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

Status: Submitted
Last Updated: 07/10/2018 10:27 AM

Technical Review Coversheet

Applicant: New York Hall of Science (U411B180028)
Reader #4: **********

		Points Possible	Points Scored
Questions			
Selection Criteria			
Significance			
1. Significance		15	0
Strategy to Scale			
1. Strategy to Scale		30	0
Quality of the Project Design and Management Plan			
1. Project Design/Managememt		35	0
Quality of the Project Evaluation			
1. Project Evaluation		20	18
	Total	100	18

Technical Review Form

Panel #3 - EIR Mid-Phase - 4: 84.411B

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

Applicant: New York Hall of Science (U411B180028)

Questions

Selection Criteria - Significance

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

   (1) The magnitude or severity of the problem to be addressed by the proposed project.

   (2) The national significance of the proposed project.

   (3) The extent to which the proposed project represents an exceptional approach to the priority or priorities established for the competition.

   Strengths:

   NA

   Weaknesses:

   NA

Reader's Score: **0**

Selection Criteria - Strategy to Scale

1. **In determining the applicant's capacity to scale the proposed project, the Secretary considers the following factors:**

   (1) The extent to which the applicant demonstrates there is unmet demand for the process, product, strategy, or practice that will enable the applicant to reach the level of scale that is proposed in the application.

   (2) The extent to which the applicant identifies a specific strategy or strategies that address a particular barrier or barriers that prevented the applicant, in the past, from reaching the level of scale that is proposed in the application.

   (3) The feasibility of successful replication of the proposed project, if favorable results are obtained, in a variety of settings and with a variety of populations.

   Strengths:

   NA

   Weaknesses:

   NA

Reader's Score: **0**

Selection Criteria - Quality of the Project Design and Management Plan

1. **In determining the quality of the proposed project design, 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 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.

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

   (4) The potential and planning for the incorporation of project purposes, activities, or benefits into the ongoing work of the applicant beyond the end of the grant.

   Strengths:

   NA

   Weaknesses:

   NA

Reader's Score: 0

Selection Criteria - Quality of the Project Evaluation

1. **In determining the quality of the project evaluation, the Secretary considers the following factors:**

   (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 without reservations as described in the What Works Clearinghouse Handbook (as defined in this notice).

   (2) The extent to which the evaluation will provide guidance about effective strategies suitable for replication or testing in other settings.

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

   (4) 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 project evaluation proposes a rigorous research design (blocked cluster-randomized experimental design) along with the random assignment of 6-8th grade teachers using Playground Physics or treatment group or a delayed treatment or control group meeting the WWC standards without reservations requirements (p. 24-25).

   The project evaluation provides clearly articulated evaluation questions addressing impact on student outcomes and fidelity of implementation (Table 2, p. 24). Additionally, the project evaluation provides a list of the key project components and outcomes of the project (Appendix G3, p. 29-30).

   The project evaluation proposes recruiting participants from multiple sites across the state of New York (40 representative schools, 80 teachers, 7,840 students) enrolling at least 40% minority students or at least 40% who qualify for free and reduced lunch creating a diverse group of students from multiple school districts (p. 25-26). A strategic sampling selection plan will be used to recruit a sample of middle school that is compositionally similar to the state-wide proportions (p. 26).

   The project evaluation provides the detailed results of the power analysis assessing for minimum sample sizes and/or detectable effect sizes to adequately assess program impact (Appendix G3, p. 26).

The project evaluation proposes to administer pre/post knowledge assessments along with student engagement and attitudes surveys (p. 26-27). This will allow for the assessment of a baseline prior to instruction and assess for change over time.

The project evaluation proposes to utilize multiple methods of data collection (surveys, tests, observations, extant data, and attendance) throughout the project to assess the fidelity of implementation and impact of the project (p. 21-22, 26-30). Additionally, a detailed description of the data analysis plan for the quantitative data was provided (p. 28-29).

The project evaluation provides detailed information on the psychometrics of previously validated instrumentation to be used to collect teacher and student data that will provide valid and reliable data on relevant outcomes to the project (Appendix G3, p. 26-30).

The project evaluation addresses the extent to which the evaluation will provide guidance about effective strategies suitable for replication or testing in other settings (p. 14-15).

