KiDSPARK EDUCATION

Student and Partnership Experience Evaluation
February 2020

Prepared by:

Introduction

The purpose of this evaluation is to more fully understand Kid Spark Education's (KSEs) student and partner experiences and unpack implications of these experiences for program development, partnership development and organizational priority-setting. While a host of themes and topics were covered throughout this evaluation, the report primarily focuses on student need, program and partnership strengths and challenges, and opportunities for development. To accomplish these evaluation goals, a methodological framework was developed which captured a range of student, educator and partner voices through various evaluation tools. Evaluation tools/sources included:

Student baseline survey: 317 students completed the baseline survey which covered STEM confidence, ability and identity as well as 21st Century Skills. And student perspectives on future use of STEM (jobs, activities). In addition, through open-ended responses, students were asked to comment on their expectations of KSE programming.

Throughout this report, references to 'high' 'mid' and 'low' scores will be made. This evaluation used a likert scale which gave response options[1]of 'strongly agree' 'agree' 'neither agree or disagree' 'disagree' and 'strongly disagree'. Following best practice, we categorized responses as follows:

- 'High score' as 70% or more of survey responses in 'strongly agree' or 'agree'
- 'Mid score' as 40-69% of responses in 'strongly agree' or 'agree'
- 'Low score' is less than 40% of responses in 'strongly agree' or 'agree.'

Student endline reflective survey: 170 students completed the reflective endline survey which asked students to reflect on their experiences with the KSE program and assess the impact of participation on their skills and confidence in Math, Science, Art and other classes.

Student focus groups: Approximately 60 students participated in endline student focus groups. Like the endline survey, student focus groups focused on student experiences with the KSE program and assessed the impact of participation for their skills and confidence in Math, Science, Art and other classes. Additionally, focus groups provided an opportunity to further explore student's understanding of KSE activities and workforce connections.

1-1 Stakeholder interviews: 7 external stakeholders participated in in-depth interviews. Interviewees included teachers, principals, and district representatives. Interviews focused on partner experience (strengths, challenges and opportunities) and their perceptions of student impact.

[1] There were two questions where scoring was reversed due to framing of question

Ongoing Educator check-ins: For those educators whose students participated in this evaluation, monthly 'check-ins' were conducted to assess challenges, strengths and opportunities including (but not limited to) program implementation and use, student engagement and impact.

Primary Sample

Student and educator evaluation participants included third and fourth grade students from 3 schools in Vista Unified School District (Monte Vista Elementary, Maryland Elementary, Foothill Oaks Elementary). All schools receive Title 1 funding. Sample schools have a high percentage of low-income students with more than 60% of students coming from low-income households at Monte Vista Elementary, 93% at Maryland Elementary and 97% at Foothill Oaks Elementary. In all schools, the majority of students are Latino.[2]

Part One: Student Experience

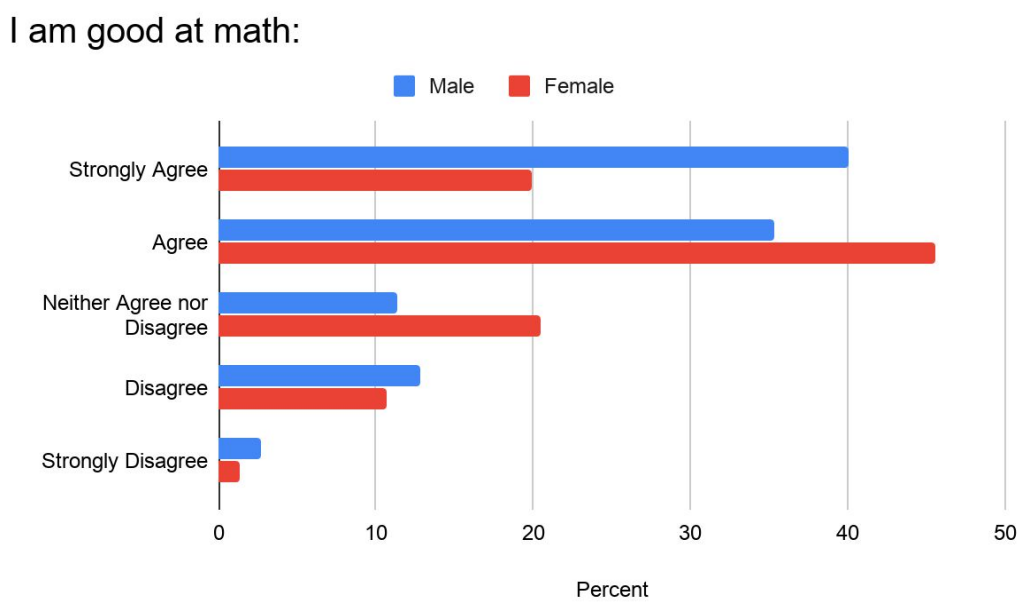
A primary goal of this evaluation is to understand student experience based upon their STEM confidence, perceived ability, identity, student engagement with the KSE program, and student impact. Informed by student surveys and focus groups, and educator interviews, the following section provides an overview of key findings.

