

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

Status: Submitted

Last Updated: 09/13/2024 07:18 PM

## Technical Review Coversheet

**Applicant:** Teachers College, Columbia University (S411C240225)

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

	Points Possible	Points Scored
<b>Questions</b>		
<b>Selection Criteria</b>		
<b>Significance</b>		
1. Significance	20	19
<b>Quality of Project Design</b>		
1. Project Design	30	30
<b>Quality of Project Personnel</b>		
1. Project Personnel	10	10
<b>Quality of the Management Plan</b>		
1. Management Plan	10	10
<b>Sub Total</b>	70	69
<b>Priority Questions</b>		
<b>Competitive Preference Priority</b>		
<b>Competitive Preference Priority 1</b>		
1. Promoting Equity	3	3
<b>Competitive Preference Priority 2</b>		
1. Impact of COVID-19	3	2
<b>Sub Total</b>	6	5
<b>Total</b>	76	74

# Technical Review Form

Panel #20 - Early Tier 1 - 20: 84.411C

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

Applicant: Teachers College, Columbia University (S411C240225)

## 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 factor:

Reader's Score: 19

#### Sub

1. (1) 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. (20 points)

#### Strengths:

The applicant has proposed to develop and implement a well-designed pre-kindergarten (preK) science program for children from historically-underserved high need communities. The goal of providing children with a better foundation of science before they enter elementary school is based on referenced educational research publications and appropriately addresses identified needs. In the application, they appropriately reference relevant studies demonstrating a need for better science instruction in the target student population, as well as studies indicating that early exposure to quality inquiry-based experiences increases children's knowledge, interest, and motivation in science (e13). Furthermore, they do an outstanding job of citing studies indicating inquiry-based science instruction improves students' linguistic abilities by supporting enhanced communication between students and teachers as well as between students themselves. The proposed project should effectively develop and deliver lesson plans and classroom materials, teacher professional development, and coaching strategies enabling schools to successfully implement an inquiry-based preK science curricula based on Next Generation Science Standards (NGSS). The project also has the additional benefit of utilizing an inquiry conversation strategy which should be most beneficial with the target preK students (e16-17) as demonstrated by previous studies. The applicant's plan to use an inquiry-based strategy and follow NGSS standards builds on educational best practices. The teacher professional development and coaching strategies also are based on best practices.

#### Weaknesses:

It is not clear from current science education that emphasizing science vocabulary should be incorporated before other inquiry-based science activities for the students. Even though vocabulary and language skills development is an important strategy in the ultimate goal of the program, science education research studies emphasize the importance of discovery and inquiry-based strategies with early learners. The application is weakened without a sound rationale for this particular approach.

The use of online self-paced professional development modules for training teachers (e13) may not be the best methodology for training in this project. The applicant did not provide a clear justification for the use of the online learning conducted over six sessions.

Sub

Reader's Score: 19

**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:**

Reader's Score: 30

Sub

- 1. (1) The extent to which there is a conceptual framework underlying the proposed research or demonstration activities and the quality of that framework. (10 points)**

**Strengths:**

The applicant has provided a solid logic model on page e80 that appropriately represents the proposed project and identifies foundational inputs, key support components, direct components short term mediators, as well as medium-term outcomes.

The plan to revise lesson plans and modules with an Advisory Board and consultant feedback is a strong key component of the plan (e80). Their plan to use midstream formative assessment for continuous program improvement is one of the strongest features of their proposal, especially since their proposed evaluation plan is so thorough.

The applicant proposes a conceptual framework with strong connections between key components and their desired outcomes of supporting learning of their students enhanced science content knowledge and improved language skills and vocabulary. Their desired long-term outcome of educating students who are better prepared for elementary grade NGSS-based Science curriculum later in their education is important and well-supported by the proposed project. An additional long-term outcome of maintaining teacher skill gains and maintaining the sustainability of the curriculum in the district is also important and supported by extensive professional development in the project.

It is important that the applicant has placed an emphasis on early linguistic development and preK student acquisition of vocabulary. That strategy has been supported by educational research references in the proposal, especially for the identified target student population with a high number of EL students (e18-21). The decision to focus on responding to cultural and linguistic diversity in the students and recognizing their diversity of backgrounds, is essential to developing appropriate lesson plans. Two strong strategies in this regard were the partnering with an HBCU partner to bring in additional expertise in creating culturally-responsive lesson plans, and the selecting of books and curricular materials that represent the widest array of characters.