Weaknesses:

Although the project evaluation calculates the minimum detectable effect size using an assumption of a 15% attrition rate, it is unclear how the 15% was calculated and there is no plan for “how” the project evaluation will minimize attrition issues to ensure the measurement of program impact (Appendix G3).

The project evaluation does not provide measurable thresholds for acceptable implementation of the project.

Reader's Score: **18**

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Technical Review Coversheet

Applicant: New York Hall of Science (U411B180028)
Reader #1: **********

	Points Possible	Points Scored
Questions		
Selection Criteria		
Significance		
1. Significance	15	13
Strategy to Scale		
1. Strategy to Scale	30	23
Quality of the Project Design and Management Plan		
1. Project Design/Managememt	35	25
Quality of the Project Evaluation		
1. Project Evaluation	20	0
Total	100	61

Technical Review Form

Panel #3 - EIR Mid-Phase - 4: 84.411B

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

Applicant: New York Hall of Science (U411B180028)

Questions

Selection Criteria - Significance

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

   (1) The magnitude or severity of the problem to be addressed by the proposed project.

   (2) The national significance of the proposed project.

   (3) The extent to which the proposed project represents an exceptional approach to the priority or priorities established for the competition.

   Strengths:

   The research is clear that economically disadvantaged students in middle-school do not have access to physics. The research is also clear. Physics is a gateway course to higher-level advanced math and science which leads students to being more attracted to STEM-related higher education fields (page, 2-4). The project is significant, it is addressing a gap in exposure to physics for students in the middle-school grades who are not exposed (page, 6). A report from the state's department of education, found that 90% of middle-school students have limited exposure to physic topics, which is being addressed by this applicant. As related to this project, students will have exposure to physics that is both challenging and engaging (page, 5). Professional development support is provided to teachers through in-person training, follow-up, and teacher guides.

   Weaknesses:

   Although the applicant is addressing a STEM related subject physics, linking the project specifically to how this project will address the primary severity of the problem would have strengthened the application. It was not clear how more disadvantaged students in middle-school will be more motivated to pursue higher-level STEM courses, and eventually purse a 4-year degree in a STEM related field.

Reader's Score: **13**

Selection Criteria - Strategy to Scale

1. **In determining the applicant's capacity to scale the proposed project, the Secretary considers the following factors:**

   (1) The extent to which the applicant demonstrates there is unmet demand for the process, product, strategy, or practice that will enable the applicant to reach the level of scale that is proposed in the application.

   (2) The extent to which the applicant identifies a specific strategy or strategies that address a particular barrier or barriers that prevented the applicant, in the past, from reaching the level of scale that is proposed in the application.

   (3) The feasibility of successful replication of the proposed project, if favorable results are obtained, in a variety of settings and with a variety of populations.

Strengths:

The applicant cited research which speaks to the unmet demand for evidence-based and engaging exposure to physics for students in middle-school, which has the potential to reach a national level of scale (page, 8). In addition, there is clearly an unmet demand given the statistics related to the lack of physics exposure for middle-schoolers as measured by the department of education for the state in which this project is targeting. The specific identified barrier that prevented the applicant in the past was related to the platform in which the technology was built-on. The applicant will develop a web-based version of the technology for use on Chromebooks or laptops, beyond just an iPad as is the case today (page, 10).

Weaknesses:

Given the known facts about the digital divide, and the need to have a computer and Internet to access this platform, the applicant did not address how this would be mitigated with this traditionally underrepresented group which the project seeks to address. The applicant did not address criterion B.3 in the grant. Although the applicant address the feasibility of replication of the proposed project with the current participants, how this will be address in a variety of settings with a variety of populations was not clear (page, 14-15).

Reader's Score: 23

Selection Criteria - Quality of the Project Design and Management Plan

1. In determining the quality of the proposed project design, 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 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.

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

(4) The potential and planning for the incorporation of project purposes, activities, or benefits into the ongoing work of the applicant beyond the end of the grant.

Strengths:

The applicant on (page, 15-17) in Table 1 provided goals, objectives and outcomes. The applicant provided the qualifications and experience of the project lead and key personnel assigned to this grant (pages, 17-19, and Appendix B). The qualifications and experiences of these key personnel are appropriate based on the number of years cited and previous work experience cited by the applicant. The applicant has a continuous process improvement plan, with sufficient specific details (page, 21-22). It was clear what type of formative data will be used for the purpose of evaluating implementation fidelity, and for the purposes of iteratively improving the project throughout the grant period. The data will include four appropriate data sources, post-workshop surveys, attendance logs, and other sources. The feedback loop for continuous improvement purposes will be reported to the project team at four different time points (page, 22).

