OSAS Statewide Assessment System

Science Reporting

The Oregon Statewide Assessment System (OSAS) Science Assessment provides educators, students, and families with valuable information about student knowledge and skills as aligned to the Oregon Science Standards. Available reporting information includes:

1) Student level composite (overall) Scale Score
2) Student level 3-Dimensional Claim Scores
3) Group level 3-Dimensional Claim Scores
4) Group level Science and Engineering Practice (SEP)/Crosscutting Concepts (CCC) Claim Score

OSAS Science Assessment Scale Scores

For grades 5, 8, and 11, the OSAS Science Assessment composite scale scores are mapped into four achievement levels (Level 1, Level 2, Level 3, and Level 4). Achievement levels are proficiency ranges in which a student composite scale scores fall within (see Table 1).

Table 1. OSAS Science Assessment Achievement-Level Cut Scores

Grade	Level 1	Level 2	Level 3 *	Level 4
5	Score below 3131	3131	3162	3198
8	Score below 3433	3433	3460	3507
11	Score below 3735	3735	3755	3788

**Achievement of level 3 or higher demonstrates proficiency on the OSAS Science Assessment.*

Achievement Level Descriptors for OSAS Science Assessments for grades 5, 8, and 11 are found on the ODE Science Assessment web page within the *Oregon's Science Assessment Achievement Level Descriptors, Test Specifications, and Blueprint* menu. The Achievement Level Descriptor documents contain information about each of the claim categories including the targets for that claim category and the evidences that are typically observed within each achievement level of that target. These targets are arranged by Disciplinary Core Ideas and sets of Performance Expectations/Standards within them (e.g. PS.1 Matter and Its Interactions).

3-Dimensional Discipline Claim Scores at the Student Level

The 3-Dimensional Discipline Claims at the student-level are sub-claims to the overall composite scale scores that students receive and reflect performance on items aligned to standards within each discipline. Assessment items are 3-dimensional, containing interactions designed to identify student knowledge and skills relative to the Disciplinary Core Idea, Science and Engineering Practice, and Crosscutting Concept of the standard assessed by the item. For more information on 3-dimensional Oregon Science Standards, please see the ODE Science Standards web page.

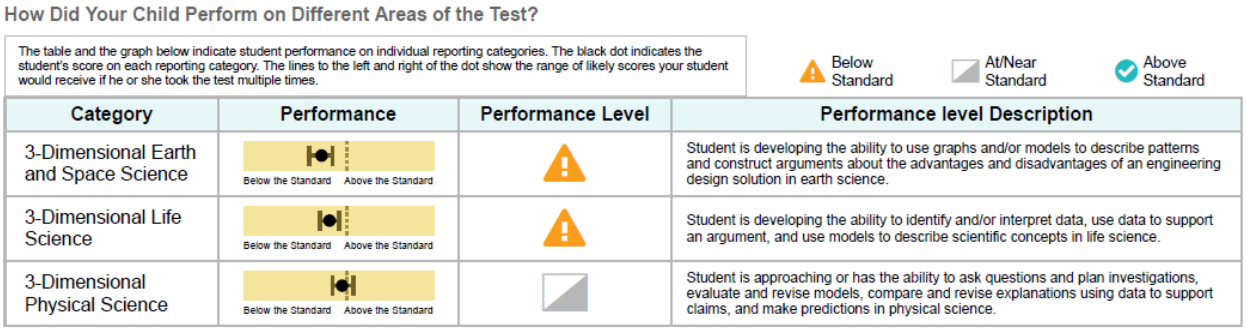
Table 2. OSAS Science Assessment 3-Dimensional Discipline Category Descriptors

3-Dimensional Physical Science
3-Dimensional Life Science
3-Dimensional Earth and Space Science

Students' performance on each reporting discipline is reported in three achievement categories:

- *Below Standard, At/Near Standard, and Above Standard*. Unlike achievement levels for the overall test, student performance on each of the discipline levels is evaluated with respect to the *Level 3 achievement stand*ard.
- *Below Standard* or *Above Standard* can be interpreted as having student achievement that is clearly below or above the *Level 3 cut score* for a specific discipline level.
- *At/Near Standard* can be interpreted as falling with a standard error of measurement (SEM) range in which *student achievement does not provide enough information* to tell whether students clearly reached the *Level 3* mark for the specific discipline category.

