

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

Status: Submitted

Last Updated: 10/22/2020 11:07 AM

Technical Review Coversheet

Applicant: Intercultural Development Research Association (S411C200142)

Reader #1: *****

	Points Possible	Points Scored
Questions		
Selection Criteria		
Quality of Project Design		
1. Quality of Project Design	40	38
Sub Total	40	38
Resources and Quality of Management Plan		
Resources and Quality of Management Plan		
1. Resources and Management	35	30
Sub Total	35	30
Selection Criteria		
Quality of the Project Evaluation		
1. Project Evaluation	25	18
Sub Total	25	18
Priority Questions		
CPP		
Competitive Preference Priority 1		
1. Computer Science	5	5
Sub Total	5	5
Total	105	91

Technical Review Form

Panel #10 - FY20 EIR Early Phase- AP2 STEM - 10: 84.411C

Reader #1: *****

Applicant: Intercultural Development Research Association (S411C200142)

Questions

Selection Criteria - Quality of Project Design

1. The Secretary considers the quality of the design of the proposed project based on the following factors:

Reader's Score: 38

Sub

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

Strengths:

The applicant includes a detailed chart listing their proposed goals, objectives, and outcomes. The applicant has a clearly articulated project plan and logic model.

Weaknesses:

Specific measures (e.g., how "computing competence" will be measured) are not included for several noted outcomes. Some outcomes need more definition; for example, it is not clear whether percent improvements are for the aggregate or for individual students.

Reader's Score: 8

2. (2) 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 applicant provides a clear definition of "high-needs students" (abstract) and provides extensive support demonstrating both the need for the project generally and in their targeted districts. The applicant provides baseline data for their targeted outcomes as well as demographic information for each of their schools demonstrating their ability to reach their target population. Both components of their proposed project (combining computer science with a "purpose" to design programs for early childhood) are well demonstrated to be appropriate and impactful for their target population.

Weaknesses:

No weaknesses noted.

Reader's Score: 10

3. (3) The extent to which the design of the proposed project reflects up-to-date knowledge from research and effective practice.

Sub

Strengths:

The applicant clearly and thoroughly provides research evidence supporting each component of their proposed project using current literature. The applicant does a nice job of justifying each element of their logic model and making the case that their proposed project will lead to the improvements they propose.

Weaknesses:

No weaknesses noted.

Reader's Score: 10

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

Strengths:

The applicant makes a compelling case that their project will help build upon emerging research related to “computing identity” and help inform practice for improving math skills using this framework.

Weaknesses:

No weaknesses noted.

Reader's Score: 10

Resources and Quality of Management Plan - Resources and Quality of Management Plan

1. The Secretary considers the adequacy of resources and the quality of the management plan for the proposed project based on the following factors:

Reader's Score: 30

Sub

1. (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 applicant provides both a thorough narrative and accompanying management plan chart detailing the three phases of their project, timelines, and responsible parties. The management plan highlights key activities,

Weaknesses:

Milestones are not clearly specified. The evaluation timeline/plan is separated from the overall project management team plan. The applicant also does not describe the overall project organization and how partners will be managed and collaborate.

Reader's Score: 8

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

Sub

Strengths:

The applicant's costs are fully justified and reasonable. The applicant's budget narrative clearly defines each budget line.

Weaknesses:

No weaknesses noted.

Reader's Score: 5

3. (3) The qualifications, including relevant training and experience, of key project personnel.

Strengths:

The applicant includes a strong staffing plan and identifies clearly qualified staff for each role.

Weaknesses:

No weaknesses noted.

Reader's Score: 5

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

Strengths:

The applicant has centered continuous improvement in their project design. Specifically, each goal will consist of a series of pilot testing and refining. The applicant will also engage an external advisory board to help inform project development, which will help ensure the project team incorporates feedback into their work.

Weaknesses:

The applicant also does not include continuous improvement activities after the initial pilot phase.

Reader's Score: 8

5. (5) 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 applicant will use a number of dissemination methods including public-facing materials, professional conferences, and peer reviewed journal, each of which will help findings reach a number of key audiences.

Weaknesses:

The applicant does not describe dissemination efforts directly back to participating schools or teachers.

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 based on the following factors:

Reader's Score: 18

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:

The applicant makes a compelling case that their project will help build upon emerging research related to “computing identity” and help inform practice for improving math skills using this framework.

