U.S. Department of Education - EDCAPS
G5-Technical Review Form (New)

Technical Review Coversheet

Applicant: University City Science Center (S411C210055)
Reader #1:   **********

	Points Possible	**Points Scored**
Questions		
Selection Criteria		
Significance		
1. Significance	20	18
Quality of Project Design		
1. Project Design	30	27
Sub Total	50	45
Resources & Management Plan		
Resources & Management Plan		
1. Resources & Manag. Plan	25	21
Sub Total	25	21
Selection Criteria		
Quality of the Project Evaluation		
1. Project Evaluation	25	0
Sub Total	25	0
Priority Questions		
CPP1		
CPP1		
1. CPP1	5	4
Sub Total	5	4
CPP2		
CPP2		
1. CPP2	5	0
Sub Total	5	0
CPP3		
CPP3		
1. CPP3	5	5
Sub Total	5	5
Total	115	75

Technical Review Form

Panel #7 - EIR Early Phase - 7: 84.411C

Reader #1:   **********

Applicant: University City Science Center (S411C210055)

Questions

Selection Criteria - Significance

1. **The Secretary considers the significance of the proposed project. In determining the significance of the proposed project, the Secretary considers the following factors:**

Reader's Score: 18

   Sub

1. **The extent to which the proposed project involves the development or demonstration of promising new strategies that build on, or are alternatives to, existing strategies.**

    Strengths:

    The significance and strength of this project is the plan to engage underserved high need middle school students in an inquiry-based program for STEM by connecting students' STEM knowledge with out-of-school settings. In addition, a strength of this project is the explicit connection to the communities of Philadelphia and a vast STEM social network that is based on local industry partners (p. e16, p. e25). This has significant potential to research and develop new strategies to support traditionally underserved students in STEM learning.

    Weaknesses:

    The project is highly dependent on the presence of a strong learning ecosystem, which does not exist in a lot of communities. This is a noted weakness, as it assumes that implementation will take place in schools that already have industry partnerships which may reduce the likelihood of future replication.

   Reader's Score: 13

2. **The extent to which the results of the proposed project are to be disseminated in ways that will enable others to use the information or strategies.**

    Strengths:

    Using a multifaceted approach including social media, conferences, reports, presentations, and journals, the project will disseminate results in a variety of ways. The project will also reach key stakeholders and public audiences through presentations and workshops (p. e26) and have a stated history of reaching over 3,500 practitioners to date. The demonstration of strong previous experience and dedication to dissemination activities with a key partner, Venture Café Philadelphia is a noted strength because it presents a plan that will enable others to use the information and strategies to support their local community needs. (p. e26)

    Weaknesses:

    No weaknesses noted.

Reader's Score: 5

Selection Criteria - Quality of Project Design

1. **The Secretary considers the quality of the design of the proposed project. In determining the quality of the design of the proposed project, the Secretary considers the following factors:**

Reader's Score: 27

Sub

1. **The extent to which there is a conceptual framework underlying the proposed research or demonstration activities and the quality of that framework.**

   Strengths:

   The project builds upon strong conceptual foundations, specifically research and data that demonstrates the systemic nature of achievement gaps in STEM especially for low-income students of color compared to their white counterparts in urban areas like Philadelphia (p. e20). Another strength of this application is noted by the recent investments in foundations for out-of-school programs that show growing evidence of success (p. e20). The project draws upon the broader STEM business ecosystem in Philadelphia (p. e22) to support the likelihood of the project reaching the intended goals. Another noted strength of the project is that it builds upon a significant body of STEM research, showing learning as an active process that utilizes social and community connections (p. e22). Finally, the project is also aligned with the National Academies of Sciences evidence-informed action steps (p. e23) which suggests a strong national-level evidence-based foundation for the project activities in alignment with the intended goals.

   Weaknesses:

   The conceptual background and hypotheses do not clearly and explicitly link to evidence from the literature. (p. e27, e28) The lack of articulation connecting those two elements is a weakness of the project rationale.

   Reader's Score: 13

2. **The extent to which the goals, objectives, and outcomes to be achieved by the proposed project are clearly specified and measurable.**

   Strengths:

   The majority of project objectives are listed with aims and are appropriate to the project purpose and goals. The objectives include specific outcomes that describe different data sets that will be used to determine success.

   Weaknesses:

   Two of the three project objectives are focused on evaluation processes (p. e21), which is a weakness because the evaluation dominates and obscures some of the other perhaps more nuanced project goals that might be needed to assess specific innovations. The lack of specific objectives for each of the diverse project activities is a weakness because it is not clear how those will be achieved and accessed in alignment with the overall goal.

