

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

Status: Submitted

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## Technical Review Coversheet

Applicant: Florida State University (U423A180115)

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

	Points Possible	Points Scored
<b>Questions</b>		
<b>Selection Criteria</b>		
<b>Quality of Project Design</b>		
1. Project Design	35	35
<b>Significance</b>		
1. Significance	20	18
<b>Quality of the Management Plan</b>		
1. Management Plan	25	22
<b>Quality of the Project Evaluation</b>		
1. Project Evaluation	20	20
<b>Sub Total</b>	100	95
<b>Priority Questions</b>		
<b>Competitive Preference Priority</b>		
<b>Promoting STEM Education/Computer Science</b>		
1. CPP1	3	2
<b>Sub Total</b>	3	2
<b>Total</b>	103	97

# Technical Review Form

Panel #2 - Supporting Effective Educator Development - 2: 84.423A

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

Applicant: Florida State University (U423A180115)

## Questions

### Selection Criteria - Quality of Project Design

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

- (1) The extent to which the proposed project represents an exceptional approach to the priority or priorities established for the competition.
- (2) The extent to which the training or Professional Development services to be provided by the proposed project are of sufficient quality, intensity, and duration to lead to improvements in practice among the recipients of those services.
- (3) The extent to which the services to be provided by the proposed project involve the collaboration of appropriate partners for maximizing the effectiveness of project services.
- (4) The extent to which the services to be provided by the proposed project are focused on those with greatest needs.
- (5) The extent to which the design of the proposed project is appropriate to, and will successfully address, the needs of the target population or other identified needs.

### Strengths:

1. The goals of this proposal are to provide CGI based PD to in math to 2,790 elementary teachers in Florida, improve the teachers' content knowledge in mathematics, increase teachers; implementation of evidence based strategies in mathematics instruction, increase student achievement in mathematics with a focus on traditionally underserved and underrepresented students by enhancing CGI to meet their needs, and to establish structures support teachers' sustained use of high quality mathematics instruction beyond the grant period (e21). CGI is a program that has already proven success and by partnering with specific districts, this program can impact students with high needs who are currently not benefiting from this program.

2. The professional development in this program is designed to take place over time in order to increase the likelihood of continued implementation of the content into classrooms (e23). Teachers can participate for up to three years. There are eight 7 hour days of PD each school year for a total of 56 hours of direct contact per school year. At least 4 of these PD days will happen during the school year, so that teachers can try to implement strategies learned directly into their classrooms and receive follow-up support as needed (e23). All of the strategies taught in this program are aligned with almost all of the evidence based recommendations in the IES Practice Guides for teaching mathematics to young children, effective fractions instruction, and improving mathematical problem solving (e26-27). There are two different tracks of CGI PD: K-2 and 3-5. These tracks ensure that the developmental needs of students are considered in the strategies being taught, which will result in increased student achievement since the specific needs of the students are targeted.

3. This proposal includes partnerships between Florida State University, The CGI Math Teacher Learning Center, The University of Miami, the Florida Department of Education, 5 named school districts, and other local education agencies representing public schools in Florida (e27). All of the named partners have committed to the project and the project will extend the offer of participation to additional urban, rural, and suburban public school districts in the first two months of the project (e27). This partnership already has demonstrated success with the Project Director having already implemented 3 large scale CGI programs in the state. By utilizing LEAs, the SEA, two different universities, and the CGI Math Teacher Learning Center, this proposal will likely have a large impact to the students of the teachers participating in this program.

4. Statewide achievement data from the last 3 years in Florida show specific subgroups in need of improvement in regards to mathematics achievement (e28). While the achievement gap appears to be slightly narrowing, less than half of black students and economically disadvantaged students are achieving basic grade level proficiency in mathematics (e28). When recruiting for participants in this program, preference will be given for teachers at schools that are considered low-wealth (Title I) and/or have Black and Hispanic populations that are greater than the state average (e28). Another guideline in place to ensure those with high needs are being targets, each year at least 60% of the participating teachers will identify as mixed-race or Alaskan/Native American, teach in a Title I school, teach in a school where more than 22% of the population is Black, and teach in a school where more than 35% of the population is Hispanic (e29-30). By having this guideline in place, the proposal ensures that it will focus on those with the greatest needs.

5. Supporting teachers to meet the needs of the traditionally underserved students will be integrated into every aspect of the CGI program (e30). Participating teachers will be given the opportunity to attend an annual Mathematics Equity and Access Conference (MEAC) (e30). This conference will be modeled after related programs that have been successful in supporting the Black and Hispanic populations in Florida in completing post-secondary degrees through a comprehensive support system (e30). The MEAC will provide a forum where participating teachers can create networks of support to share ideas among the group and with the program staff (e30). Future CGI PD will be modified to meet the needs of the participants based on what is learned at this conference (e30). The MEAC is an exceptional way to meet the challenges of the high needs students that are indirectly involved in this grant. The teachers will be able to bring the actual challenges they are facing and CGI PD can be modified to address these specific challenges.

**Weaknesses:**

None found.