Weaknesses:

The applicant does not plan to conduct any exploratory moderation analyses to examine whether the intervention has differential impacts for some students. The applicant further does not address how they will handle attrition of students over the course of the evaluation or handle missing data. Additionally, the applicant does not describe the threshold for acceptable matches or from what pool the matches will be drawn. The applicant acknowledges that there will be clustering effects by classroom for the control students, but matched controls will likely need to be drawn from the broader school (not just clustered in 2 classrooms) to achieve sufficient matches; this makes the clustering issue difficult to deal with, and, indeed the clustering by classroom is not reflected in the applicant’s proposed impact model. The power analysis conducted assumes random assignment; while the propensity score matching helps approximate random assignment, the applicant does not provide enough information to demonstrate that they will be able to get sufficient matches to achieve their Minimum Detectable Effect Size (MDE).

Reader's Score: 11

- 2. (2) The extent to which the evaluation plan clearly articulates the key project components, mediators, and outcomes, as well as a measurable threshold for acceptable implementation.**

Strengths:

The applicant clearly articulates each component of their project and provides some details for measuring implementation (see Appendix I. b.). The applicant indicates they will further refine thresholds for implementation during the Development Phase.

Weaknesses:

The applicant does not describe how measures of fidelity will be included in the outcomes model. Thresholds are not provided for all measures. Some of the thresholds proposed (see Appendix 1.b.) are not well justified and may be hard to achieve (e.g., “100% of participating teachers report high confidence levels...”).

Reader's Score: 2

- 3. (3) The extent to which the methods of evaluation will provide valid and reliable performance data on relevant outcomes.**

Strengths:

The applicant provides psychometric data for each of their proposed measures demonstrating their reliability and validity.

Sub

Weaknesses:

No weaknesses noted.

Reader's Score: 5

Priority Questions

CPP - Competitive Preference Priority 1

1. Competitive Preference Priority 1: Computer Science

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 applicant aims to increase computer science implementation among high needs students.

Weaknesses:

No weaknesses noted.

Reader's Score: 5

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Technical Review Coversheet

Applicant: Intercultural Development Research Association (S411C200142)

Reader #2: *****

	Points Possible	Points Scored
Questions		
Selection Criteria		
Quality of Project Design		
1. Quality of Project Design	40	39
Sub Total	40	39
Resources and Quality of Management Plan		
Resources and Quality of Management Plan		
1. Resources and Management	35	35
Sub Total	35	35
Selection Criteria		
Quality of the Project Evaluation		
1. Project Evaluation	25	23
Sub Total	25	23
Priority Questions		
CPP		
Competitive Preference Priority 1		
1. Computer Science	5	5
Sub Total	5	5
Total	105	102

Technical Review Form

Panel #10 - FY20 EIR Early Phase- AP2 STEM - 10: 84.411C

Reader #2: *****

Applicant: Intercultural Development Research Association (S411C200142)

Questions

Selection Criteria - Quality of Project Design

1. The Secretary considers the quality of the design of the proposed project based on the following factors:

Reader's Score: 39

Sub

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

Strengths:

Project objectives are listed in exhibit 2 on p. e25. Outcomes are listed in a measurable format. This is a unique intervention in that it connects middle school students to kindergarten students through computer game development and supports teachers overseeing the process. It includes a graduate-level course developed to scaffold the learning.

Weaknesses:

None Noted

Reader's Score: 10

2. (2) 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:

On p. e19, the scope and theoretical basis of the middle school course is explained to the reader. The project focuses on the cognitive processes required to think like a programmer, rather than simply teaching the skills of programming.

Weaknesses:

None noted

Reader's Score: 10

3. (3) The extent to which the design of the proposed project reflects up-to-date knowledge from research and effective practice.

Sub

Strengths:

Literature cited on page e28 underscores the need for engaging students from underrepresented groups in STEM fields. In the target district, the applicant notes just 1% of families are employed in computer-related fields. Efficacy of the selected coding languages in supporting cognitive goals is articulated on page e31. Literature in support of this thesis is provided.

Weaknesses:

The project includes a connection between middle school students and kindergarten students in addition to a masters level course for teachers. An articulation of the evidence base presented on page e32 does not address these components.

Reader's Score: 9

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

Strengths:

The applicant proposes to replicate published research into math skills and computer science, outlined on page e34, using the unique population of these 7 districts. Additionally, the project proposes to add research findings in the area of computing identity specific to this population.

