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

Status: Submitted
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Technical Review Coversheet

Applicant: New York Hall of Science (U411C190044)
Reader #1: **********

		Points Possible	Points Scored
Questions			
Selection Criteria			
Significance			
1. Significance		25	25
Quality of Project Design			
1. Project Design		35	35
Adequacy of Resources/Quality of Management Plan			
1. Resources/Management Plan		20	17
	Sub Total	80	77
Priority Questions			
Competitive Preference Priority			
Competitive Preference Priority			
1. Absolute Priority 3		5	5
	Sub Total	5	5
	Total	85	82

Technical Review Form

Panel #25 - EIR Early Phase Tier 1 - 24 - 1: 84.411C

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

Applicant: New York Hall of Science (U411C190044)

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 provides adequate details to show the understanding of the problem dealing with interventions for 6th through 8th grade students who live in low-income communities and are from backgrounds underrepresented in STEM career pathways. (pp. 1)

The applicant provides strong evidence to show understanding of the proposed project to increase knowledge by discussing that private and public funders have provided many efforts to support the creation of curricular and professional development resources that build teachers' and students' understanding of foundational CT concepts and practices to increase students' access to stand-alone computer science courses, or to integrate core disciplinary practices of CS into existing STEM courses. (pp. 2)

The applicant provides compelling details to show their project involves the development of promising new strategies by writing that the computer science Blueprint from Computer Science for All (CS4All), the Next Generation Science Standards(NGSS) Science and Engineering Practices, and other learning standards all call for the integration of CT concepts and practices into science teaching across the K-12 spectrum and that The Pack intervention will respond to this need by supporting the integration of CT into the science courses of high-need 6th-8th grade students. (pp. 2)

The applicant provides compelling details to show their project builds on existing new strategies by writing that the project integrates computational thinking into 6th through 8th grade science teaching and learning in ways that build teachers' capacity and support for engaged and connected science learning for students. The Pack's approach is grounded in and builds upon extensive evidence such as situating computer thinking in the context of science learning and Next Generation Science Standards (NGSS) cross cutting concepts. (pp. 3)

To show another strong promising strategy the applicant provided adequate details to show that few teachers working in 6 through 8 grade levels are prepared to integrate computational thinking tools and into the science content they cover and the Next Generation Science Standards (NGSS) crosscutting can provide anchors for teachers seeking to integrate computational thinking into their coverage of existing middle grade science (pp. 4)

Weaknesses:

None noted

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:

The applicant provided very clear objectives and performance measures. For example, the applicant discussed the objective of building and testing the Pack intervention and continuous improvement with a performance measure of designing teacher evaluation surveys on appeal, comprehensibility, and usefulness of guide activities. (pp. 11).

There is clear evidence provided to show the underlying conceptual framework of the project by the applicant providing a logic model which shows resources such as the Pack supplemental curriculum and inputs such as teachers integrating the Pack program into science domains. (e108)

The conceptual framework of the project is compelling because the applicant provides details in their Table 1 which shows cross cutting concepts which are science disciplines covered in 6 through 8 grade scope and sequence and involves game play and computational thinking skills. (pp. 9)

The applicant provided adequate details to show continuous improvement by discussing that they propose a four-phase approach to continuous improvement which is shown in Table 3 and involves design phase, pilot study, experimental study, and final improvement testing. (Table 3). (pp. 13, 14)

The applicant provided strong evidence to show that real time platform analytics from the Communities of Practice annual evaluation forms and surveys, critical incident essays, and content analysis of discussions and teacher learning products will be used to assess the immediate value of program activities, the potential value for practice, applied value to the classroom, and actual evidence of change in teachers' practices and student learning. (pp. 13)

To show strong evidence of providing feedback the applicant also wrote AIR will support the NYSCI project team with a structured process for continuous improvement by collecting data from surveys, extant data, interviews, and classroom observations during a pilot study (Cohort 1) to provide a detailed understanding of program implementation and teacher and student reactions to the intervention. The applicant also wrote that AIR will report these data frequently to allow for mid-course adjustments during the pilot study and revisions to intervention components in advance of the experimental trial. (pp. 13, 14)

Weaknesses:

None noted.

