Nevada Governor's Designated STEM School Framework

Nevada STEM Rubric

The rubric below contains the attributes of a STEM School and is divided into 3 categories:

1. **The School**
2. **The Classroom**
3. **The Community**

The rubric describes what each attribute might look like at an Exploratory school, a Developing school, an Established school, and a Model school. The following pages summarize the characteristics of schools at each level.

Model

Established

Developing

Exploratory

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SCORING GUIDE

Schools that meet the criteria of a Model, Established, or Developing School will receive the Governor's STEM School Designation.

Model Schools receive no more than five ratings of "Established" and receive no "Developing" or "Exploratory" ratings.

Established Schools receive no more than five ratings of "Developing" and no more than one rating of "Exploratory".

Developing Schools receive no more than five ratings of "Exploratory".

Model

Established

Developing

Exploratory

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Exploratory

A **program** that has intermittent STEM-related opportunities for some students.

Learning
STEM and non-STEM content are not regularly integrated. STEM activities are available for some students with minimal independent student learning through inquiry. Limited administrator support exists for STEM collaboration and professional learning opportunities.

Application
Student learning is not consistently linked to STEM career opportunities. Opportunities to develop teamwork and critical thinking skills are infrequent. Some participation from parents or STEM community partners exist.

Examples
STEM activities, Science Fairs, after-school programs and clubs.

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Developing

A **program** that provides STEM-related experiences for students in specific classes or instructional settings as part of the daily schedule.

Learning
STEM content is regularly offered in addition to the regular curriculum and is only occasionally integrated, with limited independent student learning through inquiry. Some administrator support exists for STEM collaboration and professional learning opportunities.

Application
Teachers and students understand the importance of STEM to future careers. Students work to solve teacher-developed, real-world problems. Partnerships exist with STEM businesses and parents but may be underdeveloped.

Examples
"STEM Days"; Standalone, supplementary project-based activities.

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Established

A **school** where STEM- related experiences are provided for ALL students in the program in many instructional settings as part of the daily schedule.

Learning
STEM practices and content are regularly integrated into daily instruction across most disciplines. Teachers facilitate independent student learning through inquiry. Significant administrative support exists for STEM collaboration and professional learning opportunities.

Application
Teachers regularly link student learning to future careers. Students work in groups to solve student or teacher-developed, real-world problems. The school's STEM industry and parental partners often support STEM-related classroom experiences.

Examples
Year-long STEM projects integrated across multiple subjects; School-wide STEM focus.

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Model

A school where STEM-related experiences are provided for ALL students and are integrated in all instructional settings throughout the school day.

Learning

STEM practices and content are fully integrated into daily instruction across all disciplines. Teachers facilitate collaborative, independent student learning through inquiry. Administrators fully and strongly support STEM collaboration and professional learning opportunities.

Application

Students identify pathways to their STEM career goals. Student teams design and evaluate solutions to difficult, real-world problems. STEM industry and parental partners actively collaborate on and participate in STEM-related experiences.

Examples

A STEM Academy: with a fully integrated program across all curriculum for all students; a project-based school environment where students are immersed in STEM teaching and learning; where faculty have expertise in STEM Fields and bring a real-world perspective to the classroom.

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CATEGORY I: THE SCHOOL

1.1 STEM Mission and Vision

The school's STEM mission and vision guide decision-making around teaching and learning toward a strong future of STEM education.

Attribute	Exploratory	Developing	Established	Model
1.1.1	A few teachers or administrators have discussed a **STEM** mission or vision but the school has not articulated anything formally.	The school's **STEM** mission and vision is in the process of being developed or has been developed by a core group of staff but is not universally understood by all staff.	The school has an established **STEM** mission and vision that has been formally adopted and is evident to outside stakeholders.	The school's **STEM** mission and vision is formally established, and students, families, and outside stakeholders understand and believe in the value of STEM.
1.1.2	There is no staff-wide buy-in for STEM. Support for STEM is concentrated among a small number of staff.	Some buy-in exists for STEM beyond a core group of staff but universal staff buy-in has not occurred.	All staff are aware of the school's STEM mission and vision and work to achieve it.	All staff demonstrate a belief in the school's STEM mission and obvious passion exists to prepare students for STEM careers.
1.1.3	Administrators and some teachers have begun to think about how to align classroom instruction to a STEM mission and vision.	Classroom instruction is aligned to the STEM mission and vision in some classrooms.	Classroom instruction is aligned to the STEM mission and vision in most classrooms.	Classroom instruction is aligned to the STEM mission and vision in all classrooms.