Figure 1. Student ISR Performance on 3-Dimensional Discipline Categories



How Did Your Child Perform on Different Areas of the Test?

The table and the graph below indicate student performance on individual reporting categories. The black dot indicates the student's score on each reporting category. The lines to the left and right of the dot show the range of likely scores your student would receive if he or she took the test multiple times.

Below Standard | At/Near Standard | Above Standard

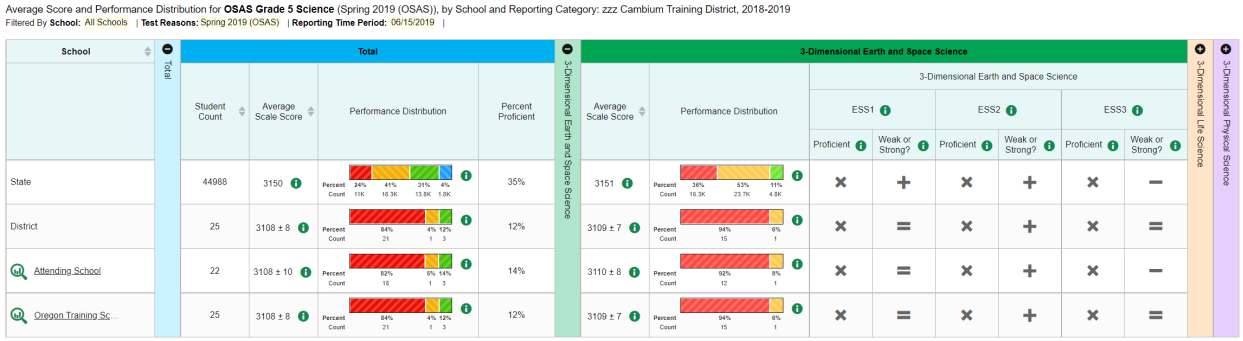
Category	Performance	Performance Level	Performance level Description
3-Dimensional Earth and Space Science	Below the Standard Above the Standard		Student is developing the ability to use graphs and/or models to describe patterns and construct arguments about the advantages and disadvantages of an engineering design solution in earth science.
3-Dimensional Life Science	Below the Standard Above the Standard		Student is developing the ability to identify and/or interpret data, use data to support an argument, and use models to describe scientific concepts in life science.
3-Dimensional Physical Science	Below the Standard Above the Standard		Student is approaching or has the ability to ask questions and plan investigations, evaluate and revise models, compare and revise explanations using data to support claims, and make predictions in physical science.

Discipline category scores are shown as a range on Individual Student Reports (ISRs) to account for the SEM due to students responding to too few items within a science discipline category to generate data with the same level of reliability and validity as an overall composite score.

