STEM Equity Program Evaluation Rubric
PROMISE Program
(Providing Opportunities for Mathematics and Science Enrichment)
Summary of Findings
January 19 – February 19, 2021

Executive Summary

The STEM Equity Program Evaluation Rubric is designed to help program administrators, designers, implementers and funders identify the critical attributes of a STEM program to determine the degree to which it is inclusive and supports access and success for students who historically have not engaged in STEM. Serving "all students" does not ensure equity, so considering how each of these attributes impacts underrepresented students in STEM and addressing those barriers will create a STEM learning environment where every student can succeed (NAPE, 2019).

Nine members of IMSA's PROMISE program completed the rubric from Tuesday, January 19, 2021 through Friday, February 19, 2021. Below is a summary of the results.

Summary of Findings

- The two highest rated attributes among the PROMISE program are "STEM Content" and "Instruction," as indicated by the nine members completing the rubric.

- Based on the rubric findings from nine members of the PROMISE program, the two attributes that have the most potential for future growth are "Capacity" and "Career Connection."

- Many ratings of all eight attributes were mixed and tended to hover between the categories of developing and established.
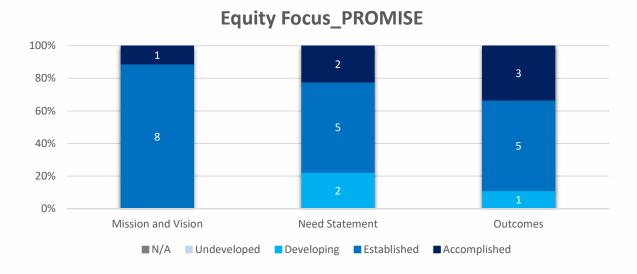
Next Steps

The results from the STEM Equity Program Evaluation Rubric will inform members of the PROMISE program how well their program meets the standards of equity in STEM education and guide their team to design strategies to grow toward "accomplished" in each of the eight attributes.
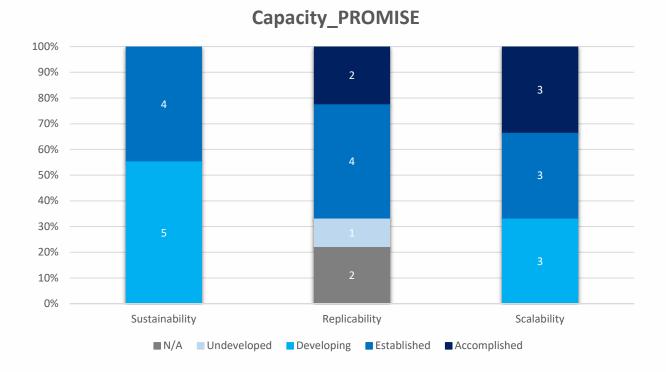
Findings

Equity Focus

Clearly stated equity in STEM mission and vision, need statement, and history of positive outcomes that explicitly impact underrepresented groups.

Equity Focus_PROMISE

- A majority of the PROMISE members completing the rubric felt that they are currently established in the subarea of "mission and vision."
  - Established "Mission and Vision" – Equity focus is offered within the system and incorporated in some strategies with consistent review for improvement.

- Some members of the PROMISE program completing the rubric indicated that they are currently established in the subareas of "need statement" and "outcomes." However, others felt that these areas were either still developing or were already accomplished.
  - Developing "Need Statement" – Equity focus of the target population is identified and needs are not validated through analysis.

  - Established "Need Statement" – Equity focus on identified target population needs as determined through subgroup analysis or analysis of difference.

  - Accomplished "Need Statement" – Equity focus on identified target population needs as determined through subgroup analysis and analysis of difference.

  - Developing "Outcomes Impact Targeted Underrepresented Groups" – Equity focus reflects unexpected outcomes when an intervention is applied.

  - Established "Outcomes Impact Targeted Underrepresented Groups" – Equity focus reflects some observed outcomes when an intervention is applied and is not validated through assessment.