Reader's Score: 35

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 applicant provides a strong management plan that includes activities related to implementation and testing of the Pack in Years 1, 2, 3, and 4. project planning, implementation, data collection and analysis in Years 1 and 2. (pp. 15)

Adequate evidence is provided by the applicant to show tasks, and timelines by year and person's responsible. For example, the applicant wrote that in phase 1 during Fall 2019 to Summer 20202 the NYSCI will recruit ten teachers to serve as a Design Team to codevelop game challenges and other curriculum guide resources with NYSCI and Participate. (pp. 18)

Clear details are providing to show experiences of key project personnel after Appendix B. For example, the Chief Scientist from the New York Hall of Science has serves as the chief scientist from 1999 to present and provides much experiences by providing teacher workshops and publications about Transformational Approaches to Teaching and Learning. (pp. e60)

There are adequate details to show key personnel such as the NYSCI project director and co-project directors, along with program coordinators and advisors. The applicant also discussed that these individuals consist of researchers, professional developers, with expertise in K-12 STEM education. (pp. 15)

To show adequate details for sustainability the applicant also discussed that Participate's nationwide system of professional development and Communities of Practice will support the proposed early-phase study, and enable this work to be sustained for the long term. In addition, Participate has agreed to assist in developing nationwide strategies for the scale up of The Pack professional development and CoPs through its online platform. (pp. 14)

To show adequate evidence support of the project after Federal funding ends, the applicant also discussed that they anticipate that organizations including the New York City (NYC) Foundation for Computer Science Education and the national CS4All network will be able to support future scale-up of The Pack in NYC as it is tightly aligned with their goals and priorities. (pp. 14)

Weaknesses:

There were minimal details to show responsibilities of key personnel. (pp.15)

Reader's Score: **17**

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 applicant provided adequate details to show that one of their objectives is to increase achievement and attainment of high needs student populations in STEM disciplines. (pp. e18)

The applicant provided adequate details to show their expanding access to and participation in rigorous computer science coursework. For example, the applicant wrote that each of the two cohorts of THRIVE will include a group of new computer science teachers form their Career and Technical program. (pp. 4)

Weaknesses:

None noted.

Reader's Score: **5**

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Technical Review Coversheet

Applicant: New York Hall of Science (U411C190044)
Reader #2: **********

		Points Possible	Points Scored
Questions			
Selection Criteria			
Significance			
1. Significance		25	23
Quality of Project Design			
1. Project Design		35	33
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 #25 - EIR Early Phase Tier 1 - 24 - 1: 84.411C

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

Applicant: New York Hall of Science (U411C190044)

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:

(1) This project is unique in several ways. First because it proposes to impact middle school students. Specifically, 27,000 students in 6th – 8th grades in NYC districts, Brooklyn and Queens. Second, because it will provide professional development activities supplemented by online communities of practice for 226 middle school science teachers. (page 1)
(2) This project proposes to foster computational thinking among middle school students using a digital game (The Pack). The Pack was developed with funding from the National Science Foundation and the JPB Foundation and supports core Computational Thinking skills including problem decomposition, algorithmic naming and sequencing, debugging, parallel programming and pattern identification. (page 1)
(3) This proposal cites numerous published research studies on the effectiveness of games in supporting students' understanding of complex scientific concepts and their engagement in computational thinking. (page 5)

Weaknesses:

This proposal includes ongoing professional development for teachers but no evidence that teachers will spend the additional time and energy required to learn the game and ways to integrate it into already existing science curricula. Teachers, particularly middle school teachers, are already dealing with challenging students and curricula and may not be able to spend the additional time required to implement this project effectively.