**Reader's Score:** 35

**Selection Criteria - Significance**

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

**(1) The importance or magnitude of the results or outcomes likely to be attained by the proposed project, especially improvements in teaching and student achievement.**

**(2) The extent to which the costs are reasonable in relation to the number of persons to be served and to the anticipated results and benefits.**

**(3) The potential for the incorporation of project purposes, activities, or benefits into the ongoing program of the agency or organization at the end of Federal funding.**

**(4) The extent to which the results of the proposed project are to be disseminated in ways that will enable others to use the information or strategies.**

**Strengths:**

1. This proposal plans to train 2,790 elementary teachers and 120 elementary school principals, impacting more than 14,000 students during the project years alone (e21). These teachers and administrators will impact other students beyond the scope of the project. It is significant that principals are being trained in this program, as they are second only to teachers on the impact of student achievement. CGI is an already proven strategy to increase student achievement in Florida, so it is likely that this proposal will also increase student achievement.

2. This proposal estimates an approximate cost of \$2,100 per teacher to receive the CGI PD and attend the MEAC conference. Using similar calculations, it estimates a cost of \$105 per impacted pupil (e34). These amounts would be considered feasible in some areas of the nation.

3. The only area of sustainability addressed in this proposal involves the training of the principals. The program proposes that by training the principals, they will be able to effectively support their teachers with mathematics instruction beyond the scope of the grant (e34) which will result in sustainability at the school.

4. Over the years, the project director has developed strong working relationships with both state and district officials and has determined that regular reports of program status and results will garner support from the administration (e34). There will be annual meetings with state and district officials, so that they can share their short and long-term goals for their students and CGI can be modified to meet those goals. Senior project personnel will meet annually with policy makers to discuss outcomes and share teacher experiences (e35). Results from the program will be shared at local and national conferences. A project website will also be developed to publicly share the results and reports (e35).

**Weaknesses:**

3. This proposal fails to explicitly address sustainability in regards to having additional teachers trained in CGI. Inevitably there is teacher turnover for a variety of reasons, including retirement. This proposal does not include a plan to offer new teachers the CGI training. A train the trainer model or a model that included some site-based coaching would assist in ensuring long term sustainability.

**Reader's Score: 18**

**Selection Criteria - Quality of the Management Plan**

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

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

**(2) The 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.**

**Strengths:**

1. This proposal does outline 5 specific goals with a variety of objectives under each goal (e35-38). Some of the objectives do have clearly outlined measures in place.

2. This program clearly outlines a Partnership Board (one member from each partner institution/school district) that will meet three times annually to discuss program design and implementation, review interim results, and address potential challenges to a successful implementation (e41-42). There will also be a Project Advisory Board made up of top scholars with expertise in CGI and in teaching in diverse backgrounds. These members represent diverse perspectives in the field of mathematics education, teacher education, and related Florida education policy (e42). This Board will meet annually to provide insight into best practices for helping children with diverse backgrounds to succeed in mathematics (e42). These members will be available for consultation with the project directors and other applicable program staff. They will also be invited to share their expertise at the annual MEAC (e42-43). The project timeline is broken into quarters for each year and includes the major activities for each goal and the milestones for each goal. In addition to the goals, there is a timeline for the Initiation and Administrative components of the project and an Evaluation and Dissemination component (e44-46). The narrative also briefly describes the roles of project director, CGI implementation director, and lead project manager (e41). This project does involve a variety of players with various expertise in order to ensure a successful program.

3. The project's senior personnel will hold monthly meetings to share information, engage in collaborative problem solving as necessary, and provide updates on progress towards goals (e47).

## **Weaknesses:**

1. Some of the objectives are unclear on what is being measured and why. For example, 4.4 pilot test scaffolds to support CGI implementation and 4.5 Conduct focus group interviews involving teachers and instructional support personnel in high poverty or high minority schools (e37). The proposal is unclear on what data is being collected in these areas and how it will be used.
2. The timeline does not include who is responsible for the specific activities. By not having each activity aligned with a responsible party, there is no guarantee it will happen. In year 5, the principal investigator's time commitment jumps from 25% to 40%, which seems high since all of the partnership development and evaluation design should be completed by that point (e185). It is concerning that the project director's years 1-4 efforts is at 150% and then 100% in year 5 (e185-186). The proposal does not clearly explain these amounts of efforts. A similar unexplained pattern occurs for the Research Associates, Postdoctoral Associates, and OPS Assistants. Graduate assistants will also be used. The proposal seems to be staff heavy in these areas that will not directly impact the participating teachers.
3. The proposal does not clearly articulate who will be involved with implementing changes to the program immediately and in future iterations and how this will all happen, which makes it unlikely that it will happen.