Another strong strategy is to thematically integrate the proposed curriculum with the existing thematic curriculum in the participating schools with 10 month-long themes consistent with what is being taught in their classrooms in other disciplines. This thematic focus should help with integrating this new NGSS-aligned Science curriculum into existing theme-based preK curriculum.

**Weaknesses:**

There are no identified weaknesses.

Reader's Score: 10

- 2. (2) The extent to which the goals, objectives, and outcomes to be achieved by the proposed project are clearly specified and measurable. (5 points)**

**Sub**

**Strengths:**

The goals, objectives, and activities of the proposed Science curriculum project are clearly identified and focus on developing and implementing a sustainable Science curriculum for high PreK students. Core components of theme-based Science lesson plans are included along with topics for a teacher professional development program with online modules (e19-20). A table with clear project goals and objectives is presented (Table 1 on e22-24) along with appropriate performance measures on pages e121-128 of the appendices. Many of the project objectives have identified performance measures with quantitative benchmarks. Performance measures for science content knowledge and vocabulary are tied to the standardized Lens on Science instrument (e33) and the Peabody Picture Vocabulary Test (e33). Both measures are considered best practices in evaluation for this age group. Teacher science knowledge and self-efficacy outcomes will also be assessed and processes for measurement are appropriate (e22).

Evaluation processes and the basis for selection of the statistical evaluation clearly address project goals and objectives (e31-35). Processes for data collection and evaluation by the external evaluator are clearly outlined in the plan and are appropriate for the goals and objectives of the project. The evaluation plan uses identified nationally-accepted assessment instruments and should provide a strong measure of the outcomes of the project. Furthermore, data provided from formative assessments should provide the planned reporting needed to allow iterative lesson plan and training process improvements as planned in outgoing years of the project.

**Weaknesses:**

There are no identified weaknesses.

**Reader's Score: 5**

**3. (3) 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. (15 points)**

**Strengths:**

The proposed project was designed to provide equitable and accessible science instruction to high-need preK students. It is notable that they recruited a school district for the project that is the poorest big city and the nation with 95% of preK children eligible for free or reduced-price lunch. Their needs analysis indicates the students are ethnically- and linguistically-diverse with 75% Black or Latine ethnicities and 20% English learners.

The proposed project is designed to meet the specific needs of those targeted students, while providing them with a world class curriculum based on NGSS Science standards. Proposed activities address broad and deep science concepts while being culturally- and linguistically-responsive to the needs of their learners. The sample Lesson plan included in the Appendix is appropriate for the target learners (e98-100). The proposal to provide funding for the families of the participating students and funding for the teachers to purchase books for their classrooms is also attentive to the needs of the targeted students and their community.

It is also important that the applicant will be addressing learning deficits in students that resulted from the COVID-19 pandemic. Their plan to intentionally design lesson plans using evidence-based strategies, content, and activities based on a needs assessment and asset-mapping conducted in Year 1 of the project is a strength (e22). Their plan to seek teachers' input on students' gaps in understanding that may have resulted from lack of instruction during the pandemic and/or their socioeconomic status, will be useful in designing a curriculum that meets their specific needs (e16, Goal 1, Objectives 1A and 1B, e22).

**Weaknesses:**

There are no identified weaknesses.

Sub

Reader's Score: 15

**Selection Criteria - Quality of Project Personnel**

1. The Secretary considers the quality of the personnel who will carry out the proposed project. In determining the quality of project personnel, the Secretary considers the following factor:

Reader's Score: 10

Sub

1. (1) The extent to which the applicant encourages applications for employment from persons who are members of groups that have traditionally been underrepresented based on race, color, national origin, gender, age, or disability. In addition, the Secretary considers the qualifications, including relevant training and experience, of key project personnel. (10 points)

**Strengths:**

The applicant has committed to hiring a project coordinator who is Spanish-English bilingual and a native speaker in Spanish. They also will seek program coaches and data collectors who are from diverse backgrounds and also bilingual. Their past history of hiring staff for similar educational grants (greater than 50% were from underrepresented categories) is also a strength, indicating a commitment to diversity and an ability to recruit to honor that commitment (e25). The pool of Philadelphia teachers that will participate in the project is 39% underrepresented racial and ethnic groups.