   Reader's Score: 4

3. **The extent to which the design of the proposed project is appropriate to, and will successfully address, the needs of the target population or other identified needs.**

Strengths:

The design is appropriate to the target population of unrepresented youth in Philadelphia because it will use hands-on discovery-based learning, is place-based, builds on the strengths of the students in their urban community, and will engage industry partners that will help develop their science identities (p. e27, e28). This is a noted strength of the program as it will also create a direct connection between students interested and proficient in STEM and increase their potential to pursue eventual careers in STEM industries in the Philadelphia area.

Weaknesses:

No weaknesses noted.

Reader's Score: 10

Resources & Management Plan - Resources & Management Plan

1. **The Secretary considers the adequacy of resources and the quality of the management plan for the proposed project. In determining the adequacy of resources and quality of the management plan for the proposed project, the Secretary considers the following factors:**

Reader's Score: 21

Sub

1. **The adequacy of the management plan to achieve the objectives of the proposed project on time and within budget, including clearly defined responsibilities, timelines, and milestones for accomplishing project tasks.**

   Strengths:

   The proposal provides details about monthly and weekly meetings, leadership meetings, program development team meetings and evaluation team meetings. These management structures are a noted strength as all have evolving purposes depending on the phase of the program which are detailed. The proposal states that all work will be done collaboratively and iteratively to refine the program, which increases the likelihood the project will achieve improved student STEM outcomes. Finally, a detailed timeline broken down by quarterly tasks is provided on p. e56 demonstrating a clear set of activities in alignment with the project goal and objectives.

   Weaknesses:

   The proposal outlines a heavy reliance on FirstHand program staff for program design, refinement, coordination and implementation. (p. e35) The assignment of these tasks in aggregate to the program staff as a collective makes it unclear if the team has the appropriate capacity to achieve all of the assigned efforts.

   Reader's Score: 8

2. **The qualifications, including relevant training and experience, of key project personnel.**

   Strengths:

   The proposed team will collaborate with AnLar LLC and Palmer Wolf, using AnLar's FirstHand curriculum, which will help for coordinating and managing various project components. This is noted as a strength as there are multiple partners with special roles and expertise who come together synergistically. In addition, the group has already established long standing partnerships with schools, principals, and industries throughout Philadelphia (p. e24). These pre-existing relationships increase the likelihood that the project will be able to complete the full scope of activities.

Weaknesses:

No weaknesses noted.

Reader's Score: 5

3. **The extent to which the costs are reasonable in relation to the objectives, design, and potential significance of the proposed project.**

Strengths:

All project costs appear reasonable and are clearly outlined in narrative form on p. e125-e132. The level of detail is a noted strength and demonstrates that the project has taken into account costs for various program activities including personnel, dissemination, and partnership costs. This demonstrates that the project has sufficient resources to achieve the project as proposed.

Weaknesses:

The overall project will only support 336 students (p. e126), which seems low for the large scope and budget of the proposed project.

Reader's Score: 4

4. **The adequacy of procedures for ensuring feedback and continuous improvement in the operation of the proposed project.**

Strengths:

This project is designed in four phases including a pilot program followed up by in depth formative evaluation to collect baseline data. Phase 2 involves refinement and phase 3 is implementation of the refined FirstHand program, which demonstrates a strong evaluative plan (p. e32). Data on implementation fidelity, students' scientific identity, interest and knowledge will be collected and analyzed during each year for team recommendations in the following spring. (p. e36) These activities demonstrate a process and commitment to continuous improvement over the course of the grant award.

Weaknesses:

A weaknesses is that the proposal lacks specific details regarding when the formative evaluation will take place and when and how the data will be delivered to program participants. It is not clear if the data and outcomes would be delivered to a leadership team or all participants, nor is it clear how would this data be used to inform improvement.

Reader's Score: 4

Selection Criteria - Quality of the Project Evaluation

1. **The Secretary considers the quality of the evaluation to be conducted of the proposed project. In determining the quality of the evaluation, the Secretary considers the following factors:**

Reader's Score: 0

Sub

1. **(1) The extent to which the methods of evaluation will, if well implemented, produce evidence about the project's effectiveness that would meet the What Works Clearinghouse standards with or without reservations as described in the What Works**

Sub

Clearinghouse Handbook (as defined in this notice).

   Strengths:

   Weaknesses:

   Reader's Score:

2. **(2) The extent to which the methods of evaluation will provide performance feedback and permit periodic assessment of progress toward achieving intended outcomes.**

   Strengths:

   Weaknesses:

   Reader's Score:

3. **(3) The potential contribution of the proposed project to increase knowledge or understanding of educational problems, issues, or effective strategies.**

   Strengths:

   Weaknesses:

   Reader's Score:

Priority Questions

CPP1 - CPP1

1. **Competitive Preference Priority 1: Computer Science (up to 5 points).**
   Projects designed to improve student achievement or other educational outcomes in computer science (as defined in this notice). These projects must address the following priority area: Expanding access to and participation in rigorous computer science coursework for traditionally underrepresented students such as racial or ethnic minorities, women, students in communities served by rural local educational agencies (as defined in this notice), children or students with disabilities (as defined in this notice), or low-income individuals (as defined under section 312(g) of the Higher Education Act of 1965, as amended).