**Reader's Score: 22**

## **Selection Criteria - Quality of the Project Evaluation**

- 1. The Secretary considers the quality of the evaluation to be conducted of the proposed project. In determining the quality of the 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 WWC standards with or without reservations as described in the WWC Handbook.**

**(2) The extent to which the methods of evaluation will provide performance feedback and permit periodic assessment of progress toward achieving intended outcomes.**

**(3) The extent to which the methods of evaluation include the use of objective performance measures that are clearly related to the intended outcomes of the project and will produce quantitative and qualitative data to the extent possible.**

**(4) The extent to which the methods of evaluation will provide valid and reliable performance data on Relevant Outcomes.**

**Note: Applicants may wish to review the following technical assistance resources on evaluation: (1) WWC Procedures and Standards Handbooks: <https://ies.ed.gov/ncee/wwc/Handbooks> (2) "Technical Assistance Materials for Conducting Rigorous Impact Evaluations": <http://ies.ed.gov/ncee/projects/evaluationTA.asp>; and (3) IES/NCEE Technical Methods papers: [http://ies.ed.gov/ncee/tech\\_methods/](http://ies.ed.gov/ncee/tech_methods/). In addition, applicants may view two optional webinar recordings that were hosted by the Institute of Education Sciences. The first webinar discussed strategies for designing and executing well-designed Quasi-Experimental Design Studies and is available at: <http://ies.ed.gov/ncee/wwc/Multimedia.aspx?sid=23>. The second webinar focused on more rigorous evaluation designs, discussing strategies for designing and executing studies that meet WWC evidence standards without reservations. This webinar is available at: <http://ies.ed.gov/ncee/wwc/Multimedia.aspx?sid=18>.**

## **Strengths:**

1. The summative evaluation will have 5 research questions (e50-51). The impact analyses will cluster randomized control trial research design with hierarchical linear modeling to estimate the impact of CGI on teacher and student outcomes (e51-52). Moderation analysis will enable the investigators to determine for whom and under what conditions the CGI program works. The mediation analysis will enable a deeper investigation into the causal mechanisms of the CGI program (e52). A randomized control trial to determine impact on students and teachers will take place during the 2018-19 school year. Due to the varied supports in the program, a low attrition rate is anticipated and the evaluation results will meet WWC standards without reservation.

2. Teacher feedback, exit interviews, and moderation and mediation analyses from year 1 data will be compiled and analyzed and shared with the Implementation Director, the Partnership Board, and the Advisory Board (e53). Based on the ensuing discussions, the 8 day PD for 2019-2020 and the 2 day MEAC in the summer 2019 will be designed using this feedback. The same cycle of improvement will repeat in future years. This actual performance feedback will continue to hone the CGI program to meet the specific needs of the participating school districts. Smaller, more formative cycles of feedback, will occur during the PD sessions between fidelity observers and workshop leaders (e54). This information will assist in program fidelity and keep the program on track for the desired outcomes.

3. Teachers' Mathematical Knowledge (TMK) will be measured pre and post via an online assessment that was developed, field tested, and validated during a CGI efficacy study in Florida (e54). Classroom instruction will be measured using the Instructional Quality Assessment (IQA) which looks for several components of classroom instruction in two broad categories: academic rigor and accountable talk (e54). The CGI program aims to increase both of these facets of classroom instruction (e54). This tool was designed to be used in real time classroom observations. An instrument validation study will take place the first year of this program in order to gather reliability and validity information for the tool (e55). Regarding student achievement, the Elementary Mathematics Student Assessment Test will be used. These tests have been previously field tested and have been vertically scaled to be comparable across grades K-2 and 3-5 (e56). School contextual factors and student demographics will also be analyzed. All of this data together will be able to provide a rich, detailed analysis of what works and what can be improved in regards to the CGI program.

4. This program plans to use some data sources that are already respected as valid and reliable data sources, such as student achievement scores. Teacher Mathematical Knowledge will be measured using a tool that has already been validated in a previous CGI efficacy study in this state. The tool that will be used to analyze classroom instruction will undergo an instrument validation study in the first year of the program. As a result, the evaluation plan for this proposal should be able to easily produce reliable and valid performance data regarding the relevant outcomes.

**Weaknesses:**

none found

**Reader's Score: 20**

**Priority Questions**

**Competitive Preference Priority - Promoting STEM Education/Computer Science**

1. **Projects designed to improve student achievement or other educational outcomes in one or more of the following areas: Science, technology, engineering, math, or Computer Science. These projects must address the following priority area:**

**Increasing the number of educators adequately prepared to deliver rigorous instruction in STEM fields, including Computer Science, through recruitment, Evidence-Based Professional Development strategies for current STEM educators, or evidence-based retraining strategies for current educators seeking to transition from other subjects to STEM fields.**

**Strengths:**

The CGI PD program promotes STEM education through its focus on elementary mathematics instruction through a problem solving approach (e22).

**Weaknesses:**

This program only focuses on mathematics. Science, Engineering, or computer science are not addressed.

