

WASHINGTON STATE

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## Alphabet Soup of STEM Education



*Commonly used acronyms and jargon for  
Science/STEM education professionals*

# A — D

**Administrator:** This term typically refers to senior school district personnel, such as the Superintendent and Curriculum Directors. At times, it can include 'building administrators,' also known as principals.

**ASCD – Association for Supervision and Curriculum Development:** A membership organization that develops programs, products, and services to support the way educators learn, teach, and lead. Some of the resource articles at the Institute come from this association ([www.ascd.org](http://www.ascd.org)).

**Assessment:** The process of documenting knowledge and skills; can take place during instruction (see *Formative Assessment*) or at the end instruction (see *Summative Assessment*).

**Brain Research:** Research used to understand how people learn; this knowledge impacts how teachers teach.

**CBA – Curriculum (or Classroom)-Based Assessment:** Assessments that are delivered at the classroom level used to uncover student understanding. CBA's are built from the state's learning standards.

**CBAM – Concerns Based Adoption Model:** A way of examining change, over time, of personal attitudes, feelings, perceptions, and motivations relative to an innovation.

**CCSS – Common Core State Standards:** National standards representing a set of shared goals and expectations for the knowledge and skills students need in English language arts and mathematics at each grade level (K-12) so they can be prepared to succeed in college, career, and life ([www.corestandards.org/](http://www.corestandards.org/)). Also known and referred to as Washington State Learning Standards.

**CEO – Chief Executive Officer:** The chief executive officer is the top position in an organization and is responsible for implementing existing plans and policies, ensuring the successful management of the business and setting future strategy. (<http://whatis.techtarget.com/>)

**CFO – Chief Financial Officer:** The chief financial officer is a corporate title for the person responsible for managing the company's financial operations. In many companies, the CFO is also the treasurer. (<http://whatis.techtarget.com/>)

**CFOO – Chief Financial and Operating Officer:** The chief financial and operating officer (**CFOO**) is a corporate officer primarily responsible for managing the financial risks of the corporation. This officer is also responsible for financial planning and record-keeping, as well as financial reporting to higher management. (<https://en.wikipedia.org>)

**COO – Chief Operating Officer:** A chief operating officer is the corporate executive who oversees ongoing business operations within the company. The COO reports to the CEO (Chief Executive Officer) and is usually second-in-command within the company. Alternative titles for the COO include Chief Operations Officer, Operations Director and Director of Operations. (<http://whatis.techtarget.com/>)

**CTE – Career and Technical Education:** Offered at the high school level and in some middle schools, uses real-life subject matter to provide hands-on training to gain real world experience. This form of education often includes job shadowing and internships.

**Crosscutting Concepts:** One of the three dimensions of the Next Generation Science Standards, the Crosscutting Concepts have application across all domains of science. They include Patterns, Similarity, and Diversity; Cause and Effect; Scale, Proportion and Quantity; Systems and System Models; Energy and Matter; Structure and Function; Stability and Change. The Framework emphasizes that these concepts

need to be made explicit for students because they provide an organizational schema for interrelating knowledge from various science fields into a coherent and scientifically-based view of the world.

**Curriculum:** The aggregate of all of the learning experiences a student will engage in that is developmentally appropriate and provides a learning progression which builds over time and supports a student's deep conceptual understanding.

**DCI - Disciplinary Core Ideas:** One of the three dimensions of the Next Generation Science Standards, these have the power to focus K-12 science curriculum, instruction and assessments on the most important aspects of science. To be considered core, the ideas should meet at least two of the following criteria and ideally four:

- Have Broad Importance across multiple sciences or engineering disciplines or be a key organizing concept of a single discipline;
- Provide a key tool for understanding or investigating more complex ideas and solving problems;
- Relate to the interests and life experiences of students or be connected to societal or personal concerns that require scientific or technological knowledge;
- Be teachable and learnable over multiple grades at increasing levels of depth and sophistication.

Disciplinary ideas are grouped in four domains: the physical sciences; the life sciences; the earth and space sciences; and engineering, technology and applications of science.

**Differentiated Instruction:** Instruction that is adapted or adjusted to meet the needs of different learners and different learning styles.