3-Dimensional Discipline Claim Scores at the Group Level

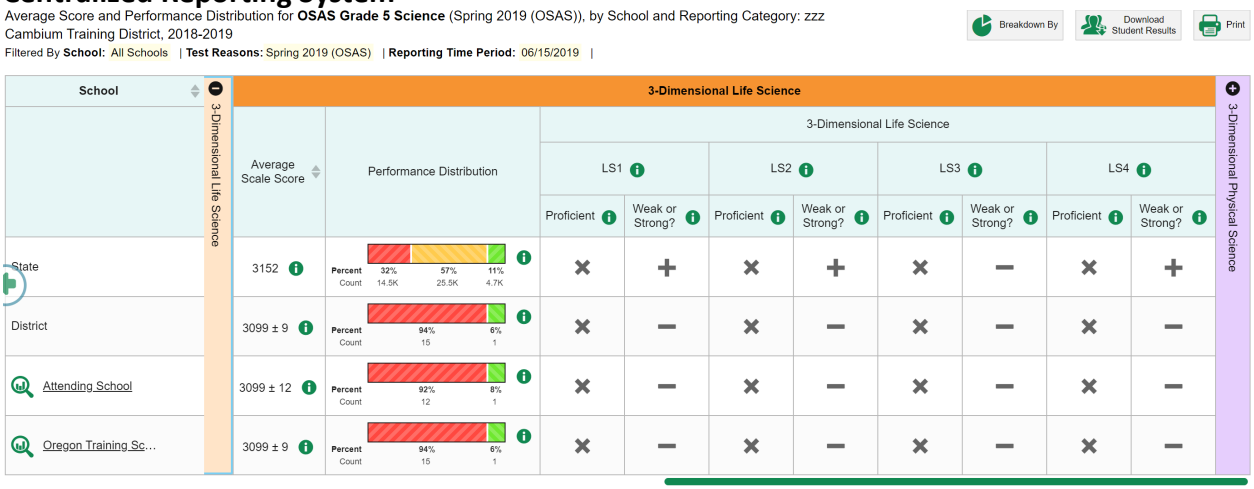
Aggregate (group) scores of Performance Relative to Proficiency can be found in the Centralized Reporting System (located on the OSASPortal). The Performance Relative to Proficiency for a 3-Dimensional Discipline shows how a group of students performed in a 3-Dimensional Discipline relative to the expected performance at the proficiency cut. Since the Performance Relative to Proficiency is a comparison to a standards-based expectation, performance across groups can be compared.

Figure 2. Example of Group Level Claim Data as shown in the Centralized Reporting System



For Performance Relative to the Test as a Whole (weak or strong), the expected performance is determined based on the students' overall performance on the entire test. It shows how a group of students performed relative to their performance on the test overall. Rather than comparing across groups, Performance Relative to the Test as a Whole provides more information regarding the relative strength and weakness on different DCI targets (DCI sets of Performance Expectations/Standards) within a group.

Figure 3. Example of 3-Dimensional Life Science Claim Data at the Group Level in the Centralized Reporting System



Group Level Science Practices (SEP)/Crosscutting Concepts (CCC) Claim Scores

Science and Engineering Practices (SEP)/Crosscutting Concepts (CCC) sub claims provide educators with specific information about aggregate student performance relative to the Science and Engineering Practices and Crosscutting Concepts.

A multi-state group of educators and state science assessment leaders developed claim groups at each grade band to combine groups of SEPs and CCCs with similar or associated features and/or evidences.

Table 3. Grade 5 SEP/CCC Claims and Descriptors

Claim	Descriptors of the types evidences included in this claim
Gathering Data and Investigating Scientific Questions (GI)	Ask questions, obtain and use information, and conduct investigations to determine cause and effect. Make observations and measurements using standard units to describe physical quantities to describe patterns as evidence of phenomena. Ask questions, gather information and conduct investigations to describe the transfer of energy within systems.
Developing and Using Models to Describe the Natural World (DM)	Develop and use models to: describe patterns and interactions within a system, describe cause and effect relationships, describe the transfer of energy and cycling of matter within a system, and show variations pertaining to scale, proportion, and quantity.
Using Mathematical Thinking to Analyze and Interpret Patterns in Data (UM)	Represent, analyze, and interpret patterns of data to describe relationships and make predictions. Analyze, describe, and graph data to determine quantitative and qualitative relationships at various scales, proportions, and quantities. Use mathematical thinking to explain phenomena at various scales, proportions, and quantities using standard units.
Use Scientific Reasoning to Construct Explanations and Arguments and to Design Solutions (CE)	Generate and/or compare solutions to a problem based on criteria and constraints using patterns to sort and classify products. Construct an argument, explanation or solution: based on evidence to describe cause and effect relationships within a system, to support claims about the transfer of energy and cycling of matter, and based on evidence derived from patterns at various scales within a system.

