

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

Status: Submitted

Last Updated: 09/20/2016 08:40 PM

Technical Review Coversheet

Applicant: AZ Board of Regents on behalf of Arizona State University (U411C160121)

Reader #1: *****

	Points Possible	Points Scored
Questions		
Selection Criteria		
Significance		
1. Significance	35	29
Quality of the Project Design and Management Plan		
1. Project Design/Mgmt. Plan	45	38
Quality of the Project Evaluation		
1. Project Evaluation	20	0
Total	100	67

Technical Review Form

Panel #10 - i3 Development - 10: 84.411C

Reader #1: *****

Applicant: AZ Board of Regents on behalf of Arizona State University (U411C160121)

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 extent to which the proposed project involves the development or demonstration of promising new strategies that build on, or are alternatives to, existing strategies.

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

Strengths:

(1) The proposal addresses a problem of significance. Compu Girls is a project that addresses the need to attract and prepare women of color to STEM careers. The proposal provides national statistics and published research demonstrating this need (p. 1). The national need is linked to the local Arizona (AZ) community (p.1).

(2) The proposed project builds on its existing COMPUGIRLS model, launched in 2007 and recognized at federal and local levels for providing underrepresented girls access to STEM opportunities (p. 4). The proposal provides qualitative data documenting the program's supportive environment and its capacity to integrate non-cognitive factors into the program (p.4).

(3) The project addresses priority #4 by proposing to integrate NC skills (e.g., self-regulation, self-concept, expectancy value) into COMPUGIRLS. The proposal cites research (e.g., Eccles, Malka et al.) that informs the choice of NC strategies most essential to academic and career success (p. 4). The proposal also addresses priority # 5 as 65% of the participants come from rural schools (p.13).

Weaknesses:

Although the Appendices include studies of COMPUGIRLS, published in peer reviewed journals (e.g., Urban Education, Learning, Media, & Technology), the proposal narrative does not make a strong case for using a computer intervention, as opposed to other means of preparing girls for STEM. The need for computational skills in STEM careers may seem obvious, but this need for increasing girls' computational skills is not sufficiently supported in the proposal.

Moreover, the strength of the proposal is somewhat diminished by statements, such as "while promising, we do not have data ... how sustainable" (p. 4).

"Computational thinking skills" and plans to pursue STEM careers are inappropriately identified as non-cognitive factors (p. 12).

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 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 mechanisms the applicant will use to broadly disseminate information on its project so as to support further development or replication.

Strengths:

(1) The project provides a thoughtfully developed logic model in the Appendix (large print version) and in a Table on page 12; the logic model includes inputs, elements of COMPUGIRLS, activities, and short and long term outcomes. The elements are described in detail in the narrative (pp. 6 ff.). The goals, objectives, and measurable outcomes are clearly specified on page 13. All objectives, outcomes, and activities are aligned with one overarching goal, to positively impact girls' NC outcomes, plans for STEM coursework, and increase their computational skills.

(2) The management plan includes timelines, milestones, and roles and responsibilities (p. 13-14). The management team is presented in a Table on p. 14-15 and documents sufficient expertise among project staff. Key partners are identified, including participating schools selected because of their high percentages of underrepresented groups, industry partners, and family. Table 4 (p. 16) details the activities/milestones, deadlines, and lead personnel responsible, and this is linked to the logic model. The budget includes training stipends, important for sustainability.

(3) The management plan includes procedures for feedback and improvement (p.18), and emphasizes the participation of key stakeholders and individuals. The project uses a research-based "Design Based Implementation Research Experiment" which involves participants in the research and feedback loop (e.g., iterative test cycle). This kind of strategy is more likely to ensure sustainability than models that are "top down." The plan includes an external evaluator, who will share results from the pilot study with participants.

(4) Dissemination is described on page 19 and includes partnerships with the external evaluators and a research center, who will share findings in publications, poster sessions, conferences, and through digital stories. The participating girls themselves will share the project in a closing ceremony open to the community. In addition, the project promised to establish a "robust online learning community."

Weaknesses:

Although the project is likely to be sustained in the local area (e.g., training stipends provided in the budget to build capacity), it is a small pilot project (100 girls) and no convincing case for replicability and scalability is made.

Although there are a number of different mechanisms for dissemination (p.19), the details about what will be disseminated are missing. Given that Design Based Research Experiments tend (by design) to result in models tailored to the particular setting, some discussion of what might be generalizable to other settings might be warranted.