  - Accomplished "Outcomes Impact Targeted Underrepresented Groups" – Equity focus reflects expected outcomes when an intervention is applied and is validated through applicability assessment.

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Capacity

Capacity to be sustainable, replicable, and scalable with diverse students in diverse communities.
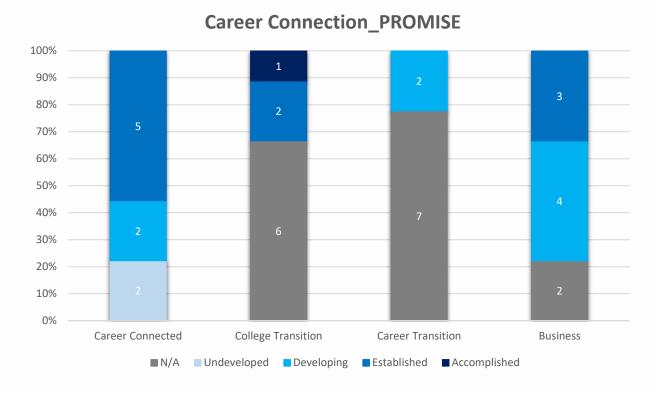
Capacity_PROMISE

- For the subarea of "Sustainability," the members of the PROMISE program were split almost evenly between developing and established.
  - Developing "Sustainability" – Program has been successful in obtaining multi-year funding from an external source (donor, Foundation, federal/state funds).

  - Established "Sustainability" – Program has a steady source of income from an external source and has some internal revenue generating capacity.

- Several of the PROMISE members completing the rubric agreed that they are established in the subarea of "replicability," while others responded otherwise.
  - Developing "Replicability" – Program provides support for replicating on an ad hoc basis or is so expensive to not be accessible by low resourced communities. Fidelity of implementation is weak or unproven.

  - Established "Replicability" – Program has the potential to be replicated and has some support for those wanting to implement. Fidelity of implementation is unproven especially in diverse communities.

  - Accomplished "Replicability" – Program is replicable to other communities and populations and provides support to new sites. There is a strong fidelity of implementation among sites.

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- For the subarea of "scalability", the members of PROMISE were split evenly among the three categories of developing, established, and accomplished.
  - Developing "Scalability" – A process for scaling the program is offered but it is not well documented.

  - Established "Scalability" – Most elements of the program are well documented and some tools and resources are available at a low cost.

  - Accomplished "Scalability" – Program is well documented and includes tools and resources that are easily accessible and free. The program has proven it is able to scale over time.

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Career Connection

Students are connected to their future college and career goals and engage with business, industry who provide diverse STEM role models and work-based learning opportunities.
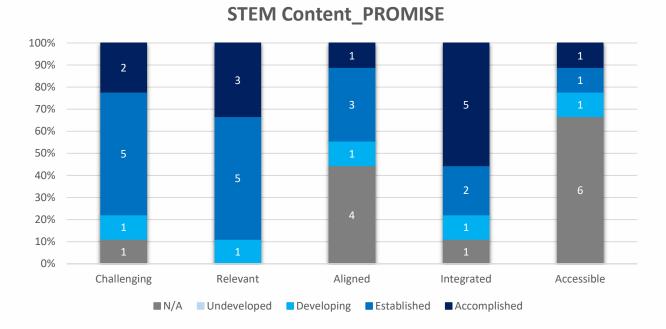
Career Connection_PROMISE

- The members of PROMISE completing the rubric reported a mixture of responses for the subarea of "career connected learning" ranging from undeveloped to established.
  - o Undeveloped "Career Connected Learning" – Student learning is rarely connected to future STEM careers. Career connections mostly present examples that are typical with the industry. Student success in STEM careers is not explicitly a part of STEM learning. Information about STEM education pathways to careers is not systematically or readily available, especially to underserved communities.