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:

(1) The goal of this project is to build and test a strateqy to implement The Pack in 54 Title I schools in New York City. Strategies, outcomes, and measures of success are clearly delineated in Table 2 (pp11 – 13) and ensure that the goal can be accomplished. These include building, testing, and implementing The Pack curriculum in the classroom, increasing students' skills in computational thinking (CT), supporting teachers, and disseminating results.
(2) The proposal includes a four-phase approach to continuous improvement (page 13), employing an iterative approach that incorporates real-time information from the Communities of Practice (CoPs), annual evaluations, and content analysis among other specified activities

Weaknesses:

This project is divided into several phases. Year 1 of the project will be spent identifying ten design team teachers (page 14). This activity should take place prior to the start of the grant.

Reader's Score: 33

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:

(1) A management plan is presented in Appendix I4 (pp e123-124). This plan addresses the objectives of the project, assigns responsibilities and specifies timelines and milestones, ensuring that the project goals will be accomplished on time and within budget.
(2) Key project personnel are well-qualified with appropriate relevant experience. They have deep knowledge of the New York educational system and are well versed in STEM activities. The New York Hall of Science is the lead organization for this project. They offer STEM education to 300,000 K-12 students per year and professional development to approximately 2,000 teachers each year. (page 15)
(3) The management plan includes detailed dissemination activities including articles and conference presentations. Participate, one of the project partners, has a nationwide system of professional development and communities of practice that will foster dissemination of this project. (page 14)

Weaknesses:

There is no provision for sustainability. Letters of support indicate desire to extend the project beyond the life of the grant but there is no evidence of financial support for continued teacher training.

Reader's Score: **18**

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:

This proposal expands access and participation to high-need students from groups that are underrepresented in STEM and CS by providing middle school teachers with professional development and continued support that will enable them to introduce an existing, innovative game curriculum (The Pack) into their current 6th – 8th grade science classes. :

This reviewer found no weaknesses in this area.

Weaknesses:

This reviewer found no weaknesses in this area

Reader's Score: **5**

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Technical Review Coversheet

Applicant: New York Hall of Science (U411C190044)
Reader #3: **********

		Points Possible	Points Scored
Questions			
Selection Criteria			
Significance			
1. Significance		25	22
Quality of Project Design			
1. Project Design		35	31
Adequacy of Resources/Quality of Management Plan			
1. Resources/Management Plan		20	18
	Sub Total	80	71
Priority Questions			
Competitive Preference Priority			
Competitive Preference Priority			
1. Absolute Priority 3		5	5
	Sub Total	5	5
	Total	85	76

Technical Review Form

Panel #25 - EIR Early Phase Tier 1 - 24 - 1: 84.411C

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

Applicant: New York Hall of Science (U411C190044)

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:

1) The applicant has proposed a program to enhance middle school students' preparedness for Computer Science curriculum using a curriculum based on using an open world digital game called "The Pack" to teach computational thinking skills. The program will use the digital game, a supplemental computational thinking curriculum for grades 6 through 8 science classrooms, teacher professional development activities and online communities of practice to support the effort. The applicant has correctly identified a need for students to develop a foundational understanding of computational thinking and the use of algorithms in order to learn basic programming skills. Skills such as problem decomposition, algorithmic development, naming, and sequencing, debugging, parallel programming and design pattern identification will assist students in later computer science courses. These skills are developed through student participation in the game that was constructed for this project. This reviewer downloaded and reviewed the game software and found it to be engaging, and well suited to encourage skills development in the target audience. This early phase study will provide curricular development and early feedback that will be necessary for wider dissemination of this curriculum for the school district and other schools system. This effort will be crucial for other schools before they consider adoption of this or a similar curriculum in computational thinking, and could be a significant contribution to the development of computational thinking education as a precursor to all computer science training.

2) A definite strength of this proposal is the underlying importance of computational thinking and integrative problem solving as a foundation for computer science and all STEM discipline training. The use of this open world game provides an approach that should be welcoming to both young boys and girls. Furthermore, the developed problem-solving skills should be easy to integrate into existing earth, physical, biological, and social science courses. The expertise of the for profit software partner Participate in developing other similar educational software allows them to build on previously successful educational software strategies. Furthermore, the historical success of the project leadership at the New York Hall of Science with partnering with New York City school systems in the development and training of teachers for science curriculum allows them to utilize past best practice strategies in project development, training and evaluation. The inclusion of the development of a Community of Practice will support the needs of both students and teachers and again is a quite innovative strategy based on sound research and experience.