The leadership team is exceptionally well qualified, with a strong history of conducting similar innovative educational program grants targeting K-12 students from underrepresented backgrounds (e25-26, e43-64). They have demonstrated expertise in science education, early childhood education, language and literacy, English learners, and cultural and linguistic diversity (e25). The publication records of the project leadership in pertinent educational research journals are very strong.

**Weaknesses:**

There are no identified weaknesses.

Reader's Score: 10

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

1. The Secretary considers 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:

Reader's Score: 10

Sub

1. (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.

**Sub**

**Strengths:**

The applicant has proposed a strong management plan with clearly defined goals, objectives, and measurable outcomes, overseen by a well-qualified leadership team, project staff (many to be hired), an advisory board of stakeholders, and an experienced external evaluation team (e28-29). The management plan is well described (Table 2. e29-31), providing goals, objectives, responsible parties, and dates. An additional table (e121-128), providing performance measures for each project objective is appropriate given the project's stated goals. Tables documenting the evaluation plan and timeline for data collection, analysis, and reporting are included (e101-103) and are very well designed.

The project's management plan has a strong emphasis on an iterative continuous improvement plan that includes observation of teacher instruction, coaching, and timely evaluation which will allow midstream programmatic changes (e29-31).

The plan to have an Advisory Board, composed of principals, teachers and parents, should also be beneficial to the ultimate success of the project and ensure that the stakeholders have a strong voice in results of the activities (Objective 1B, e22, Objective 4C, e23, e29).

**Weaknesses:**

There are no identified weaknesses.

**Reader's Score: 10**

**Priority Questions**

**Competitive Preference Priority - Competitive Preference Priority 1**

**1. Competitive Preference Priority 1:**

**Promoting Equity in Student Access to Educational Resources and Opportunities: Implementers and Partners (up to 3 points)**

**Under this priority, an applicant must demonstrate how the project will be implemented by or in partnership with one or more of the following entities:**

- (a) Community colleges (as defined in the NIA)**
- (b) Historically Black colleges and universities (as defined in the NIA)**
- (c) Tribal Colleges and Universities (as defined in the NIA)**
- (d) Minority-serving institutions (as defined in the NIA)**

**Strengths:**

The applicant has partnered with North Carolina Central University (NCCU), a public historically black university in Durham, NC. As a partner, NCCU will serve to assist in creating and editing lesson plans which specifically address the needs of the targeted needy student audience. In this capacity, NCCU serves as a valuable asset to the success of this project.

**Weaknesses:**

There are no identified weaknesses.

**Reader's Score: 3**

**Competitive Preference Priority - Competitive Preference Priority 2**

**1. Competitive Preference Priority 2:**

**Addressing the Impact of COVID-19 on Students, Educators, and Faculty: Community Asset-Mapping and Needs Assessment and Evidence-Based Instructional Approaches and Supports (up to 3 points).**

**Projects that are designed to address the impacts of the COVID-19 pandemic, including impacts that extend beyond the duration of the pandemic itself, on the students most impacted by the pandemic, with a focus on underserved students and the educators who serve them through the following priority areas:**

**(a) Conducting community asset-mapping and needs assessments that may include an assessment of the extent to which students, including subgroups of students, have become disengaged from learning, including students not participating in in-person or remote instruction, and specific strategies for reengaging and supporting students and their families; and**

**(b) Using evidence-based instructional approaches and supports, such as professional development, coaching, ongoing support for educators, high-quality tutoring, expanded access to rigorous coursework and content across K-12, and expanded learning time to accelerate learning for students in ways that ensure all students have the opportunity to successfully meet challenging academic content standards without contributing to tracking or remedial courses.**

**Strengths:**

a) The applicant has specifically committed to asset-mapping and conducting a needs analysis in the first year of the project in order to respond to the post COVID-19 needs of both the educators and the preK students. They are aware of likely educational deficits in the target student population, and their plan to conduct an early needs assessment prior to Lesson plan development is a strength (e12-13, e15-16 Goal 1, Objectives 1A and 1B, e22).

b) Their plan to intentionally design lesson plans using evidence-based strategies based on teachers' input regarding students' gaps in understanding is especially important, especially those deficits which may have been generated because of the pandemic (e16, Goal 1, Objectives 1A and 1B, e22).

**Weaknesses:**

The applicant has not clearly described how Pre-K students who were not even born or enrolled in preschool programs when the COVID-19 pandemic was at its peak, were negatively impacted, and acquired deficits that now must be identified and addressed.