Weaknesses:

The applicant goals, objectives and outcomes were not clearly specified and measurable. There were no goals provided, and the outcomes were not all objectively measurable. As example of an outcome, broaden access to the technology, and measured by website usage. This outcome cannot be objectively assessed by the evaluator to determine if it was met. Although the applicant included a timeline, the timeline was too general as related to the specific timeline and person responsible for completing a specific deliverable (page, Appendix G1). It was not clear how the applicant will ensure objectives will be met on time and within budget.

Another area of concern was the amount of time the key personnel will be assigned to this grant. The FTE for these key positions was not provided, without this information it is difficult to determine if the time will be sufficient and provide the needed reasonable resources for this grant. Finally, in addressing criterion C.4, the applicant indicated that the participants of this grant has agreed to integrate the technology into its professional development offerings, this does not

fully address sustainability. The applicant should specifically address why no more funds will be needed, hence, benefits into the ongoing work of the applicant beyond the end of this grant. For instance, if additional funds are needed to support the technology and professional development, it is not clear how the districts will cover these costs.

Reader's Score: **25**

Selection Criteria - Quality of the Project Evaluation

1. **In determining the quality of the project evaluation, the Secretary considers the following factors:**

   (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 without reservations as described in the What Works Clearinghouse Handbook (as defined in this notice).

   (2) The extent to which the evaluation will provide guidance about effective strategies suitable for replication or testing in other settings.

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

   (4) 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:

   N/A

   Weaknesses:

   N/A

Reader's Score: **0**

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Last Updated: 07/12/2018 05:48 PM

Technical Review Coversheet

Applicant: New York Hall of Science (U411B180028)
Reader #3: **********

		Points Possible	Points Scored
Questions			
Selection Criteria			
Significance			
1. Significance		15	12
Strategy to Scale			
1. Strategy to Scale		30	24
Quality of the Project Design and Management Plan			
1. Project Design/Managememt		35	25
Quality of the Project Evaluation			
1. Project Evaluation		20	0
	Total	100	61

Technical Review Form

Panel #3 - EIR Mid-Phase - 4: 84.411B

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

Applicant: New York Hall of Science (U411B180028)

Questions

Selection Criteria - Significance

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

(1) The magnitude or severity of the problem to be addressed by the proposed project.

(2) The national significance of the proposed project.

(3) The extent to which the proposed project represents an exceptional approach to the priority or priorities established for the competition.

Strengths:

1. The application did a thorough job of describing the severity of the problem, NY Hall of Science provided a sense of urgency that middle school students do not have adequate opportunities to learn physical science. The Applicant addressed engaging inquiry-based instructional physics materials and indicated an overview of the severity of the problem, indicating only 41% of high school students took physics. For example, page 2 indicates the relatively small group of physic takers to be of high socioeconomic status. The project has potential to improve STEM by incorporating Playground Physics curriculum including the app to improve STEM career pathways for high-need middle school students.

2. The project addresses the science achievement gap for high-need students who are not being adequately prepared at the middle school level. The applicant stressed the importance of engaging curricular resources and strategies, such as exploring physics through hands-on activities in each lesson (page 7) and app access to support students in observing and noticing core concepts of physics. The applicant stressed the importance to understand the challenges educators face in implementing Common Core state math and ELA standards, specifically indicating the significant number of children that enter school unprepared in math and highlighting the importance of providing strong literacy skills (see page 3).

3) The project supports exceptional priorities and specific strategies to scale up and broadening the app. The applicant established the need for high quality PD using an effective model, train the trainer model, to draw from the assessment (NYSCATE) system including a web-based creation version of the Playground Physics apps. The approach aligns to the project priorities by indicating, identifying, and scaling-up the validating efforts that are shown to leverage the interactive learning experiences (pg.5).

Weaknesses:

2) The connection of the demonstration of the strategies are not not-well explained and therefore, two points are deducted (pg.7). There are missing elements within the national significance section of the proposed project to physics education access.

Reader's Score: **12**

Selection Criteria - Strategy to Scale

1. **In determining the applicant's capacity to scale the proposed project, the Secretary considers the following factors:**

(1) The extent to which the applicant demonstrates there is unmet demand for the process, product, strategy, or practice that will enable the applicant to reach the level of scale that is proposed in the application.

