

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

Status: Submitted

Last Updated: 09/24/2013 12:07 PM

Technical Review Coversheet

Applicant: Challenger Center for Space Science Education (U411C130041)

Reader #1: *****

	Points Possible	Points Scored
Questions		
Summary Statement		
Summary Statement		
1. Summary Statement	0	
Selection Criteria		
Significance		
1. Significance	35	34
Quality of Project Design		
1. Project Design	25	23
Quality of the Management Plan		
1. Management Plan	15	14
Quality of Project Personnel		
1. Personnel	10	9
Quality of the Project Evaluation		
1. Project Evaluation	15	0
Total	100	80

Technical Review Form

Panel #15 - i3 Development - 15: 84.411C

Reader #1: *****

Applicant: Challenger Center for Space Science Education (U411C130041)

Questions

Summary Statement - Summary Statement

1. Summary Statement (Optional)

General:

Reader's Score:

Selection Criteria - Significance

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

(1) The extent to which the proposed project would implement a novel approach as compared with what has been previously attempted nationally.

(2) The potential contribution of the proposed project to the development and advancement of theory, knowledge, and practices in the field of study.

(3) The extent to which the proposed project will substantially improve on the outcomes achieved by other practices, such as through better student outcomes, lower cost, or accelerated results.

Strengths:

This project builds on the novel approach of integrating technology base problem solving simulation with high definition real world scenarios (p.1 & 11) that embrace problem-base learning, real-time immersion of problem solving team. The extent to which the proposed project would implement a novel approach as compared with what has been previously attempted nationally.

A.- This project builds on the novel approach of integrating technology base problem solving simulation with high definition real world scenarios (p.1 & 11) that embrace problem-base learning, real-time immersion of problem solving team.

- This project is very impactful for reality based character molding and role playing of teachers and students that involve them in switching roles with other team members.
- This project allows them to interact differently from the duties required of other team members.
- This software base technology is founded in Science, Technology, Engineering, Mathematics (STEM).
- Strong development component for field implementation as it relates to problem solving real life scenarios on a mission.
- Strong historical data surround project background as it relates to role model in professional fields.
- Using the technology to improve teacher/parental confidence that has already impacted over 400,000 students & 40,000 teachers (Apx: C p.1).

Too often the intervention theory, which stipulates the links between a program's resources, activities and effects, does not represent the way in which the program actually produces its effects, but this technology and knowledge has been proven in other formats related to this group of body work with other entities (D:1-5).

- This project builds on lessons learned from Challenger Learning Centers that have hosted previous version of the simulation.
- This project is building off a strong history of the Challenger Centers to develop a novel (p.2) approach that includes space exploration.

This project demonstrates reverse role and relationship character building and knowledge increase for females has out-paced the male population that has participated in the simulation (C:1-5) by several percentage points.

- This project substantial improvement in outcomes will provide great feedback to the general population of 5th grade potential participants to heighten the interest and commitment.
- This project base of "missions" and teams for connect to high technology Sci-Fi Adventures that these generations of students are very familiar.

Weaknesses:

This project demonstrates Priority 7 – Effective Use of Technology – Technology Enabled Solutions but the software user interface is NOT complete.

- Professional development for teachers need to be strengthen

Reader's Score: 34

Selection Criteria - Quality of Project Design

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

(1) The extent to which the proposed project addresses the absolute priority the applicant is seeking to meet.

(2) The clarity and coherence of the project goals, including the extent to which the proposed project articulates an explicit plan or actions to achieve its goals (e.g., a fully developed logic model of the proposed project).

(3) The clarity, completeness, and coherence of the project goals, and whether the application includes a description of project activities that constitute a complete plan for achieving those goals, including the identification of potential risks to project success and strategies to mitigate those risks.

Strengths:

This project will immerse students in Flight Missions to solve a intergalactic problem with students being able to identify with each of the officers on the mission (mission team: commander, navigation, life support, medical , communications, planetary science & engineering (p.5).

- The application will collect data and track decision making as the mission continues to conclusion.
- Dedicated in Professional Development to help teachers improve their confidence/knowledge in the implementation process.
- Teacher development in 3 phases (p.11-12).