Key Finding #1: At baseline, students self-report their ability, interest and confidence in STEM as between Mid and High range.

When asked about their ability to succeed in, enjoyment of, interest in, and personal connection to STEM subjects (Math, Science, Engineering), overall, students scored between mid-range and high-range at baseline. However, within the sample there were variances. Female students scored lower than male students within this subset of survey questions. In particular, at baseline female students report lower ability in STEM subjects. Two questions where scores differed by more than 10% between female and male students included "Science is difficult for me" (10% difference in score, with females rating themselves lower) and "I am good at math" (12% difference in score, again, females scored lower).

[2] Low income status determined by students who qualify for free or reduced-price lunch compared to all students in the state of California

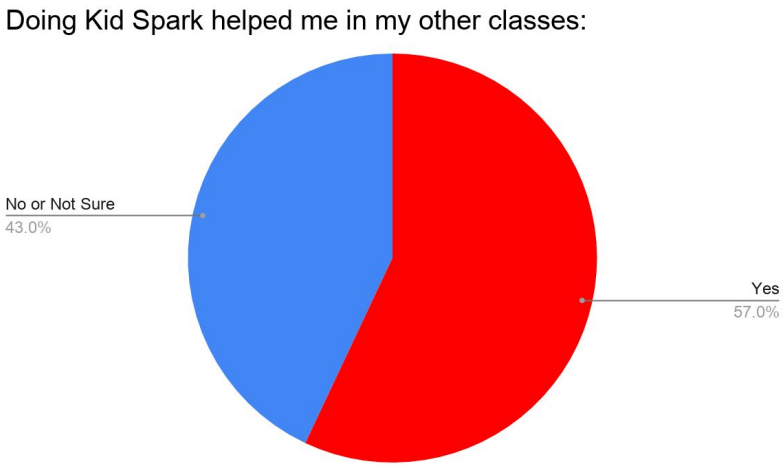
Chart 1: Self-reported ability in Math (Male and Female)



Key Finding #2: According to the post-program student survey, student focus groups and educator interviews, participation in the KSE programs has a positive impact on STEM confidence, ability and identity *and* it has a positive flow-on impact throughout the student's day. Additionally, some differences exist for female versus male students.

Survey results revealed the perceived impact on student's STEM confidence, ability and identity as a result of their participation in KSE. Over 50% of students agreed that KSE helped them in their other classes.

Chart 2: Impact of KSE for other classes



When asked about impact for Science and Math classes, and broken out by sex of student (shown below), perceived increase in ability and confidence differs, with female students scoring lower on both measures. As will be discussed in Part Three (Recommendations), this finding has implications for program development.

Chart 3: Changes in skills in Math and Science

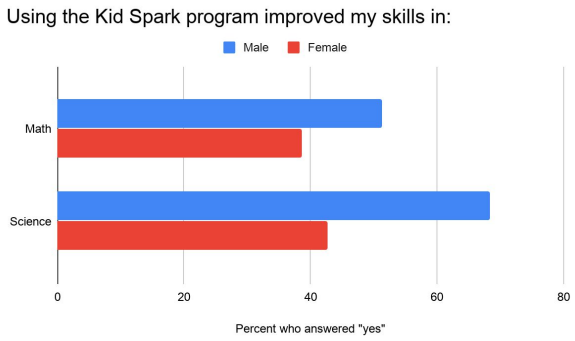
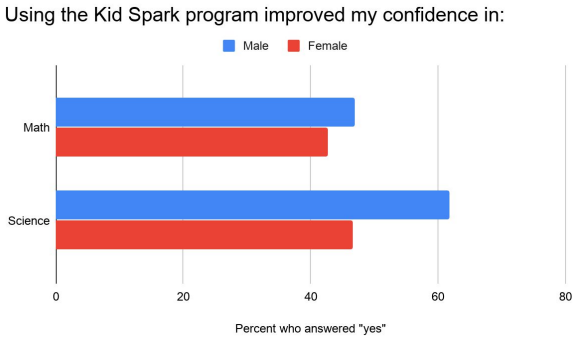


