.7.98 [2]:	30:5[1]	36:1[2]	46:5[1.4]	69:1[2]		
12.7.99 [1]:	54:5[1]					
12.7.100 [2]:	6:3[1.33]					
12.7.101 [1]:						
13 [2]:						
13A [1]:	38:1[1]					
13.7.01 [1]:	13:1[1]	63:5[1]	68:5[1]			
13.7.02 [2]:	39:1[1]	57:1[1]	70:1[1]	71:1[2]		
13.7.03 [1]:	31:2[1]	39:4[1.25]	44:1[1]	57:4[1]	70:1[1]	71:1[2]
13.7.04 [1]:	21:2[2]	31:2[1]	70:3[1]	71:1[1]		

Table 7.13

Assessment Item DOK vs Consensus DOK (Item Number: Number of Reviewers [Average DOK])

IL Science Grade 7 Spring 2006

13.7.05 [1]:					
13.7.06 [1]:	53:3[1.67]				
13B [2]:	45:2[1]	62:2[1]	66:1[1]	71:1[2]	74:1[1]
13.7.07 [2]:					
13.7.08 [1]:	53:1[1]	71:2[1.5]			
13.7.09 [2]:	38:4[1]				
13.7.10 [3]:	45:2[1]	62:1[1]	66:2[1.5]		
13.7.11 [3]:	13:2[1]	34:1[1]	45:1[2]	62:1[2]	74:4[1.25]
13.7.12 [2]:	53:1[2]	66:2[2]			
13.7.13 [2]:	37:2[1.5]	63:1[1]			

Appendix C

Reviewers Notes and Source of Challenge Comments

Illinois
Grades 4 & 7 Science

Brief Explanation of Data in the Alignment Tables by Column

Tables *grade*.5

Comments made by reviewers on items identified as having a Source-of-Challenge issue by item number.

Tables *grade*.7

All notes made by reviewers on items by item number.

Table 4.5
Source-of-Challenge Issues by Reviewer
IL Science Grade 4 Spring 2006

Item Number	Comments by Reviewer
21	Objective is about revolving, not rotating.
25	Question includedes a decimal and the concept of leap year which are not in the objectives.
25	Is decimal notation OK for 4th grade?
27	Abswer B is also reasonable, even though there is no obj. for it.
31	Answer A is also reasonable (see question 32).
48	This can be answered without using the table.
49	Vertebrate/invertebrate not a choice in objectives.
72	But coice C might be just as good since the TV has lots of inertia.
73	Thought this required other knowledge.
74	Camouflage is the vocabulary word, not mimicry. not required to distinguish between types of camouflage.

Table 4.7
Notes by Reviewer
IL Science Grade 4 Spring 2006

Item Number	Comments by Reviewer
25	There's no obj. on leap year
36	But the objective (12.4.28) indicates the diagram given will show a BALANCED condition.
45	What SHOULD be changed is the amount of light; changing the location might very well change Soil and Water as well.
52	The objective (13.4.08) dosen't suggest needing to know specific names.

Table 7.5
Source-of-Challenge Issues by Reviewer
IL Science Grade 7 Spring 2006

Item Number	Comments by Reviewer
46	Answer C is also correct. (Often heard said by the TV weatherperson.)
47	chromosome rather than nucleus in objectives
51	Nothing about decay and bacteria in objectives.
52	Identification only in objectives, not identifying state.
52	Water (answer A) is also a gas at room temperature, and well below, hence "relative humidity" due to water vapor in the air.
66	Answer B should be considered correct. Fish congregate at solid object (artificial reefs).
67	No behavior/migration objectives.
69	Constellations and revolutions in 4th grade objectives.

Table 7.7
Notes by Reviewer
IL Science Grade 7 Spring 2006

Item Number	Comments by Reviewer
63	Will students know that carbon monoxide is dangerous?
64	Language: "Ramon SET two glasses..."

Appendix D

Debrief Summary Notes

Illinois
Grades 4 & 7 Science

Table 4.15
Debriefing Summary
IL Science Grade 4 Spring 2006

A. For each standard, did the items cover the most important topics you expected by the standard? If not, what topics were not assessed that should have been?

· For the most part the items did cover the standard. There were gaps such as in 12 E 4.29-32 and 4.41-45
· Yes
· The major objectives were covered however, earth science regarding land formations were not mentioned as well as environmental issues i.e. breaking down of materials and erosion methods.
· Many parts of the standard were not tested.
· Yes, a good spread.