Figure 4. Matrix of Performance Expectations for Science Practices and Crosscutting Concepts Claims, Grades 3-5

Matrix of Performance Expectations (NGSS SEPs vs. CCCs: Grades 3-5)

	Patterns	Cause and Effect	Scale, Proportion and Quantity	Systems and System Models	Energy and Matter	Structure and Function	Stability and Change
Asking Questions and Defining Problems		3-PS2-3 (GI 1)			4-PS3-3 (GI 3)		
Obtaining, Evaluating and Communicating Information	3-ESS2-2 (GI 3)	4-ESS3-1 (GI 1)		5-ESS3-1 (GI 3)			
Planning and Carrying Out Investigations	3-PS2-2 (GI 2)	3-PS2-1 (GI 1) 4-ESS2-1 (GI 1) 5-PS1-4 (GI 1)	5-PS1-3 (GI2)		4-PS3-2 (GI 3)		
3-PS2-4* (Not aligned to any of the above CCCs)							
Developing and using Models	3-LS1-1 (DMD 1) 4-PS4-1 (DMD 1)	4-PS4-2 (DMD 2)	5-PS1-1 (DMD 4)	4-LS1-2 (DMD 1) 5-LS2-1 (DMD 3) 5-ESS2-1 (DMD 1)	5-PS3-1 (DMD 3)		
Analyzing and Interpreting Data	3-LS3-1 (UM 1) 3-ESS2-1 (UM 1) 4-ESS2-2 (UM 1) 5-ESS1-2 (UM 1)		3-LS4-1 (UM 2)				
Using Mathematical and Computational Thinking			5-PS1-2 (UM 3) 5-ESS2-2 (UM 3)				
Constructing Explanations and Designing Solutions	4-PS4-3* (CE 2) 4-ESS1-1 (CE 4)	3-LS3-2 (CE 1) 3-LS4-2 (CE 1) 4-ESS3-2* (CE 1)			4-PS3-1 (CE 3) 4-PS3-4* (CE 3)		
Engaging in Argument from Evidence		3-LS2-1 (CE 1) 3-LS4-3 (CE 1) 3-ESS3-1* (CE 1) 5-PS2-1 (CE 1)	5-ESS1-1 (CE 4)	3-LS4-4* (CE 4) 4-LS1-1 (CE 4)	5-LS1-1 (CE 3)		

Table 4. Grade 8 SEP/CCC Claims and Descriptors

Claim	Descriptors of the types evidences included in this claim
Gathering Data and Investigating Scientific Questions (GI)	Ask questions, obtain and use information, and conduct investigations to determine cause and effect. Obtain, evaluate, and/or communicate information to describe structures and their functions. Ask questions and conduct investigations to determine the stability of a system over time. Plan and conduct investigations to determine proportional relationships.
Developing and Using Models to Describe the Natural World (DM)	Develop and use models to: describe patterns and interactions within a system at various scales, describe cause and effect relationships, describe the cycling, transfer and conservation of energy and matter over time, and describe how the structures of living and nonliving things affect their functions.
Using Mathematical Thinking to Analyze and Interpret Patterns in Data (UM)	Analyze and interpret patterns of data to describe properties and quantitative and qualitative proportional relationships at various scales. Analyze and interpret patterns of data in living (or once living) organisms to determine cause and effect relationships. Use mathematical representations to describe patterns and explain cause and effect relationships in natural processes.
Use Scientific Reasoning to Construct Explanations and Arguments and to Design Solutions (CE)	Construct arguments, explanations, and design solutions based on evidence to analyze patterns and describe cause and effect relationships. Construct an explanation based on evidence describing interactions within a system at varying time and spatial scales. Apply scientific principles to design and test and evaluate the impact of a solution within a system over time. Construct explanations, use argument, and design solutions using evidence to support claims about the transformations of energy and matter.