This project (6) goals(p.5) are articulated with professional development(p.11), activities (p.6) and assessments (p.9) defined for completion of the logic model (Apx: D-p.8) and implementation(p.5) and the logic model is fully defined and data supported for expected outcomes that have been proven (D:1-5).

- This project identifies project user interface (p.7)
- Professional Development Process (p.13)
- Technology Platform (p.6)
- Student will be able to interface with the application that will map out the decision making process used by the student (p.7-8).

This project has defined mission models and project goals (Adapt Technology Platform for classroom; Develop and Implement simulation for 5th grade science; Improve Command interface; Professional Development; Deliver & Evaluate Simulation; Analyze Data) in detail.

- The potential risk will be mitigated with adopting industry best practices (need to relate; problem solving; motivation and readiness to learn; desire to acquire new skills) and incorporate feedback from educators and subject matter experts (p. 13-14).

Weaknesses:

This project includes reference to evidence on effective methods to increase children's expressive, it is unclear how project activities are directly related to the identified Absolute Priority 7 -Effective Use of Technology – Technology Enabled Solutions.

- Application software NOT completely developed
- No explanation of link from project logic model to activities, goals or objectives.

Reader's Score: 23

Selection Criteria - Quality of the Management Plan

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

(1) The extent to which the management plan articulates key responsibilities and well-defined objectives, including the timelines and milestones for completion of major project activities, the metrics that will be used to assess progress on an ongoing basis, and annual performance targets the applicant will use to monitor whether the project is achieving its goals.

(2) The extent of the demonstrated commitment of any key partners or evidence of broad support from stakeholders whose participation is critical to the project's long-term success.

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

Strengths:

This project is building on success matrix that was established in 1986 thru the "teachers in space" by articulating defined responsibilities, objectives, milestones and project activities as outlined in Priority 7 with project leadership team and supporters that are at the highest level of competence in subject matter expertise (Apx: D) that are committed to the continuing success.

The project support relationships identifies major educational & corporate partners (Apx: D) that have help develop over 40 Challenger Learning Centers network around the county (Apx C:-1). Some of the partnerships have been active for over 25 years.

- This project identifies Key Partners: (3) LEA's, Project Partners (3) (Apx: D)

This project will demonstrate continuous improvement and feedback through technology base communication: email, teleconference and webinars on meeting schedules that are daily, weekly or monthly depending on project phase and stakeholders (p.17). In person meeting will be held as needed to facilitate the project objectives, activities and milestones (p.18).

Weaknesses:

This project identifies an outstanding management plan for developing the software platform necessary to complete the project but the success depends on application code development of which they have experience.

- No direct link from activities to goals and positive feedback identified

Reader's Score: 14

Selection Criteria - Quality of Project Personnel

1. In determining the quality and personnel for the proposed project, the Secretary considers the following factor:

(1) The adequacy of the project's staffing plan, particularly for the first year of the project, including the identification of the project director and, in the case of projects with unfilled key personnel positions at the beginning of the project, that the staffing plan identifies how critical work will proceed.

Strengths:

This project has identified all of the major personnel position of which 2 will be new hires: Education Manager and Education Technology Manager (Apx: D).

- The project director will assume responsibility for these new hire position until a candidate is on board (p. 19).
- This project clearly identifies project plans for new hires (p.14-20)
- Individual team players resumes are and experiences are highly qualified and listed (Apx: D)
- Timelines are clearly defined and articulated with project success with responsibilities (p.18)

Weaknesses:

This project has identified all of the key management personnel and partners that will participate but the success will depend on application code development.

- Two new hires have NOT been identified (Apx: D) who will play a critical role in implementation of the project that should have prior experience in this type of methodology implementation

Reader's Score: 9

Selection Criteria - Quality of the Project Evaluation

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

(1) The clarity and importance of the key questions to be addressed by the project evaluation, and the appropriateness of the methods for how each question will be addressed.

(2) The extent to which the evaluation plan includes a clear and credible analysis plan, including a proposed sample size and minimum detectable effect size that aligns with the expected project impact, and an analytic approach for addressing the research questions.