**Reader's Score: 2**

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**Status:** Submitted  
**Last Updated:** 09/13/2024 07:18 PM



Status: Submitted

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## Technical Review Coversheet

**Applicant:** Teachers College, Columbia University (S411C240225)

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

	Points Possible	Points Scored
<b>Questions</b>		
<b>Selection Criteria</b>		
<b>Significance</b>		
1. Significance	20	19
<b>Quality of Project Design</b>		
1. Project Design	30	29
<b>Quality of Project Personnel</b>		
1. Project Personnel	10	10
<b>Quality of the Management Plan</b>		
1. Management Plan	10	9
<b>Sub Total</b>	70	67
<b>Priority Questions</b>		
<b>Competitive Preference Priority</b>		
<b>Competitive Preference Priority 1</b>		
1. Promoting Equity	3	3
<b>Competitive Preference Priority 2</b>		
1. Impact of COVID-19	3	2
<b>Sub Total</b>	6	5
<b>Total</b>	76	72

# Technical Review Form

Panel #20 - Early Tier 1 - 20: 84.411C

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

Applicant: Teachers College, Columbia University (S411C240225)

## 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 factor:

Reader's Score: 19

#### Sub

1. (1) 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. (20 points)

#### Strengths:

The applicant proposes to develop materials specifically targeting PreK science learning, based on the established Next Generation Science Standards (NGSS) (e12). In particular, the applicant notes that there is a dearth of curricula and pedagogical resources for PreK science applications (e14). The applicant's strategy to emphasize general science concepts such as asking questions and interpreting data, will reinforce the inquiry-based learning that generally takes place in PreK while providing an opportunity to introduce science vocabulary and skills (e15). Early grades, and PreK especially, are often under-prioritized in campuses and districts, both because PreK may not be widely available (or barriered through cost) and is not typically considered in state accountability schema. The applicant makes a convincing case that adding science instruction to PreK will build on existing strategies for science instruction in middle elementary grades (1-3) and ultimately improve student outcomes in higher grades (e32).

#### Weaknesses:

The applicant does not provide sufficient citations or other evidence for the design principles in Innovation-2 (e15) or in Innovation-4 (e14). Both of these innovations have additional weaknesses. In Innovation-2, the applicant does not indicate whether their dissemination efforts post-grant will continue to make their materials financially accessible to target schools (e8,103). Useful materials that become paywalled post-grant are ultimately not effective for the target schools/districts. In Innovation-4 it is not best practice for early education students to receive "sit-and-get" instruction on technical terminology at the outset of a lesson, which the applicant notes themselves (e14).

Reader's Score: 19

### 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:

**Reader's Score: 29**

**Sub**

- 1. (1) The extent to which there is a conceptual framework underlying the proposed research or demonstration activities and the quality of that framework. (10 points)**

**Strengths:**

The applicant aligns NGSS standards with the activities of ExCELL in Science (EiS), namely lesson plan, materials, professional development, and coaching (e18). These standards and practices are supported with inquiry-based learning processes, such as technical vocabulary definitions, extended conversations, and open-ended questions. The applicant reinforces these practices with a coaching model, Exceptional Coaching for Early Language and Literacy (ExCELL) that was developed by one of the Co-PIs and has been previously implemented with positive outcomes (e16).

The applicant articulates clear links between their theory, curriculum, and practice which, coupled with their professional learning module descriptions (e20), displays a high-quality conceptual framework. For example, in the description of the constituent components of ExCELL (e19-21) program, the applicant notes the relevant theoretical framework or content standards, describes the associated component, and lists the intended outcome.

Because the applicant establishes a focused use-case for their proposed project, the logic model is streamlined and largely supplemental to a well-articulated narrative (e80). The logic model emphasizes the importance of the ExCELL model to implementing the intervention, which will lead to improved student outcomes in PreK and preparation for higher grades.

**Weaknesses:**

No weaknesses noted.

**Reader's Score: 10**

- 2. (2) The extent to which the goals, objectives, and outcomes to be achieved by the proposed project are clearly specified and measurable. (5 points)**

**Strengths:**

The applicant's goals and objectives are clearly specified and measurable. For example, the applicant notes in Objective 5B that they will train 80 teachers and at least 1,440 children. Both groups will be pre- and post-tested on content knowledge (e23) at the beginning and end of each school year (e32-33). These assessments will measure student science knowledge and vocabulary, as well as teacher science knowledge and self-efficacy using previously proven assessments. The combination of pre-/post-assessments, classroom observations, and surveys is a robust methodology that will provide useful data to the project team regarding project progress towards their objectives and evaluating direct and indirect student outcomes. For example, utilizing extended conversations (e18), is not only a useful strategy to encourage using science vocabulary, as the applicant states, but a critical strategy for PreK students' social emotional development.