**Reader's Score:** 2

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**Status:** Submitted

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Status: Submitted

Last Updated: 06/28/2018 04:21 PM

## Technical Review Coversheet

Applicant: Florida State University (U423A180115)

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

	Points Possible	Points Scored
<b>Questions</b>		
<b>Selection Criteria</b>		
<b>Quality of Project Design</b>		
1. Project Design	35	35
<b>Significance</b>		
1. Significance	20	19
<b>Quality of the Management Plan</b>		
1. Management Plan	25	22
<b>Quality of the Project Evaluation</b>		
1. Project Evaluation	20	19
<b>Sub Total</b>	100	95
<b>Priority Questions</b>		
<b>Competitive Preference Priority</b>		
<b>Promoting STEM Education/Computer Science</b>		
1. CPP1	3	2
<b>Sub Total</b>	3	2
<b>Total</b>	103	97

# Technical Review Form

Panel #2 - Supporting Effective Educator Development - 2: 84.423A

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

Applicant: Florida State University (U423A180115)

## Questions

### Selection Criteria - Quality of Project Design

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

- (1) The extent to which the proposed project represents an exceptional approach to the priority or priorities established for the competition.
- (2) The extent to which the training or Professional Development services to be provided by the proposed project are of sufficient quality, intensity, and duration to lead to improvements in practice among the recipients of those services.
- (3) The extent to which the services to be provided by the proposed project involve the collaboration of appropriate partners for maximizing the effectiveness of project services.
- (4) The extent to which the services to be provided by the proposed project are focused on those with greatest needs.
- (5) The extent to which the design of the proposed project is appropriate to, and will successfully address, the needs of the target population or other identified needs.

### Strengths:

- (1) As stated on p. e22, the project uses the Cognitively Guided Instruction (CGI) program to "promote STEM education through its focus on elementary school mathematics instruction" that relies on a problem-solving approach. As described on p. e23-e26, the program prepares teachers to use data to monitor instruction, write their own mathematics problems, support students to generate problem-solving strategies and use multiple strategies to solve problems. These are evidence-based strategies that address the foundations of STEM teaching. To address the developmental stages of elementary school students, the project offers two tracks: K-2 and grades 3-5 (p. e23). CGI is a well-established program, funded upon rigorous research that meets WWC standards without reservations (p. e31-e32), and complies with the state's standards for mathematics (p. e64). The application clearly demonstrate that this a relevant, rigorous, evidence-based program with a focus on mathematics, one of the four fields under the STEM acronym (Science, Technology, Engineering, and Mathematics).
- (2) Attachment 3 (p. e64-e66) provides a breakdown of the activities involved in the project per year. The program consists of an initial 56 hours of contact during the school year, so that teachers can work with their students and apply the learned strategies to obtain feedback under the trainers' supervision. The teachers return for refresher courses of about 4 days during the summer for the next two years. Every year, a new cohort of teachers starts the program. Parallel to this teacher preparation, the project runs a principal academy. The focus of the academy is preparing school leadership to support their teachers, as they implement CGI in their classrooms (p. e66-e67). The description suggests a program of sufficient intensity, quality and duration to promote changes in teaching of mathematics.
- (3) The project, Foundations for Success, represents a partnership between Florida State University, The CGI Math Teacher Learning Center, the University of Miami, the Florida Department of Education, and a minimum of five school districts in Florida, who have already committed to participate (p. e27). The applicant intends to send invitations to other school districts, including publicly funded charter schools in urban, suburban and rural locations (p. e27). The implementation team has long and strong connections with the state and the local education agencies, and is experienced in providing CGI professional development (p. e27-e28). Therefore, the project has strong potential for a successful implementation.

(4) On p. e28, the applicant commits to concentrate resources on students and teachers who represent traditionally underserved/underrepresented groups, such as students from minority backgrounds. Recruitment priority will be given to teachers from Title I schools, which tend to have high concentrations of minority students (p. e28). The project also aims at attracting teachers from these minority groups (p. e29). Participant teachers will attend the Mathematics Access and Equity Conference (MAEC), which focuses on supporting minority students to complete their post-secondary education (p. 30). The project is focused on high-needs schools and their teachers, and provides strategies to address issues of equity.

(5) The project is relevant in its focus (mathematics) (p. e21). The choice of elementary schools is particularly important to ensure strong foundations in mathematics, before students move to upper grades, so that students can be successful in upper mathematics (algebra, geometry, trigonometry, etc.). The applicant has a commitment to work with teachers from high-needs schools and also a commitment to equity (p. e27-e28). The project has potential to successfully prepare high-quality mathematics teachers for its target population (high-needs elementary schools in Florida).

**Weaknesses:**

None found.

**Reader's Score:** 35

**Selection Criteria - Significance**

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

**(1) The importance or magnitude of the results or outcomes likely to be attained by the proposed project, especially improvements in teaching and student achievement.**

**(2) The extent to which the costs are reasonable in relation to the number of persons to be served and to the anticipated results and benefits.**

**(3) The potential for the incorporation of project purposes, activities, or benefits into the ongoing program of the agency or organization at the end of Federal funding.**

**(4) The extent to which the results of the proposed project are to be disseminated in ways that will enable others to use the information or strategies.**

**Strengths:**

(1) The project proposes to affect 2,790 elementary school teachers and 120 school principals, with a potential to impact more than 142,312 students in urban, suburban and rural settings (p. e21). CGI has been researched with the use of Randomized Control Trials and showed robust evidence of positive effects on student academic achievement in mathematics (p. e31-e32). As discussed in the proposal (p. e32), research has shown that early success in mathematics is a predictor of success in the upper elementary years and even through high school. The project, with its focus on improving the knowledge of mathematics among elementary school teachers, has the potential to improve student achievement that may be transferred throughout students' school life, a result of great importance and magnitude.