Figure 5. Matrix of Performance Expectations for Science Practices and Crosscutting Concepts Claims, Grades 6-8

Matrix of Performance Expectations (NGSS SEPs vs. CCCs: Middle School)

	Patterns	Cause and Effect	Scale, Proportion and Quantity	Systems and System Models	Energy and Matter	Structure and Function	Stability and Change
Asking Questions and Defining Problems		MS-PS2-3 (GI-1)					MS-ESS3-5 (GI-3)
Obtaining, Evaluating and Communicating Information		MS-LS1-8 (GI-1) MS-LS4-5 (GI-1)				MS-PS1-3 (GI-2) MS-PS4-3 (GI-2)	
Planning and Carrying Out Investigations		MS-ESS2-5 (GI-1) MS-PS2-5 (GI-1)	MS-PS3-4 (GI-4) MS-LS1-1 (GI-4)				MS-PS2-2 (GI-3)
Developing and using Models	MS-ESS1-1(DM-1)	MS-PS1-4 (DM-2) MS-LS3-2(DM-2)	MS-PS1-1 (DM-1)	MS-PS3-2 (DM-1) MS-ESS1-2 (DM-1) MS-ESS2-6 (DM-1)	MS-PS1-5 (DM-3) MS-LS1-7 (DM-3) MS-LS2-3 (DM-3 MS-ESS2-4 (DM-3)	MS-PS4-2 (DM-4) MS-LS1-2 (DM-4) MS-LS3-1 (DM-4)	MS-ESS2-1(DM-3)
Analyzing and Interpreting Data	MS-PS1-2 (UM-1) MS-LS4-1 (UM-2) MS-LS4-3 (UM-2) MS-ESS2-3 (UM-1) MS-ESS3-2 (UM-1)	MS-LS2-1 (UM-2)	MS-PS3-1 (UM-1) MS-ESS1-3 (UM-1)				
Using Mathematical and Computational Thinking	MS-PS4-1 (UM-3)	MS-LS4-6 (UM-3)					
Constructing Explanations and Designing Solutions	MS-LS2-2 (CE-1) MS-LS4-2 (CE-1)	MS-LS1-5 (CE-1) MS-LS4-4 (CE-1) MS-ESS3-1(CE-1) MS-ESS3-3 (CE-1)	MS-ESS1-4 (CE-2) MS-ESS2-2 (CE-2)	MS-PS2-1* (CE-3)	MS-PS1-6*(CE-4) MS-PS3-3* (CE-4) MS-LS1-6 (CE-4)		
Engaging in Argument from Evidence		MS-LS1-4 (CE-1) MS-ESS3-4 (CE-1)		MS-PS2-4 (CE-2) MS-LS1-3 (CE-2)	MS-PS3-5 (CE-4)		MS-LS2-4 (CE-2) MS-LS2-5*(CE-3)

Table 5. Grade 11 SEP/CCC Claim and Descriptors

Claim	Descriptors of the types evidences included in this claim
Gathering Data and Investigating Scientific Questions (GI)	Ask questions to determine the causal effect of a system's stable or dynamic nature. Plan and conduct investigations and evaluate and communicate information to find patterns in data to use as evidence of cause and effect relationships. Evaluate and communication information to describe patterns or interactions in the transfer of energy and/or the cycling of matter. Plan and conduct investigations and communicate information to provide evidence of how structures function within a system.
Developing and Using Models to Describe the Natural World (DM)	Develop and/or use models to describe: patterns and interactions within a system, cause and effect relationships, the cycling, transfer, and conservation of energy and matter at various scales, and how natural processes can vary between stable and dynamic over time.
Using Mathematical Thinking to Analyze and Interpret Patterns in Data (UM)	Analyze and interpret patterns of data to describe properties, determine cause and effect relationships, and stability and change in natural systems. Use mathematical reasoning to analyze and interpret data to determine quantitative and qualitative proportional relationships. Use mathematical reasoning to describe cause and effect relationships and explain patterns in natural processes. Use mathematical and computational representations to describe the flow of energy and cycling of matter within systems.
Use Scientific Reasoning to Construct Explanations and Arguments and to Design Solutions (CE)	Construct arguments, explanations, and design solutions: based on evidence using patterns to explain cause and effect relationships, based on evidence explaining how various natural and human-cause processes impact a system over time, and to support claims to explain how the transfer and flow of energy and conservation and cycling of matter impacts a system. Construct explanations, using evidence, to describe how the structure of an entity determines specific functions.

