Nevada Governor's Designated STEM School Action Guide

GOVERNOR DESIGNATED
Nevada STEM School

Nevada STEM Advisory Council

OSIT
Nevada Governor's Office of Science, Innovation and Technology

Our Vision

Our **vision** is that every student in Nevada will have access and opportunities to experience a high-quality science, technology, engineering and mathematics (STEM) education, with the ultimate objective that students are prepared to thrive in the New Nevada economy. Key to realizing this vision is the effort to encourage all schools, with a particular focus on reaching underrepresented groups, to adopt practices that engage and expose students to real-world problem solving, creative design, innovation, critical thinking, and career opportunities through STEM-focused formal and informal education.

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The **STEM Advisory Council** is charged with identifying and awarding recognition to not more than 15 schools in Nevada each year that demonstrate exemplary performance in STEM. These schools are designated as Governor's STEM Schools and are recognized at an annual recognition event held in Carson City. Designation as a Governor's STEM School denotes that the school meets the highest standards of STEM instruction and is a model for schools around the state. Designations may be used to promote the school.
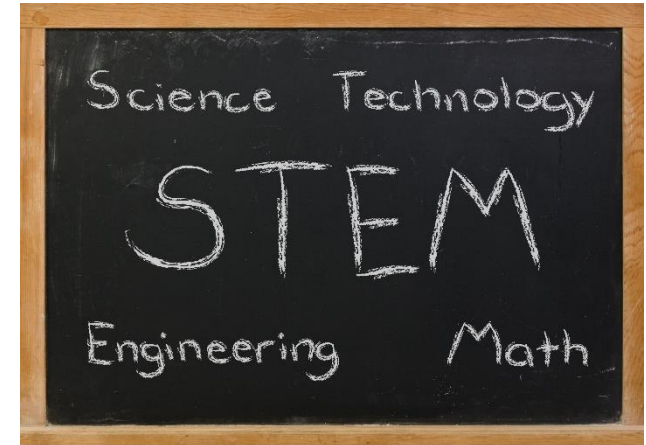
The **mission** of the Nevada STEM Advisory Council is to increase student interest and achievement in the fields of science, engineering, technology, and mathematics, leading students to fulfilling careers in the New Nevada economy.

How to use this Guide

The **purpose** of this Action Guide is to serve as a blueprint for educators, administrators, and stakeholders to take action to integrate STEM into daily student instruction. This Guide will also **assist** in understanding the Governor's STEM School Designation process and what types of activities, pedagogy, daily structure, and supports will be evaluated during the review.

This Guide provides a **roadmap** with guidelines and criteria for Nevada schools to become a Governor Designated STEM School. It aligns with Nevada Academic Content Standards to promote the integration of STEM into daily instruction for all students. You can use this Guide as a self-assessment, as a tool to expand STEM education at your school, or as a blueprint as you prepare to apply for the Governor's STEM School Designation.

Questions? Contact **Brian Mitchell**, Director of OSIT- blmitchell@gov.nv.gov

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Application Process

Eligibility

Any K-12 school in Nevada is eligible to apply

Deadline

Applications are due March 15, 2018 at 5:00pm

Timeline

Applications will be reviewed in March. Schools under consideration to be designated as a Governor's STEM School will be contacted to schedule a site visit in April. Designated schools will be announced in May and honored at a recognition event at the Governor's Mansion.

Application Instructions

Please visit www.stemhub.nv.gov to complete the application

Site Visit

Schools under consideration to be designated as a Governor's STEM School will be contacted to schedule a site visit in April

Considerations When Planning a Site Visit

❑ A visit will last about an hour
❑ Structure the visit as much as possible to highlight what is written in your application
❑ Allow time to visit multiple classrooms and multiple subject areas
❑ Allow time for visitors to speak briefly with and ask questions of teachers and students
❑ Provide either a time for an overview at the beginning of the visit or a debrief at the end of the site visit

Nevada STEM Rubric

The rubric below contains the attributes of a STEM School and is divided into 7 sections:

1. **Curriculum Practices**
2. **Curriculum Integration**
3. **Learning Environment**
4. **STEM Instruction**
5. **STEM Integration**
6. **Leadership**
7. **Stakeholders**

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.