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

Strengths:

N/A scored by another reviewer

Weaknesses:

N/A scored by another reviewer

Reader's Score: **0**

Status: Submitted

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Status: Submitted

Last Updated: 09/19/2013 07:48 PM

Technical Review Coversheet

Applicant: Challenger Center for Space Science Education (U411C130041)

Reader #2: *****

	Points Possible	Points Scored
Questions		
Summary Statement		
Summary Statement		
1. Summary Statement	0	
Selection Criteria		
Significance		
1. Significance	35	32
Quality of Project Design		
1. Project Design	25	24
Quality of the Management Plan		
1. Management Plan	15	14
Quality of Project Personnel		
1. Personnel	10	10
Quality of the Project Evaluation		
1. Project Evaluation	15	0
Total	100	80

Technical Review Form

Panel #15 - i3 Development - 15: 84.411C

Reader #2: *****

Applicant: Challenger Center for Space Science Education (U411C130041)

Questions

Summary Statement - Summary Statement

1. Summary Statement (Optional)

General:

Reader's Score:

Selection Criteria - Significance

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

(1) The extent to which the proposed project would implement a novel approach as compared with what has been previously attempted nationally.

(2) The potential contribution of the proposed project to the development and advancement of theory, knowledge, and practices in the field of study.

(3) The extent to which the proposed project will substantially improve on the outcomes achieved by other practices, such as through better student outcomes, lower cost, or accelerated results.

Strengths:

- One of the strengths of the application is that it addresses the extent to which the proposed project would implement a novel approach as compared with what has been previously attempted nationally through what the Challenger Center has offered through "site-based" simulations through its network of regional centers" to a transition to "the classroom" as described in the abstract.
- Another strength is that it addresses how the potential contribution of the proposed project will advance the field through knowledge and practices related to the integration of simulations with problem-based learning, background assessments, professional development, and virtual and hands-on manipulative activities described on p. 2 – 4.
- Evidence of theory includes an extensive bibliography towards the back of the application, along with theoretical references such as those referenced on p. 3 - 4 related to sections 2, 3 and 4.

Weaknesses:

- There is no evidence of theory referenced in the application's narrative in section 1 on p. 2.
- Although outcomes are stated on p. 4, it is not clear how the proposed project will improve student outcomes achieved by other practices, lower costs or accelerate results through the simulation models described on p. 4.

Selection Criteria - Quality of Project Design

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

(1) The extent to which the proposed project addresses the absolute priority the applicant is seeking to meet.

(2) The clarity and coherence of the project goals, including the extent to which the proposed project articulates an explicit plan or actions to achieve its goals (e.g., a fully developed logic model of the proposed project).

(3) The clarity, completeness, and coherence of the project goals, and whether the application includes a description of project activities that constitute a complete plan for achieving those goals, including the identification of potential risks to project success and strategies to mitigate those risks.

Strengths:

- One of the strengths is that the application clearly addresses Absolute Priority 7 – Effective Use of Technology and Subpart B Technology-enabled solutions in the abstract and p. 1 related to classroom-based simulations.
- This application clearly, completely and coherently states six project goals in the abstract, p. 5 - 6 and includes an abbreviated logic model on p. 5 – 6 and a fully developed logic model of the proposed project toward the end of the application.
- This application completely and coherently addresses descriptions of the project activities in the table on p. 5 - 6, along with detailed project activities relating to the Technology Platform on p. 6 - 7, Simulation Experiences on p. 8 - 9, Real Time Assessment on p. 9 – 11 and Professional Development on p. 11 – 13. The application also includes a figure on p. e24 to address the appearance and content of the learner interface.
- The application identifies potential challenges to project success, which are included on p. 13 – 14, as well as appropriate strategies to mitigate the risks.

Weaknesses:

- Although evidence is included related to the six project goals, more explanation of or reference to how the logic model relates to the narrative is needed.