**Weaknesses:**

Though the applicant describes a robust methodology to evaluate student and teacher outcomes (e104-109), the applicant restricts their analysis to single-year pre-/post-test evaluations. Over the course of a 5-year grant, tracking students longitudinally would provide a better indication of direct impact of the intervention on long-term student outcomes.

**Reader's Score: 4**

Sub

3. (3) 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. (15 points)

**Strengths:**

Importantly, the applicant notes they will begin by conducting needs assessments in the target populations to understand their PreK learning needs, which provide crucial baseline information for project implementation (e22). Additionally, the applicant notes there will be an advisory board consisting of teachers, administrators, and parents that meets three times per year to provide ongoing feedback regarding the implementation of EiS (e22). Consistent feedback will ensure the project is able to adapt to the target population's changing needs.

The applicant notes that they will be serving students in the School District of Philadelphia (SDP), which is predominantly Black and Hispanic (75%). More specifically, in 2023 only 11% of Hispanic and 9.3% of Black students reached grade-level proficiency on the state science test (e24). This demonstrates a clear need for improved science outcomes in SDP, which the applicant is supporting through their proposed project, albeit on a lagging timeframe since PreK students will not take a state science test until upper Elementary grades (4-5). In addition to student needs, the applicant noted that PreK teachers do not have the resources to build or implement innovative science curriculum (e15-16). EiS provides a year-long PD sequence to teachers, along with activities and materials for implementation (e25). This will greatly reduce the barriers that may have prevented PreK teachers from implementing EiS strategies or activities with fidelity.

**Weaknesses:**

No weaknesses noted.

**Reader's Score: 15**

**Selection Criteria - Quality of Project Personnel**

1. The Secretary considers the quality of the personnel who will carry out the proposed project. In determining the quality of project personnel, the Secretary considers the following factor:

**Reader's Score: 10**

Sub

1. (1) The extent to which the applicant encourages applications for employment from persons who are members of groups that have traditionally been underrepresented based on race, color, national origin, gender, age, or disability. In addition, the Secretary considers the qualifications, including relevant training and experience, of key project personnel. (10 points)

**Strengths:**

The applicant notes their prior successful efforts in hiring coaches and project coordinators from diverse backgrounds, and states they will continue these practices with the proposed project (e25). For example, the applicant notes that their master coach and coaches will have a preferred bilingual qualification, and the project coordinator must be bilingual. These position expectations will encourage applications from underrepresented groups, who are more likely to be bilingual.

The indicated project personnel have extensive experience working in the fields and content areas required for the proposed project (e43-64). For example, the PI is the co-developer of ExCELL, one of the key components of EiS (e26); and one of the Co-PIs has worked with early grade science learning for decades (e27). Lastly, though the project coordinator is yet to be hired, the applicant will require this role to be bilingual (e65), which is essential for

**Sub**

their target's student population that is 20% English Learners.

The external evaluator is American Institutes for Research (AIR), a nationally recognized organization that provides, among other things, evaluation services for government-funded grants. AIR's project team assigned to this proposal has extensive experiences researching and evaluating programs that focus on early language development and early childhood education, making them a qualified candidate for this proposed project.

**Weaknesses:**

No weaknesses noted.

**Reader's Score: 10**

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

- 1. The Secretary considers 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:**

**Reader's Score: 9**

**Sub**

- 1. (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.**

**Strengths:**

The applicant provides a concise description of tasks and milestones, attached project personnel, and dates by year and quarter in Table 2 (e29-31). The applicant reinforces this table with data collection and management details aligned to project tasks, which can be found in the appendices (e101-103). They describe a multi-tiered approach to project management that includes a core leadership team; partnership team that will manage the day-to-day implementation and consultation with the stakeholder advisory board; and an external evaluator (e29). This well-structured approach will provide accountability for the responsibilities described on Table 2 (e29-31).

The applicant also notes they will be hiring full-time staff including a project coordinator to oversee daily grant activities, a master science coach to assist in curriculum development, and science coaches to implement programming at target schools (e111-112). Dedicated staff improve the fidelity of project implementation, making the project more likely to achieve its intended objectives.