(2) The extent to which the applicant identifies a specific strategy or strategies that address a particular barrier or barriers that prevented the applicant, in the past, from reaching the level of scale that is proposed in the application.

(3) The feasibility of successful replication of the proposed project, if favorable results are obtained, in a variety of settings and with a variety of populations.

Strengths:

1) The applicant did a thorough job of describing the severity of the problem by indicating the important predictors of scalable, effective, and engaging inquiry-based science programs. The project specifies clear outcomes for PD including the train the trainer model, the information is plainly outlined. The applicant articulates the lack of access to suitable science curricula which addresses the unmet demand factor and additionally supports their claim by citing the 2015 NY test results where 70% of 8th graders performed below the NAEP proficient level (pg.8).

2) The applicant stressed the national importance to develop a sustainable, high-quality and cost-effective PD strategy for training, specifically indicating engaging PD, reflection, and dialogue to acquire STEM knowledge. Various strategies are outlined including the objectives, outcomes, and indicators to test and refine a strategy for scaling and sustain Playground Physics in diverse middle schools (pg.15).

Weaknesses:

3) The applicant lacked clarity and alignment of the STEM and computer science priorities. The project prioritizes on the TtT model program and the replication of the project was not highlighted.

Reader's Score: 24

Selection Criteria - Quality of the Project Design and Management Plan

1. **In determining the quality of the proposed project design, 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 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.

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

(4) The potential and planning for the incorporation of project purposes, activities, or benefits into the ongoing work of the applicant beyond the end of the grant.

Strengths:

1) The goals, objectives, strategies, outcomes, and measures are clearly stated on page 15 indicating that supporting teachers is a key component in the project and, that teachers will work with their coaches online to enhance the innovative CoP space. Table 1 on page 15 & 16 evidently supports the project with the specific indicators aligned to the measurable outcomes.

2) The applicant has a well-planned structured to manage the project. Several researchers and NYSCI will structure the system of support to maintain communication and relationship with partners (pg.17). The management plan indicates

several measures to monitor the effectiveness of the program by ensuring the accountability within the clear roles and responsibilities identified in the project (pg.16).

4) The applicant plans to develop statewide strategies for PD and to disseminate through other ISTE affiliated organization (pg.23). Ongoing work is clearly stated as the objectives, strategies, and measurable goals are provided on page 15. Further, NYSCATE has agreed to integrate Playground Physics into its PD offerings if proven to be effective in increasing the physics achievement of students in New York (pg.23).

Weaknesses:

3) The feedback and continuous improvements detailed plan would have been helpful to understand the alignment with project.

Reader's Score: 25

Selection Criteria - Quality of the Project Evaluation

1. In determining the quality of the project evaluation, the Secretary considers the following factors:

(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 without reservations as described in the What Works Clearinghouse Handbook (as defined in this notice).

(2) The extent to which the evaluation will provide guidance about effective strategies suitable for replication or testing in other settings.

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

(4) 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:

n/a

Weaknesses:

n/a

Reader's Score: 0

Status: Submitted
Last Updated: 07/12/2018 05:48 PM

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Last Updated: 07/10/2018 01:47 PM

Technical Review Coversheet

Applicant: New York Hall of Science (U411B180028)
Reader #2: **********

	Points Possible	Points Scored
Questions		
Selection Criteria		
Significance		
1. Significance	15	0
Strategy to Scale		
1. Strategy to Scale	30	0
Quality of the Project Design and Management Plan		
1. Project Design/Managememt	35	0
Quality of the Project Evaluation		
1. Project Evaluation	20	19
Total	100	19

Technical Review Form

Panel #3 - EIR Mid-Phase - 4: 84.411B

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

Applicant: New York Hall of Science (U411B180028)

Questions

Selection Criteria - Significance

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

   (1) The magnitude or severity of the problem to be addressed by the proposed project.

   (2) The national significance of the proposed project.

   (3) The extent to which the proposed project represents an exceptional approach to the priority or priorities established for the competition.

   Strengths:

   N/A

   Weaknesses:

   N/A

Reader's Score: **0**

Selection Criteria - Strategy to Scale

1. **In determining the applicant's capacity to scale the proposed project, the Secretary considers the following factors:**

   (1) The extent to which the applicant demonstrates there is unmet demand for the process, product, strategy, or practice that will enable the applicant to reach the level of scale that is proposed in the application.

