

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

Status: Submitted

Last Updated: 06/18/2019 11:42 AM

Technical Review Coversheet

Applicant: Technical Education Research Centers, Inc. (U411C190179)

Reader #1: *****

	Points Possible	Points Scored
Questions		
Selection Criteria		
Significance		
1. Significance	25	23
Quality of Project Design		
1. Project Design	35	35
Adequacy of Resources/Quality of Management Plan		
1. Resources/Management Plan	20	18
Sub Total	80	76
Priority Questions		
Competitive Preference Priority		
Competitive Preference Priority		
1. Absolute Priority 3	5	5
Sub Total	5	5
Total	85	81

Technical Review Form

Panel #13 - EIR Early Phase Tier 1 - 13: 84.411C

Reader #1: *****

Applicant: Technical Education Research Centers, Inc. (U411C190179)

Questions

Selection Criteria - Significance

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

(1) The potential contribution of the proposed project to increased knowledge or understanding of educational problems, issues, or effective strategies.

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

Strengths:

Research highlights and supports the opportunity for learners with diverse cognitive functions to build computational thinking and apply these strategies in ways that benefit instructional goals.(page e 25-27). The project presents adaptive assessments embedded in various digital experiences to provide unique ways for individuals in elementary and middle grades with neurological sensitivities, to showcase their learning in CT education.

Weaknesses:

No significant weaknesses were noted in this section of the proposal. The potential of the project was outlined to indicate how it contributes to the educational problem and builds on existing strategies.

Reader's Score: 23

Selection Criteria - Quality of Project Design

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

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

(2) The extent to which there is a conceptual framework underlying the proposed research or demonstration activities and the quality of that framework.

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

Strengths:

In addition to the strong research base, a program targeting elementary students with IEPs has the potential to contribute effective strategies that will lay a foundation for growth in this special population. Students with more diverse cognitive functions will also have stronger and more relevant preparation for the workforce of the future. These goals are sufficiently outlined in the proposed project and a plan for measurement of targeted objectives was outlined along with each assessment model and how they will guide the impact studies (e24, e26, e28). The timelines are clear with details for

each phase of the project management (e31) and the role of each partner. The assessments will capture aspects that were not previously recorded in other projects. The Diversity for Design framework that will be used in the participatory design process fits within the methodology and the plan for statistical analysis appears sufficient (e38-40).

Weaknesses:

None noted at this time.

Reader's Score: 35

Selection Criteria - Adequacy of Resources/Quality of Management Plan

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

- (1) The adequacy of the management plan to achieve the objectives of the proposed project on time and within budget, including clearly defined responsibilities, timelines, and milestones for accomplishing project tasks.**
- (2) The qualifications, including relevant training and experience, of key project personnel.**
- (3) The potential for continued support of the project after Federal funding ends, including, as appropriate, the demonstrated commitment of appropriate entities to such support.**

Strengths:

The key personnel in the consortium has varied expertise in game-based learning, computational thinking and professional development and this is a major strength of the project. A clear outline of how these would be integrated into the design and assessment of the project would add needed clarity. The assessment models include validation measures to support expected learning outcomes and this strengthens the potential for continuation. The resources listed will serve the project but more could be added.

Weaknesses:

More C4C content and resources detailed in the plan would be helpful, however there is a clear research base and outline of the design process.

Reader's Score: 18

Priority Questions

Competitive Preference Priority - Competitive Preference Priority

1. **Within Absolute Priority 3, we give competitive preference to applications that address the following priority:**

Projects designed to improve student achievement or other educational outcomes in computer science (as defined in the notice). These projects must address the following priority area:

Expanding access to and participation in rigorous computer science (as defined in the notice) coursework for traditionally underrepresented students such as racial or ethnic minorities, women, students in communities served by rural local educational agencies (as defined in the notice), children or students with disabilities (as defined in the notice), or low-income

individuals (as defined under section 312(g) of the Higher Education Act of 1965, as amended).

Note: Projects addressing this priority must be administered in a manner consistent with nondiscrimination requirements contained in the U.S. Constitution and Federal civil rights laws.

Strengths:

This proposal addresses equity and targets traditionally underrepresented students in STEM to improve achievement in computer science specifically.

Weaknesses:

None noted.

Reader's Score: 5

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Technical Review Coversheet

Applicant: Technical Education Research Centers, Inc. (U411C190179)

Reader #2: *****

	Points Possible	Points Scored
Questions		
Selection Criteria		
Significance		
1. Significance	25	21
Quality of Project Design		
1. Project Design	35	31
Adequacy of Resources/Quality of Management Plan		
1. Resources/Management Plan	20	18
Sub Total	80	70
Priority Questions		
Competitive Preference Priority		
Competitive Preference Priority		
1. Absolute Priority 3	5	5
Sub Total	5	5
Total	85	75

Technical Review Form

Panel #13 - EIR Early Phase Tier 1 - 13: 84.411C

Reader #2: *****

Applicant: Technical Education Research Centers, Inc. (U411C190179)

Questions

Selection Criteria - Significance

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

(1) The potential contribution of the proposed project to increased knowledge or understanding of educational problems, issues, or effective strategies.