(2) The five-year project requests about \$15 million from federal funds (Budget, p. e6). The applicant has calculated an annual cost for the project at \$2,100 per teacher, which includes professional development and attendance at the MAEC conference (p. e34). Traveling costs for teachers to attend the MAEC Conference are included in the budget (p. e206-e211). The budget appears reasonable in relation to the numbers of teachers (close to 3,000) which the project proposes to serve.

(3) Grant funds are being requested for professional development on CGI within a group of public school districts in Florida (p. e21). CGI is a not-trademarked program (p. 22) that has existed for over 30 years. The CGI Math Teacher Learning Center, a partner in the grant, is the PD provider and co-sponsor of a biennial conference for teachers of

mathematics. Its sustainability is independent from the current proposal. To sustain the program in the schools, the applicant (Florida State) is proposing a short training for school principals complemented by yearly contacts to ensure that teachers are supported at their schools as they implement the program (p. e34). More importantly, sustainability is part of the project's goal (Goal 5), which includes the establishment of structures to continue high-quality mathematics instruction after federal funds expire (p. e38). The application makes it clear that sustainability is at the core of the project.

(4) The dissemination plan (p. e34-e35) includes presentations in conferences, a project website, and annual meetings with state policy makers "to discuss outcomes from the program and to share teacher experiences." (p. e35). Such meetings are already part of the applicant's work. It is a reasonable plan that can be easily achieved and has the potential to expand the use of the program within the state, while adding to the body of evidence about the effectiveness of the program in improving the quality of the teaching of mathematics beyond state borders.

#### **Weaknesses:**

(3) Sustainability at the schools might be a problem. Principals may not have the authority or time to maintain the program, as the teachers who participate in the project leave the school. Professional development (PD) is not a decision that relies solely on principals, and funding for PD tends to be limited. A train-the-trainer approach, whereby teachers who participate in the project train their peers would increase the probability that the program will be sustained at the participant schools, regardless of teacher turnover.

**Reader's Score: 19**

#### **Selection Criteria - Quality of the Management Plan**

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

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

**(2) The 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.**

#### **Strengths:**

(1) Goals, objectives and performance measures are listed on p. e35-e39. Performances are measurable and feasible, while instruments for measuring performances are listed. It is an ambitious project with five goals and challenging performance measures (to serve close to 3,000 teachers); yet, the project has the potential to achieve its goals, objectives and outcomes.

(2) The project personnel listed on p. e39-e43 are clearly experts in CGI and the teaching of mathematics. The project includes an Advisory Board comprised of experts in the program and members of the state department of education, which increases its potential for sustainability and statewide expansion (p. e42-e43). The project also includes a partnership board, with representatives of the two universities, the CGI organization, the state department of education, and the participating school districts (p. e41-e42). The partnership board, which meets three times a year, has a key role in the continuous improvement process and also in sustainability within the participant school districts. Table 2 (p. e44-e46) presents a detailed timeline for both project and evaluation. Time allocated by key personnel to the project is listed on Budget narrative (p. 185-e219).

(3) A plan for feedback and continuous improvement is presented on p. e47. The plan includes monthly meetings with the implementation team to "share information, engage in collaborative problem solving as necessary, and provide updates on progress towards project goals" (p. e47); quarterly meetings with the Partnership Board, and an annual meeting with

the Advisory Board (p. e39). The information gathered in these meetings will be incorporated into new recruiting material and into the planning of workshops. The plan, as proposed, has the potential to maintain a continuous improvement process.

#### **Weaknesses:**

(1) Benchmarks to assess progress toward goals would strengthen the section (p.e35-e39). The applicant could use research findings for benchmarks in goals where measurements are more difficult to insure precision, such as Goal 3 (increase teachers' implementation of evidence-based mathematics, p. e36), since the instrument proposed has been used in previous research. Likewise, research on EMSA (the test used to measure student achievement) might be used to benchmark student outcomes (Goal 4, p. e37). Establishing benchmarks is a good tool for the implementer, particularly when benchmarks are drawn from research, as it provides a perspective on where the project is, compared to where it should be.

(2) The time commitment and responsibilities of key personnel should have been described more clearly. For instance, on p. e41, the Lead Project Manager is named. The Budget Narrative for the project (p. e185-e219) does not mention this person. It mentions Project Managers at 105% level of effort (p. e185) It suggests the presence of more than one manager, which can become a problem for the implementation, since this is a key role to coordinate activities. The Project Director assumes a very broad role of overseeing "implementation, evaluation, and fiscal management" of the project, chairing monthly meetings with the management team, coordinating quarterly meetings with the partnership board, in addition to convening the annual meeting with the Advisory Board (p. e39). With a level of effort of 25% for years 1-4 and 40% for the final year (p. e185), this role seems to be too demanding, particularly if there is more than one project manager that he will need to coordinate. An effort to understand inconsistencies by looking at the budgets from the two partners (CGI Math Teacher Leadership Center, p. e70-e76; University of Miami, p. e79-e82, Florida State, p. e185-e219) was not helpful. A clearer description of the management team, their responsibilities, and level of effort would strengthen the proposal.

