CRACKING THE CODE ON STEM

A People Strategy for Nevada's Economy

Establish a Nevada P-12 STEM Challenge Grant Program

Problem

Throughout the state of Nevada, teachers, principals, district administrators, and other interested individuals are working to incorporate STEM education into the existing curriculum. Their diligent efforts, implemented in many cases with very limited resources, have established a small number of "islands of excellence" that are producing strong outcomes at all grade levels. However, these programs frequently remain one-off efforts with little reach beyond where they originate. Meanwhile, other Nevada schools and districts interested in adopting STEM programming struggle with severe financial constraints. They can afford neither to experiment nor to implement a proven model. Absent a mechanism for supporting the development and scaling of best practices in P-12 STEM education, many Nevada students will continue to find STEM programming difficult if not impossible to access.

Recommendation

To help ensure that many more Nevada students receive quality STEM education, the state should establish a competitive grant program that works through the regional development authorities (RDAs) to fund entities that seek to develop and implement innovative approaches to P-12 STEM education. Such a program would provide needed support for efforts to create new STEM education programs and, perhaps more importantly, to scale proven STEM education initiatives developed either within or outside the state. Meanwhile, a one-to-one private- and/or philanthropic-sector match requirement would allow the state to leverage and channel limited public funds for greater return on investment. In addition, having RDAs make final determinations on grant awards for their regions will serve to strengthen these authorities, which are key actors in Nevada's economic diversification efforts.

Eschewing prescriptive, top-down approaches, the Nevada P-12 STEM Challenge would affirm and inspire bottom-up creative problem-solving that is rooted in cross-sector collaboration and attentive to the particular needs of each region. At the same time, by stipulating certain elements of program design and encouraging efforts to scale proven programs, the competition would provide a significant nudge toward strong and consistent program development and

adoption of best practices that support the aims of the proposed Nevada STEM Champion's strategic plan.

Implementation Specifics

The Nevada P-12 STEM Challenge would provide two types of grants:

- **Experimentation Grants** would provide one-time grants to support the development and implementation of innovative approaches to STEM education. From the creation of novel partnerships with area firms to the design and use of exciting new STEM curriculum in the classroom, these grants would let schools and districts experiment with how best to provide STEM education to their students. Each grantee would be required to secure a one-to-one match (cash and/or in-kind) from the private sector and/or philanthropic organizations. The grants would range in value up to $100,000, and grantees would have two years to spend down funds received.

  Eligible activities could include strategies to bolster student success in STEM, efforts to boost student interest in STEM fields and careers, outreach to underrepresented populations, development and implementation of STEM curriculum, creation of bridge programs between elementary and middle schools or middle and high schools, afterschool programs, provision of professional development for teachers and/or administrators, and strategies to incorporate STEM awareness into early childhood education.

  Successful applications will propose activities that could be replicated and scaled beyond the initial pilot area. Proposals should set out clear performance metrics and a transparent system for tracking progress on these goals and implementing course corrections as needed.

- **Scaling Grants** would provide one-time grants to support the scaling of proven approaches to STEM education. Eligible activities could include curricula acquisition, purchase of software licenses for blended-learning courses, efforts to bolster interest in STEM among students, professional development for teachers and/or administrators, and expansion of existing STEM programs to other schools in the district. As with the Experimentation Grants, each Scaling Grant recipient would be required to secure a one-to-one match (cash and/or in-kind) from the private sector and/or philanthropic organizations. These grants would range in value up to $250,000, and grantees would have two years to spend down funds received.

  Successful applications will seek to bring activities with demonstrated track records for improving student outcomes in STEM fields (as shown through independent evaluations) to new or additional locations in the state. Activities to be scaled must be grounded in current research on best practices in STEM education. Preference will be given to applications seeking to replicate strong programming that has already been successfully scaled in other locations.

  Proposals should set out clear performance metrics and a transparent system for tracking progress on these goals and implementing course corrections as needed.

Applicants to the Nevada P-12 STEM Challenge would also be eligible to apply for additional funds to facilitate capital investment in equipment critical to STEM education. These one-time awards would range in value up to $1 million and would require at least a one-to-one cash and/or in-kind match from the private sector and/or philanthropic organizations.

Decisions on grant awards will be made by the RDA of the region in which the applicant is located. To ensure that the benefits of P-12 STEM Challenge investments reach the greatest number of Nevada students, funds will provided by the state to the RDAs in a manner that is roughly proportional to the number of students served by each school district. The RDAs will use a points system to score each application, with awards going to those applicants with the highest scores.

For both types of grants, successful proposals will include:

- A designated lead entity that will head up grant-related activities. Any relevant organization may serve as lead entity, regardless of sector affiliation (educational, public, private, nonprofit, philanthropic)
- Strong regional engagement and leadership
- Program design rooted in quantitative data on educational outcomes and focused on producing clear benefits for the greatest number of students
- Cross-sector collaboration that brings together schools, school districts, postsecondary educational institutions, area firms and industry groups, nonprofit social service organizations, and industry sector councils as appropriate. Priority will be given to those applications that bring together multiple educational institutions, including partnerships between P-12 and postsecondary institutions
- Smart leveraging of existing or additional state and federal funding
- Replicable model(s), so as to allow possible transfer to other regions
- Well-defined metrics and performance management and evaluation mechanisms to ensure that decisionmaking is evidence-based and accountability is clear. Evaluation practices should be culturally and contextually responsive, taking into account the distinctive demographic, developmental, academic, and social characteristics of the target participant group

For its part, in addition to providing funds to RDAs for award to successful applicants, the state will:

- Work with regions to align relevant state-level programs to support the efforts of successful applicants
- Facilitate the sharing of best practices developed by grantees
- Set out required and recommended performance metrics to inform regional efforts to track progress on program development and/or implementation

- Provide technical assistance to applicants during the proposal process
- Connect grant recipients to technical assistance during the grant period

Budget Implications

Funding the Nevada P-12 STEM Challenge at $5 million ($1 million for Experimentation Grants, $4 million for Scaling Grants) would provide a clear signal of the state's desire to support access to strong, proven STEM education for all Nevada students. In addition, this level of funding would buy a lot of creative, high-quality STEM education programming. When combined with the required matching funds from the private sector and/or philanthropies, this program would provide up to $10 million for investments in STEM education in the state ($2 million for Experimentation Grants, $8 million for Scaling Grants). Funding levels could be reassessed in subsequent years based on demand.

References

Massachusetts STEM Pipeline Fund @Scale Project Initiative. 2012. "Request for Proposals 2012." Available at http://mnreb.org/documents/ScaleRFP.pdf.

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