The virtual meetings described in Table 4 under Phase 1, Planning, on page 16 may not be the most effective way to plan

and gather feedback; other mechanisms may need to be included to supplement the virtual meetings.

Although technology support is identified to set up Blackboard training courses for teachers (p.17), a Blackboard training course may pose technical challenges (e.g., internet downtime, connectivity, browsers that do not interface well with Blackboard), which may frustrate teachers using the system to access the training. Alternative delivery modes, such as webinars, might be considered as more interactive delivery modes.

Reader's Score: 38

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 methods of evaluation will, if well-implemented, produce evidence about the project's effectiveness that would meet the What Works Clearinghouse Evidence Standards with reservations.

(3) The extent to which the proposed project plan includes sufficient resources to carry out the project evaluation effectively.

Strengths:

NA

Weaknesses:

NA

Reader's Score: 0

Status: Submitted

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Status: Submitted

Last Updated: 09/23/2016 09:08 AM

Technical Review Coversheet

Applicant: AZ Board of Regents on behalf of Arizona State University (U411C160121)

Reader #2: *****

	Points Possible	Points Scored
Questions		
Selection Criteria		
Significance		
1. Significance	35	28
Quality of the Project Design and Management Plan		
1. Project Design/Mgmt. Plan	45	38
Quality of the Project Evaluation		
1. Project Evaluation	20	0
Total	100	66

Technical Review Form

Panel #10 - i3 Development - 10: 84.411C

Reader #2: *****

Applicant: AZ Board of Regents on behalf of Arizona State University (U411C160121)

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 extent to which the proposed project involves the development or demonstration of promising new strategies that build on, or are alternatives to, existing strategies.

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

Strengths:

On p.1, the applicant establishes, with data from the Bureau of Labor Statistics that there is a low percentage of minority women involved in STEM. This strengthens the perceived need for the proposed project.

Pages 1 and 2 describe how developing non-cognitive skills in the target population (e.g., female minority students) is central to the COMPUGIRLS project. This establishes alignment with absolute priority 4. Additionally, p. 2-3 describes the project as a partnership with 11 of Arizona's highest need rural and urban schools. The rural component of this plan addresses absolute priority 5.

Participating/targeted schools have a high percentage of low income students and traditionally under-represented students. As noted on p. 5, partner schools also represent a vast geographic area.

The use of the family members who are strategically involved in the program, as noted on p. 9, is a strength. This demonstrates that the project is addressing the identified challenges of low income minority students as something that must be addressed systemically.

Weaknesses:

The link between computing experiences and the development of non-cognitive strengths is a central and fundamental aspect of the proposed project. However, the citation establishing this core concept on page 2 is "in press" or not yet published. This diminishes confidence that the project targets of developing non-cognitive skills will be addressed as proposed.

On pages 3 and 6, a stronger description of how the applicant expects non-cognitive skills will be developed via computer interface could be included.

On page 4, the applicant acknowledges that they do not yet have data demonstrating whether desired outcomes (i.e., salient non-cognitives) are a product of their proposed interventions. Although transparent, this does not allow confidence that the project would provide desired results.

The logic model on p. 12 is hard to read. The application would be strengthened by providing a Table 2 in a larger more readable format.

Reader's Score: 28

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 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 mechanisms the applicant will use to broadly disseminate information on its project so as to support further development or replication.

Strengths:

The applicant identifies three clear objectives on p.13. The associated outcomes make clear the relationship between the objectives and how the participating student population will be impacted.

The key stakeholders are identified on p.14, along with a description of their expertise and responsibilities. This provided a clear and thoughtful management plan.

Table 4 on pages 16-18 provides three phases of the project with expected dates of implementation the responsible stakeholder indicated. Together, these aspects of the proposal suggest a clear management plan.

Weaknesses:

The pilot identified on p. 2 was very small and it was not clear how the project could be scaled to impact more students.

One goal is identified on p.13, which aligns with objectives. Goals, or the measurement related to reaching the goal, do not appear clearly defined.

Virtual meetings were a key element to the continuous feedback plan. On p.18 it was unclear how many virtual meetings would be held and how many in-person meetings. Clarifying the format of these meetings would strengthen the continuous improvement plan.

The plan for dissemination includes “academic articles, poster sessions, digital stories,...” on p. 19. This plan could be strengthened with additional information about targeted journals and conferences.

Reader's Score: 38

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 methods of evaluation will, if well-implemented, produce evidence about the project's effectiveness that would meet the What Works Clearinghouse Evidence Standards with reservations.