Artifacts That Demonstrate Evidence of a STEM Mission and Vision

- The school's Mission and Vision with an obvious STEM component or focus
- Evidence of a visible articulation of the mission in the school and online
- A STEM Strategic Plan in which the STEM mission and the vision have been articulated
- Agendas and meeting minutes from staff meetings discussing, developing, and implementing or adhering to the STEM mission and vision
- Evidence of community understanding and support of the vision on social media, traditional media, school events, volunteerism

CATEGORY I: THE SCHOOL

1.2 An Explicit Focus on Equity

The school's STEM education fosters ALL students' STEM identity, learning, and career paths.

Attribute	Exploratory	Developing	Established	Model
1.2.1	The school does not have an explicit, stated equity focus. Some staff have started the work of developing an equity focus for the school.	The school has developed an equity and diversity plan and has begun implementing programs and/or strategies* that encourage underrepresented students to develop an interest in STEM.	The school's equity plan and programs are established school-wide. Teachers receive equity-focused professional development that informs instruction.	STEM instruction includes all learners, with a special focus on including girls and students of color. Underrepresented students participating in STEM exceed district or regional averages.
1.2.2	Strategies* focused on supporting the achievement in STEM of females, students from underrepresented backgrounds, English Language Learners, and students in poverty is absent.	Strategies* focused on supporting the achievement in STEM of females, students from underrepresented backgrounds, English Language Learners, and students in poverty exists in some classrooms.	Strategies* focused on supporting the achievement in STEM of females, students from underrepresented backgrounds, English Language Learners, and students in poverty exists in most classrooms.	Strategies* focused on supporting the achievement in STEM of females, students from underrepresented backgrounds, English Language Learners, and students in poverty exists in all classrooms.

*Strategies may include, but are not limited to: positive micro-messaging, diverse students represented in the curriculum, clubs that recruit underrepresented populations, selecting partners that mirror the school's underrepresented population
Note: Providing STEM instruction to all learners is not a sufficient strategy.

Artifacts That Demonstrate Evidence of an Explicit Focus on Equity

- Mission, vision
- A strategic plan that emphasizes equity and includes specific strategies and programs to engage underrepresented groups in STEM
- Professional learning plan including work around equity
- Visual representation throughout the school of traditionally underrepresented groups
- Lesson plans with differentiated or targeted strategies

CATEGORY I: THE SCHOOL

1.3 The School Budget

Sustained funding for STEM enriches inquiry and learning.

Attribute	Exploratory	Developing	Established	Model
1.3.1	There are no available funds, and there is no sustainable funding plan for STEM education.	Funds for STEM education were acquired circumstantially or happenstance. Sustainable funds are not available.	Funds are allocated in the school's budget for sustainable STEM education. The school is actively seeking additional funding.	The school has a long-term budget plan and/or actively seeks additional funding; and is committed to prioritizing funds for sustainable STEM education.
1.3.2	There are no dedicated funds for STEM education.	Funds for STEM education are targeted to small-scale specific initiatives (ex: new laptops). Only some teachers benefit from STEM funding (ex: updated chemistry labs).	The majority of funds for STEM are allocated for professional learning, high quality STEM programs on the STEM Advisory Council's list, experiential learning, and/or hands-on materials. The majority of teachers benefit from the STEM funds.	All funds for STEM are allocated for professional learning, high quality STEM programs on the STEM Advisory Council's list, experiential learning, and/or hands-on materials. All teachers benefit from the STEM funds.

Artifacts That Demonstrate Evidence of an Explicit Focus on Equity
- School and classroom budgets
- Funding partnerships
- Sustainability plan

CATEGORY I: THE SCHOOL

1.4 Leadership

Leadership drives STEM education at the school.