Selection Criteria - Quality of the Management Plan

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

(1) The extent to which the management plan articulates key responsibilities and well-defined objectives, including the timelines and milestones for completion of major project activities, the metrics that will be used to assess progress on an ongoing basis, and annual performance targets the applicant will use to monitor whether the project is achieving its goals.

(2) The extent of the demonstrated commitment of any key partners or evidence of broad support

from stakeholders whose participation is critical to the project s long-term success.

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

Strengths:

- This application identifies the commitment of three project partners including those identified in the abstract: “three identified LEAs in Virginia and Pennsylvania (more will be added upon award), the Virginia Department of Education, the University of Virginia, two of Challenger’s regional centers, and the Redmon Group.” Other project partners identified towards the end of the application include: MathScience Innovation Center, Hanover County Public Schools, Frederick County Public Schools, Mars Area School District and two LEAs to be determined. These are also listed on p. 6.
- The application clearly outlines the extent of the demonstrated commitment of the majority of key partners in the form of letters of support identified toward the end of the application.

Weaknesses:

- It is not clear what commitment the key partners related to MathScience Innovation Center, Hanover County Public Schools, Frederick County Public Schools, Mars Area School District and the two LEAs to be determined have related to the project, as there do not appear to be letters of support or other documentation.

Reader's Score: 14

Selection Criteria - Quality of Project Personnel

1. In determining the quality and personnel for the proposed project, the Secretary considers the following factor:

(1) The adequacy of the project's staffing plan, particularly for the first year of the project, including the identification of the project director and, in the case of projects with unfilled key personnel positions at the beginning of the project, that the staffing plan identifies how critical work will proceed.

Strengths:

- The strengths of the application includes clearly identified plans for staffing as individuals are identified on p. 14 – 20, along with responsibilities in implementing the proposed project.
- Evidence of personnel are also appropriately listed including: the Project Director, Technology Director, Educational Manager, Educational Technology Manager, Mission Specialist and Challenger Tech Support.
- Specific individuals have been identified and resumes are included as evidence of the specific prior experiences that suggest the team is prepared to implement the proposed project successfully.
- Timelines also suggest that the applicant has fully developed the responsibilities related to the success of the project as evidenced on p. 18.

Weaknesses:

- None identified.

Reader's Score: 10

Selection Criteria - Quality of the Project Evaluation

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

(1) The clarity and importance of the key questions to be addressed by the project evaluation, and the appropriateness of the methods for how each question will be addressed.

(2) The extent to which the evaluation plan includes a clear and credible analysis plan, including a proposed sample size and minimum detectable effect size that aligns with the expected project impact, and an analytic approach for addressing the research questions.

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

Strengths:

N/A scored by another reviewer

Weaknesses:

N/A scored by another reviewer

Reader's Score: 0

Status: Submitted

Last Updated: 09/19/2013 07:48 PM

Status: Submitted

Last Updated: 09/24/2013 11:27 AM

Technical Review Coversheet

Applicant: Challenger Center for Space Science Education (U411C130041)

Reader #3: *****

	Points Possible	Points Scored
Questions		
Summary Statement		
Summary Statement		
1. Summary Statement	0	
Selection Criteria		
Significance		
1. Significance	35	30
Quality of Project Design		
1. Project Design	25	18
Quality of the Management Plan		
1. Management Plan	15	10
Quality of Project Personnel		
1. Personnel	10	10
Quality of the Project Evaluation		
1. Project Evaluation	15	0
Total	100	68

Technical Review Form

Panel #15 - i3 Development - 15: 84.411C

Reader #3: *****

Applicant: Challenger Center for Space Science Education (U411C130041)

Questions

Summary Statement - Summary Statement

1. Summary Statement (Optional)

General:

Reader's Score:

Selection Criteria - Significance

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

(1) The extent to which the proposed project would implement a novel approach as compared with what has been previously attempted nationally.

(2) The potential contribution of the proposed project to the development and advancement of theory, knowledge, and practices in the field of study.

(3) The extent to which the proposed project will substantially improve on the outcomes achieved by other practices, such as through better student outcomes, lower cost, or accelerated results.