Weaknesses:

1) The proposal outlines a project based on a single open world digital game with little preliminary data on its usefulness, applicability or appeal to middle school students. Yet the participation of the school system in the project seems to require an integration with all of the existing science curricula in grades 6 through 8, requiring a significant commitment. Furthermore, little evidence is included ensuring that the program will be embraced by veteran science and

computer science teachers in the system. Such a large investment in a game-based curriculum with little preliminary data may be risky.

2) There no identifiable weaknesses in the proposal in the area of developing an innovative strategy to improve computer science and STEM curricula that builds on existing strategies. The proposal cites numerous studies that point out the importance of a foundation in computational thinking on success in education in computer science and other STEM disciplines. Furthermore, their strategies of using online communities of practice and strong professional development training is well founded in the educational literature.

Reader's Score: 22

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:

1) The goals, objectives, and outcomes to be achieved by the applicant are clearly identified in Table 2 (pages e33-e35) of the proposal along with indicators and measures of success. Project objectives to develop applications, surveys, and curriculum guides, provide some clearly measurable outcomes of meeting project goals and timelines. Strategies, outcomes and measures are reasonable given the aims and scope of the project. The logic model for what skills to include in the curriculum and their importance to readiness for later computer science training of these students is valid.

2) Although the applicant mentions that much of the writing for the materials will be developed in Year 1 of the project, the proposal outlines a clear and well thought out conceptual framework for the proposed project. The “Pack” open world digital game has already been written and was available for download at the software vendors website. The proposal for the computational thinking and crosscutting science for integration into the grades 6 and 8 science curriculum described on pages e25-e28, includes the development of a curriculum guide that will occur in Year 1. The outlined process for the creation of the professional development two-day workshop activities with also seems appropriate. The use of a ten-member teacher design team for that process seems appropriate (described on page 29). The plan to establish a community of practice to support the teachers during the program is appropriate and the applicant has experience with similar efforts in past curricular programs.

3) The process for formative evaluation and continuous quality improvement during the project is well thought out with a likely chance of success. Both the New York Hall of Science and the game software provider will be involved in the iterative process of improving the software and the training and support program. Timing of the implementation and testing as described in Table 3 (page e36) is appropriate. The ramping up of the program with a development and pilot phase before wider dissemination will assist in the iterative improvement process. The proposal by the applicant to employ Wenger-Trayners’ evaluation framework to track teachers’ perceptions of the value of program activities will help to ensure formative evaluation of the program activities during the grant period. Robust platform analytics will be supported by the planned Community of practice, annual evaluation surveys, critical incident reports and content analysis by program participants. The selection of AIR as the external evaluator should support the evaluation and feedback process.

Weaknesses:

1) The goals, objectives, and outcomes to be achieved by the applicant are clearly identified in Table 2 on pages e33-e34 of the proposal along with indicators and measures of success. However, many of the of the outcomes measures do not have clear quantitative or qualitative goals that might help the program evaluators to measure success. For instance, although the design plan includes efforts to survey curriculum use of instructional materials and content analysis of developed learning products, no real measures of success or expected outcomes are described, other than stating those activities will be completed.
2) The plan to develop all of the curricular and training guides in Year 1 of the proposal delays implementation and suggests that some of that content has not been previously considered. Because the Pack game software was developed with a goal of using the software to integrate with grades 6 through 8 science courses and teach computational thinking skills such as algorithm development, design patterns and debugging, there should have already been some effort to providing support materials to integrate with science courses. Similarly, because of the past experience of the applicant with delivering professional development to Science teachers at that level, many of the processes should be easily adaptable and might not have required a full year of development before the pilot program.
3) There is no apparent weakness in the adequacy of proposal in the plan to conduct an iterative process of program development with feedback and continuous quality improvement efforts and responsible parties identified in the proposal.