(3) The extent to which the proposed project plan includes sufficient resources to carry out the project evaluation effectively.

Strengths:

NA

Weaknesses:

NA

Reader's Score: **0**

Status: Submitted

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Status: Submitted

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Technical Review Coversheet

Applicant: AZ Board of Regents on behalf of Arizona State University (U411C160121)

Reader #3: *****

	Points Possible	Points Scored
Questions		
Selection Criteria		
Significance		
1. Significance	35	0
Quality of the Project Design and Management Plan		
1. Project Design/Mgmt. Plan	45	0
Quality of the Project Evaluation		
1. Project Evaluation	20	19
Total	100	19

Technical Review Form

Panel #10 - i3 Development - 10: 84.411C

Reader #3: *****

Applicant: AZ Board of Regents on behalf of Arizona State University (U411C160121)

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 extent to which the proposed project involves the development or demonstration of promising new strategies that build on, or are alternatives to, existing strategies.
- (3) The extent to which the proposed project addresses the absolute priority the applicant is seeking to meet.

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 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 mechanisms the applicant will use to broadly disseminate information on its project so as to support further development or replication.

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 methods of evaluation will, if well-implemented, produce evidence about the project's effectiveness that would meet the What Works Clearinghouse Evidence Standards with reservations.

(3) The extent to which the proposed project plan includes sufficient resources to carry out the project evaluation effectively.

Strengths:

The applicant effectively provides clarity and importance of the key questions to be addressed by the project evaluation. For example, the applicant concisely proposes that COMPUGIRLS Remixed will impact non-cognitive outcomes, engaging 100 girls in a pilot study and 640 girls in a full impact and implementation study (p.2). The applicant fully identifies well-defined goals and objectives for COMPUGIRLS Remixed. With an overall goal to positively impact underrepresented girls' non-cognitive outcomes, plans for STEM coursework, and increase computational thinking skills; the applicant proposes three main objectives. The applicant provides details of the program inputs, elements, activities, and both short and long term outcomes (Appendix D). In addition, the applicant clearly outlines reliable and well documented data measures and collection processes for student data (pgs. 21-22).

The applicant provided strong evidence of the process for determining impact and effectiveness that will meet the What Works Clearinghouse Standards for student analysis. For example, the applicant proposes to use fixed-effects linear regression models, with fixed effects, for each outcome with an effect size of .21: Significant level alpha of .05 and beta power of 0.80 (p. 23).

The applicant proposes that American Institutes for Research (AIR) will conduct an independent evaluation. AIR has a strong reputation for project evaluation with years of experience serving as national evaluators (p. 25; Appendix F).

Weaknesses:

The applicant mentions the collection of teacher and parent data through measures that will need to be adapted. However, there is no mention of what the specific measures will be or the significance of those measures (pgs. 22-23). The applicant does not describe the selection process for teachers in the application or the process of analyzing the teacher data collected.

Reader's Score: 19

Status: Submitted
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Status: Submitted

Last Updated: 09/19/2016 05:25 PM

Technical Review Coversheet

Applicant: AZ Board of Regents on behalf of Arizona State University (U411C160121)

Reader #4: *****

	Points Possible	Points Scored
Questions		
Selection Criteria		
Significance		
1. Significance	35	0
Quality of the Project Design and Management Plan		
1. Project Design/Mgmt. Plan	45	0
Quality of the Project Evaluation		
1. Project Evaluation	20	19
Total	100	19

Technical Review Form

Panel #10 - i3 Development - 10: 84.411C

Reader #4: *****

Applicant: AZ Board of Regents on behalf of Arizona State University (U411C160121)

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 extent to which the proposed project involves the development or demonstration of promising new strategies that build on, or are alternatives to, existing strategies.
- (3) The extent to which the proposed project addresses the absolute priority the applicant is seeking to meet.

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 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 mechanisms the applicant will use to broadly disseminate information on its project so as to support further development or replication.

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 methods of evaluation will, if well-implemented, produce evidence about the project's effectiveness that would meet the What Works Clearinghouse Evidence Standards with reservations.

(3) The extent to which the proposed project plan includes sufficient resources to carry out the project evaluation effectively.

Strengths:

A series of research questions are described on pages 20 and 21 for the impact study, while there are clear questions for the implementation study outlined on page 24. The impact study is guided by an overachieving research question focused on treatment effects in three broad domains (e.g. non-cognitive skills), while the implementation questions focus on the fidelity of implementation of the core components of the study.