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

Strengths:

The project is based on implementing existing research-based learning materials and professional development from the consortium partners. This approach could be effective as it takes advantage of individual team expertise for the collective objective of improving STEM achievement goals in grades 3 through 8.

Another strength of the project is the inclusion of students receiving special education services. The focus on improving executive function with CT practices (page e26) and providing scaffolds adds another layer of benefits for all students and especially for students with disabilities.

Weaknesses:

The project includes STEM approaches that support math and computer science standards. However, it is not clear which standards are being targeted by the different learning resources. Additionally, as each resource is assigned to different grade bands (page e23), it would be helpful to understand how these support core curricular areas in elementary and middle school.

Reader's Score: 21

Selection Criteria - Quality of Project Design

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

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

(2) The extent to which there is a conceptual framework underlying the proposed research or demonstration activities and the quality of that framework.

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

Strengths:

The project employs the INFACT logic model that describes inputs, activities and outcomes for the project (e89). This is complemented by a timeline that shows the succession of activities that are proposed to achieve the stated goals.

The project includes plans to assist educators in the implementation of instructional resources with the development of teacher tools and a scalable suite of professional development tools. This assistance is critical to help educators achieve the goals of the implementation of the instructional resources.

Weaknesses:

The professional development plan needs more information about how content knowledge, curriculum implementation, and differentiation will be addressed differently at the elementary (grades 3-5) and middle school (grade 6-8) levels. It would be helpful to know specific goals and strategies that will be used to design teacher tools and professional development modules to address teacher with different levels of expertise and with students from different grade bands.

Reader's Score: 31

Selection Criteria - Adequacy of Resources/Quality of Management Plan

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

(1) The adequacy of the management plan to achieve the objectives of the proposed project on time and within budget, including clearly defined responsibilities, timelines, and milestones for accomplishing project tasks.

(2) The qualifications, including relevant training and experience, of key project personnel.

(3) The potential for continued support of the project after Federal funding ends, including, as appropriate, the demonstrated commitment of appropriate entities to such support.

Strengths:

The key personnel have extensive STEM experience and expertise is well matched for leading and implementing this project.

The project offers a detailed management plan for personnel and resources is adequate for the project scope of the project (pages e99 – e116).

The proposal has an effective dissemination plan to share materials with teachers and educational material distribution channels (page e43).

Weaknesses:

There is not sufficient information on how the partners' integration will be managed including if and how they will interact directly with professional development designers and implementers and with schools.

There is not a clear plan for the continued support of the project after Federal funding ends.

Reader's Score: 18

Priority Questions

Competitive Preference Priority - Competitive Preference Priority

1. Within Absolute Priority 3, we give competitive preference to applications that address the following priority:

Projects designed to improve student achievement or other educational outcomes in computer science (as defined in the notice). These projects must address the following priority area:

Expanding access to and participation in rigorous computer science (as defined in the notice) coursework for traditionally underrepresented students such as racial or ethnic minorities, women, students in communities served by rural local educational agencies (as defined in the notice), children or students with disabilities (as defined in the notice), or low-income individuals (as defined under section 312(g) of the Higher Education Act of 1965, as amended).

Note: Projects addressing this priority must be administered in a manner consistent with nondiscrimination requirements contained in the U.S. Constitution and Federal civil rights laws.

Strengths:

The project focuses on implementing rigorous computer science that includes the study of computers and algorithmic processes and includes the study of computing principles and theories, computational thinking, computer hardware, software design, coding, analytics, and computer applications.

Weaknesses:

n/a

Reader's Score: 5

Status: Submitted

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Technical Review Coversheet

Applicant: Technical Education Research Centers, Inc. (U411C190179)

Reader #3: *****

	Points Possible	Points Scored
Questions		
Selection Criteria		
Significance		
1. Significance	25	25
Quality of Project Design		
1. Project Design	35	30
Adequacy of Resources/Quality of Management Plan		
1. Resources/Management Plan	20	18
Sub Total	80	73
Priority Questions		
Competitive Preference Priority		
Competitive Preference Priority		
1. Absolute Priority 3	5	5
Sub Total	5	5
Total	85	78

Technical Review Form

Panel #13 - EIR Early Phase Tier 1 - 13: 84.411C

Reader #3: *****

Applicant: Technical Education Research Centers, Inc. (U411C190179)

Questions

Selection Criteria - Significance

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

(1) The potential contribution of the proposed project to increased knowledge or understanding of educational problems, issues, or effective strategies.

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

Strengths:

The Applicant clearly describes its goal to build on current research and practices around learning variability and computational thinking (CT) that will lead to expanding the STEM/CS workforce to include individuals who are generally overlooked or considered as unable to grasp or demonstrate required cognitive skills (p. e30).