Weaknesses:

None noted

Reader's Score: 10

Resources and Quality of Management Plan - Resources and Quality of Management Plan

1. The Secretary considers the adequacy of resources and the quality of the management plan for the proposed project based on the following factors:

Reader's Score: 35

Sub

1. (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 management plan on p. e52 includes a clear explanation of objectives, goals, milestones, and personnel.

Weaknesses:

None noted

Reader's Score: 10

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

Sub

Strengths:

This project will result in the development of a college course for teachers, and a complete curriculum for middle school students, in addition to some larger contributions to the field. While not inexpensive, it will impact over 1000 students directly during the performance period and provide curricula that can be adopted statewide.

Weaknesses:

None noted

Reader's Score: 5

3. (3) The qualifications, including relevant training and experience, of key project personnel.

Strengths:

A full-time project director is included in the budget on page e38. Additionally, full-time curriculum developers and professional development specialists are included, along with administrative support on page e39. Additional personnel have been identified with qualifications listed on page e38, in addition to vitae provided as appendix.

Weaknesses:

None noted

Reader's Score: 5

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

Strengths:

The applicant explains the plan for course development and pilot testing on page e37. The applicant acknowledges the labor-intensive nature of collecting these data and interpreting them as part of the formative process. The applicant has devoted sufficient time and resources in staffing plan. The applicant has a clear blueprint for the feedback and reporting process in the management plan appendix on page e52.

Weaknesses:

None noted

Reader's Score: 10

5. (5) 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:

Well developed dissemination plan on page e41 uses multiple channels to reach technical and non-technical audiences.

Weaknesses:

None noted

Reader's Score: 5

Selection Criteria - Quality of the Project Evaluation

1. The Secretary considers the quality of the evaluation to be conducted of the proposed project based on the following factors:

Reader's Score: 23

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:

Study proposes matched groups quasi-experimental design with intact classes of approximately 50 students in each condition per school on page e42. Matching will be done to ensure equivalence. Power analysis calculations were used to inform sampling design on page e43.

Weaknesses:

Study mortality at both the student and teacher level is not addressed on page e43.

Reader's Score: 14

2. (2) The extent to which the evaluation plan clearly articulates the key project components, mediators, and outcomes, as well as a measurable threshold for acceptable implementation.

Strengths:

Measures for computational thinking and self-reports by teachers are included in logic model on p. e50. Model clearly spells out what is being measured and how it is measured.

Weaknesses:

Impacts on partner PreK-1 classrooms explained on page e22 not included in plan.

Reader's Score: 4

3. (3) The extent to which the methods of evaluation will provide valid and reliable performance data on relevant outcomes.

Strengths:

Externally validated measures of student computational identity and thinking are employed as part of pilot, as noted in Exhibit 11 on p. e44. Measures of teacher pedagogy and classroom observations are included during both pilot and implementation phases on page e69.

Weaknesses:

None noted

Sub

Reader's Score: 5

Priority Questions

CPP - Competitive Preference Priority 1

1. Competitive Preference Priority 1: Computer Science

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 applicant provides a clear plan with a well-established theoretical base and allocates appropriate time and resources to implementing an intervention with the potential for scalability in the area of computer science.

Weaknesses:

None noted

Reader's Score: 5

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Technical Review Coversheet

Applicant: Intercultural Development Research Association (S411C200142)

Reader #3: *****

	Points Possible	Points Scored
Questions		
Selection Criteria		
Quality of Project Design		
1. Quality of Project Design	40	40
Sub Total	40	40
Resources and Quality of Management Plan		
Resources and Quality of Management Plan		
1. Resources and Management	35	33
Sub Total	35	33
Selection Criteria		
Quality of the Project Evaluation		
1. Project Evaluation	25	25
Sub Total	25	25
Priority Questions		
CPP		
Competitive Preference Priority 1		
1. Computer Science	5	5
Sub Total	5	5
Total	105	103

Technical Review Form

Panel #10 - FY20 EIR Early Phase- AP2 STEM - 10: 84.411C

Reader #3: *****

Applicant: Intercultural Development Research Association (S411C200142)

Questions

Selection Criteria - Quality of Project Design

1. The Secretary considers the quality of the design of the proposed project based on the following factors:

Reader's Score: 40

Sub

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

Strengths:

The applicant describes clearly specified and measurable goals, objectives, and outcomes to be achieved by the proposed project (p. e15; pp. e23- e26). For example, goal one is the project will develop and establish eighth grade computer science VisionCoders course, professional development and materials to increase student computational thinking, computing identity and math skills. The objective is VisionCoders' instructional design team will create structures, alignment processes, development protocols, computational thinking process documents, observation tools and research-based pedagogical documents for use as guiding documents in development and pilot period of VisionCoders materials and course. The outcome is that the CS advisory team will report that the curriculum is appropriate and likely to increase students' computational thinking, computing identity and math skills (p. e25). The goals, objectives and outcomes are clearly linked and provide a cohesive outline of the components of the proposed VisionCoders project and its potential impact on students and teachers.