When completing your application and planning for your school visit you may use this rubric as a guide to highlight the STEM attributes at your site. The committee will use this rubric when reviewing your application and during school site visits.

Model

Established

Developing

Exploratory

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Schools that meet the criteria of a Model or Established 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 four ratings of "Developing" and no more than one rating of "Exploratory".

Model

Established

Developing

Exploratory

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Exploratory

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	Attribute	Exploratory	Developing	Established	Model
			The Developing STEM program describes a program that provides STEM-related experiences for students in specific classes or instructional settings as part of the daily schedule.	The Established STEM program describes a school where STEM-related experiences are provided for ALL students in the program in many instructional settings as part of the daily schedule.	The Model STEM program describes a school where STEM-related experiences are provided for ALL students within the program and are integrated in all instructional settings throughout the school day. This may be realized through a non- traditional daily schedule.
		The Exploratory STEM program describes a school program that has intermittent STEM-related opportunities for students.			
Curriculum Practices	*Degree of integration of the scientific, technological, engineering and mathematical practices.*	STEM practices may be integrated into curricular opportunities for some students with or without technology and engineering design integration.	STEM practices are partially integrated into some instructional settings for ALL students in the program as part of daily instruction with technology integration and minimal engineering design.	STEM practices are integrated into daily instruction for ALL students in the program with technology integration and engineering design.	STEM practices are fully integrated into daily instruction for ALL students in the program throughout the school day in a scientific, technological, engineering, and mathematical learning environment.
	Students use appropriate problem solving practices to develop multiple solutions and communicate their ideas both orally and in writing, with argumentative support.	Teachers guide students through engineering processes to discover problems have multiple solutions.	Students are supported by the teacher to apply content knowledge and compare multiple solutions using evidence.	Students are persistent in applying content knowledge from multiple subject areas to implement solutions and communicate them both written and orally.	Students are persistent in applying content knowledge from multiple subject areas to implement solutions and support argumentation.
	Ethical implications are part of the decision making process.	Teachers identify that ethical implications are a part of decision making.	Teachers encourage discussion of ethical implications among students.	Students explain ethical implications associated with global problems.	Classroom operations and student work clearly consider ethical implications.

Category	Attribute	Exploratory	Developing	Established	Model
Curriculum Integration	*Degree of integration of STEM content within classroom instruction with non-STEM content areas such as Art, PE, English Language Arts, Social Studies, and Health.*	STEM and non-STEM content may be integrated into curricular opportunities for some students with or without technology and engineering design integration.	STEM and non-STEM content is partially integrated into some instructional settings for ALL students in the program as part of daily instruction with technology integration and minimal engineering design.	STEM and non-STEM content is integrated into daily instruction for ALL students in the program with technology integration and engineering design.	STEM and non-STEM content is fully integrated into daily instruction for ALL students in the program throughout the school day in a scientific, technological, engineering, and mathematical learning environment.
Learning Environment	*Degree of fair and equitable access to a STEM-related experience for ALL students in a culture that is welcoming, stimulating, and nurturing.*	STEM-related experiences are equitable, accessible and are partially integrated into instruction for ALL students in a welcoming environment.	STEM-related experiences are equitable, accessible and are integrated into instruction for ALL students in a welcoming and stimulating environment.	STEM-related experiences are equitable, accessible and are integrated into instruction for ALL students in a welcoming, stimulating and nurturing environment.	STEM-related experiences are equitable, accessible and are fully integrated into instruction for ALL students in a welcoming, stimulating and nurturing environment.