Attribute	Exploratory	Developing	Established	Model
1.4.1	Administrators are open to staff growing STEM at the school but other areas of focus take priority.	Administrators support STEM-related experiences within the school including collaborative time for teachers, and STEM related professional learning opportunities.	Administrators support STEM integration, collaborative time for teachers and STEM related professional learning opportunities. STEM leadership teams meet regularly to discuss goals and areas of improvement. Decisions are made and presented to the entire staff.	Administrators strongly support fully integrated STEM content and practices in daily instruction within the school that includes collaborative time for teachers, STEM related professional learning opportunities, and funding for STEM learning experiences. Administrators involve staff in the decision-making process.
1.4.2	Teachers identify opportunities for and participate in STEM professional development on their own.	Teachers have the opportunity to participate in school-sponsored group professional development that is aligned to the school's STEM mission and vision.	The school's professional development plan focuses on STEM, and so routinely scheduled STEM professional learning occurs for all staff.	STEM instruction is vertically aligned. Staff planning includes both across grade level and alignment between grade levels.
1.4.3	Teachers have common planning time dedicated to developing STEM.	The school schedule allows for some STEM integration but not on a daily basis.	The school schedule supports STEM integration on a daily basis.	The schedule is designed for integration across all subjects throughout the school day and for teacher collaboration, co-teaching, and project-based learning.

Artifacts That Demonstrate Evidence of an Explicit Focus on Equity

- School mission, vision, or school improvement plans
- Record of administrative actions in support of STEM
- Professional development plan and schedule
- Planning records

CATEGORY II: THE CLASSROOM

2.1 STEM Curricular Integration

Explicit connections are made through integrated content and practices.

Attribute	Exploratory	Developing	Established	Model
2.1.1	The Science and Engineering Practices are not incorporated in the curriculum.	Students and teachers are becoming familiar with the Science and Engineering practices through scaffolded learning.	Students engage in the Science and Engineering practices when prompted by the teacher, or when the lesson requires it.	Students engage in the Science and Engineering practices naturally, without needing to be prompted.
2.1.2	Content areas are taught separately and are not integrated.	STEM content is regularly offered in addition to the regular curriculum and is only occasionally integrated.	STEM practices and content are regularly integrated into daily instruction across most disciplines.	STEM practices and content are fully integrated into daily instruction, throughout the school day, across all disciplines.

Artifacts That Demonstrate Evidence of an Explicit Focus on Equity

- School and class schedules
- Pacing and unit or lesson plans
- Grade level and vertical planning
- Regularly occurring and varied student presentation events

CATEGORY II: THE CLASSROOM

2.2 STEM Learning Experiences

Classroom learning is based on experiences that allow students to solve authentic local or global problems, have real-world applications, are based on phenomena, and/or rely on ethical decision-making. [i.e. PBL, inquiry]

Attribute	Exploratory	Developing	Established	Model
2.2.1	Schools have STEM exploration days in which students get to do STEM projects.	Teachers use project-based learning to teach STEM.	Project-based learning is integrated into the daily curriculum to teach STEM for the majority of the school year.	Problem and project-based learning is used by all staff as a cross-disciplinary instructional method in both STEM and non-STEM content areas.
2.2.2	Opportunities to develop teamwork and collaboration skills are limited.	Students learn and work in groups with defined roles to solve real-world problems.	The majority of the time, students learn and work in teams with defined roles to solve real-world problems. Students rely on each other to accomplish a common goal.	Students rely on each other within teams to design and evaluate solutions to age appropriate, difficult, real-world problems throughout the school day and year.
2.2.3	Teachers identify local and global problems and their relationship to the community.	Teachers identify authentic and meaningful problems, and explain the impact on the community. Students work to solve teacher-developed, real-world problems.	Students identify local and global problems and teachers facilitate independent student learning through inquiry.	Students identify meaningful local and global problems, and teachers facilitate collaboration and independence through 3-Dimensional Learning.

