

# STEM Education Equity Analysis Tool

## Summary of Findings

May 26, 2021

### Executive Summary

The STEM Education Equity Analysis Tool is used by schools to self-evaluate their equity in STEM teaching and learning, with an emphasis on graduating students who are prepared for and excited about engaging in STEM careers. The STEM Education Equity Analysis Tool, created by the Great Lakes Equity Center (i.e., MAP Center), was administered as part of the development of IMSA's Equity and Excellence scorecard via Qualtrics.

The STEM Education Equity Analysis Tool is organized into two overarching sections, Organizational Capacity and Curriculum and Instruction. Within each of these sections, there are subcategories and statements for participants to read and think about. For each statement, individuals were asked to provide a response by rating whether they felt the content of the statement was "Not Evident," "Beginning," "Developing," or "Mature." A fifth response option of "I don't know/Not applicable" was also provided.

Overall, 64 individuals completed the assessment, 12 of which identified as staff and the remaining 52 were faculty. Below is a summary of the results.

### Summary of Findings

- Just under two-thirds of staff, including faculty, members responding to the rubric reported that the building leaders are "Developing" (45.3%) or "Mature" (20.3%) in regularly demonstrating their commitment to equity in STEM education.
- A little over half of the individuals evaluating the rubric felt that the STEM teachers representing the diversity of the community they serve was either "Not Evident" or "Beginning."
- Close to nine out of ten staff, including faculty, members evaluating the rubric reported that STEM teachers are highly qualified in their content areas.
- Approximately 70.4% of individuals responded that the availability of sufficient technological support for staff and students was either "Developing" or "Mature."
- Slightly below two-thirds of respondents felt that hands-on opportunities to learn are "Beginning" to be provided to teachers.
- Of the individuals who provided a rating, a little more than one-third felt that IMSA is "Developing" family engagement in activities and learning about STEM subjects and careers.
- A large majority of the staff, including faculty, members completing the rubric agreed that IMSA is "Mature" in providing highly qualified teachers to all students.

- Close to two-thirds of staff, including faculty, members responding to the rubric indicated that students have EXPLICIT access to higher-level STEM courses.
- Approximately two-thirds of the staff, including faculty, members evaluating the rubric reported that the curriculum is relevant to students' community and culture.
- A little more than nine out of ten staff, including faculty, members responding to the rubric indicated that IMSA uses multiple means to support student learning.
- The majority of responses (44.4%) indicated that IMSA is “Developing” relationships with guest presenters and field experiences to demonstrate that students from diverse backgrounds can achieve in STEM.
- Of the participants completing the rubric, approximately 41.4% felt that families are not currently engaged as guest teachers about STEM subjects and careers.

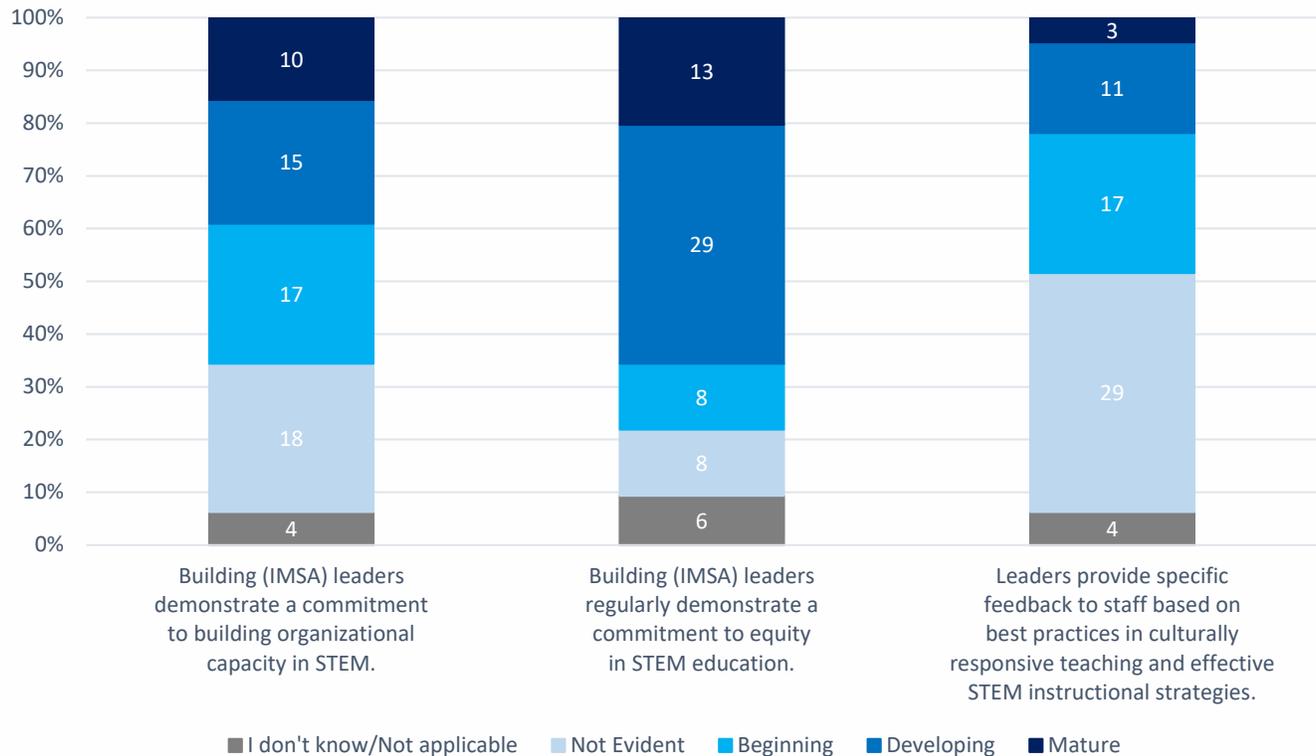
### *Next Steps*

The results from the STEM Education Equity Analysis Tool will inform members of IMSA about the extent to which equity is evident in their STEM teaching and learning. This tool will also provide guidance to the administration and leadership team to design strategies for IMSA's STEM teaching and learning to grow towards “Mature” in each subarea.