  - o Developing "Career Connected Learning" – Student learning is linked to STEM careers during special events or STEM career days. Career connections often make mention of underrepresented groups in STEM careers but profiles lack depth or mainly focus on examples from traditional groups. Teachers understand and explain that people from all backgrounds succeed in each industry. School staff make information about STEM education pathways to careers available.

  - o Established "Career Connected Learning" – Key concepts throughout the year are connected to STEM careers. Career connections profile some underrepresented groups in some STEM industries. Students and their families understand that people from all backgrounds succeed in each STEM industry. School staff invite students and families to identify and pursue STEM education pathways to chosen careers.

- Many PROMISE program leaders indicated that the subarea of "college transition" was not applicable, although some felt that it was established or accomplished for the PROMISE program.
  - Established "College Transition" – College transition services are available through the program, widely promoted, and readily available to students who choose to participate through their own motivation. Most services are free. STEM majors are encouraged to those who are high academic performers.

  - Accomplished "College Transition" – Diverse students are actively encouraged and supported to pursue a STEM major. Programs exist that support first generation college-bound students. College visits, both at the program and on-campus, are accessed by diverse students. Services to assist special population students to apply and prepare for college are available for free.

- A majority of PROMISE program members felt that subarea of "career transition" was not applicable, while two members reported that it was developing for the PROMISE program.
  - Developing "Career Transition" – Career transition services are few and inconsistently implemented across various levels. Available services rely on volunteers or external providers outside the program/school.

- The members of PROMISE completing the rubric reported a mix of results between developing and established in the subarea of "business, industry engagement," while two members felt that this subarea was not applicable to the PROMISE program.
  - Developing "Business, Industry Engagement" – The school's business and industry engagement plan makes mention of equity but implementation efforts are inconsistent or lacking. The school provides some opportunities for students to see a diverse STEM workforce, such as assemblies or field trips, but opportunities for mentorship by diverse role models are lacking. The school's work-based learning program has a few employers with non-traditional workforces and makes some efforts to place some students in these situations. The school is aware it needs more diverse employer partnerships but recruiting them is a lower priority.

  - Established "Business, Industry Engagement" – Business and industry leaders from a wide variety of backgrounds are intentionally recruited to participate in school activities. The school provides most students with opportunities to meet and interact with mentors and role models that look like them. The school's work-based learning program has a wide variety of employer partners. Many students have work-based learning opportunities with diverse mentors and role models.

STEM Content

Challenging and relevant STEM content aligned with standards, integrated in the formal curriculum, accessible by diverse students and leads to college and career transition in STEM.

STEM Content_PROMISE

- A large majority of PROMISE program members completing the rubric agreed that they are either established or accomplished in the subarea of "challenging STEM content." One respondent felt that this subarea was still developing, while another reported that it was not applicable to PROMISE.
  - Developing "Challenging STEM Content" – STEM content is available with differentiation of rigor at some levels.

  - Established "Challenging STEM Content" – STEM content is rigorous for all students with varied differentiation of pathways to pursue STEM learning.

  - Accomplished "Challenging STEM Content" – STEM content is appropriately rigorous for each student and includes multiple pathways to pursue STEM learning (developmental, on grade-level, accelerated, AP and dual credit).

- Most members of the PROMISE program responded that the program is established in the subarea of "relevant STEM content." One member felt that the program's relevant STEM content was still developing while some others indicated that relevant STEM content was accomplished.
  - Developing "Relevant STEM Content" – STEM content is the same for most students with some cultural relevance used inconsistently across levels."

  - Established "Relevant STEM Content" – Program-wide efforts are being made to offer culturally relevant STEM content with inconsistent implementation.

  - Accomplished "Relevant STEM Content" – STEM content is culturally relevant to every student and includes application that inspires learning. Content has been reviewed for bias and uses examples, images, problems, projects and sheros relevant to the students engaged.