**Director of Teaching and Learning:** A position in the administration office of some school districts. Position varies from school district to school district, but typically this person is in charge of curriculum issues and instruction.

# E — H

**ELL – English Language Learner:** A person learning English whose primary language is one other than English.  
([www.waparentslearn.org](http://www.waparentslearn.org))

**EQuIP Rubric - Educators Evaluating the Quality of Instructional Products:** An initiative designed to identify high-quality materials aligned to the Common Core State Standards (CCSS) and the Next Generation Science Standards (NGSS) (<http://www.achieve.org/EQuIP>).

The objectives are two-fold:

- Increase the supply of high quality lessons and units aligned to the CCSS and NGSS that are available to elementary, middle, and high school teachers as soon as possible; and
- Build the capacity of educators to evaluate the improve the quality of instructional materials for use in their classrooms and schools.

**ESD – Educational Service District:** Found in nine different regions covering all of Washington State, the ESD serves the school districts, public and private within their region. Each ESD has a Regional Literacy Coordinator, Regional Math Coordinator, and a Regional Science Coordinator. These Coordinators provide professional development and technical assistance for teachers and administrators in their local region. They collaborate with each other, OSPI and other partners to create a seamless system of support so that all students have access to effective learning experiences ([www.washingtondesds.org/site/default.aspx?PageID=1](http://www.washingtondesds.org/site/default.aspx?PageID=1)).

**Engineering Design Process:** A series of steps, often represented in a cyclic fashion, that engineers use to guide them as they solve problems (adapted from *Family Engineering* and *Engineering is Elementary*).

**FE – Family Engineering:** *Family Engineering* is a program resource that provides informal engineering learning experiences to children of all ages including adults! This program, developed with support from the National Science Foundation and modeled after the *Family Science* and *Family Math* programs, promotes 21st Century skills of inquiry, creativity, teamwork, and collaborative problem-solving. ([www.familyengineering.org](http://www.familyengineering.org)).

**Formative Assessment:** Formative Assessment is a process used by teachers and students during instruction that provides feedback to adjust ongoing teaching and learning to improve students' achievement of intended instructional outcomes.

**Gallery Walk:** Education term for moving around the room to look at and/or listen to findings found by different groups on similar topics.

**HR - Human Resources:** At a company or organization, the person or department responsible for creating, implementing and/or overseeing policies governing employee behavior and the behavior of the company toward its employees. (<http://whatis.techtarget.com/>)

# I — M

**ISE – Informal Science Education:** Lifelong learning in science, technology, engineering, and math (STEM) that takes place across a multitude of designed settings and experiences outside of the formal classroom. ([www.informalscience.org/what-informal-science](http://www.informalscience.org/what-informal-science))

**Inquiry-Based Science:** A teaching technique that focuses on student constructed learning as opposed to teacher-transmitted information. The teachers and materials prompt the students to think through a problem rather than the teachers providing the answers or directing the activity. Typically, inquiry-based science lessons include hands-on activities, but hands-on doesn't always mean inquiry.

**Instructional Materials:** Any materials, including books and physical materials that are used in the classroom as part of instruction.

**Instructional Practices/Strategies:** The different approaches a teacher may take to reach learning objectives.

**Jigsaw:** Education term for splitting up the work among groups or individuals, having each work independently and then bringing back the information to the group as a whole, like putting together a jigsaw puzzle.

**LAP – Learning Assistance Program:** Programs that serve eligible students who need academic support for reading, writing and math, or who need readiness skills to learn these core subjects. (<http://www.k12.wa.us/LAP/>)

**Literacy:** Reading and writing at a level adequate for communication.

**MESA – Mathematics Engineering Science Achievement:**

Organization working with students who are traditionally underrepresented in the K-12 system.

(<http://depts.washington.edu/mesaweb/>).

**MSP – Mathematics and Science Partnership:**

Washington State Office of Superintendent of Public Instruction (OSPI)

provides math and science partnership grants to fund research in math and science.

**Metacognition:** To think/reason about one's own thinking.

Students learn best when they are engaged in their own learning and taking part in metacognition.