Chart 4: Changes in confidence in Math and Science



Additionally, when asked if they had learned anything new about themselves through participation in KSE, over half of students reported learning that they are **"creative"** and **"good at building."**

Arguably the strongest theme to emerge from external stakeholder interviews was the power of KSE to shape student's confidence, identity and engagement both within and beyond the KSE classroom. According to interviewees, this was particularly true for girls, low-income students and those who struggle in more traditional academic environments. As one educator shared,

"I really want to share a success story...we have special ed students who are in an inclusion program, meaning they rotate in and out of the mainstream classes during a school day. A young lady in the special ed program who was very detached from the educational setting came to me at the end of the our (Kid Spark) class where we did a hands-on project--we built the hammer, built several different prototypes--she came to me and was asking if she could return the following day to rejoin the class for the project. The special ed teacher then came and spoke with me and said the young lady so enjoyed the class--she is not a good writer, not a good reader, but became a design leader in the room, in her group. Then the student went away with a renewed desire to do well in her other classes...she saw that she could succeed in something and that inspired her throughout the day. She felt empowered by being able to do some piece of the Kid Spark process...her connection to being at school and being a part of the school community has improved. You can't make this stuff up." (Teacher)

Consistent with educator feedback, when students were asked whether participation in KSE changed how they felt throughout the rest of their day, students most frequently used words like ***happy, calm and focused*** to describe the effect KSE had on them the rest of their day.

This sentiment held true for students who were initially unsure about the KSE program. Whether due to uncertainty of program content and activities or their anxiety around their ability in STEM in general, student's consistently described how this uncertainty eased as programming got underway. As one student shared,

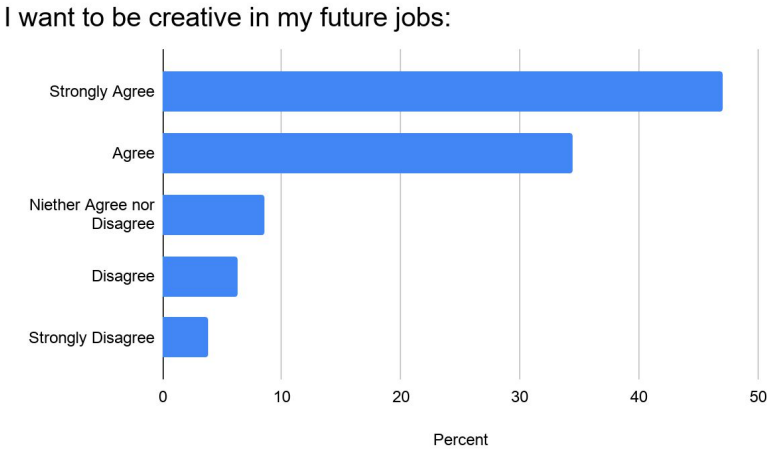
"I felt nervous at first, I wasn't sure if I could do this. But once I tried and learned more, I felt good and more relaxed. I saw that I could really be good at this." (Student)

Key Finding #3: Students have high levels of interest and curiosity in using creativity, problem-solving and engineering now and in the future

Throughout the baseline survey, students were asked about their current interest, and desire to continue engaging in, activities that require them to think and be creative. Across all questions, students expressed a strong connection to activities that involve building, designing, and thinking creatively. For example, when asked whether they "like making new products", 76% of students strongly agreed or agreed.

