

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

Status: Submitted

Last Updated: 06/14/2019 01:10 AM

Technical Review Coversheet

Applicant: National Math and Science Initiative (U411C190037)

Reader #1: *****

	Points Possible	Points Scored
Questions		
Selection Criteria		
Significance		
1. Significance	25	23
Quality of Project Design		
1. Project Design	35	31
Adequacy of Resources/Quality of Management Plan		
1. Resources/Management Plan	20	20
Sub Total	80	74
Priority Questions		
Competitive Preference Priority		
Competitive Preference Priority		
1. Absolute Priority 3	5	5
Sub Total	5	5
Total	85	79

Technical Review Form

Panel #17 - EIR Early Phase Tier 1 - 17: 84.411C

Reader #1: *****

Applicant: National Math and Science Initiative (U411C190037)

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:

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

(2) 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:

Comment ePage

The project considers disparity in offering access versus actually taking CS course. The importance of this feature is in the ability to move beyond students having opportunities that are less common versus actually looking at student learning after course completion. 23

The project brings in school counselors as a key factor. The inclusion of the school counselor is innovative and also recognizes the importance of the guidance this position provides to students as they determine a course of study that might include CS. 13

The project builds on NMSIs existing research model with 3 year plan. The proposal seeks to directly build on existing work in this field of study. The probability that this work would contribute significantly to the organization and its partners is high. 19

Organizational track record of addressing the college readiness gap (CRP) makes the proposal more viable and likely to continue improving the CRG. 25

The project considers approach of open enrollment for CS courses. There are often prerequisite barriers that intentionally or unintentionally exclude participants. In many cases the exclusions influence underrepresented students to a higher degree. 27

The project has a plan for disseminating the research findings. A commitment to sharing results and peer review is evidenced. 45

The CITS methodology follows a Design Based Research approach. DBR is a well-established methodology for educational settings. 39

Weaknesses:

The counselor component of the program is underdeveloped. This is a truly innovative feature of the proposal and could benefit from more details and design. 43-44

The project focuses on the end of K-12 spectrum. The limitation of addressing upper secondary grades is that many years of learning and processing are lost. Early interventions provide opportunities for increased sophistication in the upper grades. 16

Reader's Score: 23

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:

- (1) The extent to which the goals, objectives, and outcomes to be achieved by the proposed project are clearly specified and measurable.
- (2) The extent to which there is a conceptual framework underlying the proposed research or demonstration activities and the quality of that framework.
- (3) The adequacy of procedures for ensuring feedback and continuous improvement in the operation of the proposed project.

Strengths:

The project intervention articulates four barriers that will be addressed defining a clear design that can lead to a reliable research plan. 13

The project uses a singular measure of AP CSP scores which will allow for a focused conclusion. 22

The project plan has three avenues (teacher training, curriculum enhancement, counselor support). This multifaceted approach represents a comprehensive strategy to address a complex issue. 25

The survey methods are very detailed and research-based practices are used to validate and collect data. 40-41

The teacher training is planned over a 3 year trajectory recognizing the need for long-term interventions as a means to initiate lasting change. 13

The project team has identified outside evaluators leaving this key issues in a position that will not disrupt the plan. 16

The project combines numerous partners and a variety of curricula, using available resources in a combination that represents an innovative design. 22

Weaknesses:

The goals for the outcomes are not specifically defined (i.e. ready to participate, higher confidence levels, ...). Terms and evaluation criteria are important to define ahead of the research plan. 29

The specific details for interventions with counselors does not appear in management plan. This was a significant aspect of the innovative nature of the proposal and this aspect seems to get lost in the details. 34-35

The specifics of the teacher professional learning are vague. The strategies for helping teachers improve their knowledge base is not fully conceived. 43

Reader's Score: 31

Selection Criteria - Adequacy of Resources/Quality of 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:

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

(3) The potential for continued support of the project after Federal funding ends, including, as appropriate, the demonstrated commitment of appropriate entities to such support.

Strengths:

The lead organization has existing human resources to support the project. This is a crucial aspect of predicted longevity of the program. 13

The lead organization has experience with grants and reporting requirements 34

The management plan is very detailed and the organization elicits confidence that the proposal goals can be accomplished. 34-35

The organization has already demonstrated capacity building through increases in teachers and student enrollment. The idea of sustainability is supported by NMSI history and confidence that additional grants will be forthcoming. 23

The staff is highly qualified with a wealth of experience that can help support the goals and actions outlined. 63-104

NMSI has several decades of experience providing confidence that the experiences will stay on schedule. 22

Multiple funding sources include federal, local, and outside organizations are potential options for long-term funding solutions and seem to be likely partners. 23

Weaknesses:

None noted.