The project evaluation will utilize a student-level block randomized controlled trial, randomly assigning students to a treatment and control group (p. 21). If implemented as described and assuming low attrition, the study could meet What Works Clearinghouse Standards without reservations.

The student-level measures are clear as described on page 22 and are connected to the logic model. Further, the measures' psychometric properties are described and ensure reliable results from each of the key measures.

The proposal includes a full description of the data analysis procedures and a power analysis supporting the sample size on page 23. Overall, the data analysis section demonstrates a sophisticated approach to addressing the research questions.

The evaluation team has the requisite experience and knowledge to successfully complete the project. The lead evaluator has extensive experience and is very capable of leading the evaluation (Appendix F).

Weaknesses:

The logic model indicates that teacher and parent outcomes are of significant importance, yet the evaluation does not directly address the specific outcomes described. On pages 23 and 24, the proposal indicates that surveys will be developed, but the evaluation plan should include more detail in order to ensure the teacher and parent outcomes will be reliable and connected to the outcomes described in the logic model.

Reader's Score: 19

Status: Submitted
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Status: Submitted

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Technical Review Coversheet

Applicant: AZ Board of Regents on behalf of Arizona State University (U411C160121)

Reader #5: *****

	Points Possible	Points Scored
Questions		
Selection Criteria		
Significance		
1. Significance	35	29
Quality of the Project Design and Management Plan		
1. Project Design/Mgmt. Plan	45	39
Quality of the Project Evaluation		
1. Project Evaluation	20	0
Total	100	68

Technical Review Form

Panel #10 - i3 Development - 10: 84.411C

Reader #5: *****

Applicant: AZ Board of Regents on behalf of Arizona State University (U411C160121)

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 extent to which the proposed project involves the development or demonstration of promising new strategies that build on, or are alternatives to, existing strategies.

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

Strengths:

The applicant provided national research on how girls, particularly girls of color lack the non-cognitive skills for the work force (p. 1-3). The severity of the problem was described thoroughly on p. 5-6. The proposed project would build upon the current successful program COMPUGIRLS that has proven reliable with the National Science Foundation (p. 2-3). On p. 4 the applicant provided data that related non cognitive skills such as persistence and high expectations to academics success. The demographics for the ten high need schools indicted a vast difference in minorities in both rural and ethnicity (p.5) which addressed absolute priority #5. The COMPUGIRLS curriculum to be implemented for the proposal was described on p. 6-12. This curriculum would incorporate non-cognitive skills into academic coursework (p. 3). One component of the project would be for the parents of the girls selected would also be involved in the project and this component would align with the project's objectives. Absolute priority #4 would be addressed by the proposed project with the incorporation of non-cognitive skills into academic curriculum and revised parent curriculum with non-cognitive factors addressed (p. 9). Both absolute priority 4 and 5 would be addressed by the proposed project.

Weaknesses:

The selection process for the project was not indicated as to which girls would be chosen to participate in the program. While the curriculum was described thoroughly, it was unclear as to how the mentor teachers would be selected and when the curriculum would be offered. For example, over 120 hours would be provided (p. 7), but is this daily or weekly and when is it offered.

Reader's Score: 29

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 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 mechanisms the applicant will use to broadly disseminate information on its project so as to support further development or replication.**

Strengths:

The applicant stated on p. 13 that the proposed project had only one goal – to positively impact underrepresented girls with non-cognitive factors. The management team for the proposed project was described thoroughly on p. 14-15 with their expertise and responsibilities listed. A vital component of the project was the partners which included the schools, industry, and the families of the girls involved in the program as described on p. 15-16. The timeline provided the responsible party for each milestone for the project and the timeframe. The applicant provided a full description of each key personnel in the budget narrative (appendix). Continuous feedback of the proposed project would be provided by the development team and key personnel in face to face meeting or virtual meetings (p. 17-18). The results of the project would be disseminated through a variety of methods, such as conferences, media, and presentations for the community and families.

Weaknesses:

The objectives did not have specific measurable outcomes. The management team and advisory board were indicated but there was no mention of how often they would meet to discuss the project (p. 18). The logic model was difficult to read due to the size of print (p.12).

Reader's Score: 39

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 methods of evaluation will, if well-implemented, produce evidence about the project's effectiveness that would meet the What Works Clearinghouse Evidence Standards with reservations.**
- (3) The extent to which the proposed project plan includes sufficient resources to carry out the project evaluation effectively.**

Strengths:

N/A

Weaknesses:

N/A

Reader's Score: 0

Status: Submitted

Last Updated: 09/20/2016 10:16 AM