Lastly, the applicant gives partner institutions specific responsibilities for project components, which justifies their assigned costs in the budget narrative (e114-116). For example, collegiate faculty were assigned a 35% effort on this project, which is reasonable to account for administrative requirements necessary for grant participation, such as course buy-outs.

**Weaknesses:**

Though the applicant noted teachers would be receiving \$500 per year for classroom supplies and \$600 for participating in the intervention (e117), the applicant's narrative does not match this statement. The statement in question: "Years 3-4, 80 teachers will participate in a randomized controlled trial. \$44,000 is requested in Year 3 and in Year 4 for books and materials (\$500 per teacher) and compensation for participating (\$600 per teacher)."  $500 \times 80 = \$40,000$ ;  $600 \times 80 = \$48,000$ , meaning the request for Year 3 and Year 4 should be \$88,000 per year.

**Sub**

The applicant's remaining budget description does not provide the necessary clarity to determine if this was a typographical error or if teachers are not getting paid for participation during these years.

**Reader's Score: 9**

**Priority Questions**

**Competitive Preference Priority - Competitive Preference Priority 1**

**1. Competitive Preference Priority 1:**

**Promoting Equity in Student Access to Educational Resources and Opportunities: Implementers and Partners (up to 3 points)**

Under this priority, an applicant must demonstrate how the project will be implemented by or in partnership with one or more of the following entities:

- (a) Community colleges (as defined in the NIA)
- (b) Historically Black colleges and universities (as defined in the NIA)
- (c) Tribal Colleges and Universities (as defined in the NIA)
- (d) Minority-serving institutions (as defined in the NIA)

**Strengths:**

The applicant is partnering with North Carolina Central University (NCCU), a HBCU (e12), on this project. This partnership is valuable because the project personnel from NCCU will be part of the team creating the training materials.

**Weaknesses:**

No weaknesses noted.

**Reader's Score: 3**

**Competitive Preference Priority - Competitive Preference Priority 2**

**1. Competitive Preference Priority 2:**

**Addressing the Impact of COVID-19 on Students, Educators, and Faculty: Community Asset-Mapping and Needs Assessment and Evidence-Based Instructional Approaches and Supports (up to 3 points).**

Projects that are designed to address the impacts of the COVID-19 pandemic, including impacts that extend beyond the duration of the pandemic itself, on the students most impacted by the pandemic, with a focus on underserved students and the educators who serve them through the following priority areas:

- (a) Conducting community asset-mapping and needs assessments that may include an assessment of the extent to which students, including subgroups of students, have become disengaged from learning, including students not participating in in-person or remote instruction, and specific strategies for reengaging and supporting students and their families; and
- (b) Using evidence-based instructional approaches and supports, such as professional development, coaching, ongoing support for educators, high-quality tutoring, expanded access to rigorous coursework and content across K-12, and expanded learning time to accelerate learning for students in ways that ensure all students have the opportunity to successfully

meet challenging academic content standards without contributing to tracking or remedial courses.

**Strengths:**

(a) The applicant will conduct asset mapping with teacher and campus administrators to understand the impact COVID-19 has had on learning in their schools (e22). The applicant cites in Goal 5 (e23) that their goal is “to reduce science inequities and address needs that result from COVID.” This includes deploying a pre- and post-intervention assessment and building teacher competencies to work with high-needs students.

(b) The applicant discusses evidence-based instructional practices throughout their application, including best practices for PreK instruction and Next Generation Science Standards. These practices will support teachers in better engaging their students and closing existing achievement gaps in the target population. By emphasizing the training of teachers, there is a greater likelihood of sustainable implementation that will reengage students in the learning process.

**Weaknesses:**

The applicant indicates they will conduct asset mapping in order to establish current challenges and needs resulting from the COVID-19 pandemic (e12). However, in a PreK school setting, asset mapping with teachers whose students may not have been born during COVID-19 may bear only a weak resemblance to the priority under this criterion.