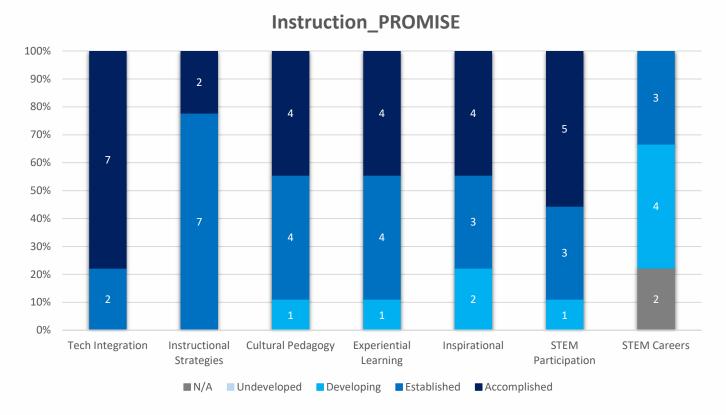**ILLINOIS MATHEMATICS AND SCIENCE ACADEMY**
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- With regard to STEM content that is "aligned with standards," members of the PROMISE program were divided in their responses ranging from developing to accomplished. Four individuals felt that the subarea "aligned with standards" did not apply to the PROMISE program.
  - Developing "Aligned with Standards" – STEM content is determined by teachers with some alignment with standards in some courses. Equity gaps in assessments are significant for some underrepresented student groups in STEM.

  - Established "Aligned with Standards" – Program-wide efforts are being made to align all STEM content with state and federal standards with inconsistent implementation. Equity gaps in assessments exist for some student groups.

  - Accomplished "Aligned with Standards" – STEM content is aligned with state and federal standards that support rigorous and comprehensive knowledge and skill development as shown by no equity gaps in student performance on state assessments.

- A majority of PROMISE program leaders indicated that the program was accomplished in the subarea of "integrated in the formal curriculum," although the responses were once again mixed.
  - Developing "Integrated in the Formal Curriculum" – STEM content is integrated in some courses and programs at the discretion of the teacher.

  - Established "Integrated in the Formal Curriculum" – Program/School-wide efforts are being made to integrate STEM across the curriculum with inconsistent implementation.

  - Accomplished "Integrated in the Formal Curriculum" – STEM content is formally supported through integrated curriculum, co-teaching, STEM thematic instruction, and professional development.

- Many members of the PROMISE program completing the rubric indicated that "accessible" STEM content was not applicable, while others indicated a range of responses from developing to accomplished.
  - Developing "Accessible" – Upper level STEM courses are inconsistently available. Algebra 1 is available in the 8th grade only. STEM related CTE pathways are limited at the middle and high school level. Few modifications or support services are available for special population students.

  - Established "Accessible" – Upper level STEM courses are available in most high schools and Algebra 1 is available in most middle schools at the 7th and 8th grade. Some student access certifications, endorsements, examinations, and licensures with few supports from the program/school. Modifications and limited support services are available for special population students.

  - Accomplished "Accessible" – A full sequence of STEM courses and a comprehensive CTE STEM program of study are offered at all levels and diverse students are completing them successfully. Certifications, endorsements, examinations and licensures are available and diverse students are supported to attain them. Modifications and support services are available for special population students.

Instruction

STEM instruction that integrates technology, utilizes multiple instructional strategies that are culturally relevant, experiential, results in the closing of equity gaps and inspires students to pursue more STEM course work or careers in STEM.

Instruction_PROMISE

Chart legend: ■ N/A ■ Undeveloped ■ Developing ■ Established ■ Accomplished

Values shown in chart:
- Tech Integration: Developing 2, Accomplished 7
- Instructional Strategies: Developing 7, Accomplished 2
- Cultural Pedagogy: Undeveloped 1, Developing 4, Accomplished 4
- Experiential Learning: Undeveloped 1, Developing 4, Accomplished 4
- Inspirational: Developing 2, Established 3, Accomplished 4
- STEM Participation: Developing 1, Established 3, Accomplished 5
- STEM Careers: N/A 2, Developing 4, Established 3

- A large majority of the PROMISE program team completing the rubric agreed that their program is accomplished the subarea of "technology integration."
  - o Established "Technology Integration" – Instruction includes some access to devices, broadband, and teachers who are qualified to facilitate technical opportunities to meet the diverse needs of students.