   Strengths:

   The project team uses computer coding software, Scratch, for training. Additionally, the project partners already developed an engaging computer science curriculum, "Health Hackers" where students learn to code and develop mobile apps using Thunkable (p. e25). These types of coding software are a strength as it allows students to build on blocks of codes without becoming overloaded with coding detail in excess and meets the needs of the target population who may be new to these aspects of computer science.

Weaknesses:

The description of computer science curriculum is under-developed. It's not clear what specific skills and concepts the students will gain, and how that aligns to future opportunities with STEM industry.

Reader's Score: 4

CPP2 - CPP2

1. **Competitive Preference Priority 2: Innovative Approaches to Addressing the Impact of COVID-19 on Underserved Students and Educators (up to 5 points).**
   Projects designed to address the needs of underserved students and educators most impacted by COVID-19 through…[refer to the NIA for the full list of potential projects]

   Strengths:

   Not addressed in this proposal.

   Weaknesses:

   Not addressed in this proposal.

Reader's Score: 0

CPP3 - CPP3

1. **Competitive Preference Priority 3: Promoting Equity and Adequacy in Student Access to Educational Resources and Opportunities (up to 5 points).**
   Projects designed to promote equity in access to critical resources for underserved students in prekindergarten through grade 12 through one or more of the following…[refer to the NIA for the full set of potential projects]

   Strengths:

   The project explicitly includes culturally-responsive programming with a focus on Black and Hispanic students in Philadelphia region where students prioritize the idea of giving back to their communities (p. e31). Students also engage with a mentor frequently throughout, which is a strength as they will develop relationships within their community.

   Weaknesses:

   No weaknesses noted.

Reader's Score: 5

Status: Submitted
Last Updated: 10/05/2021 11:14 AM

Technical Review Coversheet

Applicant: University City Science Center (S411C210055)
Reader #2:   **********

		Points Possible	Points Scored
Questions			
Selection Criteria			
Significance			
1. Significance		20	17
Quality of Project Design			
1. Project Design		30	28
	Sub Total	50	45
Resources & Management Plan			
Resources & Management Plan			
1. Resources & Manag. Plan		25	20
	Sub Total	25	20
Selection Criteria			
Quality of the Project Evaluation			
1. Project Evaluation		25	0
	Sub Total	25	0
Priority Questions			
CPP1			
CPP1			
1. CPP1		5	4
	Sub Total	5	4
CPP2			
CPP2			
1. CPP2		5	0
	Sub Total	5	0
CPP3			
CPP3			
1. CPP3		5	5
	Sub Total	5	5
	Total	115	74

Technical Review Form

Reader #2:   **********

Applicant: University City Science Center (S411C210055)

Questions

Selection Criteria - Significance

1. The Secretary considers the significance of the proposed project. In determining the significance of the proposed project, the Secretary considers the following factors:

Reader's Score: 17

> **Sub**

1. **The extent to which the proposed project involves the development or demonstration of promising new strategies that build on, or are alternatives to, existing strategies.**

    Strengths:

    Providing middle school kids the opportunity to learn programming through projects that focus on mental and/or physical health is a novel idea that will likely have a positive impact on the students and the community. In addition, the approach of having students working in the same shared space as industry professionals receiving mentoring has the potential to increase a sense of belonging in the profession. Additionally, students may gain valuable insights into the day-to-day industry experiences and be able to assess firsthand whether they want to pursue a career in STEM/CS. Finally, allocating resources to staff professional development on culturally responsive teaching and effective STEM practices will likely increase the quality of outcomes for students involved in the project (p. e19-e25).

    Weaknesses:

    The project proposal does not clearly elaborate on what students will learn in the proposed project. In particular, it's clear that students will engage in computer science (CS) projects, but it's unclear exactly what they will learn and create through the process and how this aligns with the needs of the community (p. e19-e225).

    Reader's Score: 12

2. **The extent to which the results of the proposed project are to be disseminated in ways that will enable others to use the information or strategies.**

    Strengths:

    The proposed dissemination plan includes social media, conferences, report publications and presentations, and journal publications (p. e26-e27). This approach will likely reach a wide audience of researchers and practitioners in the field to enable others to use the information or strategies of the project.

    Weaknesses:

    No weaknesses noted.

