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Performance Standards

and Rubrics for STEM

K–12 and Postsecondary Institutions

Effective July 1, 2022

STEM Certification

What it means

STEM education engages learners in inquiry processes that promote deep thinking in social learning contexts, with clear connections to outcomes associated with success at progressive levels of learning and work. Cognia's STEM Certification Standards provide a set of evaluative criteria that form the foundational elements of a high-quality STEM program within a school or system and contain concepts that serve as a roadmap for implementing high-quality STEM practices and processes. Additionally, the STEM certification process allows Cognia Review Teams to evaluate an institution's STEM implementation and provide feedback that validates current practices and informs opportunities for continued improvement.

Keys to STEM Learning

In addition to meeting Cognia's STEM Certification Standards and Assurances, a quality STEM program is:

- Thoroughly embedded in and supported by the institution
- Defined by clear expectations for STEM learning outcomes
- Composed of integrated activities within and beyond the school day
- Focused on performance-based demonstrations of learning

Rating the standards

During an institution's Self-Assessment and Certification Engagement Review, each standard will be rated according to a unique four-point scoring rubric. The point-value definitions appear below.

LEVEL 4	**Demonstrating noteworthy practices producing clear results that positively impact learners**
LEVEL 3	**Engaging in practices that provide evidence of expected effectiveness that is reflected in the standard**
LEVEL 2	**Developing or improving practices that provide evidence that effort approaches desired level of effectiveness**
LEVEL 1	**Reflecting areas with insufficient evidence and/or limited activity leading toward improvement**

STEM Standards and Rubrics

STANDARD 1

Learners engage in STEM learning experiences that integrate all STEM disciplines with an emphasis on processes and practices associated with STEM.

4	Learners consistently engage in curriculum that systematically integrates content across all STEM disciplines*. Learners continuously participate in STEM processes and practices (e.g., Design Thinking Process, NGSS STEM Practices, engineering design).
3	Learners regularly engage in curriculum that formally integrates content across all STEM disciplines*. Learners routinely participate in STEM processes and practices (e.g., Design Thinking Process, NGSS STEM Practices, engineering design).
2	Learners occasionally engage in curriculum that integrates content across all STEM disciplines*. Learners sometimes participate in STEM processes and practices (e.g., Design Thinking Process, NGSS STEM Practices, engineering design).
1	Learners rarely engage in curriculum that systematically integrates content across all STEM disciplines*. Learners seldom participate in STEM processes and practices (e.g., Design Thinking Process, NGSS STEM Practices, engineering design).

*Curriculum may include additional content disciplines in schools that have adopted other inclusive models of integrated learning, such as the arts for STEAM schools.

STANDARD 2

Professional staff members implement high quality STEM courses and curriculum aligned to recognized standards and organized into interdisciplinary frameworks.

4	Professional staff members implement a formal, systematic process for aligning courses to adopted and recognized sets of standards and/or benchmarks. A rigorous STEM curriculum is consistently organized around multiple real-world, interdisciplinary, problem-based and/or project-based units of study.
3	Professional staff members routinely implement a process for aligning courses to adopted and recognized sets of standards and/or benchmarks. The STEM curriculum is regularly organized around multiple real-world, interdisciplinary, problem-based and/or project-based units of study.
2	Professional staff members occasionally implement a process for aligning courses to adopted and recognized sets of standards and/or benchmarks. The STEM curriculum is sometimes organized around interdisciplinary, project-based units of study.
1	Professional staff members rarely implement a process for aligning courses to adopted and recognized sets of standards and/or benchmarks. The STEM curriculum is seldom organized around interdisciplinary, project-based units of study.

STANDARD 3

Professional staff members and leaders participate in an ongoing system of STEM-specific professional learning.

4	Professional staff members and leaders engage in a regular and frequent formal program of professional learning for specific areas of responsibility such as STEM disciplinary content knowledge or instructional coaching. The program of STEM professional learning consistently results in schoolwide improvements in STEM instructional practices.
3	Professional staff members and leaders regularly engage in a program of professional learning for specific areas of responsibility such as STEM disciplinary content knowledge or instructional coaching. The program of STEM professional learning routinely results in schoolwide improvements in STEM instructional practices.
2	Professional staff members and leaders occasionally engage in professional learning for specific areas of responsibility such as STEM disciplinary content knowledge or instructional coaching. The program of STEM professional learning sometimes results in improvements in STEM instructional practices.
1	Professional staff members and leaders rarely engage in professional learning for specific areas of responsibility such as STEM disciplinary content knowledge or instructional coaching. The program of STEM professional learning seldom results in improvements in STEM instructional practices.

STANDARD 4

Leaders engage a diverse network of community partners and stakeholders in order to support and sustain STEM programs and initiatives.

4	Leaders demonstrate a systematic approach to partnership with a diverse group of community organizations, including local businesses, STEM practitioners, and institutions of higher education. Leaders proactively seek, and consistently receive, resources and support from STEM partners to improve STEM teaching and learning.
3	Leaders routinely engage in partnership activities with a diverse group of community organizations, which may include local businesses, STEM practitioners, and institutions of higher education. Leaders proactively seek, and regularly receive, resources and support from STEM partners to improve STEM teaching and learning.
2	Leaders occasionally engage in partnership activities with community organizations such as local businesses, STEM practitioners, or institutions of higher education. Leaders sometimes seek and receive resources and support from STEM partners to improve STEM teaching and learning.
1	Leaders seldom engage in partnership activities with community organizations such as local businesses, STEM practitioners, or institutions of higher education. Leaders rarely seek or receive resources and support from STEM partners to improve STEM teaching and learning.

STANDARD 5

Leaders ensure that all stakeholders have ongoing opportunities to access information and learn about STEM implementation.