## Findings

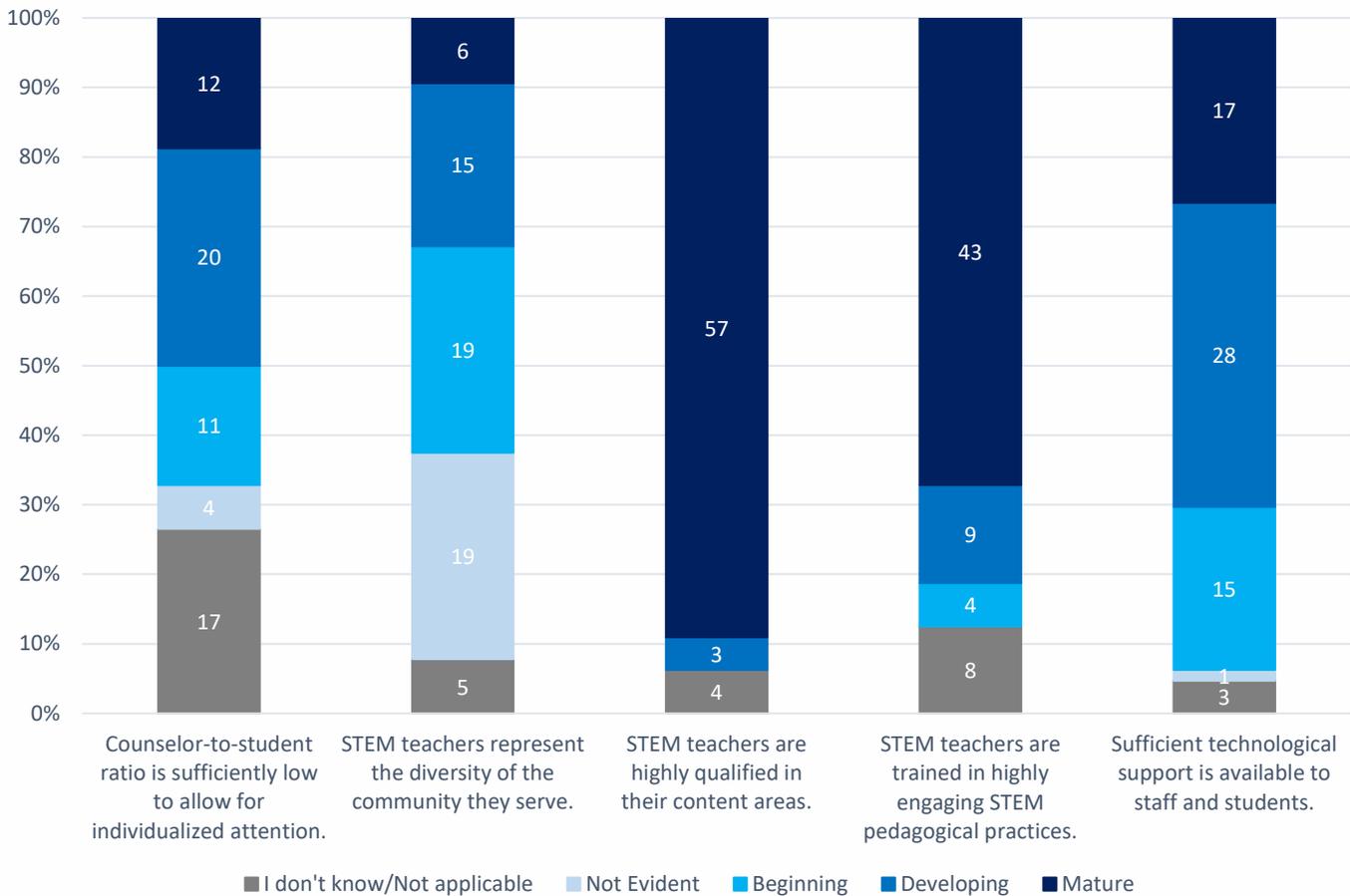
### Organizational Capacity

#### Organizational Capacity - Leadership (n = 64)



- The responses of staff, including faculty, members completing the rubric indicated a mixture of responses with regard to leadership’s demonstration of their commitment to building organizational capacity in STEM.
  - Just over a quarter of responses felt that this area of leadership was “Not Evident.”
  - Half of those participating in the rubric reported that this area of leadership was either “Beginning” (26.6%) or “Developing” (23.4%).
  - Close to 15.6% of respondents indicated that this area of leadership was “Mature,” meaning that the building leaders already demonstrate a commitment to building organizational capacity in STEM.
- A little below two-thirds of staff, including faculty, members responding to the rubric reported that the building leaders are “Developing” (45.3%) or “Mature” (20.3%) in regularly demonstrating their commitment to equity in STEM education.
- Staff, including faculty, members who participated in the rubric evaluation reported that leaders were not providing (45.3%, “Not Evident”) or “Beginning” (26.6%) to provide specific feedback to staff based on best practices in culturally responsive teaching and effective STEM instructional strategies.