Weaknesses:

None noted.

Reader's Score: 10

2. (2) 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 applicant comprehensively describes 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. For example, the applicant describes the demographic profiles and math needs of targeted students (p. e62) by district (Harlandale); middle school (Kingsborough), race (98% Hispanic); economically disadvantaged (88%); at risk (67%); and met math proficiency (45%). These data strongly support the need for the proposed project. In addition, of the 12 participating campuses, 11 have 85% to 99% Latino populations compared to the state average Latino student population of 53% per district. The average percentage of economically disadvantaged students is 85% compared to the state average of 61%; and the state passing rate for mathematics on the STAAR test is 57%, compared to the 12% to 49% passing rates of targeted schools (p. e27). These data show that students in the target districts are

Sub

unprepared for CS fields. Moreover, students in the target area are not successful in CS or STEM as evidenced by student performance data; the percentage of students taking CS classes (between 2% and 29%); and the percentage of students graduating with a STEM endorsement include 5 districts out of 7 with 0% graduating (p. e29). The proposed VisionCoders' project design will focus on increasing the number of students currently underrepresented in STEM/CS fields; providing interactive and hands on learning experiences; and improving the quality of instruction and student support through teacher professional development and technical assistance to enhance student achievement.

Weaknesses:

None noted.

Reader's Score: 10

3. (3) The extent to which the design of the proposed project reflects up-to-date knowledge from research and effective practice.

Strengths:

The applicant describes how recent studies conducted across the country and internationally have shown statistically significant increases in computational thinking (decomposing, pattern recognition, abstraction and algorithmic design) when students use Scratch™ (Rodríguez-Martínez, et al., 2020). It is a topic that has garnered much attention among researchers who have demonstrated the positive effects of Scratch™ and Code.org™ on computational thinking in different contexts (Pultoo, et al., 2020) and on secondary and college students (Armoni, et al., 2015). These findings show that statistically significant increases occur in computational thinking and support a need for curricula that use a visual approach to engage students at many levels to experiment in computer programming (pp. e30-e31). These findings are also significant because they support the project's use of Code.org™ as a visual, block coding environment that includes advanced coding features but also actively engages students. Research on students as young as six years old using the platform to learn computing basics have shown that Code.org™ improves planning skills (Arfé et al., 2020). The studies cited provide evidence that visual computing environments like Scratch™ and Code.org™ align with the logic model and are likely to positively impact computational thinking and math skills (pp. e32-e33).

Weaknesses:

None noted.

Reader's Score: 10

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

Strengths:

The applicant describes the potential contribution of the proposed project to increased knowledge or understanding of educational problems, issues, or effective strategies. For example, the applicant describes two potential contributions to the Computer Science (CS) field. These contributions include data on middle school classes that may increase CS participation of underrepresented youth while increasing mathematical skills; and data concerning a recently proposed computing identity framework that can support further creation of curriculum and pedagogical practices to increase CS participation (p. e34). For example, the project will contribute additional data to the field concerning statistically significant increases in math skills for students learning computational skills and programming using Scratch™ with large sample of at-risk students in need of interventions that increase mathematical skills (p. e34).

Sub

Weaknesses:

None noted.

Reader's Score: 10

Resources and Quality of Management Plan - Resources and Quality of Management Plan

- 1. The Secretary considers the adequacy of resources and the quality of the management plan for the proposed project based on the following factors:**

Reader's Score: 33

Sub

- 1. (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 applicant sufficiently describes a management plan for achieving the objectives of the proposed project on time and within budget, including clearly defined responsibilities, timelines for accomplishing project tasks. For example, the applicant well describes how team responsibilities are both specific and fluid. The professional development and computer science specialists who also lend their expertise and feedback to development and implementation (p. e38). The applicant provides a timeline which shows the year, project phase, and the numbers of campuses, classes, and students impacted (p.e35). Also, the applicant fully describes by project phase, the project goals, objectives and activities that fall into the distinct development, pilot, and implementation phases of the project (pp. e35-e37). The applicant provides a clear description of the management plan by goals (pp. e 35-e37 and pp. e52-e60); specifies supporting objectives; identifies appropriate measures; describes supporting activities; identifies start and end dates; and identifies personnel responsible. The management plan provides a cohesive snapshot of how project components will be implemented with fidelity.

