Nevada STEMList Rubric

The Nevada STEMList Rubric describes research-based attributes of a high-quality STEM program. For the purposes of this rubric, a STEM program is defined as a planned experience, or series of experiences, intended to develop participants' STEM identities, STEM understanding, awareness of STEM opportunities and/or STEM skills. Examples of STEM programs include, but are not limited to: camps, ongoing library STEM programming, extra-curricular clubs, and more. This rubric can be used by STEM program providers or designers to self-evaluate and develop program goals.
Note: Schools and teachers can use the Nevada STEM Framework to learn more about the attributes of high-quality STEM schools. Learn more at OSIT.nv.gov.

The rubric is organized into three sections: 1) A Focus on Underrepresented Students, 2) Nevada-Specific Attributes, and 3) High-Quality STEM Intruction and Program Design. Within each section are tables, each describing a different attribute. Each attribute table contains sub-attributes organized into the rows of the table. Reading left-to-right, the table describes the attribute at three tiers: Exploratory, Developing, and Model. Moving left-to-right, each tier progresses toward the highest level of the attribute.

This rubric was developed in 2021 by the Regional STEM Network High-Quality STEM Subcommittees as a step toward the regional ultimate outcomes. Specifically, this rubric supports the regions toward the intermediate outcome: "High quality STEM education programs with knowledgeable educators and engaged business partners exist in all counties, cities, and districts." Read more about the Networks and their strategic directions by visiting OSIT.nv.gov.
Nevada's STEM programs are encouraged to join the Nevada STEM Asset map by completing the survey linked on the Asset Map, which can be found at OSIT.nv.gov.

Users of this rubric should reach out to their Regional STEM Network for support in understanding the rubric and enhancing program attributes found in this rubric. Visit https://osit.nv.gov/STEM/Regional_STEM_Networks/ to connect with your region's STEM Network.

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1. A Focus on Underrepresented Students

1a. Equity in STEM

Description	Exploratory	Developing	Model
To what degree does the program provide evidence qualifying its effectiveness in successfully engaging and retaining learners from backgrounds* traditionally underrepresented in STEM? *Underrepresented backgrounds include female students, English Language Learners, racial and ethnic minorities, students in poverty, students from rural communities, and students with disabilities.	Equity is not a stated priority in the program's mission, vision, content or instructional strategies.	Equity is mentioned but is not a core priority in the program's mission, vision, content and/or instructional strategies.	Equity is clearly identified as a prominent area of focus in the program's mission, vision, content and strategies.
	The program offers an approach to engagement, instruction, and content development that works well primarily for students from backgrounds that are more likely to participate in STEM.	The program's strategies to engage and instruct underrepresented groups are present but are not evidence-based, are underdeveloped, or are not systemic.	The program has implemented evidence-based, specific strategies to recruit, relate to, engage, and instruct underrepresented students in STEM, including professional development for program staff.
	The program lacks evidence of successfully engaging and instructing learners from underrepresented backgrounds in STEM.	The program's success with engagement and instruction of underrepresented students is presented in anecdotes, is not systemic, or is the result of the efforts of a single person rather than strategies of the program itself.	The program provides substantial evidence from a rigorous evaluation that its equity strategies have successfully engaged and instructed students from groups underrepresented in STEM.

** For a deeper dive on Equity in STEM, please see the IM STEM Equity Program Evaluation Rubric linked here and at NAPEquity.org

Sample Artifacts that Demonstrate Evidence of Accomplishment:

- ☐ External evaluation data, specific to equity strategies
- ☐ Lesson plans with differentiated accommodations that specifically address STEM engagement and retention gaps
- ☐ Demographic participation and outcomes data
- ☐ Program description
- ☐ Mission/vision
- ☐ Student assessment data
- ☐ Outreach/marketing materials targeting learners from underrepresented backgrounds