  - o Accomplished "Technology Integration" – Instruction includes reliable access to devices, broadband, and teachers who are qualified to facilitate technical opportunities to meet the diverse needs of students.

- Most of the PROMISE team members completing the rubric indicated that their program is established the subarea of "instructional strategies."
  - o Established "Instructional Strategies" – Instruction mostly supports meaningful learning that includes critical thinking, problem solving and higher-order exercises. Instruction utilizes some differentiation techniques to meet the needs of groups of diverse learners.

  - o Accomplished "Instructional Strategies" – Instruction avoids drill and practice and supports meaningful learning that includes critical thinking, problem solving and higher-order exercises. Instruction is differentiated to meet the needs of individual students and supports student innovation.

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- For the STEM instruction subareas of "culturally relevant pedagogy" and "experiential learning," PROMISE members indicated a mix of responses ranging from developing to accomplished.
    - Developing "Culturally Relevant Pedagogy" – Instruction focuses pedagogy to support academic achievement (learning and rigor) and does not build on the students' prior learning.

    - Established "Culturally Relevant Pedagogy" – Instruction often focuses pedagogy to support academic achievement (learning and rigor) expectations, which build on the students' prior learning.

    - Accomplished "Culturally Relevant Pedagogy" – Instruction focuses pedagogy to support academic achievement (learning and rigor) expectations, which build on the students' prior learning.

    - Developing "Experiential Learning" – Students exhibit some understanding without application of applied learning.

    - Established "Experiential Learning" – Students apply learning through meaningful experiences.

    - Accomplished "Experiential Learning" – Students critically construct knowledge and apply learning through meaningful experiences.

- Responses for the subareas of "inspirational and innovative" and "STEM course participation" were similar as most PROMISE team members agreed that these subareas were either established or accomplished, with some PROMISE members indicating that these subareas were developing.
    - Developing "Inspirational and Innovative" – Instruction promotes student creativity with limitations and constraints.

    - Established "Inspirational and Innovative" – Instruction encourages student creativity and innovation.

    - Accomplished "Inspirational and Innovative" – Instruction encourages students to create new and imaginative solutions to problem solving that inspires them to want to learn more in STEM.

    - Developing "STEM Course Participation" – Instruction makes limited connection to promote analytical learning.

    - Established "STEM Course Participation" – Instruction prepares students to test solutions and recognize learning potential.

    - Accomplished "STEM Course Participation" – Instruction prepares students to develop new strategies to leverage and apply analytical learning through testing solutions.
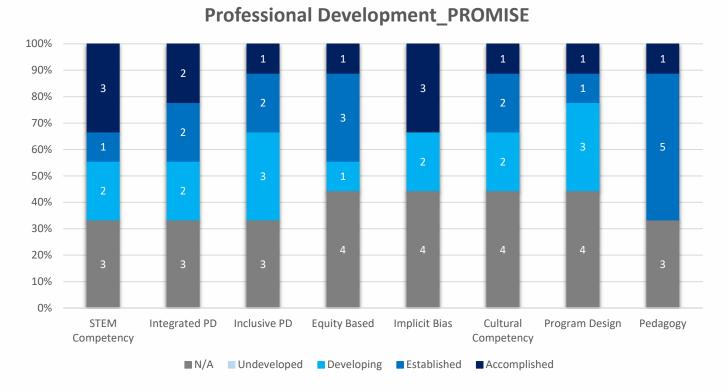
- In the subarea of "STEM majors and career trajectory," PROMISE members were divided among the categories of developing and established, while some felt that this subarea was not applicable.
  - Developing "STEM Majors and Career Trajectory" – Instruction includes limited introduction to what is required in a STEM major or career.

  - Established "STEM Majors and Career Trajectory" – Instruction introduces students to diverse STEM careers and provides information about what is needed to pursue further education in a STEM major.