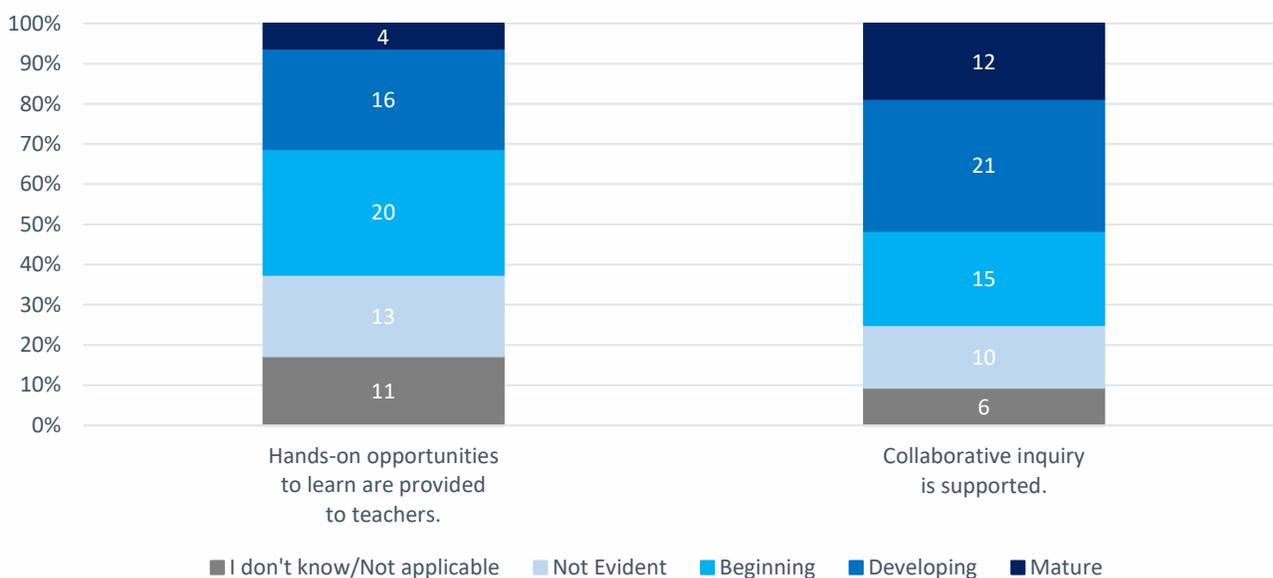
## Organizational Capacity - Staffing (n = 64)



- While many individuals did not respond to the counselor-to-student ratio statement, approximately 31.3% of staff, including faculty, reported that the counselor-to-student ratio was progressing (i.e., “Developing”) towards a sufficiently low value to provide individualized attention.
- The responses of staff, including faculty, members completing the rubric indicated a mixture of responses with regard to whether or not the STEM teachers represent the diversity of the community they serve.
  - A little over half of the individuals evaluating the rubric felt that the STEM teachers representing the diversity of the community they serve was either “Not Evident” (29.7%) or “Beginning” (29.7%).
  - Just under a quarter of those participating in the rubric reported that this area of staffing was “Developing” (23.4%).
  - Approximately 9.4% of respondents indicated that this area of staffing was “Mature,” suggesting that the STEM teachers represent the diversity of the IMSA student body.
- Close to nine out of ten staff, including faculty, members evaluating the rubric reported that STEM teachers are highly qualified in their content areas (89.1% “Mature”).

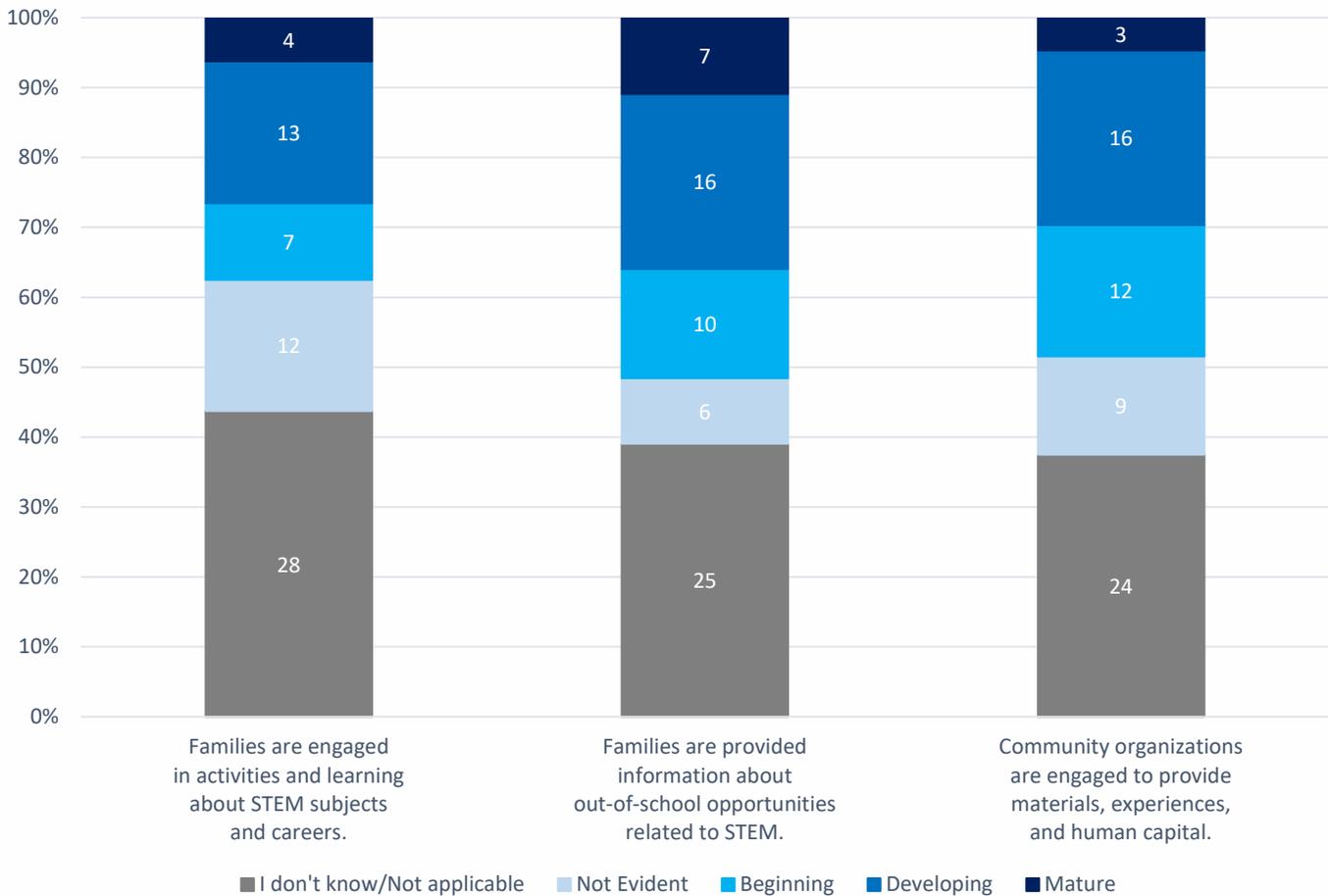
- Over two-thirds of staff, including faculty, members participating in the rubric indicated that STEM teachers are trained in highly engaging STEM pedagogical practices (67.2% “Mature”).
- The responses of staff, including faculty, members completing the rubric indicated a mixture of responses with regard to whether or not there was sufficient technological support available to staff and students.
  - Approximately 70.4% of individuals responded that the availability of sufficient technological support for staff and students was either “Developing” (43.8%) or “Mature” (26.6%).
  - Just under a quarter of those evaluating the rubric reported that the availability of sufficient technological support for staff and students was “Beginning” (23.4%).