**Reader's Score:**     **2**

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**Status:**             Submitted  
**Last Updated:**    09/13/2024 03:42 PM

Status: Submitted

Last Updated: 09/16/2024 03:59 PM

## Technical Review Coversheet

**Applicant:** Teachers College, Columbia University (S411C240225)

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

	Points Possible	Points Scored
<b>Questions</b>		
<b>Selection Criteria</b>		
<b>Significance</b>		
1. Significance	20	19
<b>Quality of Project Design</b>		
1. Project Design	30	28
<b>Quality of Project Personnel</b>		
1. Project Personnel	10	10
<b>Quality of the Management Plan</b>		
1. Management Plan	10	9
<b>Sub Total</b>	70	66
<b>Priority Questions</b>		
<b>Competitive Preference Priority</b>		
<b>Competitive Preference Priority 1</b>		
1. Promoting Equity	3	3
<b>Competitive Preference Priority 2</b>		
1. Impact of COVID-19	3	3
<b>Sub Total</b>	6	6
<b>Total</b>	76	72



# Technical Review Form

Panel #20 - Early Tier 1 - 20: 84.411C

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

Applicant: Teachers College, Columbia University (S411C240225)

## 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 factor:

Reader's Score: 19

#### Sub

1. (1) 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. (20 points)

#### Strengths:

The applicant skillfully builds the current project, ExCELL in Science (EiS) off of an existing early childhood literacy program, Exceptional Early Language and Literacy (ExCELL) through an intentional design using research-based strategies in the realm of early childhood (Pre-K) science instruction (e13). The rationale for the program is strong, as it highlighted the innovative aspects of the program as an opportunity to add structured science curriculum in Pre-K where the resources and programs are notably informal (e14). Furthermore, the program offers early childhood educators high-quality professional learning that trains the focus of classroom discourse on inquiry practices and away from more closed-ended procedural and behavioral conversations (e14). The applicant thoughtfully expands upon the Next Generation Science Standards that are currently articulated beginning at the kindergarten level, to build target learning objectives that would be developmentally appropriate for Pre-K students. The use of the ExCELL professional development (PD) program offers a robust research basis for the EiS to serve as an instructional model that can close achievement gaps for high-need learners (e16). The high-quality design of EiS attempts to build language skills for both native and emergent English language learners (ELs) by introducing vocabulary through 10 common science themes in Pre-K education (e17).

#### Weaknesses:

The EiS program design suggests that each lesson would open by clearly explaining background language and ideas, creating a barrier for ELs entering into science-inquiry through an approach that is not research-based best practice (e17). If there is research to support this approach, the applicant did not clearly explain it. Because of this, it may dampen the "promise" that this project would achieve its objectives.

Reader's Score: 19

### 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:

**Reader's Score: 28**

**Sub**

- 1. (1) The extent to which there is a conceptual framework underlying the proposed research or demonstration activities and the quality of that framework. (10 points)**

**Strengths:**

The EiS application presented a logic model that adequately supports the proposed activities with an established foundation program in ExCELL and sustained growth and implementation of the program through an advisory board structure. The key components of the logic model include six online PD modules and ongoing observations and coaching provided to participating teachers that would be designed to build teacher content knowledge, enhance self-efficacy, and help ensure the fidelity of program implementation. The foundational inputs around classroom discourse provides a reasonable expectation that students would build language and vocabulary skills that might assist their acquisition of science content knowledge and verbal resources to be prepared to access kindergarten science grade-level content standards (e80).

**Weaknesses:**

No weaknesses were noted.

**Reader's Score: 10**

- 2. (2) The extent to which the goals, objectives, and outcomes to be achieved by the proposed project are clearly specified and measurable. (5 points)**

**Strengths:**

The application lists six goals and 15 associated objectives in a well-designed project plan with clear metrics for implementation measurement (e22, e30, e100, and e101-102). The applicant describes a detailed iterative process beginning with a needs assessment and concluding with a feasibility report with the clear goal of creating a robust and sustainable program that directly addresses the needs of the target population. A key objective of the project is the 12 lesson curriculum centered around 10 common Pre-K science themes. The creation of the lessons is measured by the completion of the initial units by the 2<sup>nd</sup> quarter of the 202-25 school year. The units are then scheduled to undergo a revision using the asset mapping data and the expertise of the advisory board team following the implementation pilot and initial teacher training during the 2026-27 school year (e22, e102-103). The carefully sequenced objectives, clearly defined measurement targets, and detailed notations of the partner responsible for the objective provides extraordinary evidence that the project goals and objectives are clearly specified and that ample data will allow for proper measurement of such outcomes. The project culminates with a feasibility study to be completed in 2028 with the final objective involving dissemination of the project findings through two journal articles at three educational research conferences and three teacher practitioner conferences (e103). The clear articulation of the objectives and subsequent measures provide a high-level of confidence that the project outcomes will be achieved and validated.