Reader's Score: 5

Selection Criteria - Quality of Project Design

1. **The Secretary considers the quality of the design of the proposed project. In determining the quality of the design of the proposed project, the Secretary considers the following factors:**

Reader's Score: 28

Sub

1. **The extent to which there is a conceptual framework underlying the proposed research or demonstration activities and the quality of that framework.**

   Strengths:

   The framework in the proposal demonstrates a range of experiences that will likely improve the socially-situated identities involved with being a STEM/Computer Science (CS) professional while also providing relevant experience and content knowledge that can assist with future careers in STEM/CS (p. e27-e28). The approach aligns with needs of the target population and project activities outlined in the application. This is a strength because it demonstrates that the project design is built on sound research and has a high likelihood of achieving the intended outcomes.

   Weaknesses:

   No weaknesses noted.

   Reader's Score: 15

2. **The extent to which the goals, objectives, and outcomes to be achieved by the proposed project are clearly specified and measurable.**

   Strengths:

   The proposal provides three objectives, each with their own intended outcomes that detail specific measures (p. e29). For example, the proposed objective 1 states that the project will engage underserved, middle school students in hands-on discovery-based, mentored STEM/CS programming, and includes outcomes such as the number of students served over the course of the grant, the retention of students and teachers, and the number of student-mentor relationships established. This example demonstrates the inclusion of multiple outcomes for each objective to support the project in understanding impact across multiple data sets.

   Weaknesses:

   The proposal could be strengthened by elaborating on what and how they will measure each goal (p. e29). For example, it is unclear what success criteria will determine when students have improved their scientific identity and belonging, which is an outcome described for objective 3, and how that will be measured. The lack of specific targets and measurement tools for all proposed outcomes is a weakness because it doesn't clearly allow the project to measure achievement of stated goals.

   Reader's Score: 3

3. **The extent to which the design of the proposed project is appropriate to, and will successfully address, the needs of the target population or other identified needs.**

Sub

Strengths:

The objectives and design of this project appear both appropriate to, and will successfully address, the needs of the target population. In particular, the proposal clearly articulates specific needs of the Philadelphia student population and provides evidence to support how the proposed approach will assist with improving equitable learning through culturally-responsive programming and curated mentorship (p. e31).

Weaknesses:

No weaknesses noted.

Reader's Score: 10

Resources & Management Plan - Resources & Management Plan

1. **The Secretary considers the adequacy of resources and the quality of the management plan for the proposed project. In determining the adequacy of resources and quality of the management plan for the proposed project, the Secretary considers the following factors:**

Reader's Score: 20

Sub

1. **The adequacy of the management plan to achieve the objectives of the proposed project on time and within budget, including clearly defined responsibilities, timelines, and milestones for accomplishing project tasks.**

Strengths:

The iterative process that includes four cohorts of students will likely assist with refining the process and project activities throughout each year of the implementation (p. e32). The timeline of milestones on pages e56-e57 provide a clear outline of when each phrase will occur, demonstrating a clear plan to achieve the activities of project within the grant award period.

Weaknesses:

In the three phases outlined on pages e33 and e56-e57, it is unclear who is responsible for the major milestones associated with each objective on pages e56-e57. The lack of specificity is a noted weakness because it is not clear that the project has the capacity to achieve all project activities as stated.

Reader's Score: 8

2. **The qualifications, including relevant training and experience, of key project personnel.**

Strengths:

The key project personnel appear to have the relevant training and experience for the proposed project (p. e61-e106). This is a strength because it demonstrate that the project has the expertise necessary to successfully achieve the outcomes as proposed.

Weaknesses:

No weaknesses noted.

Sub

Reader's Score: 5

3. **The extent to which the costs are reasonable in relation to the objectives, design, and potential significance of the proposed project.**

    Strengths:

    The budget provided on pages e125-e132 appears to align with the project goals and objectives. For example, the project budget includes resources dedicated to providing participants public transit vouchers to address transportation needs that are necessary for the targeted population. (p. e125-3126)

    Weaknesses:

    The overall cost per student is high, as only 336 students are anticipated to participate in the program (p. e125-e132). The number of students involved related to the total implementation cost is a weakness because it may be a barrier to future replication and scaling.

    Reader's Score: 4

4. **The adequacy of procedures for ensuring feedback and continuous improvement in the operation of the proposed project.**

    Strengths:

    The feedback plan outlined on pages e35-36 appears appropriate for the proposed project. If well implemented, the process has the potential to improve the overall implementation of the project and increase the likelihood of achieving the intended outcomes.

    Weaknesses:

    It is unclear what the proposed formative and summative evaluations will look like in the context of the proposed continuous feedback process for the project (p. e29). The lack of specific detail about the data to be collected is a weakness because it is not clear if the project's data collection will be comprehensive to inform necessary improvements.

