

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

Status: Submitted

Last Updated: 07/19/2019 11:07 AM

Technical Review Coversheet

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

Reader #1: *****

	Points Possible	Points Scored
Questions		
Selection Criteria		
Quality of the Project Evaluation		
1. Project Evaluation	20	14
Sub Total	20	14
Total	20	14

Technical Review Form

Panel #6 - EIR Early Phase Tier 2 - 12: 84.411C

Reader #1: *****

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

Questions

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

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

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

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

Strengths:

The applicant did a good job of addressing the four (4) evaluation criteria. The applicant proposes implementing a computer science learning infusion curriculum with neurodiverse learners in grades 3-8. The total number of students in the project is 1,000 wherein at least 20% will have an individual education plan (IEP). The applicant will employ a quasi-experimental, mixed-methods evaluation design to monitor process and determine project impact.

The applicant proposes a quasi-experimental design that includes a two-level impact study. The design should meet the What Works Clearinghouse standards with reservations. The leveling of the evaluation research design from a smaller group during the pilot to the expansion study described in Impact Study 2 should yield results that provide guidance about effective strategies suitable for replication in other settings. The research evaluation questions are clear and applicable to the components of the project implementation and the evaluation research design. The analysis discussion includes the key components, mediators and outcomes of the project. Building in time for tool verification and piloting of the project prior to full scale launch will increase the potential for project fine-tuning and improving fidelity of the model. Having two observers focused on different aspects of the classroom activities (p.22) is a good approach to data collection to inform effective teacher implementation of the curriculum and student response to the curriculum. The inclusion of audio recordings should increase the verification of the coding and potentially assist in fine-tuning implementation when combined with the observation protocols.

Weaknesses:

On page 22 the applicant describes the classroom observation component of the project. More information is needed about how the eight (8) classrooms will be selected to reduce selection bias and also about how the observers will be trained to ensure inter-rater reliability. On p. 21 the applicant states the design will control for student grades and STEM-related standardized test scores if possible. It is unclear why the researchers would not have access to grades and standardized scores since grades and scores are part of the outcome measures and will be needed to control for equivalency of matched groups. On page 15 the end of the sentence is missing. It is unclear how many hours of PD each teacher will participate in. The table on p. 16 lists up to 10 hours, which does not seem like enough dosage to achieve the student learning outcomes and impact. For replication purposes more information on the categories in Table

7 is needed since the table is the basis of the impact study selection groups (pp.8-9).

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

Reader #2: *****

	Points Possible	Points Scored
Questions		
Selection Criteria		
Quality of the Project Evaluation		
1. Project Evaluation	20	13
Sub Total	20	13
Total	20	13

Technical Review Form

Panel #6 - EIR Early Phase Tier 2 - 12: 84.411C

Reader #2: *****

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

Questions

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

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

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

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

Strengths:

- The assessments described by the applicant as applied to the formative evaluation have a research base (pp. 10-11, p. 14) that establishes validity and the ability to compare findings to data produced in previous studies.
- The research activity guide (p. 16) and the timeline (p. 13) provide linkage between project objectives and evaluation components. These guides will be useful in monitoring evaluation activities and establishing accountability for collecting project data.
- The applicant proposes a validation study of the self-efficacy measure (p. 19) that will serve to establish the usefulness of this measure in interpreting differences between groups.

Weaknesses:

- The sampling methodology and assignment to treatment is not provided by the applicant. The level of sampling is unclear (schools, teachers, or districts, p. 20). The possibility of selection bias exists in the analysis of any data presented from the applicant's proposed study. The sampling plan also does not describe how the applicant will "supplement" the sampling with teachers who were previously engaged in TERC research. This jeopardizes the WWC categorization as "met with reservations"
- The incentive for control teachers to provide data through the use of TERC's database (p. 21) is not provided and may jeopardize the completeness of this data collection and the ability to interpret differences based on project participation.
- The generalizability of the evaluation findings as all schools within the study have existing CS classes and already participate in TERC projects or in the "League of Innovative Schools" (p. 20).

- The effectiveness of the use of the Markov Chain Monte Carlo (p.20) methodology is not clear as the applicant does not specify the variables to be included as independent states. This makes the usefulness of this application unknown in determining possible program implementation effects.
- The impact study design (p. 21) does not establish the conditions under which it would be established as “possible” to control for student level equivalence in the comparison of outcomes. The absence of this equivalence procedure controlling for possible pre-existing differences threatens the WWC status of the proposed research as meets standards with reservations.
- While the observations proposed (p. 22) in classrooms is a reasonable idea designed to provide context and interpretation of quantitative findings there are several problems with the procedures described by the applicant: 1) the criteria to be used to select the eight classrooms with “maximum variation” are not identified, 2) the training and inter-observer reliability of the personnel conducting these observations is not established and, 3) the methodology of how these observations will be analyzed/interpreted in conjunction with other data is not established. These issues make the utility of the observations questionable.
- The applicant indicates that there will be ten hours of classroom CT-based STEM instruction (p. 16). Based on the condition that a substantial portion of the students receiving this instruction have IEP’s it is difficult to understand how dosage across students will be equalized and how to interpret the dosage effect in interpreting student outcome data.

Reader's Score: 13

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