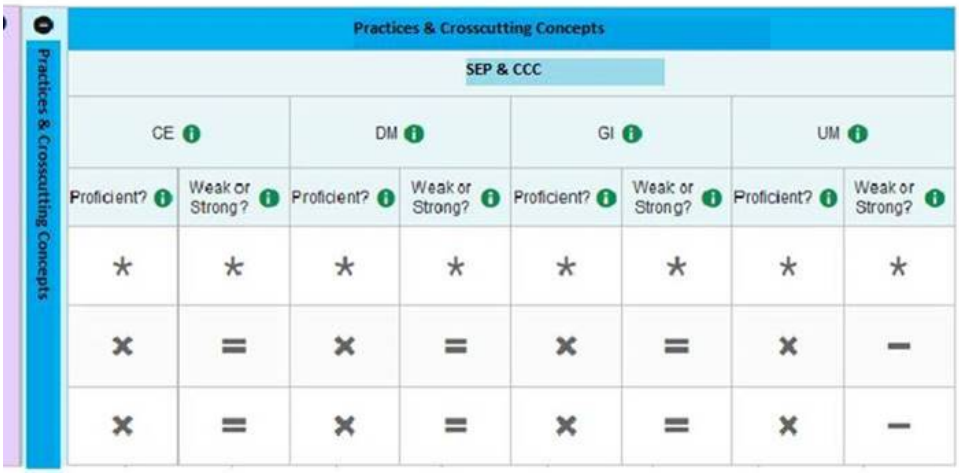
Figure 6. Matrix of Performance Expectations for Science Practices and Crosscutting Concepts Claims, Grades 9-11

Matrix of Performance Expectations (NGSS SEPs vs. CCCs: HS)