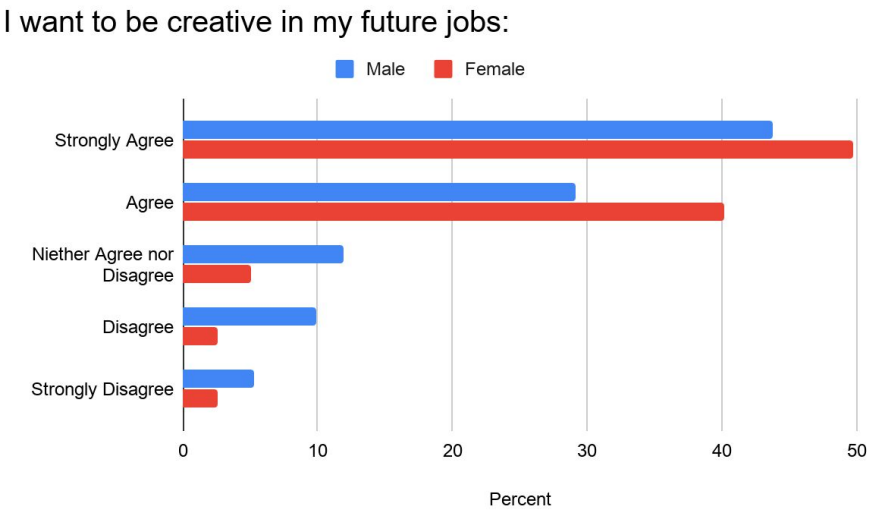
This trend continued when asked about the role of creativity in future jobs, with a combined 81% of students reporting that they want to be creative in their future job.

Chart 5: Creativity in future jobs



Of importance, in the majority of this subset of questions, female students scored higher than male students, indicating a stronger interest in, connection to and perceived use of creativity for future career. For example, when separating out gender in the question above, we see that female students scored 17 points higher than male students.

Chart 6: Creativity in future jobs (Male and Female)



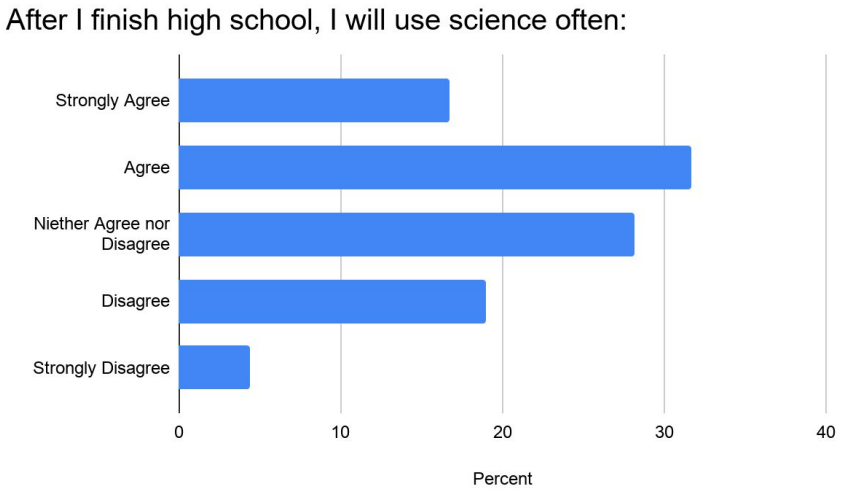
Connection of students to the creative aspects of KSE was also evident in student focus groups. Whether describing a particular activity or commenting on the program as a whole, students routinely expressed their excitement around opportunities for 'out of the box,' creative and divergent thinking. When asked to describe the KSE program in 1 or 2 words, the words cited with the greatest frequency were **"fun"** and **"creative."**

Key Finding #4: However, when asked how STEM (Science, Math, Engineering) will be relevant to or used in their future life and work, student's scores drop to mid range (with 40-69% of responses in 'strongly agree' or 'agree')

While the previous finding illustrates student's strong connection to, and interest in being creative and innovative now and in the future, when asked specifically about the relevance of STEM in their future, this connection dropped.

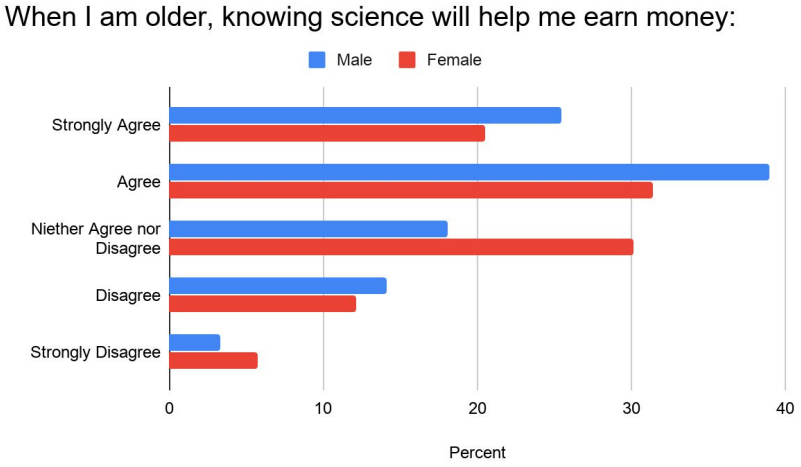
As illustrated below, anticipated use of Science post high school scored the lowest across STEM subjects, with only 48% of students saying that they are likely (Strongly Agree or Agree) to use Science after high school.