Reader's Score: 20

Priority Questions

Competitive Preference Priority - Competitive Preference Priority

1. Within Absolute Priority 3, we give competitive preference to applications that address the following priority:

Projects designed to improve student achievement or other educational outcomes in computer science (as defined in the notice). These projects must address the following priority area:

Expanding access to and participation in rigorous computer science (as defined in the notice) coursework for traditionally underrepresented students such as racial or ethnic minorities, women, students in communities served by rural local educational agencies (as defined in the notice), children or students with disabilities (as defined in the notice), or low-income individuals (as defined under section 312(g) of the Higher Education Act of 1965, as amended).

Note: Projects addressing this priority must be administered in a manner consistent with nondiscrimination requirements contained in the U.S. Constitution and Federal civil rights laws.

Strengths:

The project has specific goal of addressing minorities and females focused in CS, both serve the AP3 closely and sufficiently. 22

Weaknesses:

None noted.

Reader's Score: 5

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Technical Review Coversheet

Applicant: National Math and Science Initiative (U411C190037)

Reader #2: *****

	Points Possible	Points Scored
Questions		
Selection Criteria		
Significance		
1. Significance	25	22
Quality of Project Design		
1. Project Design	35	34
Adequacy of Resources/Quality of Management Plan		
1. Resources/Management Plan	20	18
Sub Total	80	74
Priority Questions		
Competitive Preference Priority		
Competitive Preference Priority		
1. Absolute Priority 3	5	5
Sub Total	5	5
Total	85	79

Technical Review Form

Panel #17 - EIR Early Phase Tier 1 - 17: 84.411C

Reader #2: *****

Applicant: National Math and Science Initiative (U411C190037)

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:

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

(2) 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:

Applicant identifies educational problem – low number of students take computer science and few teachers are certified in CS, and they receive little teacher support for professional development.

Identifies strategy to increase number of students to take and succeed in AP CSP, via national entity with experience in scaling to impact many more students, teachers, high schools and universities, to provide sustained intensive PD to CS teachers via NMSI

A promising strategy builds on NMSI CRP model, an existing strategy, which will be developed to focus 3 years on one component, deepening proven approach to support CS teachers, which will increase the number of underrepresented students in computer science. Includes building relationships with schools to adopt model and build capacity of school counselors to support student recruitment into AP CSP.

Weaknesses:

Although the applicant identifies the problem from the standpoint of the number of CS course takers and teachers, they don't approach it as a significant problem. This section lacks an argument for why more students should take and succeed in Computer Science, and what is the significance of closing that gap.

Reader's Score: 22

Selection Criteria - Quality of Project Design

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

(2) The extent to which there is a conceptual framework underlying the proposed research or

demonstration activities and the quality of that framework.

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

Strengths:

Applicant outlines one year of planning, followed by 3-year PD arc. Figure 4 outlines objectives & outcomes in detail by year. The outcomes match overall goals to increase teacher confidence in CS instruction and increase number of enrolled underrepresented students.

Applicant identifies a solid conceptual framework based on high quality research findings. Additionally they propose to utilize a framework that provides a library of resources that allows teacher agency to plan and adapt to meet needs of students and be culturally responsive.

Plan Do Study Act (PDSA) cycles are clearly described to ensure that NMSI, curriculum partners, and teachers have information needed to adapt their approaches to ensure project success.

Weaknesses:

None noted.

Reader's Score: 34

Selection Criteria - Adequacy of Resources/Quality of Management Plan

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(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.

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

(3) The potential for continued support of the project after Federal funding ends, including, as appropriate, the demonstrated commitment of appropriate entities to such support.

Strengths:

Applicant provides detailed plan for activities, milestones and responsibilities, in each phase of project – school selection, preparation, implementation and evaluation.

Qualifications of key project personnel include deep experience in educational leadership, curriculum design, data and analytics, and grant administration.

Weaknesses:

The potential for continued support after grant end is not compelling and should be more clearly demonstrated.

Reader's Score: 18

Priority Questions

Competitive Preference Priority - Competitive Preference Priority

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Note: Projects addressing this priority must be administered in a manner consistent with nondiscrimination requirements contained in the U.S. Constitution and Federal civil rights laws.