1b. Cultural Identity and Student Interest			
Description	**Exploratory**	**Developing**	**Model**
To what degree does the program value the cultural interests and identities* of Nevada's diverse student population by making them essential aspects of the contextualized learning, thus resulting in participants' increased STEM identities? *including but not limited to ethnicity, race, gender, age, demographics	The program lacks an understanding of its participants or the cultural values of the local community or lacks evidence of a strategy to leverage these interests and identities in the context of program learning.	The program understands the need to reflect the cultural identities and interests of their participants, but the program's experiences do not consistently embody those values.	The program has leveraged feedback from community collaboration to design experiences that specifically respond to participants' cultural identities, values, and interests.
	It is unclear if collaboration with community-based partners or families occurs.	The program partners with community or families to enhance the program's alignment with participant cultural values and interests.	The program demonstrates how it collaborates with community- based partners and families in order to leverage these interests and identities in the context of the learning.

Sample Artifacts that Demonstrate Evidence of Accomplishment:

- ☐ Participant demographic data
- ☐ Program mission and vision
- ☐ Needs assessment data
- ☐ Curriculum examples highlighting inclusion of cultural interests and identities
- ☐ Nevada-specific demographic data reflected in the program materials
- ☐ Outreach/marketing materials
- ☐ Collaboration documentation, which may include outreach events, planning/vetting teams comprised on families and partners
- ☐ Nevada landscape analysis and research
- ☐ STEM identify pre- and post- assessment data

2. Nevada-Specific			
2a. Place-Based Instruction			
Description	**Exploratory**	**Developing**	**Model**
To what degree does the program leverage local Nevada places and situations?	The program does not address local Nevada places or situations.	The program's instruction references local Nevada place-based materials, data, phenomena, history, position, or issues but only does so in a superficial manner or the references are not a significant part of the program.	The program's instruction relies on local Nevada place-based materials, data, phenomena, history, positions, or issues.

Sample Artifacts that Demonstrate Evidence of Accomplishment:

- Curriculum materials, which may include objectives, lesson plans, overviews, pacing, and/or assessments, that reference Nevada
- Mission/vision statements
- Program description
- Research of Nevada used to develop the program
- Nevada-based partnerships and outcomes of the partnerships

2b. Alignment with Nevada's Workforce Needs			
Description	**Exploratory**	**Developing**	**Model**
To what degress does the program align with and support Nevada's needs and efforts in workforce development and skills aquisition? For further information about Nevada's Workforce needs, visit: DETR.nv.gov NevadaWorkforce.com/Projections OSIT.nv.gov GOED.nv.gov OWINN.nv.gov EDAWN.org (specific to Northern Nevada)	The knowledge and skills acquired through the program are generally applicable but not relevant to the careers or concerns of Nevada's future. i.e. the program focuses on careers or problems that are relevant in other places but not in Nevada.	The knowledge and skills acquired through the program are potentially relevant to the careers or concerns of Nevada's future, but the connection to Nevada is unclear.	The program clearly and effectively articulates how the knowledge and skills acquired by learners are directly related to identified in-demand STEM occupations and pathways in Nevada to those future careers.
	The program is duplicative of existing successful programs in the region or area where it seeks funding.	The program adds unique context, knowledge or skills, but the program does not specifically address STEM program gaps or outcomes as outlined in the Nevada STEM Network Strategic Directions.	The program uses the Nevada STEM Network Asset Map and Regional Strategic Directions to identify STEM program gaps, and describes how the program adds important new context or skills that are relevant to Nevada.

Sample Artifacts that Demonstrate Evidence of Accomplishment:

- Curriculum materials, which may include objectives, lesson plans, overviews, pacing, and/or assessments, that reference Nevada
- Program overview
- Supplemental resources
- Nevada needs in reference to the Nevada STEM Network Asset Map
- Evidence of alignment to Nevada STEM Network Strategic Directions

2c. Replicability			
Description	**Exploratory**	**Developing**	**Model**
To what degree can the program structure be replicated (repeated, extended, or scaled) across Nevada's varying communities, districts, and regions?	The program is unable to convincingly articulate how it might be repeated, extended, or scaled to differing communities and/or populations. The program's success may be tied to a specific facility, event, or site due to unique resources, personnel, or other characteristics.	The program describes potential for success in repeating, extending, or scaling the program structure in differing communities and/or populations, but is unable to provide specific guidance for replication.	The program provides specific guidance and/or convincing evidence it can be repeated, extended, or scaled across differing communities and/or populations, and provides support to educators, families, and other implementers.