   (2) The extent to which the applicant identifies a specific strategy or strategies that address a particular barrier or barriers that prevented the applicant, in the past, from reaching the level of scale that is proposed in the application.

   (3) The feasibility of successful replication of the proposed project, if favorable results are obtained, in a variety of settings and with a variety of populations.

   Strengths:

   N/A

   Weaknesses:

   N/A

Reader's Score: **0**

Selection Criteria - Quality of the Project Design and Management Plan

1. **In determining the quality of the proposed project design, 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 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.

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

   (4) The potential and planning for the incorporation of project purposes, activities, or benefits into the ongoing work of the applicant beyond the end of the grant.

   Strengths:

   N/A

   Weaknesses:

   N/A

Reader's Score: 0

Selection Criteria - Quality of the Project Evaluation

1. **In determining the quality of the project evaluation, the Secretary considers the following factors:**

   (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 without reservations as described in the What Works Clearinghouse Handbook (as defined in this notice).

   (2) The extent to which the evaluation will provide guidance about effective strategies suitable for replication or testing in other settings.

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

   (4) 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 train the teacher model will be evaluated by a multisite cluster randomized study with teachers randomly assigned to intervention or control conditions, blocked by school. Student outcomes will be compared by intervention teachers versus control teachers. This study if well conducted is capable of meeting WWC Standards without reservations.

   Student outcomes will be assessed with a physics knowledge scale, and three attitude scales assessing engagement and attitudes toward physics. All measures have previously been demonstrated to have acceptable internal reliability and have face validity. These measures are capable of successfully measuring the impact of the intervention on physics knowledge and attitudes toward the subject.

   The use of student demographic data will permit the possibility of determining what differential impact, if any, the intervention has on subgroups such as race/ethnicity, gender, ELL status, economic disadvantage, and disability. Appropriate teacher variables are also included in the analyses.

   The implementation of appropriate regression models for the statistical analyses is planned.

Cut points will be determined for adequate and high fidelity of project implementation by teachers.

Weaknesses:

The applicant is assuming a 15% attrition rate. There is no explanation of how a much larger attrition rate will be handled.

Reader's Score: **19**

Status: Submitted
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Last Updated: 07/11/2018 10:30 AM

Technical Review Coversheet

Applicant: New York Hall of Science (U411B180028)
Reader #5: **********

	Points Possible	Points Scored
Questions		
Selection Criteria		
Significance		
1. Significance	15	12
Strategy to Scale		
1. Strategy to Scale	30	24
Quality of the Project Design and Management Plan		
1. Project Design/Managememt	35	31
Quality of the Project Evaluation		
1. Project Evaluation	20	0
Total	100	67

Technical Review Form

Panel #3 - EIR Mid-Phase - 4: 84.411B

Reader #5: **********

Applicant: New York Hall of Science (U411B180028)

Questions

Selection Criteria - Significance

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

   (1) The magnitude or severity of the problem to be addressed by the proposed project.

   (2) The national significance of the proposed project.

   (3) The extent to which the proposed project represents an exceptional approach to the priority or priorities established for the competition.

Strengths:

1. The proposal describes the crisis in physics education: few students take physics in high school, and students are not adequately prepared for physics in earlier grades (p. 2). In particular, Black, Hispanic, and low SES students are less likely to take physics, and Black and Hispanic students are less likely than White students to pass an AP Physics exam (pp. 2-3). P. e23-24 -- few students take physics, esp. URs. Start in MS to expose Students (4 pts)
2. The proposal makes the case for the national need to fill an increasing number of STEM jobs (pp. 3-4). The proposal also focuses on apathy, lack of motivation, and disengagement of middle school students in science classes (p 4). The proposal also cites research that physics is a strong predictor of postsecondary STEM success (p. 3). The playful, engaging app created by this project will address both of these issues.
3. The proposal represents an exceptional approach to the priority. It clearly addresses STEM content, and the particular parts of STEM that are in need. The app represents a playful, informal science learning approach to learning physics at the middle school level (p. 5). The content is aligned with the NGSS, making it feasible and likely to be incorporated into middle school science teachers' instruction (p. 6). Finally, the proposal includes multiple approaches to changing classroom instruction: the creation of an app, curriculum, and professional learning for teachers (pp. 6-7).