The Applicant presents a comprehensive approach to address educational problems and issues related to learning variabilities—as opposed to learning disabilities (e.g., dyslexia, ADD, and autism, etc.). It would work through a consortium of educational researchers who are already addressing the issue in relation to STEM education. It provides a list of seven consortium members.

While the project would explore both current and new teaching/learning approaches, a strength of the proposal is that the research would focus on how to progressively teach “computational thinking” from grades 3 – 8, moving from foundational practices to STEM application (p. e24), with researchers working in collaboration.

The Applicant is approaching its research from the viewpoint that neurodiverse learners already have the skills required for success in STEM/CS. It would address the challenge of creating materials and resources that support the development of those skills in students with learner variability (p. e25-e26). It states for example, “Since neurodiverse learners may struggle with text-based questionnaires, we will also adapt existing textual instruments for self-efficacy... and STEM dispositions...into an interactive format... (p. e33).

The Applicant presents reliable and current research to support its approach, citing findings from fields including special education, cognitive psychology, and education neuroscience.

Weaknesses:

No weaknesses identified.

Selection Criteria - Quality of Project Design

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

- (1) The extent to which the goals, objectives, and outcomes to be achieved by the proposed project are clearly specified and measurable.
- (2) The extent to which there is a conceptual framework underlying the proposed research or demonstration activities and the quality of that framework.
- (3) The adequacy of procedures for ensuring feedback and continuous improvement in the operation of the proposed project.

Strengths:

Project goals, objectives and outcomes are clearly presented and discussed (pp. e30-e33). The Applicant notes its specific expectation that struggling learners, such as those having IEPs, would benefit most from the project and that the new assessments may reveal computational thinking practices not previously captured on assessments normally used.

The project also addresses the connection between learning materials and assessments of differentiated learning (p. e28). It proposes to address that issue by developing progressive competencies that may be used in different types of formative assessments.

Performance measures are clearly stated and include pre- and post-tests of participants in the project (pp. e117-e119).

The proposal includes a logic model (p. e89) that builds on the practices of interdisciplinary research leaders to create new ways to progressively teach computational thinking and STEM to diverse learners and lead to a more diverse STEM/CS workforce.

The Applicant does a good job discussing the necessity of its project and the expected outcomes—increasing the number of neurodiverse learners pursuing STEM and but also increasing their inclusion in the STEM workforce.

The project does not limit its focus on students but would also address the needs of developing tools and professional development for teachers; again, utilizing members of the consortium to develop videos and online virtual workshops available to be used in local PD sessions (p. e29-e30). Because they are online, it means that teachers nationwide could access them.

Weaknesses:

The Applicant's timeline of activities for the INFACCT project is very brief and broad for a four-year project (p. e31).

With the project's emphasis being on neurodiverse learners, it is not explained why the number of students with IEPs drops from 50 percent in the participatory design stage to 20 percent in Impact Study 1 & 2 (p. e34).

It is unclear how the project would specifically engage schools, rather than simply listing district schools currently working with consortium partners (p. e23). Logistical questions such as number of schools per district, number of classrooms/students per schools, etc., could be addressed.

There are no procedures described on how or if parental support or engagement would be obtained for students learning variabilities or IEPs.

There was no description of a plan for feedback and continuous improvement.

Reader's Score: 30

Selection Criteria - Adequacy of Resources/Quality of Management Plan

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(2) The qualifications, including relevant training and experience, of key project personnel.

(3) The potential for continued support of the project after Federal funding ends, including, as appropriate, the demonstrated commitment of appropriate entities to such support.

Strengths:

The management plan seems adequate and includes describes key personnel and their assigned specialties. A team of project investigators will be responsible for leading the consortium and overseeing bi-weekly video conferences.

Consortium organizations are well represented and members would be engaged in project areas and responsibilities aligned with their expertise, i.e., learner variability in STEM, curriculum and technology, and integrating computational thinking into elementary math classes (p. e42-e43), etc.

The Applicant includes a dissemination plan that would target teachers and school districts to promote the program. In year four, they would create intellectual property and commercialization agreements to distribute the program (p. e43). Consortium members would promote the project work at research conferences and co-publish research papers.

Weaknesses:

There is no discussion of continuing the project should the expected outcomes not be reached within the time planned.

The logistics of how consortium members would work together are unclear.

It is not clear how professional development for teachers would be implemented, e.g., number of access points or regularity of trainings, products or partners (pp. e29-e30).

Reader's Score: 18

Priority Questions

Competitive Preference Priority - Competitive Preference Priority

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Note: Projects addressing this priority must be administered in a manner consistent with nondiscrimination requirements contained in the U.S. Constitution and Federal civil rights laws.

Strengths:

The proposed project does a good job proposing how it would identify ways to progressively teach computational thinking and executive function skills required in computer science and STEM to neurodiverse learners. It would also create assessment tools able to demonstrate the learning growth for neurodiverse learners in ways not currently able to be assessed.

Weaknesses:

No weaknesses identified.

Reader's Score: 5

Status: Submitted
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