    Reader's Score: 3

Selection Criteria - Quality of the Project Evaluation

1. **The Secretary considers the quality of the evaluation to be conducted of the proposed project. In determining the quality of the evaluation, the Secretary considers the following factors:**

Reader's Score: 0

    Sub

    1. **(1) The extent to which the methods of evaluation will, if well implemented, produce evidence about the project's effectiveness that would meet the What Works Clearinghouse standards with or without reservations as described in the What Works Clearinghouse Handbook (as defined in this notice).**

        Strengths:

Sub

    Weaknesses:

    Reader's Score:

2. **(2) The extent to which the methods of evaluation will provide performance feedback and permit periodic assessment of progress toward achieving intended outcomes.**

    Strengths:

    Weaknesses:

    Reader's Score:

3. **(3) The potential contribution of the proposed project to increase knowledge or understanding of educational problems, issues, or effective strategies.**

    Strengths:

    Weaknesses:

    Reader's Score:

Priority Questions

CPP1 - CPP1

1. **Competitive Preference Priority 1: Computer Science (up to 5 points).**
   Projects designed to improve student achievement or other educational outcomes in computer science (as defined in this notice). These projects must address the following priority area: Expanding access to and participation in rigorous computer science coursework for traditionally underrepresented students such as racial or ethnic minorities, women, students in communities served by rural local educational agencies (as defined in this notice), children or students with disabilities (as defined in this notice), or low-income individuals (as defined under section 312(g) of the Higher Education Act of 1965, as amended).

    Strengths:

Pairing real-world social connections with industry experience while obtaining computer science (CS) content knowledge is likely to have a positive and lasting impact on the target population of underserved students in Philadelphia.

    Weaknesses:

It is unclear what computer science curriculum will be used and how it fits within the overall program. The proposal lacks details on what students will create and learn as a result of engaging in this program, and how that prepares them for future industry and workforce needs.

Reader's Score: 4

CPP2 - CPP2

1. **Competitive Preference Priority 2: Innovative Approaches to Addressing the Impact of COVID-19 on Underserved Students and Educators (up to 5 points).**
   Projects designed to address the needs of underserved students and educators most impacted by COVID-19 through…[refer to the NIA for the full list of potential projects]

   Strengths:

   Not addressed in the application.

   Weaknesses:

   Not addressed in the application.

Reader's Score: 0

CPP3 - CPP3

1. **Competitive Preference Priority 3: Promoting Equity and Adequacy in Student Access to Educational Resources and Opportunities (up to 5 points).**
   Projects designed to promote equity in access to critical resources for underserved students in prekindergarten through grade 12 through one or more of the following…[refer to the NIA for the full set of potential projects]

   Strengths:

   This project provides a multipronged strategy for addressing the equity goals outlined in the proposal. The strategies as presented will likely have a strong impact on the communities in which the project will be implemented to improve equity in STEM and computer science learning. (p. e23)

   Weaknesses:

   No weaknesses noted.

Reader's Score: 5

Status: Submitted
Last Updated: 10/05/2021 11:14 AM

Technical Review Coversheet

Applicant: University City Science Center (S411C210055)
Reader #3:   **********

		Points Possible	Points Scored
Questions			
Selection Criteria			
Significance			
1. Significance		20	0
Quality of Project Design			
1. Project Design		30	0
	Sub Total	50	0
Resources & Management Plan			
Resources & Management Plan			
1. Resources & Manag. Plan		25	0
	Sub Total	25	0
Selection Criteria			
Quality of the Project Evaluation			
1. Project Evaluation		25	20
	Sub Total	25	20
Priority Questions			
CPP1			
CPP1			
1. CPP1		5	
	Sub Total	5	
CPP2			
CPP2			
1. CPP2		5	
	Sub Total	5	
CPP3			
CPP3			
1. CPP3		5	
	Sub Total	5	
	Total	115	20

Technical Review Form

Panel #7 - EIR Early Phase - 7: 84.411C

Reader #3: **********

Applicant: University City Science Center (S411C210055)

Questions

Selection Criteria - Significance

1. **The Secretary considers the significance of the proposed project. In determining the significance of the proposed project, the Secretary considers the following factors:**

Reader's Score: **0**

   Sub

   1. **The extent to which the proposed project involves the development or demonstration of promising new strategies that build on, or are alternatives to, existing strategies.**

      Strengths:

      Weaknesses:

      Reader's Score:

   2. **The extent to which the results of the proposed project are to be disseminated in ways that will enable others to use the information or strategies.**

      Strengths:

      Weaknesses:

      Reader's Score:

Selection Criteria - Quality of Project Design

1. **The Secretary considers the quality of the design of the proposed project. In determining the quality of the design of the proposed project, the Secretary considers the following factors:**

Reader's Score: 0

    Sub

1. The extent to which there is a conceptual framework underlying the proposed research or demonstration activities and the quality of that framework.