Weaknesses:

1. The proposal argues that starting with middle school exposure in physics will enable more students to successfully take this course in high school, but there is no research cited about the correlation between middle school exposure and high school course-taking or achievement.
2. The proposal would be strengthened by making explicit connections between students who take physics and their ability to fill STEM jobs. Only one reference is cited about the connection between physics in high school and postsecondary success, but it would be helpful to see more direct evidence that middle school physics exposure leads to physics achievement in high school and STEM study in college.

Reader's Score: **12**

Selection Criteria - Strategy to Scale

1. **In determining the applicant's capacity to scale the proposed project, the Secretary considers the following factors:**

(1) The extent to which the applicant demonstrates there is unmet demand for the process, product, strategy, or practice that will enable the applicant to reach the level of scale that is proposed in the application.

(2) The extent to which the applicant identifies a specific strategy or strategies that address a particular barrier or barriers that prevented the applicant, in the past, from reaching the level of scale that is proposed in the application.

(3) The feasibility of successful replication of the proposed project, if favorable results are obtained, in a variety of settings and with a variety of populations.

Strengths:

1. The proposal describes both the general need for inquiry-based science programs, as well as specific demand for their program. The applicant sites that their website has had over 1,300 U.S. visitors in the past year, and over 400,000 copies of the app have been downloaded in the U.S. and Canada (p. 8). The applicant has also fielded requests from their partners in NY, suggesting that there is clear interest in the program (p. 8)
2. The proposal clearly articulates a plan for scaling the program by developing teacher professional development with a sustainable train-the-trainer blended learning approach (pp. 11-12). The applicant has been unable to reach a large scale in the past due to the app's availability only on iPads. The funding of this proposal would enable the applicant to develop a web-based version of the app that can be used on any device, including Chromebooks (pp. 9-10).
3. The applicant intends to scale and test their program, including the professional development, in a variety of settings and with a variety of populations (p. 9). The applicant intends to create a sustainability plan for NYSCATE to integrate the program into its existing PD offerings for teachers across the state (p. 14).

Weaknesses:

3. It is not clear which settings and which populations the program and the professional development will be replicated in during the program. The proposal also does not clearly describe how incorporation into NYSCATE will result in replication.

Reader's Score: 24

Selection Criteria - Quality of the Project Design and Management Plan

1. In determining the quality of the proposed project design, 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 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.

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

(4) The potential and planning for the incorporation of project purposes, activities, or benefits into the ongoing work of the applicant beyond the end of the grant.

Strengths:

1. The goals, objectives, and outcomes are clear, aligned, and measurable (pp. 15-17). The indicators of success and measures align and described in sufficient detail.
2. The roles for each organization and involved personnel are described and are clearly delineated. The proposal includes a plan for regular meetings between team members (pp. 18-20). The timeline and milestones in the management plan (Appendix G1) was exemplary, with details for activities under each objective, specific deadlines, and responsible organizations listed.
3. The procedures for ensuring feedback and continuous improvement are described in detail. The applicant intends to collect a variety of data from the workshops and classroom implementation, and to use this data to iterate on the professional development mode (p. 22). Feedback loops will be take place four times with improvement reports and

revision of the model, and with an emphasis on the pilot phase of the project (p 22).

4. If successful, NYSCATE has agreed to include the project into its professional development offerings for teachers in the state of NY (p. 23). The proposal also describes plans to continue to scale up nationwide, and disseminate the project to ISTE-affiliated organizations.

Weaknesses:

1. The project plan does not include any outcomes on the professional development aside from teacher surveys. The research would be strengthened with measures of teacher knowledge or other outcomes. With the need for the project based heavily on high school physics course-taking, it is surprising that intended enrollment (or actual enrollment) is not a measured outcome.

4. It is not clear how the applicant will continue the project after the grant concludes. It is also not clear whether Playground Physics will be promoted or encouraged after it is added to NYSCATE's PD offerings.

Reader's Score: 31

Selection Criteria - Quality of the Project Evaluation

1. In determining the quality of the project evaluation, the Secretary considers the following factors:

(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 without reservations as described in the What Works Clearinghouse Handbook (as defined in this notice).

(2) The extent to which the evaluation will provide guidance about effective strategies suitable for replication or testing in other settings.

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

(4) 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:

N/A

Weaknesses:

N/A

Reader's Score: 0

Status: Submitted

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