Professional Development

Integrated and inclusive professional development that ensures faculty and staff STEM proficiency and equity, implicit bias, and cultural competency in program design and pedagogy.

Professional Development_PROMISE

- PROMISE program members completing the rubric had mixed responses, ranging from developing to accomplished, for the subareas of "STEM content competency" and "integrated professional development."
    - Developing "STEM Content Competency" – PD on STEM content proficiency is offered occasionally for some faculty and staff and some STEM faculty participate.

    - Established "STEM Content Competency" – PD on STEM content proficiency is available for all faculty and staff and a majority of the STEM faculty participate.

    - Accomplished "STEM Content Competency" – PD on building STEM content proficiency is available and required for all faculty and staff at all levels to ensure delivery of rigorous and integrated STEM content.

    - Developing "Integrated Professional Development" – PD on equity and inclusion strategies is available as a separate PD offering only.

    - Established "Integrated Professional Development" – PD on equity and inclusion strategies is offered separately and incorporated into some PD on other topics.

    - Accomplished "Integrated Professional Development" – PD on equity and inclusion strategies are the focus of all PD and is included in all PD offered regardless of topic.

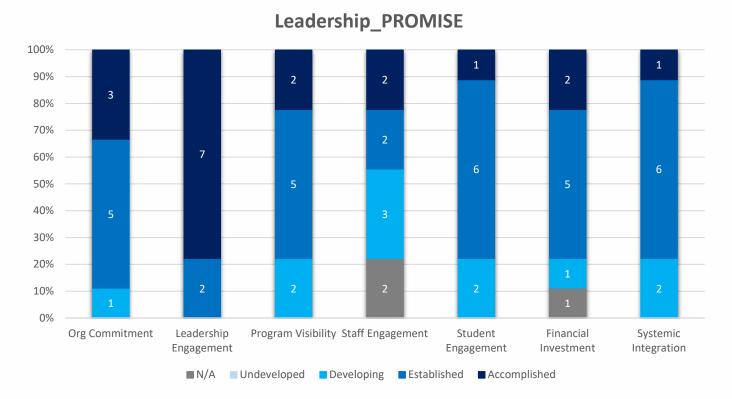**ILLINOIS MATHEMATICS AND SCIENCE ACADEMY**
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- Rubric responses for the subareas of "inclusive professional development" and "program design" were similar as some members of the PROMISE program reported these areas as developing.
  - Developing "Inclusive Professional Development" – Some PD includes a focus on inclusive practices to address diverse learner but is not available to all faculty and staff.

  - Established "Inclusive Professional Development" – PD addresses all aspects of diverse learners but is not required for faculty and staff at all levels of the organization.

  - Accomplished "Inclusive Professional Development" – PD addresses all aspects of diverse learners and is available and required for faculty and staff at all levels of the organization.

  - Developing "Program Design" – PD on STEM equity is only available to certain faculty and staff and is available in only one delivery method.

  - Established "Program Design" – PD on STEM equity is available to all faculty and staff but access is limited to traditional times and methods.

  - Accomplished "Program Design" – PD is inclusive of the diverse needs of the faculty and staff and has been made available to accommodate multiple learning styles and access.

- In the subarea of "equity-based training", the members of the PROMISE program indicated a mixture of rating ranging from developing to accomplished.
  - Developing "Equity-based Training" – Some PD on strategies to engage underrepresented groups in STEM is offered but not available to all faculty and staff.

  - Established "Equity-based Training" – PD on strategies to engage underrepresented groups in STEM is available but not required for faculty and staff at all levels of the organization.

  - Accomplished "Equity-based Training" – PD on strategies to engage underrepresented groups in STEM is attended by all faculty and staff.

- In the subarea of "implicit bias training," PROMISE members were split almost evenly between the categories of developing and accomplished, while some felt that this subarea was not applicable.
  - Developing "Implicit Bias Training" – Some PD on implicit bias is available but it is cursory and not available to all faculty and staff. Programs have not been reviewed for bias.