Strengths:

Applicant addresses needs of URM (Hispanic students) with a plan to increase their access and participation. They offer a solid plan involving school partnerships to improve student achievement with a rigorous CS curriculum.

Weaknesses:

None noted.

Reader's Score: 5

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Technical Review Coversheet

Applicant: National Math and Science Initiative (U411C190037)

Reader #3: *****

	Points Possible	Points Scored
Questions		
Selection Criteria		
Significance		
1. Significance	25	25
Quality of Project Design		
1. Project Design	35	30
Adequacy of Resources/Quality of Management Plan		
1. Resources/Management Plan	20	20
Sub Total	80	75
Priority Questions		
Competitive Preference Priority		
Competitive Preference Priority		
1. Absolute Priority 3	5	5
Sub Total	5	5
Total	85	80

Technical Review Form

Panel #17 - EIR Early Phase Tier 1 - 17: 84.411C

Reader #3: *****

Applicant: National Math and Science Initiative (U411C190037)

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:

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

(2) 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 applicant identifies two major educational issues: the lack of CS teachers and limited participation in higher-level CS classes by females and minority students (p. e24). The applicant then details how past NMSI work has been effective in a variety of AP subjects in training teachers and broadening participation, and presents an outline of their proposed plan that shows promise of improving CS access and participation through extended teacher professional development.

The applicant is using a base of national partner organizations for curriculum (The Beauty and Joy of Computing, Mobile CSP, UTeach CSP), increasing the national significance of the project because these are widely available for any school to use. The applicant also utilizes NCWIT's counselor training program C4C, which is also nationally available.

Applicant clearly explains that the proposed project is distinct from existing strategies in that it utilizes the NSMI CRP model for three consecutive years on one key component (p. e27). The increased time will allow for greater development of CS teachers, something that is needed due to the complexity of the subject.

Weaknesses:

None

Reader's Score: 25

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:

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

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

(3) The adequacy of procedures for ensuring feedback and continuous improvement in the

operation of the proposed project.

Strengths:

Applicant is using CRP as a conceptual framework. As stated in the application, CRP has been proven effective by several research studies in terms of increasing student AP success as well as supporting longer-term outcomes (p. e30).

Applicant provides a clear and organized description of the goals, objectives and outcomes for the proposed project.

Applicant utilized PDSA cycles to ensure collecting feedback and enacting continuous improvement. PDSA cycles allow the teachers to undertake their own personal improvement initiative while being guided by NMSI.

Weaknesses:

Outcomes in Figure 4 (p. e29) came from objectives in which the training of both teachers and counselors were combined into the same objectives. In order to clearly describe outcomes from the proposed project, the teacher training needs to have its own objectives/outcomes and the counselor training should have its own separate objectives and outcomes.

The outcomes in Figure 4 (p. e29) were lacking specific measurement. The outcomes were written in a way that lacked detail. They used simple increases as their measure instead of actual numbers, such as number of students or the percentage increases.

Reader's Score: 30

Selection Criteria - Adequacy of Resources/Quality of Management Plan

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

(3) The potential for continued support of the project after Federal funding ends, including, as appropriate, the demonstrated commitment of appropriate entities to such support.

Strengths:

Applicant has provided a project plan and a detailed track record of grant management that instills confidence that this proposed project would be accomplished on time and within budget. The timeline provided contains a clear picture of who has ownership over which activities and milestones and what year of the grant those activities will be taking place (p. e34 and e35).

Applicant has identified sufficiently qualified personnel for this proposed project. The team has experience working specifically within the field of 9-12 CS education, the target of this proposed project.

Applicant provides explanation of how the project will continue to have an impact after Federal funding ends, pointing out that the project design allows for schools served to continue offering high-level CS courses into the future.

Weaknesses:

None

Reader's Score: 20

Priority Questions

Competitive Preference Priority - Competitive Preference Priority

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Note: Projects addressing this priority must be administered in a manner consistent with nondiscrimination requirements contained in the U.S. Constitution and Federal civil rights laws.

Strengths:

This project clearly focuses on expanding access to and participation in rigorous computer science for traditionally underrepresented students. In this case, rigor is a result of the specific curriculum choices, which are all AP CS Principles curriculum options endorsed by The College Board. The underrepresented students targeted in this application include females, African-Americans, and Latinx students.

Weaknesses:

None

Reader's Score: 5

Status: Submitted

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