Sample Artifacts that Demonstrate Evidence of Accomplishment:

- Scalability plans or toolkit
- Landscape analysis
- Plan for site differentiation
- Analysis of potential challenges and opportunities in the Nevada landscape
- Letters of support from Nevada organizations, communities, districts, etc.
- Program alignment with current Nevada offerings
- Partnerships in diverse areas, or research from partners regarding the needed program adjustments

2d. Partnerships			
Description	**Exploratory**	**Developing**	**Model**
To what degree does the program leverage local partnerships to develop and enhance participants' experiences?	The program understands the value it adds to the community, but has not yet developed formal partnerships or roots in the community.	The program has begun developing relationships with local STEM partners or sponsors, or has employees in the area who market and support the program.	The program has specific and explicit commitments from a diverse set of local partners, such as business and industry, education, and the community that provide funding, STEM expertise, and knowledgable STEM volunteers. Or the program provides evidence that local partners have committed to using or growing the program, or enhance STEM aspects of the program.

Sample Artifacts that Demonstrate Evidence of Accomplishment:

- ☐ Interest or partnership letters describing commitment
- ☐ Reports demonstrating outcomes of existing partnerships
- ☐ Contracts or agreements with partners
- ☐ Examples of past partnerships and the outcomes

3. High-Quality STEM Instruction and Program Design			
3a. Real-World Application			
Description	**Exploratory**	**Developing**	**Model**
To what degree do the program's learning goals and activities support student-driven explanations or development of solutions around anchoring phenomena, real-world contexts, or Nevada's industries?	It is unclear how the program's learning goals and activities help students build on prior experiences and apply learning to real-world phenomena or current and local problems.	Some of the learning goals and activities center on students explaining real-world phenomena or developing solutions to current and local problems using the practices from STEM education fields. Learning contexts are often relevant to participants' cultural identity and interests. If problem-solving or phenomena are present, they are not authentic, or are connected at the end of learning.	All learning goals and activities depend on participants explaining real-world phenomena or developing solutions to current and local problems using the practices from STEM education fields. Learning contexts are consistently relevant to participants' cultural identity and interests. Phenomena and authentic problem-solving drives the learning.
	The program's experiences focus on one topic that does not provide opportunities for enrichment and/or does not include interdisciplinary contexts.	The program enriches participant experiences through complex, interdisciplinary real-world contexts.	The program enriches participant experiences through complex, interdisciplinary real-world contexts. The program designs experiences to help students make implicit and explicit connections across disciplines.

Sample Artifacts that Demonstrate Evidence of Accomplishment:

- ☐ Curriculum materials which may include objectives, lesson plans, overviews, pacing, and/or assessments
- ☐ Program or unit descriptions
- ☐ Documentation of partnerships with Nevada's industries, including flyers, sponsorships, letters of support, etc.

3b. Nevada Academic Content Standards (NVACS) Alignment			
Description	**Exploratory**	**Developing**	**Model**
NVACS-Aligned To what degree does the program focus on mastery of specific grade-level NVACS? *Note: this attribute applies to programs occurring as part of the instructional formal school day.*	The program identifies an exhaustive list of standards that the lessons cannot effectively address, showing a misinterpretation of the standards.	The program is selective in the standards it identifies for the lessons, but the lessons do not always effectively move students toward mastery of the identified standards.	The program demonstrates a clear understanding of the complexity within NVACS, and lessons are designed to move students toward mastery of NVACS.