### Organizational Capacity - Professional Learning (n = 64)



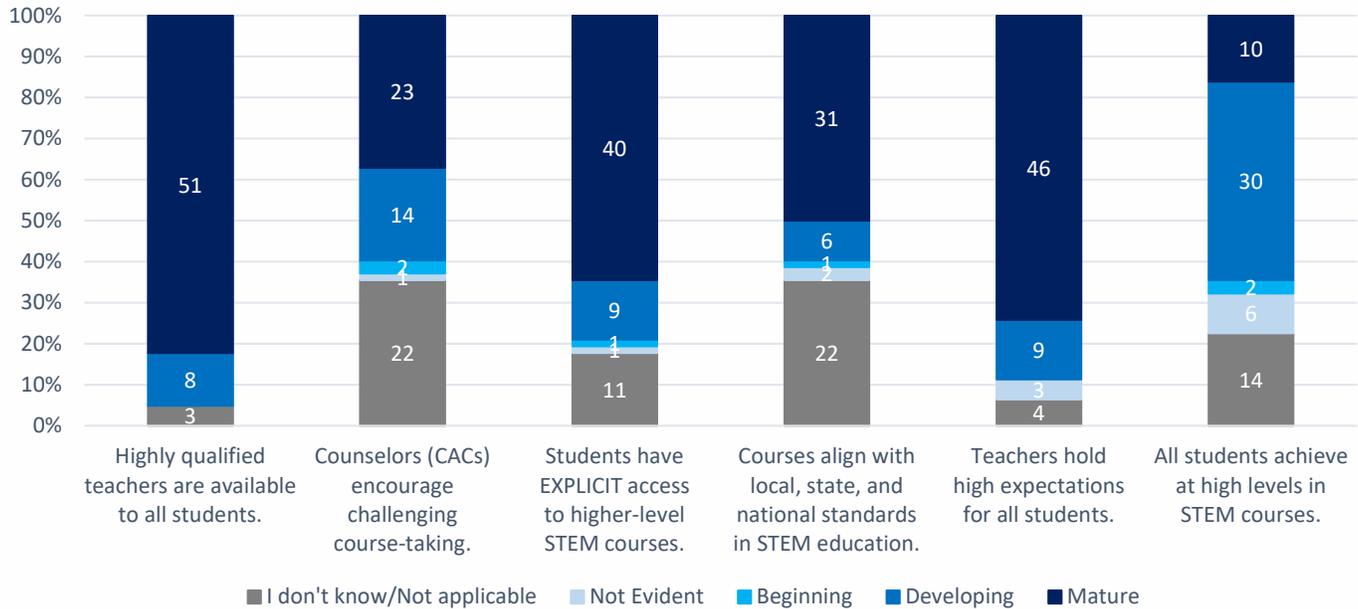
- The staff, including faculty, members completing the rubric reported a mixture of responses for the subarea of professional learning ranging from “Not Evident” to “Mature.”
  - Close to 31.3% of respondents felt that hands-on opportunities to learn are “Beginning” to be provided to teachers.
  - Slightly over half of those evaluating the rubric reported that collaborative inquiry is supported (32.8% “Developing, 18.8% “Mature”).