  - Accomplished "Implicit Bias Training" – All faculty and staff have participated in implicit bias training, are able to identify their own biases, have evaluated all program materials and activities for bias, and made every effort to ensure underrepresented groups success.

- PROMISE program members completing the rubric had mixed responses, ranging from developing to accomplished, for the subarea of "cultural competency training."
  - Developing "Cultural Competency Training" – Some PD on cultural competency is available but it is cursory and not available to all faculty and staff. Programs have not been reviewed for cultural relevance.

  - Established "Cultural Competency Training" – Cultural competency PD is available but not required or well attended. Some faculty and staff have incorporated cultural competency strategies into some aspects of the program.

  - Accomplished "Cultural Competency Training" – All faculty and staff have participated in cultural competency PD and have incorporated these principles into all aspects of the program's design and activities.

- A large majority of the PROMISE team members completing the rubric agreed that the program was established in the subarea of "pedagogy."
  - Established "Pedagogy" – PD on equitable pedagogy is available to all faculty and staff with no follow-up or evaluation of impact.

  - Accomplished "Pedagogy" – All faculty and staff have participated in PD on equitable instructional strategies and these practices have been incorporated into the program and found to be effective in closing equity gaps.

Leadership

Commitment from organization top leadership reflected by program visibility, staff engagement, student engagement, financial investment, and systemic integration.

Leadership_PROMISE

- For the subareas of "organizational commitment" and "program visibility," members from the PROMISE program reported a mixture of responses ranging from developing to accomplished.
  - Developing "Organizational Commitment" – The organization is committed to equity and is making efforts to operationalize it but not all leadership is on board or sees it as their responsibility.

  - Established "Organizational Commitment" – The organization explicitly promotes equity as an organizational priority and has operationalized it in some of its programs.

  - Accomplished "Organizational Commitment" – All aspects of the organization explicitly promote equity as an organizational priority and have operationalized it.

  - Developing "Program Visibility" – Program is not well known in diverse communities due to the use of traditional outreach methods. Media outreach materials promote diverse participation.

  - Established "Program Visibility" – Program is well known within its constituency and all media outreach materials promote diverse participation to diverse communities.

  - Accomplished "Program Visibility" – Organization regularly promotes its work by disseminating results to national and state audiences. Media outreach materials promote diverse participation to diverse communities.
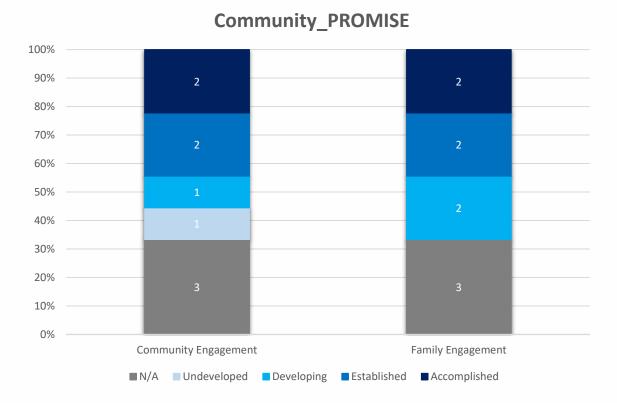
- A large majority of the PROMISE program respondents agreed that the subarea of "leadership engagement" was accomplished with some members indicating that this subarea was established.
  - Established "Leadership Engagement" – Organization leadership reflects diversity and some demonstrate commitment to equity by engaging in equity-related activities.

  - Accomplished "Leadership Engagement" – Organization leadership reflects diversity, demonstrates commitment to equity, and engages in specific equity-related activities.

- PROMISE program team members reported a mixture of responses ranging from developing to accomplished for the subarea of "staff engagement."
  - Developing "Staff Engagement" – Some staff participate in equity initiatives and are learning about equity in STEM education research.

  - Established "Staff Engagement" – All staff participate in equity initiatives and are learning about equity in STEM education research. Some staff are knowledgeable of equity in STEM education research.