Strengths:

The project offers a novel approach in transcending space simulation environments in elementary science classroom. The project will prepare elementary science educators in advance and leading atmospheric/earth science curriculum using scientific visualization approaches to learning.

Elementary school teachers and students will be exposed to virtual environments and learning modules that will build cognition through problem-based teaching and learning, scaffolding, and abstract thinking.

The simulation development environment, Sim3, may be an innovative science and technology tool for the elementary science curriculum.

Weaknesses:

Elementary teachers are knowledgeable in general science instruction and not specific subject matter such as science; they teach all core subjects. The proposed curriculum may not be beneficial for elementary teachers, but middle school/secondary teachers who are content-specific experts. The time period for elementary teachers to gain content-specific knowledge in earth science may be exhaustive coupled with all the responsibilities of the elementary educator.

Reader's Score: 30

Selection Criteria - Quality of Project Design

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

- (1) The extent to which the proposed project addresses the absolute priority the applicant is seeking to meet.**
- (2) The clarity and coherence of the project goals, including the extent to which the proposed project articulates an explicit plan or actions to achieve its goals (e.g., a fully developed logic model of the proposed project).**
- (3) The clarity, completeness, and coherence of the project goals, and whether the application includes a description of project activities that constitute a complete plan for achieving those goals, including the identification of potential risks to project success and strategies to mitigate those risks.**

Strengths:

The project design is dedicated in building teacher's knowledge of specific science content. The teacher professional development is in three stages where teachers are engaged incorporating the Sim3 software application module into their lessons; the software is in the development stages. After further testing and analysis, the software will be ready for deployment. The second stage is to learn the simulation. The third stage is review of the application software, such as assessment features and learning management system, followed by implementation with students. The teacher is engaged in three years of teacher professional development, which is necessary and sufficient time for the elementary educator.

Weaknesses:

It is recommended that the software application is ready for full deployment prior to teacher professional development. An effective teacher professional involves learning the software application or constructing modules for at least two years prior to incorporate into lessons. Teachers must identify the application as an instruction tool and not a supplement tool. Technology proficiency should be included as part of the professional development plan. Teachers can learn the technology and embedded science content simultaneously if the software application is ready for full implementation.

Reader's Score: 18

Selection Criteria - Quality of the Management Plan

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

- (1) The extent to which the management plan articulates key responsibilities and well-defined objectives, including the timelines and milestones for completion of major project activities, the metrics that will be used to assess progress on an ongoing basis, and annual performance targets the applicant will use to monitor whether the project is achieving its goals.**
- (2) The extent of the demonstrated commitment of any key partners or evidence of broad support from stakeholders whose participation is critical to the project's long-term success.**
- (3) The adequacy of procedures for ensuring feedback and continuous improvement in the operation of the proposed project.**

Strengths:

The project's management plan is to develop the education technology components, develop teacher professional development using a regional team, and hired managers to oversee the project. The LEA's staff will select teachers as the target or control group.

Project staff, university and software consultant group will administer development of the software application. Teachers will have 3 years of professional development facilitated by a regional group.

Weaknesses:

The timeline dedicated for professional development may be necessary for elementary educators so they can learn the content-specific subject matter, but the management plan does not provide sufficient time in assessing research outcomes in effective technology instruction and student growth in science curriculum. One year of implementation is conducted for the teacher and student during this grant period. This is sufficient for an exploratory study.

Reader's Score: 10

Selection Criteria - Quality of Project Personnel

1. In determining the quality and personnel for the proposed project, the Secretary considers the following factor:

(1) The adequacy of the project's staffing plan, particularly for the first year of the project, including the identification of the project director and, in the case of projects with unfilled key personnel positions at the beginning of the project, that the staffing plan identifies how critical work will proceed.

Strengths:

The project's staff is highly qualified to carry out the project goals. The project has support from school districts, educational organizations and postsecondary institutions to execute the project goals.

Weaknesses:

None reported.

Reader's Score: 10

Selection Criteria - Quality of the Project Evaluation

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

(1) The clarity and importance of the key questions to be addressed by the project evaluation, and the appropriateness of the methods for how each question will be addressed.