**Reader's Score:** 22

#### **Selection Criteria - Quality of the Project Evaluation**

**1. The Secretary considers the quality of the evaluation to be conducted of the proposed project. In determining the quality of the 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 WWC standards with or without reservations as described in the WWC Handbook.**

**(2) The extent to which the methods of evaluation will provide performance feedback and permit periodic assessment of progress toward achieving intended outcomes.**

**(3) The extent to which the methods of evaluation include the use of objective performance measures that are clearly related to the intended outcomes of the project and will produce quantitative and qualitative data to the extent possible.**

**(4) The extent to which the methods of evaluation will provide valid and reliable performance data on Relevant Outcomes.**

**Note: Applicants may wish to review the following technical assistance resources on evaluation: (1) WWC Procedures and Standards Handbooks: <https://ies.ed.gov/ncee/wwc/Handbooks> (2) "Technical Assistance Materials for Conducting Rigorous Impact Evaluations": <http://ies.ed.gov/ncee/projects/evaluationTA.asp>; and (3) IES/NCEE Technical Methods papers: [http://ies.ed.gov/ncee/tech\\_methods/](http://ies.ed.gov/ncee/tech_methods/). In addition, applicants may view two optional webinar recordings that were hosted by the Institute of Education Sciences. The first webinar discussed strategies for designing and executing well-designed Quasi-Experimental Design Studies and is available at: <http://ies.ed.gov/ncee/wwc/Multimedia.aspx?sid=23>. The second webinar focused on more rigorous evaluation designs, discussing strategies for designing and executing studies that meet WWC evidence standards without reservations. This webinar is available at: <http://ies.ed.gov/ncee/wwc/Multimedia.aspx?sid=18>.**

**Strengths:**

- (1) This is a clear, thorough, well-planned evaluation proposal founded upon a theory of change that informs both the project and the evaluation (p. e48-e49). A cluster-randomized control trial design is proposed (p. e51). The numbers of participants proposed in the grant (close to 3,000, as p. e21) ensures the power of the study, and facilitates the sample selection, as detailed on p. e52-e53. Attrition is taken into account (p. e57), as well as the potential for contamination (selected teachers may share information with non-selected peers) (p. e58). The evaluation has the potential to produce evidence of the project's effectiveness that meets WWC standards without reservations.
- (2) A plan for ongoing feedback is presented on p. e53-e54. Within each cohort, teachers will be tested in their knowledge and interviewed for their perceptions about the workshops. Results from the data will be discussed with the implementation team, partnership board, and advisory board and will be used to inform the next round of workshops. The implementation/evaluation team will hold weekly meetings to ensure that findings are integrated promptly (p. e54). The applicant proposes a solid plan for a continuous improvement process.
- (3) The project has five goals (p. e35-e38): provide CGI, increase teacher knowledge in mathematics, increase teacher implementation of evidence-based mathematics, increase math achievement, and establish a structure of support for teachers. Goals 1 and 5 focus on the activities. Goals 2, 3 and 4 focus on the outcomes from these activities. The research questions on pages e50-e51 address these goals. Teacher outcomes include changes in knowledge, as a result of their attendance in the workshops, which will be measured by the K-TEEM, and changes in classroom practices (p. e54-e55) to be measured by IQA. Student achievement in mathematics will be measured by the EMSA test (p. e56-e57). These instruments have established psychometrics, as described on p. e54-e56, and data collected are mostly quantitative. Teacher logs and feedback from the workshops (qualitative data) will also be collected (p. e54). Research questions 4 and 5 (p. e51) focuses on the moderating or mediating influence of teachers' and students' variables on the project outcomes. These are important questions that provide needed information to understand variations in outcomes.
- (4) The evaluation proposes a well-designed experimental study to assess outcomes, in addition to the collection of formative data to inform project improvements. The method proposed to analyze outcome data, Hierarchical Linear Modeling (HLM), is clearly described on p. e57-e59. The use of mediator and moderator analyses strengthen the model (p. e58-e59). The evaluation plan is thorough and has the potential to provide valid and reliable performance data on the impact of CGI on teacher knowledge and teaching practices, and on student academic outcomes.

**Weaknesses:**

- (4) It seems that the Project Director will also be in charge of the evaluation, as repetitively stated across the discussion of the evaluation plan, particularly p. e51-e53. The concern here is not that the evaluator is a member of the applicant organization. The USDOE wisely accepts the presence of internal evaluators, since there is no evidence that an internal evaluator will be more biased toward the program than an external one. The concern is that an implementer has a set of priorities that differ from (and may conflict with) the evaluator. The implementer's priority is to ensure that the implementation is successful. For the evaluator, the priority is to maintain the integrity of the data collection methods and analyses so that the findings are valid and reliable. In RCTs, it is traditional to keep the implementer and the evaluator well apart (create "a fire wall") to avoid conflicts between priorities and perspectives. The fact that the project will hire a Statistician (p. e43) to provide an external review increases the probability of a rigorous, unbiased evaluation. However, the process proposed here is untraditional and contains some risks that could be easily avoided if a person other than the project supervisor was assigned to evaluate the project.