Sample Artifacts that Demonstrate Evidence of Accomplishment:

- Curriculum materials which may include objectives, lesson plans, overviews, pacing, and/or assessments
- Program or unit descriptions
- Standards alignments and crosswalks
- Sample assessments
- Assessment data

3c. STEM Workforce Skills			
Description	**Exploratory**	**Developing**	**Model**
To what degree does the program develop participants' soft skills, interpersonal skills, and habits of mind that prepare them for success in Nevada's STEM workforce.	If participants use STEM workforce skills, such as collaboration, communication, innovative thinking, and grit, it's by happenstance, or the program focuses on developing a single STEM workforce skill in isolation.	The program requires participants regularly use STEM workforce skills, such as collaboration, communication, innovative thinking, and grit to solve problems.	STEM workforce skills, such as collaboration, communication, innovative thinking, and grit, are embedded in authentic problem solving experiences.

Sample Artifacts that Demonstrate Evidence of Accomplishment:

- ☐ Curriculum materials, which may include objectives, lesson plans, overviews, pacing, and/or assessments
- ☐ Sample formative assessments, rubrics
- ☐ Participant testimonials
- ☐ Sample participant work
- ☐ Feedback to participants

3d. Student Experience			
Description	**Exploratory**	**Developing**	**Model**
To what degree do students lead and make decisions about the learning, learn through hands-on experiences, and apply learning in authentic ways?	Participants make observations and ask questions, but may not engage in finding solutions to problems.	Participants define and solve problems given to them by facilitators.	Participants identify and define problems, with strategic support from the facilitator when appropriate.
	Students may experience hands-on learning, but focus is on construction rather than meaning-making.	Students engage in meaning-making by experiencing phenomena, conducting investigations, and exploring problems.	Students engage in meaning-making by experiencing phenomena, conducting investigations, and exploring problems that mirror tasks a STEM professional encounters in their jobs.
	Experiences are controlled by the program facilitator, and students follow along a structured learning path.	Experiences are guided by the program facilitator, and students have some voice and choice in their learning path.	Experiences are guided or open-ended, and students have significant voice and choice in their learning path.

Sample Artifacts that Demonstrate Evidence of Accomplishment:

- Curriculum materials, which may include objectives, lesson plans, overviews, pacing, and/or assessments, that reference Nevada
- Mission/vision statements
- Program description
- Samples of participants' iterative work
- Sample rubrics

3e. Innovation Culture			
Description	**Exploratory**	**Developing**	**Model**
To what degree does the program utilize discovery, creativity, and iteration to encourage continuous learning, acceptance of risk, managed failure, idea validation, and personal accountability? Note: Creativity in this context can be described as the ability to generate new-to-the-participant ideas, connections between ideas, and ways to solve problems. Creativity relies on curiosity, questioning, design thinking, and openness to new situations.	Though creativity practices are referenced by the program (curiosity, questioning, open minds, assumption examination, options exploration, judgment suspension, risk taking, learning celebration and embracing failure), the program lacks structured opportunities for participants to engage in such practices.	The program is centered on discovery. The program incorporates strategies and protocols that allow participants to engage in creativity practices, but the program does not center around creativity and iteration.	The program consistently utilizes strategies and methods that require participants to engage in creativity practices to explore a scenario or problem, ideation, and develop iterative solutions.
	(Applicable to programs involving engineering opportunities:) The program references engineering practices and the engineering design process.	(Applicable to programs involving engineering opportunities:) The program is governed by engineering practices and the engineering design process.	(Applicable to programs involving engineering opportunities:) The program supports participants in developing their own engineering identities through structured use of engineering practices and the engineering design process.