Artifacts That Demonstrate Evidence of an Explicit Focus on Equity

- Teacher and grade-level planning, units, or pacing
- Evidence of collaboration and teamwork
- Authentic problem solving initiatives
- Community partners that actively take part in the classroom learning experiences

CATEGORY II: THE CLASSROOM

2.3 STEM Instruction

Instruction is student-led and focus is on constructing meaning.

Attribute	Exploratory	Developing	Established	Model
2.3.1	Teachers periodically include high-level cognitive tasks and multi-level questioning in instruction.	Teachers act as facilitators while students work through high-level cognitive tasks and multi-level questioning at the end of units or semesters.	Teachers act as facilitators while students work through high-level cognitive tasks and multi-level questioning throughout the course.	Students lead the learning throughout the year as they work through high-level cognitive tasks and multi-level questioning.
2.3.2	Teachers often guide students through hands-on activities so students discover the content.	Students often apply content knowledge and STEM skills to engineering processes, experiments, and problem-solving projects to develop new meaning.	Students regularly apply content knowledge and skills from multiple subject areas to implement solutions and communicate them both written and orally.	Students are persistent in applying content knowledge and skills from multiple subject areas to implement solutions and communicate them both written and orally.
2.3.3	Fostering growth mindset, creativity, innovation, and risk taking is a goal for teachers at the school, but teachers are unsure how to foster these concepts.	Instruction in some classrooms fosters growth mindset, creativity, innovation, and risk taking. Students have limited opportunity to explore ideas and strategies in order to construct meaning.	Instruction in most classrooms fosters growth mindset, creativity, innovation, and risk taking. Students are encouraged to explore ideas and strategies in order to construct meaning.	Instruction across the school fosters growth mindset, creativity, innovation, and risk taking. Instruction regularly requires students to explore ideas and strategies in order to construct meaning.

Artifacts That Demonstrate Evidence of an Explicit Focus on Equity
- Lesson, unit plans, or projects
- Classroom environment, including physical set up, dialogue, resources
- Questioning strategies as an integral part of STEM instruction as evidenced by student responses
- Social Emotional Learning curriculum and practices

CATEGORY II: THE CLASSROOM

2.4 College and Career Readiness

Instruction is tied to future career development.

Attribute	Exploratory	Developing	Established	Model
2.4.1	Student learning is not linked to STEM career opportunities.	Student learning is linked to STEM career opportunities on occasion or during special events or STEM career days.	Teachers link student learning to future STEM careers through classroom instruction.	Students and families understand how learning relates to future careers and actively identify pathways to their STEM career goals.
Elementary and middle school only:				
2.4.2	Students are generally unaware of STEM career opportunities or their educational requirements.	Teachers and students understand appropriate content exposure will help develop interest in STEM careers.	School staff provide information regarding elective courses or extracurricular STEM interests to students and families.	School staff help students identify and pursue STEM interests in and out of the classroom.
High school only:				
2.4.3	Students are generally unaware of STEM career opportunities or their educational requirements.	Teachers and students understand appropriate course selection will help prepare students for opportunities in a STEM career.	School staff make information about STEM courses, secondary and postsecondary programs of study, and financial aid options available to students and families.	School staff help students identify STEM courses, secondary and postsecondary programs of study, and financial aid options as possible routes for their own educational development.

Artifacts That Demonstrate Evidence of an Explicit Focus on Equity

- Career connections embedded in lesson plans
- Career, pathway, and activity information, fliers, advertisements, etc.
- College and career goals crafted by students and staff
- Students willingly and openly discuss career options in a way that reflects STEM practices

CATEGORY II: THE CLASSROOM

2.5 Assessment

Assessment* is relevant, performance-based, and provides students with real-time feedback.

Attribute	Exploratory	Developing	Established	Model
2.5.1	Data regarding student achievement in STEM is not collected or is collected but not consistently or strategically.	Data regarding student achievement in STEM is collected consistently and strategically.	Data regarding student achievement in STEM is collected consistently and strategically and used to drive instruction.	Data regarding student achievement in STEM is collected consistently and strategically and used to drive and differentiate instruction.
2.5.2	Students assessments are tied to completing an activity versus demonstrating foundational skills or explaining big ideas.	Students are assessed in a vacuum (i.e. individual skills and understandings are assessed without application).	Assessment includes authentic and appropriate application of learning.	Assessment includes transfer of learning to related real-world situations.
2.5.3	Assessments measure achievement only.	Pre- and post- assessments measure students' academic growth in STEM.	Students' knowledge and understanding of STEM is evaluated through assessment, and students show growth in STEM.	Students' knowledge and understanding of STEM is evaluated through assessment, and a majority of students show significant growth in STEM.