B. For each standard, did the items cover the most important performance (DOK levels) you expected by the standard? If not, what performance was not assessed?

· I felt the assessment was generally low in DOK but so were the objectives. The alignment seemed good, but both objectives and items could benefit from a boost in DOK.
· Yes
· Yes,
· Only levels 1 & 2.
· Yes.

C. Were the standards written at an appropriate level of specificity and directed towards expectations appropriate for the grade level?

· The DOK could be increased in both objectives and assessment.
· Generally- I feel some of the vocabulary was challenging for 4th grade
· The questions addressed the standards well however, the Milky Way was directly addressed in two different questions. They did not supply answers for each other.
· See comments below.
· I think many were too specific, to the point of directing the curriculum. The expectations seem appropriate for 4th grade.

D. What is your general opinion of the alignment between the standards and assessment:

ii. Acceptable Alignment (4) : 80%
iv. Needs major improvement (1) : 20%

E. Comments

Table 4.15
Debriefing Summary
IL Science Grade 4 Spring 2006

· Objectives have too many "understand" statements which leads to an excess of recalling factual knowledge.
· Too many questions on equilibrium at last count it was three.
· Too many objectives and too many parts to the objectives. Several concepts need to be separated out. Eliminate the overuse of "understand". The objectives too often include an explanation of the concept. For instance, if students are to know the rock cycle, ok. But, why describe the rock cycle in the objectives. Objective 12.7.22 should be eliminated or at the very least the section "thought to be one" should be excluded. I believe the theory should always be stated as the Theory of Evolution by Natural Selection. Darwin's genius was the mechanism. Remember, these are science standards and should be unblemished and not worded to appease personal beliefs. The order of questions seems to be utterly random, bouncing from one area to another. How does this affect student thinking?

Table 7.15
Debriefing Summary
IL Science Grade 7 Spring 2006

A. For each standard, did the items cover the most important topics you expected by the standard? If not, what topics were not assessed that should have been?

· Topics not covered in detail: weather, light properties, cellular biology, reproduction.
· Yes since there are so many standards and only 75 questions...
· Alot of inquiry/design questions on test & could include more genetic, learned, inherited etc. in life sciences
· Shouldn't all standards be equally important?
· No. I didn't see anything on heredity or reproduction (Nothing on 12.7.06 to 12.7.15 or from 12.7.17 to 12.7.24). Also lots not covered on Matter and Energy (only one item from 12.7.35 to 12.7.62).

B. For each standard, did the items cover the most important performance (DOK levels) you expected by the standard? If not, what performance was not assessed?

· The DOK was low for the objectives. The DOK of the assessment was some better.
· Yes
· I thought force/motion, matter & energy were well covered
· Better ratio of one's to two's than 4th grade.
· Seems OK -- a good mix of ones and twos.

C. Were the standards written at an appropriate level of specificity and directed towards expectations appropriate for the grade level?

· There are too many objectives. This can not be emphasized enough. There are too many objectives. The objectives are too specific and have too much recall. Objectives that state "Understand that" should be raised in DOK. A total rewrite of the state standards to about 50 items would be much more appropriate.
· Yes
· The standards were too topic specific therefore, I'm sure some of my alignments could of gone into a general standard area. Editing the Objectives would be very helpful in future alignments.
· Too many objectives. Too many parts to the objectives. Still using too many "understand's". Better in that there weren't the definitions within the objective as in 4th grade.
· Too specific by and large. This resulted in lots of DOK level-ones. The expectations for seventh grade should be higher.

D. What is your general opinion of the alignment between the standards and assessment:

Table 7.15
Debriefing Summary
IL Science Grade 7 Spring 2006

iii. Needs slight improvement (3) : 60%
iv. Needs major improvement (2) : 40%

E. Comments

· Too much content!!!! It appears that the testing vendor just supplied items on anything, thinking an item would have to match some objective, when actually the match on several items were poor in that the standard had to be cited for the match.
· I think many graphs were used to test a standard but often so much information was given in the graph that it ended up being a 11.7.02 instead of a question for the standard. I also feel the specificity of the standards limited the standard being tested.
· My eyes are broken!!
· I have good feelings about the assement, but not so good for the standards.