(2) The extent to which the evaluation plan includes a clear and credible analysis plan, including a proposed sample size and minimum detectable effect size that aligns with the expected project impact, and an analytic approach for addressing the research questions.

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

Strengths:

N/A Scored by another reviewer. .

Weaknesses:

N/A Scored by another reviewer.

Reader's Score: 0

Status: Submitted

Last Updated: 09/24/2013 11:27 AM

Status: Submitted

Last Updated: 09/20/2013 03:46 PM

Technical Review Coversheet

Applicant: Challenger Center for Space Science Education (U411C130041)

Reader #4: *****

	Points Possible	Points Scored
Questions		
Summary Statement		
Summary Statement		
1. Summary Statement	0	0
Selection Criteria		
Significance		
1. Significance	35	0
Quality of Project Design		
1. Project Design	25	0
Quality of the Management Plan		
1. Management Plan	15	0
Quality of Project Personnel		
1. Personnel	10	0
Quality of the Project Evaluation		
1. Project Evaluation	15	9
Total	100	9

Technical Review Form

Panel #15 - i3 Development - 15: 84.411C

Reader #4: *****

Applicant: Challenger Center for Space Science Education (U411C130041)

Questions

Summary Statement - Summary Statement

1. Summary Statement (Optional)

General:

n/a scored by another reviewer

Reader's Score: 0

Selection Criteria - Significance

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

(1) The extent to which the proposed project would implement a novel approach as compared with what has been previously attempted nationally.

(2) The potential contribution of the proposed project to the development and advancement of theory, knowledge, and practices in the field of study.

(3) The extent to which the proposed project will substantially improve on the outcomes achieved by other practices, such as through better student outcomes, lower cost, or accelerated results.

Strengths:

n/a scored by another reviewer

Weaknesses:

n/a scored by another reviewer

Reader's Score: 0

Selection Criteria - Quality of Project Design

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

(1) The extent to which the proposed project addresses the absolute priority the applicant is seeking to meet.

(2) The clarity and coherence of the project goals, including the extent to which the proposed project articulates an explicit plan or actions to achieve its goals (e.g., a fully developed logic model of the proposed project).

(3) The clarity, completeness, and coherence of the project goals, and whether the application includes a description of project activities that constitute a complete plan for achieving those goals, including the identification of potential risks to project success and strategies to mitigate those risks.

Strengths:

n/a scored by another reviewer

Weaknesses:

n/a scored by another reviewer

Reader's Score: 0

Selection Criteria - Quality of the Management Plan

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

(1) The extent to which the management plan articulates key responsibilities and well-defined objectives, including the timelines and milestones for completion of major project activities, the metrics that will be used to assess progress on an ongoing basis, and annual performance targets the applicant will use to monitor whether the project is achieving its goals.

(2) The extent of the demonstrated commitment of any key partners or evidence of broad support from stakeholders whose participation is critical to the project's long-term success.

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

Strengths:

n/a scored by another reviewer

Weaknesses:

n/a scored by another reviewer

Reader's Score: 0

Selection Criteria - Quality of Project Personnel

1. In determining the quality and personnel for the proposed project, the Secretary considers the following factor:

(1) The adequacy of the project's staffing plan, particularly for the first year of the project, including the identification of the project director and, in the case of projects with unfilled key personnel positions at the beginning of the project, that the staffing plan identifies how critical work will proceed.

Strengths:

n/a scored by another reviewer

Weaknesses:

n/a scored by another reviewer

Reader's Score: 0

Selection Criteria - Quality of the Project Evaluation

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

(1) The clarity and importance of the key questions to be addressed by the project evaluation, and the appropriateness of the methods for how each question will be addressed.

(2) The extent to which the evaluation plan includes a clear and credible analysis plan, including a proposed sample size and minimum detectable effect size that aligns with the expected project impact, and an analytic approach for addressing the research questions.

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

Strengths:

1. The applicant on pages 21-23 addresses in detail and clarity the methods for how each of the two main research questions will be addressed – greater achievement in math and science test scores. This will be done through a well thought out randomized design on page 22 of classrooms within the selected school districts.