Chart 7: Post High School use of Science



It is important to note that in several instances, there was a greater than 10% variance between male and female students (with females scoring lower) when asked about the relevance of STEM subjects in their future. An example of this difference is illustrated in the graph below.

Chart 8: Role of Science in income earning (Male and Female)



As will be discussed in Part Three (Recommendations), the variance in scores between student's current and projected future interest and use of creative thinking and innovation, and their anticipated use of science and math in activities and jobs is important and has implications for program development opportunities for KSE.

Key Finding #5: At baseline, students reported high levels of 21st Century Skills (leadership, collaboration, time management), with female students reporting higher levels than male students on all questions.

Across the survey, the subset of questions related to 21st Century Skills received the highest aggregate score. When broken out by gender, it is important to note that male students scored lower on every question measuring 21st Century Skills, as illustrated in one example below.

Chart 9: Decision-making

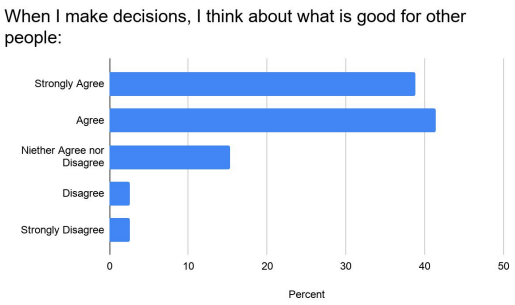
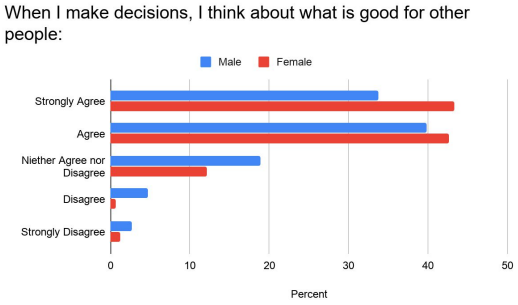


Chart 10: Decision-making (Male and Female)



This trend was consistent with findings from student focus groups, where male students consistently referenced the teamwork aspect of KSE activities as challenging, but positive. As one male student shared:

"I had to work a lot in groups which I don't usually like. You had to listen to other people's ideas and sometimes they were right, sometimes they were wrong but you built together. I wasn't expecting to have to do that but it was good for me." (Male Student)

As will be discussed in Part Three (Recommendations) the variance in scores and experience between male and female students relating to leadership, collaboration, self- and time-management has implications for KSE program development opportunities.

Part Two: Partner Experience

In addition to assessing student experiences with the KSE program, this evaluation sought to further understand the experience of KSE partners, including teachers, STEM coordinators, principals and school district representatives. Through in-depth interviews with key stakeholders, and ongoing 'check-ins' with educators using the KSE program, the evaluation captures themes related to KSE strengths, challenges and opportunities from partners' perspectives.

The positive experience of partners using the KSE program cannot be understated. Indeed, all stakeholders described the power of KSE in providing a space for students to see themselves succeeding in STEM and they recognized the flow-on implications of KSE programming for student engagement and success beyond the KSE classroom, particularly for low-income students and girls.

"For students that were not naturally motivated by science ...this gives them a different way to engage. When you start asking them questions you can see the critical thinking that is going on. They can explain why things work and don't work. There is an excitement there, it engages them." (Teacher)

While positive feedback from stakeholders was extensive, to support program and partnership development efforts, findings presented below focus on the *challenges or barriers* experienced by stakeholders.

Key Finding #1: Educators require additional support in modifying the KSE curriculum to meet their school's needs and parameters.