**Mission (Statement):** A mission statement is a communication

of an organization's purpose, usually expressed with public relations (PR) or marketing in mind. Generally, a mission statement focuses on current operations whereas a vision statement focuses on the longer-term future.

(<http://whatis.techtarget.com/>)



# N — R

**NGSS – Next Generation Science Standards:** These standards come from the vision established in the National Research Council's *Framework for K-12 Science Education*. This vision describes what it means to be proficient in science; it rests on a view of science as both a body of knowledge and an evidence-based, model and theory building enterprise that continually extends, refines, and revises knowledge. It presents three dimensions (Science & Engineering Practices, Crosscutting Concepts, and Disciplinary Core Ideas) which are interrelated in performance expectations (see *Performance Expectations*). ([www.nextgenscience.org](http://www.nextgenscience.org))

**NSF – National Science Foundation:** A federal agency which provides science research funding.

**NSRC – National Science Resources Center:** The organization which launched LASER, a national initiative to improve science education. The NSRC is now called the Smithsonian Science Education Center ([www.ssec.si.edu/](http://www.ssec.si.edu/)).

**NSTA – National Science Teachers Association:** An organization committed to promoting excellence and innovation in science teaching and learning for all. Members include science teachers, science supervisors, administrators, scientists, business and industry representatives, and others involved and committed to science education ([www.nsta.org](http://www.nsta.org)).

**OTJT – On-the-Job-Training:** A form of training taking place in a normal working situation. On-the-job training, sometimes called direct instruction, is one of the earliest forms of training. (<https://en.wikipedia.org>)

**OSPI – Office of Superintendent of Public Instruction:** A state agency with central offices in Olympia which oversees all public schools and education.

## **PBL - Project Based or Problem Based Teaching and Learning:**

Project-based learning is a dynamic approach to teaching in which students explore real-world problems and challenges. With this type of active and engaged learning, students are inspired to obtain a deeper knowledge of the subjects they are studying.

**PD – Professional Development:** A learning experience often done with classroom teachers or leadership teams of teachers and their administrators consist of activities and other learning opportunities which promote professional growth and skill.

**PE - Performance Expectations:** What students should be able to do in order to demonstrate that they have met a standard, thus providing the same clear and specific targets for curriculum, instruction, and assessment. A Performance Expectation includes all three dimensions of the NGSS (Disciplinary Core Idea, Crosscutting Concept and Science & Engineering Practice).

**PL - Professional Learning:** The primary strategy school districts have to strengthen educators' performance levels. ([www.k12.wa.us/CurriculumInstruct/WA-TPL/ProjectGoals.aspx](http://www.k12.wa.us/CurriculumInstruct/WA-TPL/ProjectGoals.aspx))

**PLC – Professional Learning Community:** A group of educators that meets regularly to share expertise and work collaboratively to improve teaching skills and the academic performance of students.

**PR – Public Relations:** A strategic communication process that builds mutually beneficial relationships between organizations and their publics. Public relations can also be defined as the practice of managing communication between an organization and its publics. (<https://en.wikipedia.org>) Many school districts have at least one person in this role who acts as a liaison in communicating with families and the public.

**Pedagogy:** Refers to the strategies of instruction or a style of instruction a teacher may use.

**Practices:** Found in Common Core State Standards (Mathematics and English Language Arts) and the Next Generation Science Standards, these describe the expertise all educators should seek to develop in their students.

**Professional Association or Society:** An organization, usually non-profit, seeking to further a particular profession, the interests of individuals engaged in that profession and the public interest. These organizations can often be community partner resources, especially local chapters.  
([https://en.wikipedia.org/wiki/Professional\\_association](https://en.wikipedia.org/wiki/Professional_association))

**R&D - Research and Development:** Investigative activities that a business chooses to conduct with the intention of making a discovery that can either lead to the development of new products or procedures, or to improvement of existing products or procedures. ([www.investopedia.com](http://www.investopedia.com))

**Research-based Instructional Materials:** Instructional resources that are based on current research about how people learn.

**Rubric:** A scoring tool that clearly lists criteria for each level of achievement or mastery.

# S — W

**SALT or SALTERs:** Science Assessment Leadership Team (SALT) or someone who attended these meetings (SALTER). This team works with OSPI on the state assessment.

