STEM Standard and Indicators: Key Terms Glossary

The Cognia STEM Standard and Indicators include deep, rich language that communicates our commitment to a high-quality, rigorous STEM education for learners. Some of the terms have become educational buzz-words in recent years, often leading people to overlook their true significance. Other terms may be more specific to the Cognia context and, thus, might be less familiar to institutions, educators, and reviewers. In light of this, we have prepared this glossary of terms to ensure all participants in the STEM Certification process understand the meanings and expectations behind the terms.

Adult-world connections	Students realize the importance of their work by being provided the opportunity to experience how their STEM learning is used in the “real” world. Resources are utilized from professional organizations such as ASME, NASA, NSTA, ASCE, etc. Local industry and higher educational community partners work together with students on ongoing projects providing real-world connections to student work
Authentic problems	Realistic scenarios centered around relevant and current issues in need of a solution
Business/industry	Area businesses/industry that are stakeholders in the education of students
Collaborative	Students working in groups or teams to accomplish a task; can be in the form of writing, oral discussion, and/or with the use of technology
Communication	Sharing ideas and thinking via spoken, written, or digital means; involves both teacher and student interaction depending on context
Community	Stakeholders within the general area or school zone
Conduct research	To seek information from multiple sources including print and digital or contacting experts to correctly define terms and concepts from established facts, and/or collecting data from experimentation or

	qualitative methods such as surveys
Creative and critical thinking	Students design, imagine and articulate new concepts in the cycle of inquiry, brainstorming, building, testing and revision. Likewise, they are able to analyze the causes and effects for successes or failures in an outcome by understanding the design process that produced it
Educators facilitate learning	Instructors guide students through the use of learning tools including technology and other resources so that students can personalize and self-direct their brainstorming, inquiry and productivity. Students are provided with a variety of approaches to problem solving and encouraged to create their own
Elaborated explanations of thinking	Students can describe the rationale for choices in design or conclusions drawn from experimentation or researched data. Explanations can be self-generated as part of a written research project or in response to questioning during presentation or demonstration
Engagement	Actively involved with the STEM process and student activity
Extended day opportunities	Activities that are offered beyond the traditional school day; these activities are often offered through partnerships that are established between the school and its community members
Interdisciplinary	Incorporating two or more disciplines (e.g., math, science, history, English) within a curriculum-based project or activity
Interdisciplinary team-work	Teachers of two or more disciplines working together on planning, organizing, and/or teaching a lesson/unit to students; teachers coming together to plan and teach lessons that include multiple disciplines
Non-traditional student participation	STEM curriculum opportunities are available to all students making the STEM curriculum *inclusive* vs. exclusive
Outcomes	A measured result directly related to STEM educational practices

Performance based assessment	A formative and/or summative evaluation in which students apply previously learned concepts; these evaluations highlight personalized and self-directed student work and are the result of evaluation and synthesis
Personalize	Students draw from their own experience, including social, cultural and academic, to create unique projects, presentations and solutions. A variety of tools and choices of format are provided to support a wide range of style options in which to complete an assignment
Problem-based	Learning that is student-centered and focused on collaboration, communication, critical thinking, creativity, and creation of a problem
Real-world applications	Teacher-presented scenarios that are as close to real-world events, problems, or issues as possible; important to ensure that the applications are authentic to students, meaning that students perceive the events or issues as relevant
Self-direct	Students are given a variety of paths with which to complete a task and are encouraged to develop new approaches to problems through inquiry and research
STEM Literacy	To understand and apply the scientific, mathematical, engineering, and technological language and meaning in the context of inquiry-based learning
STEM-specific professional learning	Off-site, on-site, live and/or on-line professional workshops, seminars, webinars, conferences and professional development opportunities directly related to STEM
Student demonstration	Students exhibit their understanding of what they have learned
Technology resources	Digital tools that facilitate the process of learning and instruction for students and teachers, respectively, through some level of applied science or mechanical means
Underrepresented groups	Female students; students designated as minority; students with learning or physical disabilities; students from lower socioeconomic groups