Category	Attribute	Exploratory	Developing	Established	Model
STEM Instruction	*Degree in which teachers are facilitators of independent student learning, providing high quality cognitive tasks and higher- level questioning during a STEM- related experience.*	Teachers guide STEM-related learning opportunities offered to students with minimal independent and interdependent student learning that include a small number of high-level cognitive tasks and multi- level questioning.	Teachers guide STEM-related learning opportunities offered to students in group situations with limited independent and interdependent student learning that includes some high-level cognitive tasks and questioning.	Teachers facilitate STEM-related learning opportunities offered to students in group situations with greater independent and interdependent student learning that includes high-level cognitive tasks and multi-level questioning.	Teachers are facilitators of collaborative groups in STEM-related learning experiences with independent and interdependent student learning that includes high-level cognitive tasks and multi- level questioning.
	Students work collaboratively to solve engineering problems.	Teamwork in the classroom takes place weekly, team roles are not defined.	Teams exhibit evidence of defined roles.	Students exemplify cooperative teamwork daily.	Student teams design and evaluate solutions to age appropriate difficult and unfamiliar problems.
	Students will participate in a STEM program that is recognized and assessed at the local/state/ national levels	Students are not evaluated through varied assessment in specific STEM- learning environments on school / state / nationwide level.	Some students are evaluated through varied assessment in specific STEM- learning environments on school / state / nationwide level.	A majority of students show some growth through varied assessment in STEM-learning environments on school / state / nationwide level.	All students show significant growth through varied assessment in STEM-learning environments on school / state / nationwide level.
STEM Integration	*Teachers and students recognize the Importance of curriculum (curricular) choices to future STEM career development and preparation.*	Teachers and students understand appropriate course selection will help prepare students for opportunities in a STEM career.	Students recognize a need for educational and STEM career goals.	Teachers help students identify STEM courses of study as possible routes for their own educational development.	Students identify possible STEM career goals and possible educational pathways to reach the goals.
	Students understand and find solutions to local and global problems within the community.	Teachers identify local and global problems and their relationship to the community.	Teachers explain how local and global problems impact the community.	Students understand how the community can solve local and global problems.	Students explain multiple-solution approaches to a variety of local and global problems.

Category	Attribute	Exploratory	Developing	Established	Model
Leadership	*Degree in which administrators support STEM- related experiences within the school such as scheduling, funding, teacher time for collaboration, and opportunities for professional learning.*	Administrators minimally support STEM-related experiences within the school to include collaborative time for teachers and STEM related professional learning opportunities.	Administrators partially support STEM-related experiences within the school to include collaborative time for teachers and STEM related professional learning opportunities.	Administrators mostly support STEM-related experiences within the school to include collaborative time for teachers and STEM related professional learning opportunities.	Administrators strongly support fully integrated STEM related practices in daily instruction within the school that includes collaborative time for teachers and STEM related professional learning opportunities.
	Administration and teachers provide experiences for STEM related career awareness.	Administration and teachers identify opportunities to collaborate with the local industry and community.	Administration and teachers collaborate with the local industry and community to provide interactions with students	Administration and teachers apply collaborative principles to form industry and community partnerships.	Administration and teachers encourage experiences for students both outside the classroom and in the classroom to develop STEM practices and related career awareness opportunities.
Stakeholders	*Degree of parent/guardian engagement and STEM partnerships ' collaboration, in support of the STEM related experience within the school and/or classroom.*	Parents/ Guardians minimally participate in some STEM related experiences and/or a STEM partner occasionally collaborates with teachers concerning STEM related experiences.	Parents/ Guardians sometimes participate in some STEM related experiences and/or a STEM partner collaborates with teachers concerning some STEM related experiences.	Parents/ Guardians usually participate in STEM related experiences and/or STEM partner(s)usually collaborate with teachers concerning STEM related experiences.	Parents/ Guardians actively participate in STEM related experiences and STEM partner(s) actively collaborate with teachers in STEM related experiences.
	Degree of STEM partnerships with community, industry, business, higher education, informal education, outdoor education, or afterschool programs.	School has a STEM partner that occasionally assists with some STEM related activities.	The school has STEM partner(s) that sometimes support STEM related activities in specific classrooms.	The school has STEM partner(s) that often support STEM related classroom experiences.	The school has STEM partner(s) that actively support a STEM-centered school setting.