Interviews revealed that often teachers lack confidence in KSE program planning and implementation, creating a barrier to program adoption, use and growth within their school. Several referenced that teachers, particularly those without a STEM background, struggled in not knowing how to adapt KSE programs within their specific school parameters (e.g. class time, room availability, etc). Recommendations for addressing this challenge are captured in Part Three (Recommendations).

Key Finding #2: Additional real world examples are needed within the curriculum (or KSE resources) for students, particularly female students and those from low-income communities, to understand the relevance of STEM activities beyond the KSE classroom.

As discussed in Part One (Student Experience), while student surveys indicated a high level of interest in engaging in activities and careers that require creative thinking, design, etc., when asked about the relevance of specific STEM subjects in future careers, scores dropped. This was particularly true for female students.

This finding was further supported through educator interviews, where several expressed a need for more 'real world' connections, specifically links between KSE lessons, use of STEM principles and potential STEM education and career pathways.

"I think for low income students in particular the success they experience is so powerful. And yet, I want them to see that this can translate to success outside of school too." (Teacher)

Student focus groups illustrated the importance of making these 'workforce connections.' In a subset of KSE classes, all taught by the same educator, lesson plans were modified by the

teacher to emphasize STEM career pathways and examples. In these classes, students were more easily able to reference jobs that use STEM and the connection of KSE activities to those jobs.

Key Finding #3: Lack of funding, resources or district 'buy-in' makes ongoing use of KSE a challenge

Across stakeholder interviews and educator 'check-ins', lack of funding to support ongoing KSE programming was identified as a challenge and barrier. Additionally, several educators mentioned that continual decreases in school and district budgets almost always negatively impact STEM programming. Several attributed this to programs like KSE being viewed as a 'value-add' or 'nice-to-have' program and not central to student learning. Educators expressed the need for those throughout the school and district, especially those in decision-making positions, to understand the impact of KSE and commit to supporting innovative student learning opportunities. The following section provides recommendations for addressing these challenges and barriers.

Part Three: Key Recommendations

The following section integrates learnings from student and educator experiences to develop a set of recommendations designed to promote student impact, strengthen partnerships, and inform KSE's program development efforts.

Key Recommendation: Provide additional support to educators in modifying curriculum to unique school parameters

Consider developing or expanding lesson plans, or separate resource materials, that guide educators in how to modify KSE lesson plans or overarching units to meet their unique timing, space and resources constraints.

"Maybe they could have some type of suggested curriculum mapping to offer implementation...how to implement the curriculum in different schedule blocks. For new teachers, or teachers jumping from one discipline to another... the materials are great but some kind of mapping for different contexts or schedules is really important. It may be a matter of best case, and worse case scenario...this is what is ideal, this is how it might work for this particular school." (Teacher)

In addition, KSE should consider appointing and supporting a KSE 'Champion' at each school site to ensure educators have access to a known, trusted, and accessible person to support their adoption and use of KSE within their classroom.

Key Recommendation: Develop resources to support students' connections between KSE activities, STEM subjects and education and career options and pathways.

Consider developing or expanding resources that connect KSE units and lessons to STEM education and workforce pathways. Additionally, special attention should be given to creating materials that are effective in reaching and engaging female students and student's from low-income communities. This includes introducing people (or stories about people) from different backgrounds that have pursued STEM careers.

Key Recommendation: Provide resources to partners that support fundraising efforts and promote school and district 'buy-in'

Successful adoption, utilization and expansion of KSE programs within schools and districts is dependent on several factors. These include funding to access KSE products and a commitment to the importance of KSE programming for student success by school leadership and key district decision-makers. It is critical that KSE staff develop relationships with key 'decision making' staff within schools and districts. Additionally, making data related to student impact and outcomes available to these stakeholders will reaffirm the importance of KSE and the importance for student learning outcomes.

To support educator and school fundraising efforts, KSE should consider providing boilerplate grant and/or development language to key stakeholders to leverage in development efforts.

Key Recommendation: Develop and expand programs, activities, and resources designed to meet the specific needs of female and male students.

In addition to lower scores for female students in STEM workforce connection questions, as illustrated in Part One (Student Experience) there are several marked differences in the experiences of female and male students at baseline assessment. Primary differences include overall lower scores in STEM ability, confidence and identity for female students and lower scores in 21st Century Skills for male students. Given these variances, KSE should consider investing in program development to address the unique needs of female and male students, particularly as it relates to the development STEM ability, confidence and identity in female students and 21st Century Skills in male students.