## Organizational Capacity - Partnerships (n = 64)



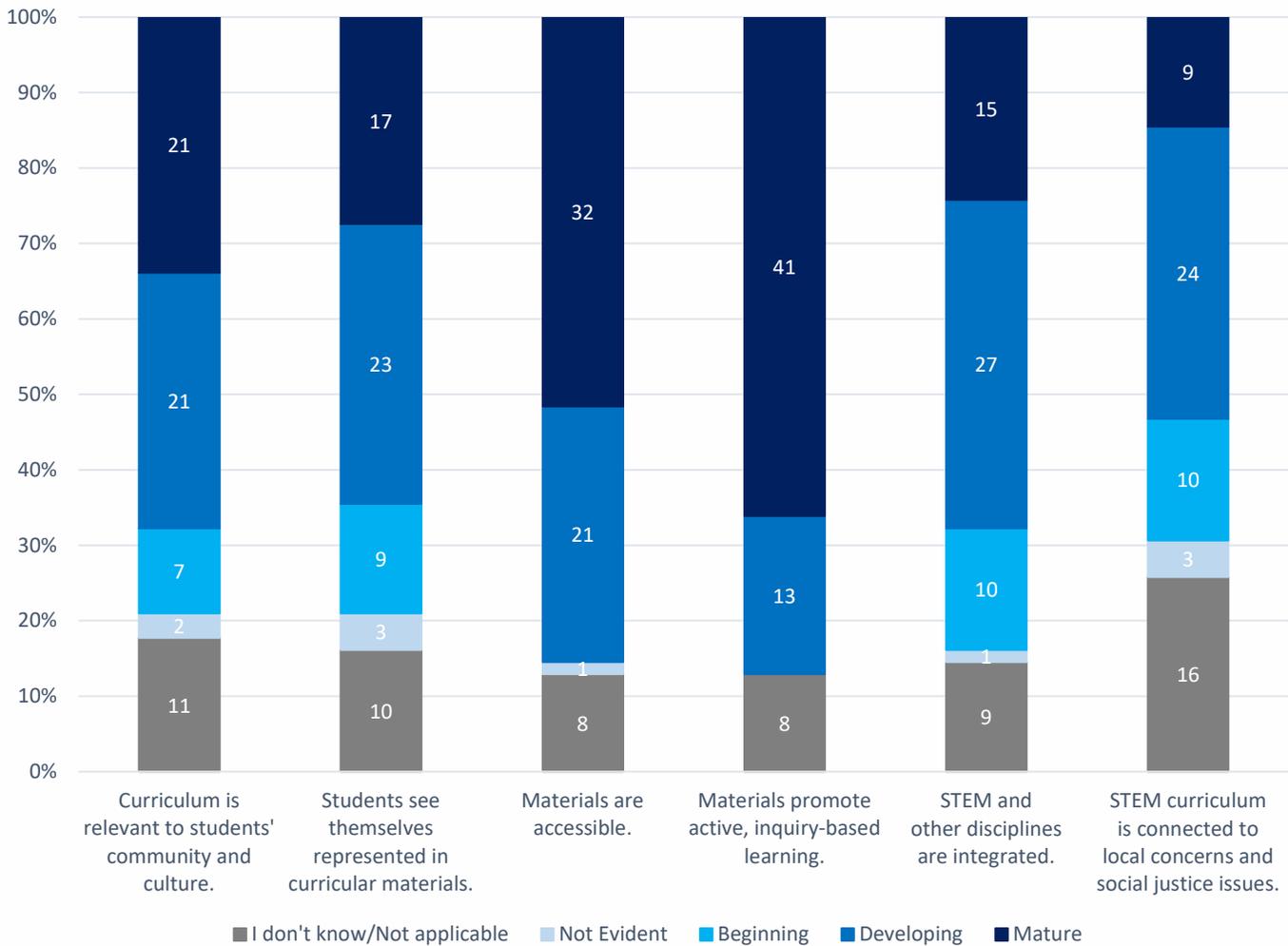
- Many staff, including faculty, did not know how to rate the organizational capacity subarea of partnerships, or felt that it was not applicable.
  - Of the 36 individuals who provided a rating, a little more than one-third felt that IMSA is “Developing” family engagement in activities and learning about STEM subjects and careers. Another third of those who responded indicated that family engagement in activities and learning about STEM subjects and careers was “Not Evident.”
  - There were 39 staff, including faculty, members who provided a rating about families receiving information about out-of-school opportunities related to STEM. A majority of those evaluating this statement rated it as a “Developing” area (41.0%).
  - Forty staff, including faculty, members offered a rating about the engagement of community organizations to provide materials, experiences, and human capital. Of those responding, many individuals reported that the engagement of community organizations is a work in progress (i.e., “Developing,” 40.0%).

### Curriculum and Instruction - Rigor (n = 62)



- A large majority of the staff, including faculty, members completing the rubric agreed that IMSA is “Mature” in providing highly qualified teachers to all students (82.3%).
- Just over a third of staff, including faculty, evaluating the rubric did not know how to rate the curriculum and instruction sub-statement about the CACs encouraging challenging course-taking.
  - Of the forty individuals who provided a response, a little over half (57.5%) felt that this subarea was “Mature.”
  - Other participants responded that the CACs encouraging challenging course-taking was a work in progress (i.e., “Developing,” 35.0%).
- Close to two-thirds of staff, including faculty, members responding to the rubric indicated that students have EXPLICIT access to higher-level STEM courses (i.e., “Mature,” 64.5%).
- Many staff, including faculty, were not sure whether IMSA courses align with local, state, and national standards in STEM education, and therefore did not provide a response.
  - Of the forty individuals who did respond to the rubric, an overwhelming majority of them felt that the courses did align with local, state, and national standards in STEM education (i.e., “Mature,” 77.5%).
- Approximately 74.2% of staff, including faculty, completing the rubric indicated that our teachers hold high expectations for all students (i.e., “Mature”).
- While some staff, including faculty, members did not comment on the ability of all students to achieve at high levels in STEM courses, others who responded felt that these areas were either “Developing” (62.5%) or “Mature” (20.8%).