2. The applicant on page 23 includes a clear analysis plan including sample (classrooms) size and provides a clear rationale for determining an effect size estimate on page 24. The formative feedback process on page 21 is well designed and the technology provides the teacher with real time feedback on time and correct answer to questions within the learning module. The applicant on page 25 is to be commended for providing measurable protocols for measuring fidelity dealing with 4 component areas of the program.

3. The applicant on page 23 presents a thorough analysis of sample size for teachers and projected effect size.

4. The applicant on page 22 clearly indicated the key component – improved student achievement in mathematics and science. The applicant addresses the statistical procedures for effectively combining statewide data scores from different states and that collection and analysis procedures will be identical for treatment and comparison classes. The analysis design should provide accurate and reliable findings.

5. The applicant in Appendix D Strong Theory provides a thorough and convincing argument for the benefit of technology enabled solutions.

6. The applicant on page 25 includes a discussion of the external evaluation and provides a discussion of the time commitment to the evaluation plus including the external evaluators' resume.

Weaknesses:

1. The applicant on page 20 mentions the selection of strong theory and while the applicant makes a cogent argument for the value of technology enabled solutions especially in the science field, it is unclear that since the applicant has been conducting technology based science programs at its centers it has not conducted any pre-post testing to confirm its strong theory discussion. The lack of these findings brings into question what will be the impact on increase in statewide science and math testing scores for these 2 hour modules.

2. The applicant on pages 3-4 lists that the protocols for making the modules rely heavily upon a trained and highly involved teacher. The evaluation does not address in any detail how the participation of the teacher will impact student success especially given this will be a randomized teacher selection process.

3. The applicant in the abstract indicates that it will be transitioning from its site based simulations which are of short duration to a year-long set of modules to replace the existing math and science instruction for all of the year for 5th grade students. The strong theory discussion in Appendix D does not adequately address this significant transition (i.e. the novelty of a field trip visit and a short simulation project to regular ongoing classroom instruction on a daily basis where the novelty and interest should be monitored). The applicant does not address this concern in the evaluation. The applicant needed to discuss the Hawthorne Effect of novelty wearing out over time.

Reader's Score: 9

Status: Submitted
Last Updated: 09/20/2013 03:46 PM

Status: Submitted

Last Updated: 09/22/2013 02:58 PM

Technical Review Coversheet

Applicant: Challenger Center for Space Science Education (U411C130041)

Reader #5: *****

	Points Possible	Points Scored
Questions		
Summary Statement		
Summary Statement		
1. Summary Statement	0	
Selection Criteria		
Significance		
1. Significance	35	0
Quality of Project Design		
1. Project Design	25	0
Quality of the Management Plan		
1. Management Plan	15	0
Quality of Project Personnel		
1. Personnel	10	0
Quality of the Project Evaluation		
1. Project Evaluation	15	9
Total	100	9

Technical Review Form

Panel #15 - i3 Development - 15: 84.411C

Reader #5: *****

Applicant: Challenger Center for Space Science Education (U411C130041)

Questions

Summary Statement - Summary Statement

1. Summary Statement (Optional)

General:

Reader's Score:

Selection Criteria - Significance

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

(1) The extent to which the proposed project would implement a novel approach as compared with what has been previously attempted nationally.

(2) The potential contribution of the proposed project to the development and advancement of theory, knowledge, and practices in the field of study.

(3) The extent to which the proposed project will substantially improve on the outcomes achieved by other practices, such as through better student outcomes, lower cost, or accelerated results.

Strengths:

n/a

Weaknesses:

n/a

Reader's Score: 0

Selection Criteria - Quality of Project Design

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

(1) The extent to which the proposed project addresses the absolute priority the applicant is seeking to meet.

(2) The clarity and coherence of the project goals, including the extent to which the proposed project articulates an explicit plan or actions to achieve its goals (e.g., a fully developed logic model of the proposed project).

(3) The clarity, completeness, and coherence of the project goals, and whether the application includes a description of project activities that constitute a complete plan for achieving those goals, including the identification of potential risks to project success and strategies to mitigate those risks.