    Strengths:

    Weaknesses:

    Reader's Score:

2. The extent to which the goals, objectives, and outcomes to be achieved by the proposed project are clearly specified and measurable.

    Strengths:

    Weaknesses:

    Reader's Score:

3. The extent to which the design of the proposed project is appropriate to, and will successfully address, the needs of the target population or other identified needs.

    Strengths:

    Weaknesses:

    Reader's Score:

Resources & Management Plan - Resources & Management Plan

1. The Secretary considers the adequacy of resources and the quality of the management plan for the proposed project. In determining the adequacy of resources and quality of the management plan for the proposed project, the Secretary considers the following factors:

Reader's Score: 0

    Sub

1. The adequacy of the management plan to achieve the objectives of the proposed project on time and within budget, including clearly defined responsibilities, timelines, and milestones for accomplishing project tasks.

Sub

   Strengths:

   Weaknesses:

   Reader's Score:

2. **The qualifications, including relevant training and experience, of key project personnel.**

   Strengths:

   Weaknesses:

   Reader's Score:

3. **The extent to which the costs are reasonable in relation to the objectives, design, and potential significance of the proposed project.**

   Strengths:

   Weaknesses:

   Reader's Score:

4. **The adequacy of procedures for ensuring feedback and continuous improvement in the operation of the proposed project.**

   Strengths:

   Weaknesses:

   Reader's Score:

Selection Criteria - Quality of the Project Evaluation

1. **The Secretary considers the quality of the evaluation to be conducted of the proposed project. In determining the quality of the evaluation, the Secretary considers the following factors:**

Reader's Score: 20

1. **(1) The extent to which the methods of evaluation will, if well implemented, produce evidence about the project's effectiveness that would meet the What Works Clearinghouse standards with or without reservations as described in the What Works Clearinghouse Handbook (as defined in this notice).**

    Strengths:

    The evaluation plan provided by the applicant includes a two-phase process (page e36). The initial process will involve a formative evaluation that will provide data for continuous feedback in the initial year of the program. The second phase is a summative evaluation that will meet the What Works Clearinghouse standard (page e36). The plan includes a review of four cohorts of students assigned at random to participate in a 10-week segment of the program and will continue over the course of the project. The project anticipates a minimum of attrition on the part of the students. The plan includes both a treatment group as well as a control group for comparison. The applicant identifies a number of instruments such as a measure of scientific self-efficacy (Bandura 2006) and a measure of belonging in science (Trujillo and Tanner 2014) (page e41). The plan will seek to establish if students in the treatment and control groups exhibited equivalencies on outcome measures that are within the guidelines of the What Works Clearinghouse (WWC) Standards Handbook (version 4.1). The applicant has selected as an external evaluator consultant that has worked on three Educational Innovation and Research (EIR) funded projects (page e111).

    Weaknesses:

    The project is designed to serve only 336 students which has impacts on the potential size of samples for assessment purposes and WWC standards. In addition, the applicant indicates that students will be assigned to the treatment group and the control group (page e40). However, it is unclear how the students will be selected for each of the groups. The applicant also indicates that 30% of the program sessions for each classroom of treatment-group students will be observed and rated using the Implementation Fidelity measure (page e41). The applicant further indicates that observations of 90% of essential program elements will serve as the threshold for acceptable program implementation. It is unclear how the applicant decided on these percentages and how that supports the overall goals of the evaluation.

    Reader's Score: 10

2. **(2) The extent to which the methods of evaluation will provide performance feedback and permit periodic assessment of progress toward achieving intended outcomes.**

    Strengths:

    The applicant indicates formative evaluation will begin in the Spring of 2022 and employ qualitative measures and analysis of data that will be shared with the project team (page e36). The applicant further indicates that the data will be analyzed in the winter of each academic year and recommendations will be shared with the various stakeholders in the beginning of the following spring. The applicant specifically indicates that data collection will take place in the fall of each year with the results shared with stakeholders. This process will enable the project team to continuously review activities to make improvements based on outcomes of smaller groups of students who have already completed their participation in this study and program (page e38).

    Weaknesses:

    No weaknesses found.