*For the purposes of this framework, STEM assessment includes integrated content understanding as well as skills and practices. Examples include, but are not limited to, assessing students' ability to: design investigations, collaborate, explain phenomena, design solutions, use mathematics to identify a problem. Assessments such as MAP or SBAC are not STEM assessments.

Artifacts That Demonstrate Evidence of an Explicit Focus on Equity
- Formative and summative assessments aligned to the standards.
- Data analysis structures in place (may be Student Learning Objectives, NEPF Goal Setting Tool, Plan-Do-Study-Act, etc.)
- Standardized testing data

CATEGORY III: THE COMMUNITY

3.1 Family Engagement

Families and schools work together to further STEM education.

Attribute	Exploratory	Developing	Established	Model
3.1.1	Families have low attendance at the school's STEM experiences. Engagement of families to support STEM learning in and out of the classroom occurs only by a few teachers.	Families regularly attend the school's STEM experiences. The school has some parents that actively participate in planning STEM experiences.	Family engagement is high throughout the year. Families are given tools to reinforce STEM learning at home.	Families actively participate in driving the development or implementation of the school's STEM experiences.
3.1.2	The school is developing a communications and outreach plan to families encouraging support of STEM.	The school has a plan to encourage families to support STEM but communication is infrequent or not effective.	The school communicates with families regularly throughout the schoolyear with frequent updates about STEM initiatives.	The school makes concerted efforts to ensure all families receive information about STEM initiatives. The school differentiates communication to ensure that all families are reached.

Artifacts That Demonstrate Evidence of an Explicit Focus on Equity
- Family event outcomes and data
- Communications to families
- Regularly occurring communication/outreach materials regarding STEM

CATEGORY III: THE COMMUNITY

3.2 Business, Industry, and Community Engagement

Business, industry, community, and school work together to further STEM education.

Attribute	Exploratory	Developing	Established	Model
3.2.1	Business and community members visit the school a few times per year. The school understands there is a need to recruit new partners.	Business and community members have been identified and participate in the school's activities in some way, including as a STEM expert to present information to the students or staff.	Business and community members officially partner with the school to regularly offer two or more of the following: funding, resources, expertise during a lesson, learning experiences, connections.	Business and community members partner with the school to drive the development of the school's STEM curriculum and experiences.

Artifacts That Demonstrate Evidence of an Explicit Focus on Equity
- Letters of commitment or Letters of Partnership
- Community engagement plan
- Official partners lists
- Outcomes of partnerships

CATEGORY III: THE COMMUNITY

3.3 Student Engagement with the Community

Students and the community work together to develop STEM relationships and interests.

Attribute	Exploratory	Developing	Established	Model
3.3.1	Students engage with the community via field trips.	Students engage with the community by learning about problems they find in the community.	Students engage with the community by learning about how to solve local or global problems and developing proposals or potential solutions through project-based learning.	Students bring about change by partnering with the community to solve local or global problems.
3.3.2	The community is invited to view student work at a showcase or other event.	Students present the results of their work to the community and receive feedback and answer questions.	Students present the results of their work to the community and receive feedback and answer questions. Students revise work based on feedback.	The community advises students during the planning, creation, and presentation of their work.
3.3.3	High school only:			
	Students do not have mentors or internships.	A few students have mentors or internships with the help of a classroom teacher, but they were not established through a formal program at the school.	The school has a mentor or internship program, and up to half of eligible students participate.	The school has a mentor or internship program, and the majority of eligible students participate.

Artifacts That Demonstrate Evidence of an Explicit Focus on Equity

- Mentorship or internship program plans, fliers, rosters, etc.
- Showcase or presentation fliers
- Student work resulting from community partnerships