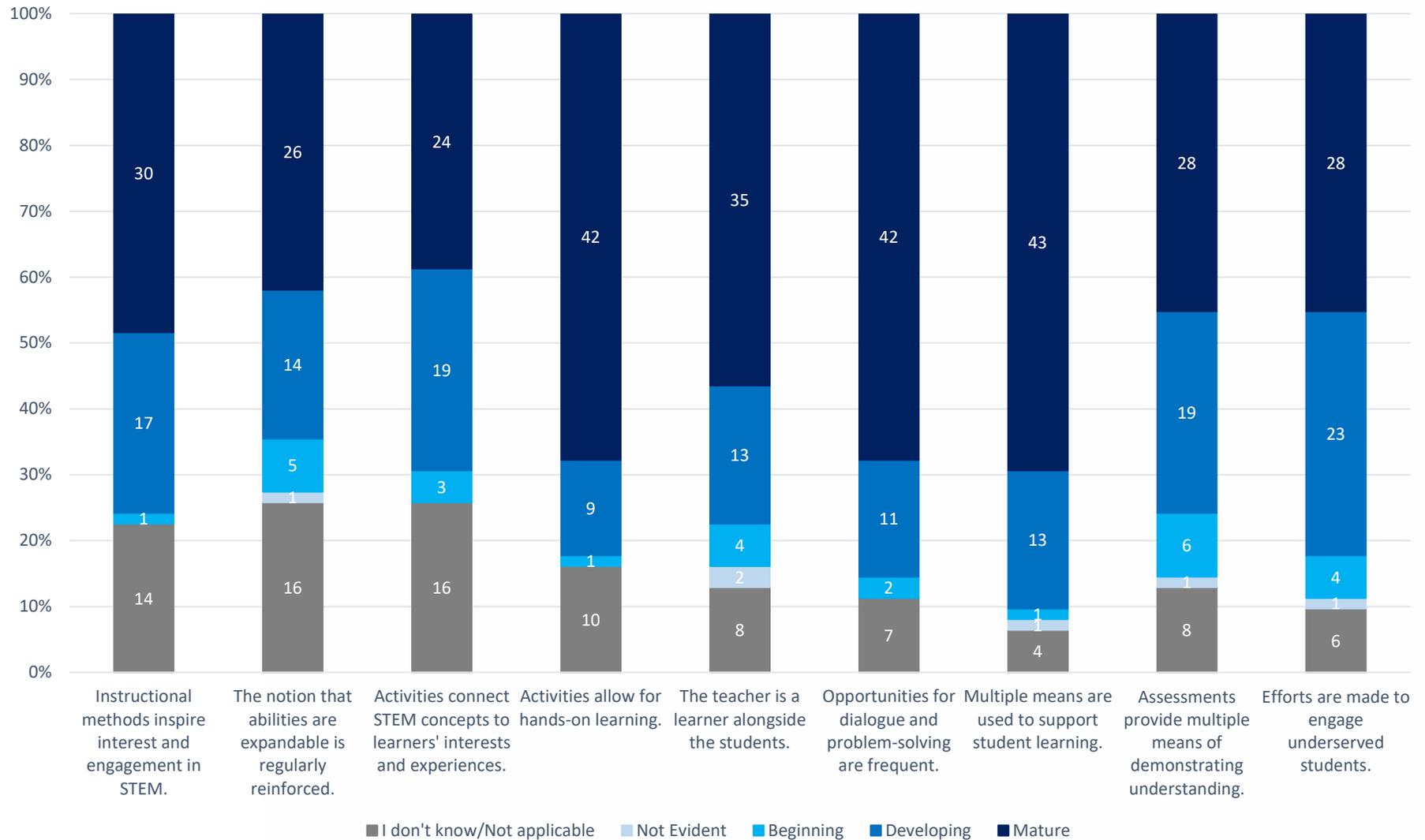
## Curriculum and Instruction - Culturally Responsive Curriculum (n = 62)



- Approximately two-thirds of the staff, including faculty, members evaluating the rubric reported that the curriculum is relevant to students' community and culture (i.e., 33.9% "Developing," 33.9% "Mature").
- While some staff, including faculty, members did not comment about students being able to see themselves represented in curricular materials, others responded with mixed ratings.
  - Of the 52 individuals who provided a rating, close to 44.2% felt that students were progressively seeing themselves represented in the curricular materials (i.e., "Developing").
  - Others providing a rating felt that students were "Beginning" (17.3%) to see themselves represented in curricular materials, while others felt that this area was already "Mature" (32.7%).
- A large majority of staff, including faculty, participating in the rubric felt that materials were accessible (i.e., 33.9% "Developing," 51.6% "Mature") and that the materials promoted active, inquiry-based learning (i.e., 21.0% "Developing," 66.1% "Mature").