**SEPs - Science & Engineering Practices:** The practices of science and engineering help students understand how scientific knowledge develops and the work of engineers. In using the practices, students understand the wide range of approaches that are used to investigate, model, and explain the world. The eight practices are:

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

**SMC – Science Materials Center:** Used by districts and ESDs to manage materials used in classrooms.

**SPED - Special Education:** Instruction provided for students with disabilities according to the requirements of the federal Individuals with Disabilities Education Act (IDEA). ([www.waparentslearn.org](http://www.waparentslearn.org))

**STEM – Science, Technology, Engineering and Mathematics:** An abbreviation for the fields of study and the integration of those fields when presented to students.

**Scientific Literacy:** Scientific literacy is the knowledge and understanding of scientific concepts and processes required for personal decision making, participation in civic and

cultural affairs, and economic productivity. It also includes specific types of abilities.

**Smarter Balanced Assessment System:** Comprehensive system used by Washington State and designed to measure how well students are learning the Common Core State Standards in English language arts (ELA) and math. It was developed by a multi-state partnership of educator and researchers.

**Special Needs Students:** Students who require special instructional programs to reach their learning potential. ([www.waparentslearn.org](http://www.waparentslearn.org))

**Standards:** The core of conceptual knowledge and abilities that all students should achieve by the time they leave our classrooms.

**Summative Assessment:** Used to check the level of learning at the end of the period of instruction (e.g. end of course or unit); are comprehensive in nature.

**3-D Learning - Three Dimensional Learning:** The blending the three dimensions (Crosscutting Concepts, Disciplinary Core Ideas, and Science & Engineering Practices) to focus instruction and assessment. This shifts the focus of the science classroom to environments where students use the three dimensions to explore, examine, and use science ideas to explain how and why phenomena occur.

**TOSA – Teacher on Special Assignment:** This is a classroom teacher who is not teaching and has been given a special assignment such as a science coach.

**Tax Credit for Volunteering:** The IRS allows certain expenses related to volunteering to be tax deductible. This information is useful to know about when recruiting and sourcing volunteers. Details available at: <https://www.nolo.com/legal-encyclopedia/tax-deductions-donations-volunteering-30101.html>

**Title I:** A federal program that provides funds to improve the academic achievement for educationally disadvantaged students who score below the 50<sup>th</sup> percentile on standardized tests. ([www.waparentslearn.org](http://www.waparentslearn.org))

**Twenty-First Century Skills:** This term is generally used to refer to certain core competencies such as collaboration, digital literacy, critical thinking, and problem-solving that are believed to teach to help students thrive in today's world.

**Vision (Statement):** A vision statement is an organization's declaration of its mid-term and long-term goals. Generally, a vision statement focuses on the future whereas a mission statement focuses on current or near-term operations. (<http://whatis.techtarget.com/>)

**Washington State LASER – Leadership and Assistance for Science Education Reform:** Washington State LASER is a state science-education program led by Pacific Science Center and Pacific Northwest National Laboratory along with the Office of Superintendent of Public Instruction, Educational Service Districts and school districts. Its mission is to be a catalyst for sustainable innovation and improvement in K-12 science education. ([www.wastatelaser.org](http://www.wastatelaser.org)).

**Work-Based Learning:** Supervised learning activities for students that occur in paid or unpaid workplace assignments, and for which course credit is awarded. ([www.waparentslearn.org](http://www.waparentslearn.org))

**Work-Based Learning Coordinator:** In a school or district, a person in charge of connecting students with real-world learning and internship opportunities. At a company, it is the person or group in charge of managing opportunities for students within the organization.

**Work-Force Development:** An American economic development approach that attempts to enhance a region's economic stability and prosperity by focusing on people

rather than businesses. It is essentially a human resources strategy. (<https://en.wikipedia.org>)

### **WSSLS – The Washington State Science Learning**

**Standards:** The Next Generation Science Standards which were adopted in 2013 by the Washington State Legislature. There are also Washington State Learning Standards for Mathematics and English Language Arts.

**WSTA – Washington Science Teachers Association:** A professional association of teachers which provides professional development, networking, and advocacy for science education.