Weaknesses:

A description of milestones is required for this criterion. More information is needed to clearly describe milestones for accomplishing project tasks. A description of milestones is required for this criterion (pp. e35-e37).

Reader's Score: 9

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

Strengths:

The applicant clearly describes the extent to which the costs are reasonable in relation to the objectives, design, and potential significance of the proposed project. For example, the costs associated with implementing the program during the development and implementation years are approximately \$ [REDACTED], which includes the multiple professional development, technical assistance and observation time needed for final refinements throughout the life of the grant (p. e37). Travel expenses appropriately allow for support to rural participants whose participation is a critical component of the project and whose participation would be limited without funded transportation. The applicant's budget includes allowable expenses; and the applicant provides a clear explanation of the purpose for each expenditure (pp. e74- e77) that is linked to project objectives.

Sub

Weaknesses:

None noted.

Reader's Score: 5

3. (3) The qualifications, including relevant training and experience, of key project personnel.

Strengths:

The applicant thoroughly describes the qualifications, including relevant training and experience, of key project personnel (pp. e38-e39). For example, the full time Project Director, who has a Ph.D. and over 12 years of STEM experience, will oversee the project implementation; coordinate with partners and collaborate with internal and external staff to meet project objectives; oversee curriculum design activities; manage monthly meetings with all partners and districts; and formalize the instructional design and professional development/technical assistance teams (p.e35 and p. e74). In addition to a full time Project Director, the Curriculum Development Specialist and two full time Professional Development Specialists have over 20 years of experience; will ensure that all training, implementation and monitoring activities are executed for each objective; and will train teacher coordinators, and provide technical assistance to teachers (p. e39). The membership, duties, qualifications, and experiences are also provided for the three CS and STEM experts who will serve on the advisory board (p. e66). These highly skilled and experienced individuals will provide a strong leadership team that is qualified to successfully implement project components.

Weaknesses:

None noted.

Reader's Score: 5

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

Strengths:

The applicant adequately describes procedures for ensuring feedback and continuous improvement in the operation of the proposed project. The internal and external feedback processes include continuous feedback activities throughout the development and piloting cycle which includes preparation; design; testing/pilot; and refinement. For example, goal 1, objective 1.1 describes activities where the instructional team meets regularly to prepare guidance documents before the course curriculum is written. For activity 1.1.4 the Instructional Design Team will meet quarterly with school district representatives to share progress and ensure district alignment (p.e52). Also, the product of activity 1.1.8 is a set of iterative development tools to guide the feedback and improvement of the project's products (p.e53). During the goal 3 pilot year activities, the professional development-technical assistance team will document all processes for student selection, technical assistance, student product creation, teacher efficacy and all iterative processes which will be used for final recommendations on refinement (p. e59). To provide external feedback to the project's continuous improvement loop, an advisory team will convene to report on the project's processes, products, evaluations and intermediate outcomes (p. e55). These sound feedback and improvement processes are built into planned activities and will ensure appropriate feedback and continuous improvement in the operation of the proposed project.

Weaknesses:

None noted.

Reader's Score: 10

Sub

5. (5) 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 applicant describes how the results of the proposed project will be disseminated in ways that will enable others to use the information or strategies. For example, the applicant will disseminate project results and products through yearly articles, podcasts, webinars and infographics; project presentations at AERA, CS conferences and international STEM Ecosystem conferences; and submission of project results to peer-reviewed journals (p. e41). This plan will provide results of the proposed project to a variety of stakeholders and practitioners.

Weaknesses:

The applicant states that they will leverage IDRA's highly successful communication strategies that apply multichannel methods that currently reach thousands of stakeholders each month (p. e41). However, more information is needed to describe how information will be disseminated through these multichannel methods to stakeholders at the school and classroom levels, as well as stakeholders in rural communities in ways that will enable them to use the information or strategies.