  - Accomplished "Staff Engagement" – All staff members participate in equity initiatives and are knowledgeable of equity in STEM education research. Some staff are experts in equity in STEM education research.

- A majority of PROMISE members completing the rubric indicated that the program was established in the leadership subareas of "student engagement" and "systemic integration."
  - Developing "Student Engagement" – Student leadership is supported at the student level and engages diverse students in student driven initiatives.

  - Established "Student Engagement" – Diverse student leadership is established and considered at some levels of the organization's decision-making processes.

  - Accomplished "Student Engagement" – Students from diverse backgrounds participate at all levels of the organization and provides input to decision-making in a significant way.

  - Developing "Systemic Integration" – Organization staff is not diverse. Equity is part of all planning processes and organizational evaluation efforts; however, the results of these efforts are not always implemented.

  - Established "Systemic Integration" – Organization staff has some diversity but this is not a priority in the hiring process. Equity is part of all planning processes and organizational evaluation efforts and implemented.

  - Accomplished "Systemic Integration" – Organization staff is diverse and staff diversity is part of the hiring process. Equity is part of all annual planning and organizational evaluation efforts. Systems are regularly evaluated for bias or barriers that limit access and equity and are changed.

- In the leadership subarea of "financial investment," a majority of the PROMISE program members indicated that the program is established, with other members indicating that this subarea was developing or accomplished.
    - Developing "Financial Investment" – The organization has created a separate budget priority for equity initiatives and professional development that supports the organization's limited equity agenda.

    - Established "Financial Investment" – The organization budget reflects its equity values by using a significant amount of its resources to support equity initiatives and professional development that supports the organization's equity agenda.

    - Accomplished "Financial Investment" – The organization budget reflects its equity values by only investing in initiatives for underrepresented students, in underserved communities and in professional development that supports the organization's equity agenda.

Community

Authentic community and family engagement of the target population being served.

Community_PROMISE

- The members of PROMISE completing the rubric reported that the subarea of "community engagement" ranged from undeveloped to accomplished.
    - Undeveloped "Community Engagement" – Community engagement is teacher or principal-driven, based on the connections and experiences of the school leaders. Topics for student projects are teacher-designed. Students present to the community at a showcase event.

    - Developing "Community Engagement" – School leadership has made efforts to engage a wide variety of community partners. Topics for projects are teacher-led with community partner input. Students present the results of their work to the community. Community partners offer feedback and ask questions of students.

    - Established "Community Engagement" – Community partners mostly reflect the diversity of the school population. Topics for projects are student-led based on their observations and experiences. Students present the results of their work to community partners who offer feedback and ask students questions. Students revise based on feedback.

    - Accomplished "Community Engagement" – Students and families with school leaders suggest, engage, and develop relationships with diverse community partners. Topics for projects are student-led, after significant community engagement. Community partners advise students during the planning, creation, and presentation of student projects.

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- For the community subarea of "family engagement," the PROMISE program team indicated a mixture of ratings ranging from developing to accomplished.
  - Developing "Family Engagement" – The school uses multiple means to transmit information to families. Information generally travels one-way. Families are aware their children do "STEM" at school, but may not know what it means. Some families attend school-wide "STEM nights" at the school.

  - Established "Family Engagement" – Families are engaged at school-based events throughout the year. Diversity of families is recognized at a yearly multicultural night. Teachers use multiple means to engage families in a dialogue about students. Teachers successfully engage most families in the STEM learning of their children, through school-based family nights and sent-home enrichment activities. Efforts are made to make the activities accessible and culturally relevant.

  - Accomplished "Family Engagement" – Families are viewed as collaborators, partners, and decision-makers. Communication is two-way. Differentiated strategies are employed to engage diverse families. Efforts to engage go beyond paper and email, and include text message, social media, home visits, and visits in the community to ensure all communities are engaged. Students engage their families/parents in their STEM learning. Projects and student learning activities have components built-in that invite family participation. Materials are culturally relevant and accessible in the language of the family.