    Reader's Score: 5

3. **(3) The potential contribution of the proposed project to increase knowledge or understanding of educational problems, issues, or effective strategies.**

Sub

Strengths:

The applicant describes how its various evaluation strategies and techniques will increase knowledge and understanding of several key education issues. For example, the use of the Woodcock Johnson Academic Knowledge subtest focused on science will provide information and data in understanding how interventions had an impact on student achievement (page e42). The applicant further indicates that it will also examine and consider how the project aligns with the Next Generation Science Standards in order to gauge curriculum specific scientific knowledge of students in the program (page e 43). The project also states that the activities and services will assist in understanding how the barriers that have historically prevented students of color from pursuing STEM opportunities careers will be reduced or eliminated (page e45). These outcomes have a strong likelihood of improving the field's understanding and knowledge.

Weaknesses:

No weaknesses found.

Reader's Score: 5

Priority Questions

CPP1 - CPP1

1. **Competitive Preference Priority 1: Computer Science (up to 5 points).**
   Projects designed to improve student achievement or other educational outcomes in computer science (as defined in this notice). These projects must address the following priority area: Expanding access to and participation in rigorous computer science coursework for traditionally underrepresented students such as racial or ethnic minorities, women, students in communities served by rural local educational agencies (as defined in this notice), children or students with disabilities (as defined in this notice), or low-income individuals (as defined under section 312(g) of the Higher Education Act of 1965, as amended).

   Strengths:

   Weaknesses:

Reader's Score:

CPP2 - CPP2

1. **Competitive Preference Priority 2: Innovative Approaches to Addressing the Impact of COVID-19 on Underserved Students and Educators (up to 5 points).**
   Projects designed to address the needs of underserved students and educators most impacted by COVID-19 through…[refer to the NIA for the full list of potential projects]

   Strengths:

   Weaknesses:

Reader's Score:

CPP3 - CPP3

1. **Competitive Preference Priority 3: Promoting Equity and Adequacy in Student Access to Educational Resources and Opportunities (up to 5 points).**
   Projects designed to promote equity in access to critical resources for underserved students in prekindergarten through grade 12 through one or more of the following…[refer to the NIA for the full set of potential projects]

   Strengths:

   Weaknesses:

   Reader's Score:

Status: Submitted
Last Updated: 10/05/2021 11:14 AM

Technical Review Coversheet

Applicant: University City Science Center (S411C210055)
Reader #4:   **********

		Points Possible	Points Scored
Questions			
Selection Criteria			
Significance			
1. Significance		20	0
Quality of Project Design			
1. Project Design		30	0
	Sub Total	50	0
Resources & Management Plan			
Resources & Management Plan			
1. Resources & Manag. Plan		25	0
	Sub Total	25	0
Selection Criteria			
Quality of the Project Evaluation			
1. Project Evaluation		25	17
	Sub Total	25	17
Priority Questions			
CPP1			
CPP1			
1. CPP1		5	
	Sub Total	5	
CPP2			
CPP2			
1. CPP2		5	
	Sub Total	5	
CPP3			
CPP3			
1. CPP3		5	
	Sub Total	5	
	Total	115	17

Technical Review Form

Panel #7 - EIR Early Phase - 7: 84.411C

Reader #4: **********

Applicant: University City Science Center (S411C210055)

Questions

Selection Criteria - Significance

1. **The Secretary considers the significance of the proposed project. In determining the significance of the proposed project, the Secretary considers the following factors:**

Reader's Score: **0**

     Sub

     1. **The extent to which the proposed project involves the development or demonstration of promising new strategies that build on, or are alternatives to, existing strategies.**

       Strengths:

       Weaknesses:

       Reader's Score:

     2. **The extent to which the results of the proposed project are to be disseminated in ways that will enable others to use the information or strategies.**

       Strengths:

       Weaknesses:

       Reader's Score:

Selection Criteria - Quality of Project Design

1. **The Secretary considers the quality of the design of the proposed project. In determining the quality of the design of the proposed project, the Secretary considers the following factors:**

Reader's Score: **0**

    Sub

1. **The extent to which there is a conceptual framework underlying the proposed research or demonstration activities and the quality of that framework.**

    Strengths:

    Weaknesses:

    Reader's Score:

2. **The extent to which the goals, objectives, and outcomes to be achieved by the proposed project are clearly specified and measurable.**

    Strengths:

    Weaknesses:

    Reader's Score:

3. **The extent to which the design of the proposed project is appropriate to, and will successfully address, the needs of the target population or other identified needs.**

    Strengths:

    Weaknesses:

    Reader's Score:

Resources & Management Plan - Resources & Management Plan

1. **The Secretary considers the adequacy of resources and the quality of the management plan for the proposed project. In determining the adequacy of resources and quality of the management plan for the proposed project, the Secretary considers the following factors:**

Reader's Score: **0**

    Sub

1. **The adequacy of the management plan to achieve the objectives of the proposed project on time and within budget, including clearly defined responsibilities, timelines, and milestones for accomplishing project tasks.**