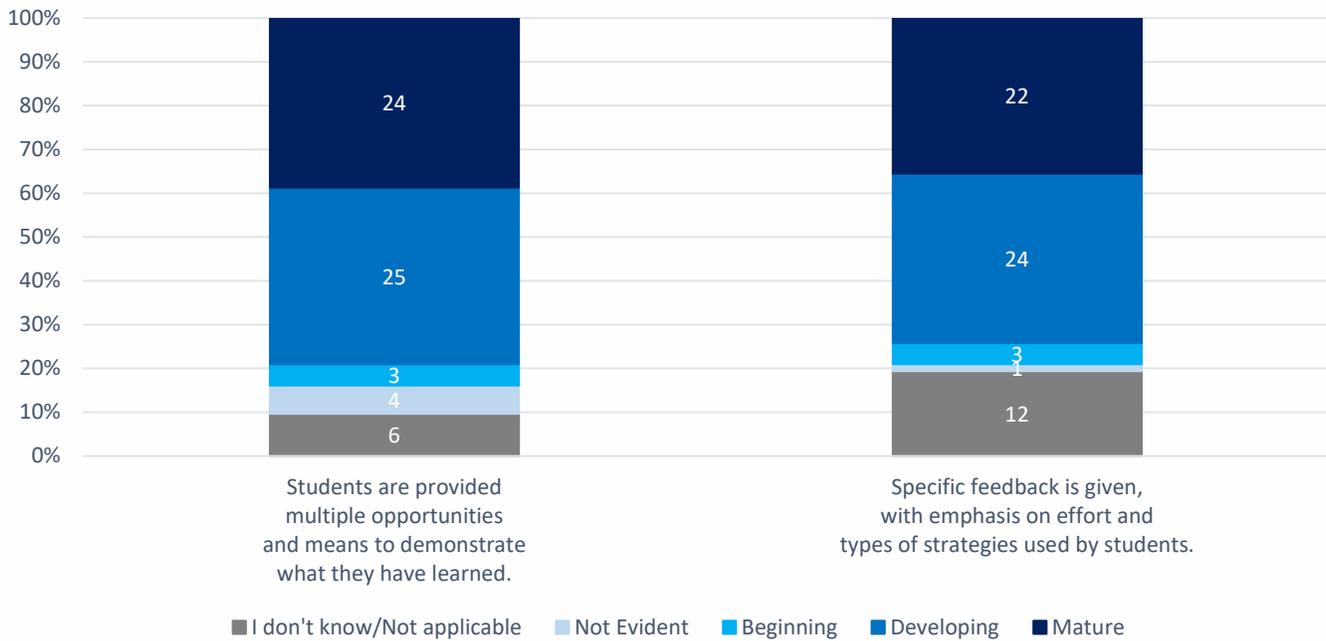
- The staff, including faculty, members completing the rubric reported a mixture of responses ranging from “Not Evident” to “Mature” with regard to the integration of STEM and other disciplines.
  - Close to 16.1% of respondents felt that STEM and other disciplines are “Beginning” to be integrated with one another.
  - Slightly over two-thirds of those evaluating the rubric reported that STEM and other disciplines are integrated (43.5% “Developing, 24.2% “Mature”).
- Just over a quarter of staff, including faculty, members did not provide a rating for the sub-statement about the STEM curriculum being connected to local concerns and social justice issues.
  - Of the 46 individuals who responded, a little over half felt that the curriculum was progressively including local concerns and social justice issues in the STEM curriculum (i.e., “Developing”).
  - Others providing a rating felt that IMSA was “Beginning” (21.7%) to connect local concerns and social justice issues to the STEM curriculum, while others felt that this area was already “Mature” (19.6%).

## Curriculum and Instruction - Culturally Responsive Instructional Practices (n = 62)



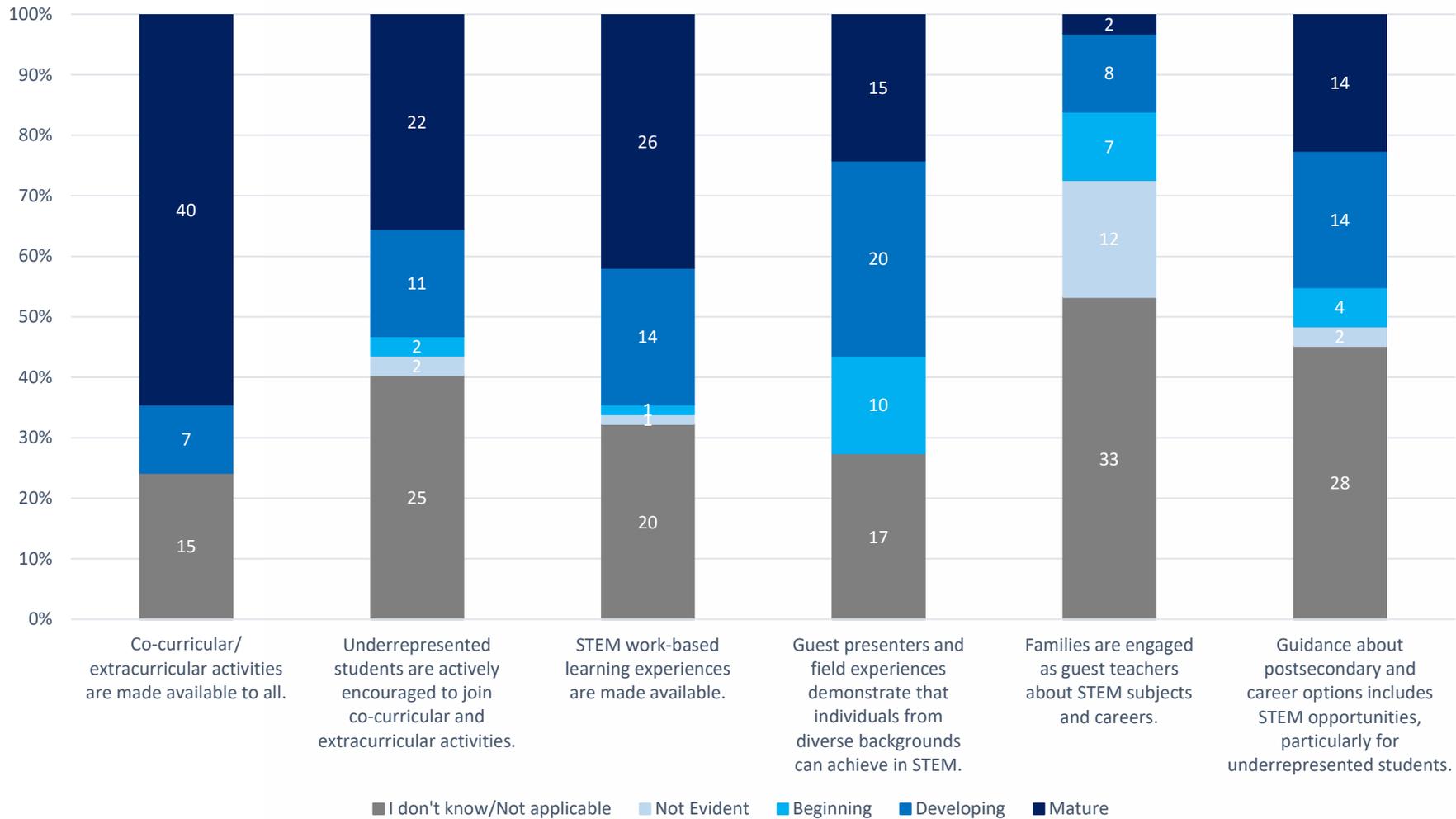
- Responses from staff, including faculty, for the first three culturally responsive instructional practices sub-statements had a similar pattern.
  - Of the 48 individuals providing a rating, approximately 62.5% felt that IMSA has instructional methods that inspire interest and engagement in STEM (i.e., “Mature”).
  - Out of the 46 staff, including faculty, evaluating the rubric, slightly over half (56.5%) reported that IMSA was “Mature” in regularly reinforcing the notion that abilities are expandable.
  - Of the 46 individuals completing the rubric, close to 52.2% provided a rating of “Mature” with regard to activities that connect STEM concepts to learners’ interests and experiences.
  