Strengths:

n/a

Weaknesses:

n/a

Reader's Score: 0

Selection Criteria - Quality of the Management Plan

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

(1) The extent to which the management plan articulates key responsibilities and well-defined objectives, including the timelines and milestones for completion of major project activities, the metrics that will be used to assess progress on an ongoing basis, and annual performance targets the applicant will use to monitor whether the project is achieving its goals.

(2) The extent of the demonstrated commitment of any key partners or evidence of broad support from stakeholders whose participation is critical to the project's long-term success.

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

Strengths:

n/a

Weaknesses:

n/a

Reader's Score: 0

Selection Criteria - Quality of Project Personnel

1. In determining the quality and personnel for the proposed project, the Secretary considers the following factor:

(1) The adequacy of the project's staffing plan, particularly for the first year of the project, including the identification of the project director and, in the case of projects with unfilled key personnel positions at the beginning of the project, that the staffing plan identifies how critical work will proceed.

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 to be conducted, the Secretary considers the following factors:

(1) The clarity and importance of the key questions to be addressed by the project evaluation, and the appropriateness of the methods for how each question will be addressed.

(2) The extent to which the evaluation plan includes a clear and credible analysis plan, including a proposed sample size and minimum detectable effect size that aligns with the expected project impact, and an analytic approach for addressing the research questions.

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

Strengths:

The proposal identifies two questions that have to do with the impact of the proposed project; and these quite appropriately have to do with student achievement (p 21).

The timeline for the project occasionally mentions evaluation, which is needed for an effective evaluation plan (p 18).

The evaluation plan that includes a logic model, which is important for any evaluation (appendix).

The evaluation plan calls for the study of implementation fidelity and “intervention thresholds” that would be used to determine the fidelity of implementation (appendix). Proposal provides details of the random assignment protocol that the project intends to use. The N size and power calculations are provided (p 23-24). The data will be subjected to a standard HLM treatment (p 24).

The evaluation plan calls for both summative in formative data, and calls for the use of formative data as feedback for program improvement (p 21).

Weaknesses:

The evaluation plan provides very few details but instead says that the details will be provided upon receiving funding (p 21). However, a strong proposal would present enough details in the proposal to demonstrate competence of the evaluation plan.

There are two research questions presented by the proposal (p 21); but these are not articulated with the project goals and activities. And, there is too little description of measurable outcomes would be used to address the questions. While the proposal mentions the use of standardized tests and the conversion of student scores to z-scores, there is no discussion of how the two research questions and the project treatment will be aligned to the questions asked on standardized tests (p 22).

Although the timeline includes a heading called “activities and milestones,” no distinction is made between activities and milestones and none of what is listed provide enough detail to be considered a true milestone or to aid evaluation (p 18).

Although the proposal includes a logic model for the evaluation, the logic model is not specifically keyed to the six goals stated for the project, nor is the logic model connected to milestones that could be used to assess accomplishment at various stages of the project.

The controlled condition is to be “treatment as usual” (p 23). This is a common procedure but it is a very weak one because it assumes that what goes on in the control classrooms is all the same. Given that teacher effect is amongst the most powerful influences on student learning, it is not a strong design that assumes that all of the control teachers will be equally effective doing approximately the same things. A stronger proposal would provide for observation of control classrooms so the actual activities in those classrooms vis-à-vis the objectives of the learning units are known. This is important because only then is it possible to infer why the treatment is more effective or less effective.

The proposal also makes no mention of time on task as part of the evaluation of effectiveness of treatment, even though the proposal narrative acknowledges the possibility of a time on task fact (appendix C- p 3). It is a weakness of the proposal that it leaves open the possibility that time on task will vary substantially between the treatment and control classrooms.

Although the narrative calls for formative feedback (p 21), there is no discussion as to how a feedback process would work. Moreover there is no discussion within the evaluation plan of how evaluation data would be used as feedback for continuous progress of the project. For example, according to the proposal if the fidelity measure does not reach its specified threshold then relevant data will not be used; however there is no mention of how the failure of fidelity will be used to improve the implementation of the project.

Reader's Score: 9

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