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 based on the following factors:

Reader's Score: 25

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:

The applicant will use an independent evaluator to conduct a formative and summative evaluation of the proposed VisionCoders project. The applicant well describes appropriate methods of evaluation that will include an impact study designed to meet WWC standards with reservations. The applicant details how the impact study will include a student-level Quasi-Experimental Design (QED) to compare outcomes for students in the VisionCoders course to outcomes for a matched group of comparison students in the same schools. In addition, the applicant well describes how they will use propensity score matching to select an equivalent number of comparison students who are similar to those participating in VisionCoders on baseline characteristics, including demographics characteristics and math and reading achievement from the year prior to the intervention. Comparison students will receive traditional instruction, which may include some basic computer instruction (p. e43). These methods of evaluation using a quasi-experimental design to establish a significant cause-and-effect relationship plus propensity score matching to reduce bias due to confounding variables, are sound and will likely produce meaningful evidence about the project's effectiveness.

Weaknesses:

None noted.

Sub

Reader's Score: 15

2. (2) The extent to which the evaluation plan clearly articulates the key project components, mediators, and outcomes, as well as a measurable threshold for acceptable implementation.

Strengths:

The applicant sufficiently describes the extent to which the evaluation plan clearly articulates the key project components, mediators, and outcomes, as well as a measurable threshold for acceptable implementation. The proposed VisionCoders project will assess the fidelity of implementation of key project components, including the student curriculum, teacher supports, partner PreK-1 classrooms, and student showcases, providing necessary context for interpreting the impact findings during the Evaluation Phase. The applicant describes how the implementation data will allow for exploration of the relationship between implementation and impacts to draw conclusions about effective strategies suitable for replication or testing in other settings. During the development phase, the applicant will finalize appropriate and systematic measures of fidelity of implementation for each of the key components of the program logic model and will revise the logic model's components, mediators, or outcomes if needed. The implementation measures will include quantitative indicators of full implementation for each component (p. e46). The Impact Analysis Model (pp. e68-e69) provides details on each of the data sources, along with the timing and sample for each. These evaluation procedures will likely ensure that the applicant will assess implementation of VisionCoders in each treatment classroom and school with fidelity.

Weaknesses:

None noted.

Reader's Score: 5

3. (3) The extent to which the methods of evaluation will provide valid and reliable performance data on relevant outcomes.

Strengths:

The applicant clearly describes how the evaluation will provide valid and reliable performance data on the key outcomes of interest using measures that meet WWC standards for reliability and validity (p. e44). For example, the outcome measures for the impact study include a description of the domain (math achievement); the outcome (STAAR eighth grade mathematics test); the measure of reliability/validity (standardized tests; WWC assumes that state tests meet outcome standards for validity and reliability); and baseline measures (STAAR seventh grade mathematics test). Districts will provide administrative data on students' achievement and demographic characteristics; and to assess students' Computer Science skills, the applicant will use the Computational Thinking Abilities Middle Grades Assessment. The applicant describes how this assessment will include rich data that is reliable; developed for middle school students; and provides a reasonable measure of computational thinking for both intervention students and those in the comparison group who have not had access to a computer programming class includes references to reliability/validity measures (p. e44). In addition, the applicant provides a description of the timing, sample, and purpose for data collection activities (teacher interviews, student focus groups) as part of the pilot, implementation, and impact studies (p. e69). The applicant will ensure that analyses for each outcome meet WWC standards for baseline equivalence by including the appropriate baseline measure in the analytic model and by using propensity score matching to select comparison students who are similar to those participating in VisionCoders (pp. e68-e69). The applicant's evaluation plan clearly describes methods of evaluation that will provide valid and reliable performance data on relevant outcomes.

Weaknesses:

None noted.

Reader's Score: 5

Priority Questions

CPP - Competitive Preference Priority 1

1. Competitive Preference Priority 1: Computer Science

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:

This innovative project will provide opportunities for middle school students who are in at-risk situations to become software designers who create educational games for PreK-1 students. The project will focus on of high-need students, defined as students at-risk of dropping out, as defined by the Texas Education Agency, and economically disadvantaged students. The total number of students to be served in the project is 1,400; and the grade level(s) to be served by the project is the eighth grade. The project builds on research where students, underrepresented in CS fields, develop computational thinking skills and computing identity because they are tasked to design games, using visual coding platforms, that are meaningful to community needs. Additionally, the project expects to see gains in mathematical skills as evidenced by current studies that correlate the use of Scratch™ and Code.org™ to increases in math scores as students build computational thinking. Partnering organizations will provide additional fiscal and physical resources to support the successful implementation of project components. This project will likely enhance student achievement in Computer Science because students will be actively engaged in hands-on learning with real world applications.

Weaknesses:

None noted.

Reader's Score: 5

Status: Submitted
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