4	Leaders engage a formal process to share and communicate STEM vision, mission, goals, outcomes, responsibilities, roles, events, and activities to internal and external stakeholders. Leaders consistently plan for and facilitate STEM events and activities for the school community during and beyond the regular school day.
3	Leaders routinely share and communicate STEM vision, mission, goals, outcomes, responsibilities, roles, events, and activities to internal and external stakeholders. Leaders regularly plan for and facilitate STEM events and activities for the school community during and beyond the regular school day.
2	Leaders occasionally share and communicate STEM vision, mission, goals, outcomes, responsibilities, roles, events, or activities to internal and external stakeholders. Leaders sometimes plan for and facilitate STEM events and activities for the school community.
1	Leaders rarely share or communicate STEM vision, mission, goals, outcomes, responsibilities, roles, events, or activities to internal and external stakeholders. Leaders seldom plan for and facilitate STEM events and activities for the school community.

STANDARD 6

Learners engage collaboratively in authentic inquiry during ongoing units of study.

4	Learners continually engage in authentic inquiry through systematically planned and implemented project-based units of study. Learners consistently work collaboratively to complete rigorous tasks, including problem identification, investigation, and analysis.
3	Learners regularly engage in authentic inquiry through intentionally planned and implemented project-based units of study. Learners routinely work collaboratively to complete rigorous tasks, including problem identification, investigation, and analysis.
2	Learners occasionally engage in authentic inquiry through project-based units of study. Learners sometimes work collaboratively to complete tasks, including problem identification, investigation, or analysis.
1	Learners seldom engage in authentic inquiry through project-based units of study. Learners rarely work collaboratively to complete tasks, including problem identification, investigation, or analysis.

STANDARD 7

Learners engage in self-directed STEM learning guided by professional staff members who are effective facilitators of learning.

4	Learners consistently have opportunities to be critical and creative thinkers and are encouraged to be owners and managers of their own STEM learning experiences. Professional staff members continually serve as facilitators who provide guidance and support for learners to be self-directed.
3	Learners regularly have opportunities to be critical and creative thinkers and to be owners and managers of their own STEM learning experiences. Professional staff members routinely serve as facilitators who provide guidance and support for learners to be self-directed.
2	Learners occasionally have opportunities to be critical and creative thinkers and to take ownership of their own STEM learning experiences. Professional staff members sometimes serve as facilitators who provide guidance and support for learners to be self-directed.
1	Learners rarely have opportunities to be critical and creative thinkers or to take ownership of their own STEM learning experiences. Professional staff members seldom serve as facilitators who provide guidance or support for learners to be self-directed.

STANDARD 8

Learners benefit from a formal structure of within-school and extracurricular opportunities to extend STEM learning.

4	The institution consistently provides a variety of STEM-specific extracurricular and extended day opportunities for learners (e.g., clubs, competitions, summer camps). Leaders implement a systematic process to ensure that learners have multiple formal, age-appropriate opportunities to engage with STEM practitioners, community experts, and/or other STEM partners.
3	The institution routinely provides a variety of STEM-specific extracurricular and extended day opportunities for learners (e.g., clubs, competitions, summer camps). Leaders implement multiple formal, age-appropriate opportunities for learners to engage with STEM practitioners, community experts, and/or other STEM partners.
2	The institution occasionally provides STEM-specific extracurricular and extended day opportunities for learners (e.g., clubs, competitions, summer camps). Leaders sometimes implement age-appropriate opportunities for learners to engage with STEM practitioners, community experts, and/or other STEM partners.
1	The institution rarely provides STEM-specific extracurricular and extended day opportunities for learners (e.g., clubs, competitions, summer camps). Leaders seldom implement opportunities for learners to engage with STEM practitioners, community experts, and/or other STEM partners.

STANDARD 9

Learners demonstrate their learning through performance-based assessments and have opportunities to develop self-assessment and self-monitoring skills.

4	Learners consistently engage in STEM-specific performance assessments that provide opportunities for public demonstrations of learning. Learners continually participate in activities that develop metacognitive skills, such as goal setting, formative self-assessment, and reflections on learning.
3	Learners regularly engage in STEM-specific performance assessments that provide opportunities for public demonstrations of learning. Learners routinely participate in activities that develop metacognitive skills, such as goal setting, formative self-assessment, and reflections on learning.
2	Learners occasionally engage in STEM-specific performance assessments to demonstrate learning. Learners sometimes participate in activities that develop metacognitive skills, such as goal setting, formative self-assessment, or reflections on learning.
1	Learners rarely engage in STEM-specific performance assessments to demonstrate learning. Learners seldom participate in activities that develop metacognitive skills, such as goal setting, formative self-assessment, or reflections on learning.

STANDARD 10

Learners demonstrate STEM literacy outcomes that prepare them for the next level of learning and work.

4	Learners consistently progress through the STEM curriculum based on mastery of identified learning outcomes for each of the STEM disciplines, as well as content areas included in the institution's integrated model (e.g., STEAM, STREAM). Learners and professional staff continually collaborate in using assessment results in a meaningful way to ensure future success.
3	Learners regularly progress through the STEM curriculum based on mastery of identified learning outcomes for each of the STEM disciplines, as well as content areas included in the institution's integrated model (e.g., STEAM, STREAM). Learners and professional staff routinely collaborate in using assessment results in a meaningful way to ensure future success.
2	Learners occasionally progress through the STEM curriculum based on mastery of identified learning outcomes for the STEM disciplines. Learners and professional staff sometimes collaborate in using assessment results to ensure future success.
1	Learners seldom progress through the STEM curriculum based on mastery of identified learning outcomes for the STEM disciplines. Learners and professional staff rarely use assessment results to ensure future success.

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