**Reader's Score:** 19

**Priority Questions**

**Competitive Preference Priority - Promoting STEM Education/Computer Science**

1. **Projects designed to improve student achievement or other educational outcomes in one or more of the following areas: Science, technology, engineering, math, or Computer Science. These projects must address the following priority area:**

**Increasing the number of educators adequately prepared to deliver rigorous instruction in STEM fields, including Computer Science, through recruitment, Evidence-Based Professional Development strategies for current STEM educators, or evidence-based retraining strategies for current educators seeking to transition from other subjects to STEM fields.**

**Strengths:**

The project focused on improving the teaching of mathematics through a rigorous program of study, which includes progression in numbers, operations, algebraic thinking, and ability to understand and express mathematical ideas. Algebraic thinking and ability to understand and express mathematical ideas rely on strong critical thinking and problem solving skills, two foundations for the teaching in all the STEM fields (p. e22). Elementary teachers, the target of the program, frequently express difficulties with understanding and teaching mathematics. The focus of the program is, therefore, of great importance for elementary school teaching in general.

**Weaknesses:**

Although geared toward elementary teachers, who are mostly generalists, the project focuses on only one of the STEM fields (mathematics). While helping teachers to improve their mathematical knowledge, it will not be suitable for teachers who want to enter or transition into STEM fields other than mathematics, or, more importantly, who want to apply the STEM framework as a pedagogical approach to their practice as elementary school teachers.

**Reader's Score:**     **2**

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**Status:**             Submitted  
**Last Updated:**    06/28/2018 04:21 PM

Status: Submitted

Last Updated: 06/29/2018 05:30 PM

## Technical Review Coversheet

Applicant: Florida State University (U423A180115)

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

	Points Possible	Points Scored
<b>Questions</b>		
<b>Selection Criteria</b>		
<b>Quality of Project Design</b>		
1. Project Design	35	35
<b>Significance</b>		
1. Significance	20	18
<b>Quality of the Management Plan</b>		
1. Management Plan	25	23
<b>Quality of the Project Evaluation</b>		
1. Project Evaluation	20	20
<b>Sub Total</b>	100	96
<b>Priority Questions</b>		
<b>Competitive Preference Priority</b>		
<b>Promoting STEM Education/Computer Science</b>		
1. CPP1	3	2
<b>Sub Total</b>	3	2
<b>Total</b>	103	98

# Technical Review Form

Panel #2 - Supporting Effective Educator Development - 2: 84.423A

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

Applicant: Florida State University (U423A180115)

## Questions

### Selection Criteria - Quality of Project Design

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

- (1) The extent to which the proposed project represents an exceptional approach to the priority or priorities established for the competition.
- (2) The extent to which the training or Professional Development services to be provided by the proposed project are of sufficient quality, intensity, and duration to lead to improvements in practice among the recipients of those services.
- (3) The extent to which the services to be provided by the proposed project involve the collaboration of appropriate partners for maximizing the effectiveness of project services.
- (4) The extent to which the services to be provided by the proposed project are focused on those with greatest needs.
- (5) The extent to which the design of the proposed project is appropriate to, and will successfully address, the needs of the target population or other identified needs.

### Strengths:

- (1) The proposed project will teach teachers how through progress monitoring they can further increase students' engagement with the materials, and how to provide individualized targeted instruction to connect learners who are at different levels of understanding. These aspects of the design is excellent and will help sustain the implementation of the PD and positively impact student achievement well beyond the end of the project
- (2) Teachers can participate in up to 3-yrs of PD with 56 hrs/yr. Most of the PD occurs during the school year ensuring that teachers have the opportunity to immediately begin implementing in their classrooms what they learned (pe23). The CGI is appropriately tailored to the grade level
- (3) Researchers at the University of Miami will collaborate with relevant stakeholders at the state and local level, and several school districts across Florida. They have a history of previous successful collaboration (pe19, 27). The discuss a design in which principals will be contacted about the project and asked to identify and educate teachers about the PD. Teachers will then have the freedom to consent to participate or not.
- (4) The applicants have done an excellent job of tailoring the PD to the needs of the teachers and to the students.
- (5) The applicants have an excellent idea of the demographics and needs of the teachers and students that will be the ultimate benefactors of the proposed PD project (pe28-30). The applicants discuss several methods by which teachers will learn how to reach a wide variety of learns including exposing them to multiple problem-solving strategies, visual representation, the language to articulate concepts and notions and increase understanding (pe23-26).

### Weaknesses:

None found

### Selection Criteria - Significance

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

- (1) The importance or magnitude of the results or outcomes likely to be attained by the proposed project, especially improvements in teaching and student achievement.
- (2) The extent to which the costs are reasonable in relation to the number of persons to be served and to the anticipated results and benefits.
- (3) The potential for the incorporation of project purposes, activities, or benefits into the ongoing program of the agency or organization at the end of Federal funding.
- (4) The extent to which the results of the proposed project are to be disseminated in ways that will enable others to use the information or strategies.