- The ratings reported from staff, including faculty, were similar across the next four questions, each of which are described in more detail below.
  - More than eight out of ten individuals evaluating the rubric indicated that activities allow for hands-on learning (i.e., 14.5% “Developing,” 67.7% “Mature”).
  - Just over three-quarters of the staff, including faculty, participating in the rubric reported that the teacher is a learner alongside the students (i.e., 21.0% “Developing,” 56.5% “Mature”).
  - Close to 85.4% of participants completing the rubric felt that IMSA was either “Developing” (17.7%) or “Mature” (67.7%) with regard to providing frequent opportunities for dialogue and problem solving.
  - Approximately nine out of ten staff, including faculty, members responding to the rubric indicated that IMSA uses multiple means to support student learning (i.e., 21.0% “Developing,” 69.4% “Mature”).
  
- The ratings provided from staff, including faculty, for the final two statements were also similar.
  - Three-quarters of the participants evaluating the rubric agreed that assessments provide multiple means of demonstrating understanding (i.e., 30.6% “Developing,” 45.2% “Mature”).
  - Approximately 82.3% of staff, including faculty, completing the rubric indicated that efforts were being made to engage underserved students (i.e., 37.1% “Developing,” 45.2% “Mature”).

## Curriculum and Instruction - Assessment (n = 62)



- The responses collected from staff, including faculty, were similar for both assessment sub-statements. The information below provides some additional detail.
  - Close to 79.0% of participants responding to the rubric felt that students are provided multiple opportunities and means to demonstrate what they have learned (i.e., 40.3% “Developing,” 38.7% “Mature”).
  - Slightly below three-quarters of the individuals evaluating the rubric indicated that specific feedback is given, with emphasis on effort and types of strategies used by students (i.e., 38.7% “Developing,” 35.5% “Mature”).

## Curriculum and Instruction - Ongoing Engagement (n = 62)



- Many staff, including faculty, members did not provide a rating with regard to co-curricular and extracurricular activities available to students.
  - Of the 47 individuals who did respond, more than 85% felt that IMSA was “Mature” in the co-curricular and extracurricular offerings available to students.
- The responses collected from staff, including faculty, were similar for the next two questions, each of which is described in more detail below.
  - A large portion (40.3%) of participants evaluating the rubric did not feel comfortable rating the extent to which underrepresented students are actively encouraged to join co-curricular and extracurricular activities.
    - Of the 37 individuals who did provide a response, over half (59.5%) indicated that IMSA was “Mature” in encouraging underrepresented students to participate in co-curricular and extracurricular activities.
  - Close to a third of staff, including faculty, completing the rubric did not rate whether STEM work-based experiences are made available to students.
    - Of the 42 participants who provided a rating, approximately 61.9% felt that STEM work-based learning experiences are made available to students (i.e., “Mature”).
- The staff, including faculty, members evaluating the rubric reported a mixture of responses ranging from “Beginning” to “Mature” with regard to guest presenters and field experiences that demonstrate how individuals from diverse backgrounds can succeed in STEM (n = 45).
  - The majority of responses (44.4%) indicated that IMSA is “Developing” relationships with guest presenters and field experiences to demonstrate that students from diverse backgrounds can achieve in STEM.
  - Close to 22.2% of participants felt that IMSA is “Beginning” to use guest presenters and field experiences to demonstrate that individuals from diverse backgrounds can succeed in STEM.
  - Roughly one-third of those evaluating the rubric reported that IMSA has established guest presenters and field experiences that demonstrate how individuals from diverse backgrounds can achieve in STEM (i.e., “Mature”).
- A significant portion of staff, including faculty, members evaluating the rubric did not feel comfortable providing a rating about family engagement and postsecondary guidance for underrepresented students. The specific responses collected from staff, including faculty, are provided in more detail below.
  - Of the 29 participants completing the rubric, approximately 41.4% felt that families are not currently engaged as guest teachers about STEM subjects and careers.
  - Of the 34 individuals who responded to the rubric, more than eight out of ten participants indicated that guidance about postsecondary and career options included STEM opportunities, especially for underrepresented students (i.e., 41.2% “Developing,” 41.2% “Mature”).