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:

1) The described project plan as outlined in Table 2 (pages e33-e35) provides a clear outline of measurable strategies and outcomes and measures of success for program managers to follow. The list of project objectives and performance measures included in the Appendix beginning on page e148, seems reasonable, although most measures do not provide listed quantitative measures. Letters of support are included from all involved organizations including the New York City Department of Education (page e98), the Brooklyn Borough Department of Education (page e99). The budget narrative on pages e135-e147) adequately identifies allowable expenditures given the scope of the project and the salaries, fringe benefit requirements, and FTE contributions of personnel in the project. There is a large indirect cost of over $1,000,000 based on a negotiated indirect cost rate of 51.6% (pages e139-140).
2) The management team of the lead organization, New York Hall of Science, is skilled and experienced. The organization serves 300,000 K-12 students and provides professional development training to 2,000 teachers each year. The project Director Dr. Stephen Uzzo's qualifications (CV on pages e60-e61) are outstanding, with excellent academic credentials and extensive experience developing and implementing similarly scaled curricular programs. The Co-project Director Dorothy Bennett (CV on pages e62-e63) is also qualified, with a strong academic background and experience in implementing curricula that reflects the New York Hall of Science pedagogical approach to STEM called of "Design, Make, Play". Other project personnel, Labriole (CV on page e64), Honey (CV on pages e65-e66), Culp (CV on pages e67-68), and Lyons (CV on pages e69-e70), also have outstanding academic training credentials and impressive project experience on similar curricular programs. The for-profit software partner, Participate, currently works with more than

50,000 educators around the world. They have experience with collaborating with the New York City school systems on similar projects. The program evaluation team, AIR (page be41 and e102), is also qualified and experienced in evaluating similarly scaled projects.
3) The applicants have a history of developing similar programs for adoption into the New York City School system and other school systems. There is a high likelihood that if the proposed Pack game curriculum is successful in helping middle school age students in developing computational thinking skills, then this curriculum will be sustained with a more widespread dissemination in the New York city school system and perhaps nationwide. The participation of a for profit vendor (Participate) responsible for the software part of the proposal also improves the chances of the curricula being sustained, as there is a profit motive with use of the software and the curriculum with the strategies outlined by the applicant supporting the adoption by new school systems. However, it is not clear what the proposed cost for use of the software will be for participant school districts should they continue to use the software. A strong system for a community of practice (page e29) will also assist in the dissemination and continued support of the curriculum after the funding period has ended.

Weaknesses:

1) The described project plan as outlined in Table 2 (pages e33-e35) provides an outline of measurable strategies and outcomes and measures of success for program managers to follow, but does not clearly identify time frames or responsible parties. A very crude outline of the timeframe of the project phase is listed in Table 3 (page e36), but specific objectives, outcomes or responsible parties are not identified. More detail is needed in the project plan.
2) There are no identified weaknesses in the proposal related to the qualifications of key personnel.
3) The applicants have a history of developing similar programs for adoption into the New York City School system and other school system. However, it is not clear what contribution of time, resources or personnel would be required to continue support of the described computational thinking curriculum in a middle school system on an ongoing basis, or if the school systems would be willing to shoulder that expense.

Reader's Score: 18

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:

This proposal proposes the implementation of a curriculum that should enhance grade 6 through 8 students' abilities in the area of computational thinking through the development of a curriculum based on a game called the Pack. The skills development in the use of computational skills in problem solving, Furthermore, the skills development in computational thinking should integrate with other STEM discipline course work in the middle school curriculum. The focus on algorithm development in problem solving should support later computer instruction in the secondary education coursework.

The piloting and early rollout of this gaming curriculum in New York City school district will develop the program in a student population with diversity in ethnicity, language skills, literacy, and economic need. This testing population will provide strong evidence of the ability of the program suitability to all student populations.

Weaknesses:

There are no weaknesses in this proposal in the area addressing the improvement of student outcomes in the area of computer science.

There are no weaknesses in this proposal in the area addressing the needs of traditionally underrepresented students and students from disadvantaged backgrounds.

Reader's Score: 5

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