#### Strengths:

- (1) The magnitude of the proposed project is expected to be significant: over the 5-year program they will serve 2790 mathematics teachers and 120 principals working at the elementary school level. They estimate that a total of over 140,000 would be indirectly affected by the project (pe15). Previous studies have demonstrated the effectiveness of CGI in Florida (pe31-32). The project will significantly impact student achievement in mathematics and evidence supports the fact that this can in turn affect student long-term success in STEM (pe32) and help to address a lack of equity and inclusion in high quality math instruction (pe33) .
- (2) Considering the potential impact of the program, the cost are fairly reasonable (pe34).
- (3) The applicant has an excellent project design aimed at securing buy-in from principals upfront. They expect that when positive impact on student mathematics achievement is shown, that principals will make room for CGI in their budgets (pe34).
- (4) The applicant has a reasonable dissemination plan that will harness existing established networks to build upon the success of the program and disseminate results at the state and local level to affect change at the level of state policy (pe35). They will also attend relevant conferences and use a website to help report the project's outcomes.

#### Weaknesses:

- (2) There was some concern that the overall budget was (pe70) was somewhat top-heavy on personnel costs.

### Selection Criteria - Quality of the Management Plan

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

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

**Strengths:**

- (1) The applicants will use several evaluation methods including mixed-methods, multisite cluster-randomized trial and an exploratory study to understand how the CGI intervention affects student achievement and discuss how their approach will meet WWC without reservations and how they will deal with any attrition (pe19, e59-60).
- (2) The applicants do an excellent job of integrating continuous feedback in the project design. The logic model outlines what measures will be used to collect qualitative and quantitative data and provide performance feedback that will allow assessment of project progress (pe48). Other sources of data will come from videos of classroom instruction, and exit interviews (pe51).
- (3) The applicants will do pre- and post-surveys of teachers and students that will enable them to efficiently obtain qualitative data about the impact of the project. (pe16).
- (4) The applicants detail in pe53-55 an excellent approach to collect and assess reliable performance data on relevant outcomes for both teachers and students.

**Weaknesses:**

- (2) The program manager will oversee the work of the evaluator and this raised a slight concern that this could lead to bias in the evaluation.

**Reader's Score:**      23

**Selection Criteria - Quality of the Project Evaluation**

1. **The Secretary considers the quality of the evaluation to be conducted of the proposed project. In determining the quality of the 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 WWC standards with or without reservations as described in the WWC Handbook.**

**(2) The extent to which the methods of evaluation will provide performance feedback and permit periodic assessment of progress toward achieving intended outcomes.**

**(3) The extent to which the methods of evaluation include the use of objective performance measures that are clearly related to the intended outcomes of the project and will produce quantitative and qualitative data to the extent possible.**

**(4) The extent to which the methods of evaluation will provide valid and reliable performance data on Relevant Outcomes.**

**Note: Applicants may wish to review the following technical assistance resources on evaluation: (1) WWC Procedures and Standards Handbooks: <https://ies.ed.gov/ncee/wwc/Handbooks> (2) "Technical Assistance Materials for Conducting Rigorous Impact Evaluations": <http://ies.ed.gov/ncee/projects/evaluationTA.asp>; and (3) IES/NCEE Technical Methods papers: [http://ies.ed.gov/ncee/tech\\_methods/](http://ies.ed.gov/ncee/tech_methods/). In addition, applicants may view two optional webinar recordings that were hosted by the Institute of Education Sciences. The first webinar discussed strategies for designing and executing well-designed Quasi-Experimental Design Studies and is available at: <http://ies.ed.gov/ncee/wwc/Multimedia.aspx?sid=23>. The second webinar focused on more rigorous evaluation designs, discussing strategies for designing and executing studies that meet WWC evidence standards without reservations. This webinar is available at: <http://ies.ed.gov/ncee/wwc/Multimedia.aspx?sid=18>.**

**Strengths:**

- (1) The applicants will use several evaluation methods including mixed-methods, multisite cluster-randomized trial and an exploratory study to understand how the CGI intervention affects student achievement and discuss how their approach will meet WWC without reservations and how they will deal with any attrition (pe19, e59-60).
- (2) The applicants do an excellent job of integrating continuous feedback in the project design. The logic model outlines what measures will be used to collect qualitative and quantitative data and provide performance feedback that will allow assessment of project progress (pe48). Other sources of data will come from videos of classroom instruction, and exit interviews (pe51).

- (3) The applicants will do pre- and post-surveys of teachers and students that will enable them to efficiently obtain qualitative data about the impact of the project. (pe16).
- (4) The applicants detail in pe53-55 an excellent approach to collect and assess reliable performance data on relevant outcomes for both teachers and students.

**Weaknesses:**

None found

**Reader's Score: 20**

**Priority Questions**

**Competitive Preference Priority - Promoting STEM Education/Computer Science**

1. **Projects designed to improve student achievement or other educational outcomes in one or more of the following areas: Science, technology, engineering, math, or Computer Science. These projects must address the following priority area:**

**Increasing the number of educators adequately prepared to deliver rigorous instruction in STEM fields, including Computer Science, through recruitment, Evidence-Based Professional Development strategies for current STEM educators, or evidence-based retraining strategies for current educators seeking to transition from other subjects to STEM fields.**

**Strengths:**

The applicants describe a project with direct relevance to increasing student achievement in mathematics.

**Weaknesses:**

The application does not directly address learning of computer science.

**Reader's Score: 2**

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**Status:** Submitted

**Last Updated:** 06/29/2018 05:30 PM