Sub

    Strengths:

    Weaknesses:

    Reader's Score:

2. **The qualifications, including relevant training and experience, of key project personnel.**

    Strengths:

    Weaknesses:

    Reader's Score:

3. **The extent to which the costs are reasonable in relation to the objectives, design, and potential significance of the proposed project.**

    Strengths:

    Weaknesses:

    Reader's Score:

4. **The adequacy of procedures for ensuring feedback and continuous improvement in the operation of the proposed project.**

    Strengths:

    Weaknesses:

    Reader's Score:

Selection Criteria - Quality of the Project Evaluation

1. **The Secretary considers the quality of the evaluation to be conducted of the proposed project. In determining the quality of the evaluation, the Secretary considers the following factors:**

Reader's Score: 17

1. **(1) The extent to which the methods of evaluation will, if well implemented, produce evidence about the project's effectiveness that would meet the What Works Clearinghouse standards with or without reservations as described in the What Works Clearinghouse Handbook (as defined in this notice).**

   Strengths:

   The proposal will evaluate multiple outcomes that are directly related to the proposed logic model and are intended targets of change for the program (pg. e24-26). If well implemented, the evaluation may inform the project effectiveness to promote future replication and research.

   Weaknesses:

   The proposal plans to have 336 students in the sample, which does not meet the requirement of having at least 350 participants to meet What Works Clearinghouse (WWC) standards (pg. e22). Additionally, the proposal may experience attrition that would also reduce the total anticipated sample to be further below the required sample size threshold. It is not clear whether the proposal will be utilizing a quasi-experimental design or randomized control trial to meet WWC criteria. If the proposal is seeking to implement a randomized control trial, information was not provided on the process for randomization and at what level groups would be randomized at, which is a weakness as that methodology directly impacts the evaluation's ability to meet the WWC criteria. Additionally, methods describing how baseline equivalence will be determined was not provided, so it is difficult to determine what confounding factors may be. The proposal states that it will examine possible covariates during analyses, but these should be considered at the outset of the evaluation design so that the correct methodology can be used in the evaluation. Finally, not enough information was provided on how missing data would be addressed in analyses.

   Reader's Score: 7

2. **(2) The extent to which the methods of evaluation will provide performance feedback and permit periodic assessment of progress toward achieving intended outcomes.**

   Strengths:

   The proposed use of obtaining multiple types of data to monitor performance and understand what improvements are needed during the design phase is a strength (pg. e40-41). The variety of data collected to answer various research questions will aid in improving the overall program design. In deciding how to improve programming it is important to obtain data from multiple stakeholders and the proposal plans to do this by obtaining information from both teachers and student participants, which is a strength.

   Weaknesses:

   No weaknesses are noted.

   Reader's Score: 5

3. **(3) The potential contribution of the proposed project to increase knowledge or understanding of educational problems, issues, or effective strategies.**

   Strengths:

   The proposed evaluation plan may yield findings that would clarify whether the program would improve student outcomes. If found to be effective, the findings will contribute to understanding what is needed to address STEM interest and knowledge in a high-needs population (pg. e45). Lastly, the data collected during the development cycles will greatly inform improvement of the program, which in turn should lead to better outcomes for the project.

Sub

    Weaknesses:

    No weaknesses are noted.

    Reader's Score: 5

Priority Questions

CPP1 - CPP1

1. **Competitive Preference Priority 1: Computer Science (up to 5 points).**
    Projects designed to improve student achievement or other educational outcomes in computer science (as defined in this notice). These projects must address the following priority area: Expanding access to and participation in rigorous computer science coursework for traditionally underrepresented students such as racial or ethnic minorities, women, students in communities served by rural local educational agencies (as defined in this notice), children or students with disabilities (as defined in this notice), or low-income individuals (as defined under section 312(g) of the Higher Education Act of 1965, as amended).

    Strengths:

    Weaknesses:

Reader's Score:

CPP2 - CPP2

1. **Competitive Preference Priority 2: Innovative Approaches to Addressing the Impact of COVID-19 on Underserved Students and Educators (up to 5 points).**
    Projects designed to address the needs of underserved students and educators most impacted by COVID-19 through…[refer to the NIA for the full list of potential projects]

    Strengths:

    Weaknesses:

Reader's Score:

CPP3 - CPP3

1. **Competitive Preference Priority 3: Promoting Equity and Adequacy in Student Access to Educational Resources and Opportunities (up to 5 points).**
    Projects designed to promote equity in access to critical resources for underserved students in prekindergarten through grade 12 through one or more of the following…[refer to the NIA for the full set of potential projects]

Strengths:

Weaknesses:

Reader's Score:

Status: Submitted
Last Updated: 10/05/2021 11:14 AM