	Patterns	Cause and Effect	Scale, Proportion and Quantity	Systems and System Models	Energy and Matter	Structure and Function	Stability and Change
Asking Questions and Defining Problems		HS-LS3-1(GI-1)					HS-PS4-2 (GI-1)
Obtaining, Evaluating and Communicating Information	HS-LS4-1 (GI-2)	HS-PS4-4 (GI-2) HS-PS4-5* (GI-3)			HS-ESS1-3 (GI-3)	HS-PS2-6 (GI-4)	
Planning and Carrying Out Investigations	HS-PS1-3 (GI-5)	HS-PS2-5 (GI-2)		HS-PS3-4 (GI-5)		HS-ESS2-5 (GI-5)	HS-LS1-3 (GI-2)
Developing and using Models	HS-PS1-1 (DM-1)	HS-PS3-5 (DM-2) HS-ESS2-4 (DM-2)	HS-ESS1-1(DM-3)	HS-LS1-2 (DM-1) HS-LS1-4 (DM-1) HS-LS2-5 (DM-1)	HS-PS1-4 (DM-3) HS-PS1-8 (DM-3) HS-PS3-2 (DM-3) HS-LS1-5 (DM-3) HS-LS1-7 (DM-3) HS-ESS2-3 (DM-3) HS-ESS2-6 (DM-3)		HS-ESS2-1 (DM-4)
Analyzing and Interpreting Data	HS-LS4-3 (UM-2)	HS-PS2-1(UM-2)	HS-LS3-3 (UM-3)				HS-ESS2-2 (DM-1) HS-ESS3-5 (DM-1)
Using Mathematical and Computational Thinking	HS-PS2-4 (UM-4)	HS-PS4-1(UM-4) HS-LS4-6 (UM-4)	HS-LS2-1 (UM-3) HS-LS2-2 (UM-3) HS-ESS1-4 (UM-3)	HS-PS2-2 (UM-5) HS-PS3-1 (UM-5) HS-ESS3-6 (UM-5) HS-ETS1-4*	HS-PS1-7 (UM-5) HS-LS2-4 (UM-5)		HS-ESS3-3 (UM-5)
Constructing Explanations and Designing Solutions	HS-PS1-2 (CE-1) HS-PS1-5 (CE-1)	HS-PS2-3 (CE-1) HS-LS4-2 (CE-1) HS-LS4-4 (CE-1) HS-ESS3-1 (CE-1)			HS-PS3-3 (CE-3) HS-LS1-6 (CE-3) HS-LS2-3 (CE-3) HS-ESS1-2 (CE-3)	HS-LS1-1 (CE-4)	HS-PS1-6 (CE-2) HS-LS2-7 (CE-2) HS-ESS1-6 (CE-2) HS-ESS3-4 (CE-2)
Engaging in Argument from Evidence	HS-ESS1-5 (CE-1)	HS-LS2-8 (CE-1) HS-LS3-2 (CE-1) HS-LS4-5 (CE-1)		HS-PS4-3 (CE-3)			HS-LS2-6 (CE-2) HS-ESS2-7 (CE-2)

Educators can access aggregate SEP/CCC claim score data in the Centralized Reporting System within the OSAS Portal in the same way they access the 3-Dimensional Discipline Claim information.

Figure 7. Example of Science Practices & Concepts Claim Data at the Group Level in the Centralized Reporting System



An individual student responds to too few items within an SEP/CCC claim category to generate data with the same level of reliability and validity as an overall composite score. Aggregate (group) scores of Performance Relative to Proficiency for an SEP/CCC claim shows how a group of students performed relative to the expected performance at the *Level 3* proficiency cut. Since the Performance Relative to Proficiency is a comparison to a standards-based expectation, performance across groups can be compared.

For Performance Relative to the Test as a Whole, the expected performance is determined based on the students' overall performance on the entire test. It shows how a group of students performed on each claim relative to their performance on the test overall. Rather than comparing across groups, Performance Relative to the Test as a Whole provides more information regarding the relative strength and weakness of different DCIs within a group.

FAQ

Who Takes the OSAS Science Assessment?

The OSAS Science Assessment is a required assessment for students in grades 5, 8, and 11.

Where can find assessment scores?

Assessment score information can be found in several places.

- Preliminary (unofficial) results for the assessments are located in the Centralized Reporting System on the OSAS Portal.
- Official data is made available to districts in the Accountability Warehouse Extract (AWE). Districts can download an Excel file from AWE or pull student level reports.
- Additionally, Assessment Group Reports are located on the ODE website for public viewing.

How should assessment results be used?

Assessment results of students' performance on the test can be used to help teachers or schools make decisions on how to support students' learning. Aggregate score reports at the teacher and school level provide information about the strengths and weaknesses of their students and can be used to improve teaching and learning. For example, a group of students may have performed well overall, but did not perform as well in a specific 3-Dimensional Discipline or Science and Engineering/Crosscutting Concept Claim. Teachers or schools can then identify specific areas of teaching and learning in which to focus improvement processes.

While assessment results provide valuable information to understand student performance, these scores and reports should be used with caution. It is important to note that scale scores are estimates of true scores and hence do not represent a precise measure of student performance. Given that assessment results measured by a test provide limited information about individual student performance, other sources of information, such as classroom assessment and teacher evaluation should be considered when making decisions on student learning and performance.