Sample Artifacts that Demonstrate Evidence of Accomplishment:

- Curriculum materials, which may include objectives, lesson plans, overviews, pacing, long-range planning, and/or assessments
- Program description
- Samples of participants' iterative work
- Sample rubrics

3f. Assessment			
Description	**Exploratory**	**Developing**	**Model**
To what degree does the program incorporate formative assessment strategies and tools, based on cognitive and/or cultural models, in addition to Data-Driven Decision Making (DDDM), to support participants and facilitators throughout the program?	Assessments measure participant content knowledge and skills.	Assessments measure participant STEM identity, interest, and motivation in addition to content knowledge and skills.	Assessments measure participant STEM identity, interest, and motivation in addition to content knowledge and skills. Facilitators adjust learning experiences, based on assessment data, to shape an enduring STEM identity.
	Facilitators rely on worksheets and paper-and-pencil assessments to evaluate participant understanding, growth and/or program outcomes.	Facilitators rely on observations and interviews taken while participants engage in program activities to evaluate participant understanding, growth and/or program outcomes.	Facilitators rely on observations and interviews taken while participants engage in authentic learning experiences to evaluate participant understanding, growth, and/or program outcomes.
	Participants receive feedback from assessments at the end of the learning experience.	Participants receive ongoing feedback from facilitators, peers, and potentially the experience itself.	Participants receive and apply ongoing feedback from facilitators, peers, and potentially the experience itself.

Sample Artifacts that Demonstrate Evidence of Accomplishment:

- ☐ Assessment plans, which may include pacing, samples, performance indicators, plans for differentiation based on assessment results, etc.
- ☐ Student assessment data
- ☐ Sample assessments
- ☐ Samples of participants' iterative work, including feedback from facilitators or peers
- ☐ Sample rubrics
- ☐ Goal setting templates/processes included in the program

3g. Sustainability			
Description	**Exploratory**	**Developing**	**Model**
To what degree does the program have strong community support, funding, and proven success toward its goals.	The program and organization have not yet demonstrated sustainability.	The program has not yet demonstrated sustainability, but the organization has a long-term track record of providing and sustaining high-quality programming.	The program and the organization have a long-term track record of providing and sustaining high-quality programming.

Sample Artifacts that Demonstrate Evidence of Accomplishment:

- Letters of commitment from partners or program users
- Budget and funding sources
- Impact data from the organization's other STEM programs

3h. Continuous Improvement			
Description	**Exploratory**	**Developing**	**Model**
To what degree does the program utilize formal evaluations to identify strengths and deficiences, and make positive changes.	The program has not completed a comprehensive formal evaluation.	The program has completed a comprehensive evaluation, but there is not ongoing evaluation, OR the program has ongoing evaluation of only specific program aspects.	The program regularly evaluates program content, engagement, and progress toward goals, and shows growth in each area.
	The program has not analyzed evaluation data.	The program has identified program strengths and deficits based on evaluation data, but has not effectively acted on the data analysis.	The program identifies program strengths and deficits based on evaluation trends. The program demonstrates how it has made positive changes based on evaluation data.

Sample Artifacts that Demonstrate Evidence of Accomplishment:

- Evaluations
- Evaluation Results
- Surveys
- Reflections
- Evaluation contracts from outside organizations for pending evaluations

3i. Program Support			
Description	**Exploratory**	**Developing**	**Model**
To what degree does the program support staff, program facilitators, and program users?	Program staff are trained in how to facilitate the program.	Training is used to build program staff (and volunteer) capacity, and includes STEM best practices.	Ongoing, strategic training is used to build staff (and volunteer) capacity in STEM best practices.
	The curriculum or program does not provide sufficient user support.	The curriculum or program provides training to users regarding how to implement the materials.	The curriculum or program provides ongoing training to users regarding how to implement the materials, as well as STEM best practices.
If the program itself is a professional development program, to what degree does it demonstrate attributes of high-quality professional development? For more information on such attributes, visit: LearningForward.org DOE.NV.gov	PD is designed around a component of STEM but does not embrace STEM best practices.	PD is based on STEM Best Practices is the focus of the PD but does not engage the participant in actively	PD embodies STEM Best Practices described throughout this rubric.

Sample Artifacts that Demonstrate Evidence of Accomplishment:

- Professional development plan which may include documentation of attendees, schools, districts or agencies, agendas, frameworks, schedules, outcomes, etc.
- Current and reputable teaching and learning research references
- Identification of best practices within the program or curriculum materials, which may include lesson plans, plans for differentiation, plans for progress monitoring, etc.
- Curriculum guides
- Training guides