**Weaknesses:**

No weaknesses were noted.

**Reader's Score: 5**

- 3. (3) 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. (15 points)**

**Sub**

**Strengths:**

The application clearly identified Pre-K teachers and their students from an urban district in a major metropolitan region as the target population. Concerning the teachers, the project described approximately six hours of targeted online professional learning conducted in six modules with a goal of completing a module each month. The online modules would be co-created by the project team and teachers from the advisory board and administered to a pilot group of six teachers. This demonstrates an intentionality that is likely to help to ensure the relevancy and comprehensiveness of the professional learning content (e20). Additionally, the teacher participants would be involved with a substantial and ongoing observation and coaching model designed to provide comprehensive feedback on classroom implementation with commentary on instructional strengths and areas for growth (e20). The target student population includes a high percentage of economically disadvantaged students and nearly 75% of the students are members of underrepresented groups in STEM and of these, 20% are ELs (e24). The project focuses on Pre-K students with the goal of early intervention promoting science inquiry at an age that would increase the likelihood of long-term science achievement gains. The early intervention design seeks to accelerate learning in response to learning gaps created by COVID and identified through community asset mapping (e24). The linguistic and cultural needs of the target student population will be addressed through the inclusion of a project partner that specializes in culturally and linguistically responsive strategies in diverse student learning communities (e25).

**Weaknesses:**

The professional learning modules are designed to be engaged by the teacher participants one per month for six months. This slow deployment model limits the pace of teacher development and may result in slower implementation and less efficacy related to the early coaching/observation sessions. The program design offers a limited (approximately 6 hours) of asynchronous online training modules that are unlikely to represent a robust PD experience, falling well short of recommended professional learning duration. The applicant has not provided a sound rationale justifying the use of only 6 hours of modules. The limited PD time calls into question the ability of the program to elicit teacher change and build pedagogical content knowledge and teacher self-efficacy (e20). Additionally, the proposal is ambiguous regarding how the year-long online PD would build communities of practice around EiS (e18).

**Reader's Score:** 13

**Selection Criteria - Quality of Project Personnel**

- 1. The Secretary considers the quality of the personnel who will carry out the proposed project. In determining the quality of project personnel, the Secretary considers the following factor:**

**Reader's Score:** 10

**Sub**

- 1. (1) The extent to which the applicant encourages applications for employment from persons who are members of groups that have traditionally been underrepresented based on race, color, national origin, gender, age, or disability. In addition, the Secretary considers the qualifications, including relevant training and experience, of key project personnel. (10 points)**

**Strengths:**

The proposal cites recent collaborative grant work with over 50% of the staff from underrepresented groups. The applicant's stated commitment to hire qualified personnel from underrepresented groups is well supported by past practice. The diversity and experiences the team brings to the project along with a significant contribution from a team member who works at a historically black university provides profound evidence the team will follow equitable

**Sub**

hiring practices (e27). The project director job description lists a Spanish-English bilingual candidate as a requirement for the position which fits the majority demographic of the ELs in the partner school who are predominantly Spanish speakers (e25). The project leadership team consists of accomplished academics that have been collaborating on professional grants for 15 years providing the proposal with consistency, expertise, and experience coordinating major grant funded projects. They bring a wealth of content and contextual expertise to the project. In addition to the team collaborating on the ExCELL project, the investigators have established relationships with and geographic proximity to the urban partner school district. The collective expertise includes early language, science education, multilingual learning instruction, and teacher professional learning.

**Weaknesses:**

No weaknesses were noted.

**Reader's Score: 10**

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

- 1. The Secretary considers 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:**

**Reader's Score: 9**

**Sub**

- 1. (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.**

**Strengths:**

The project leadership team consists of a principal investigator (PI) and two co-PIs each with prior experience leading multimillion dollar grant programs which provides a strong measure of confidence the scope and logistics of a large grant will be managed effectively (e43-e60). The proposal includes a goal table that identifies the milestone time markers and person (people) responsible for the activity demonstrating basic-level organization and knowledge of grant management (e30-e31). For example, the applicant insures that curriculum units are designed at the start of the project so that testing and revisions are completed two quarters before the full-implementation teacher training begins (e102-e103). The proposal included a precisely coordinated Gantt chart with quarterly intervals marking evaluation data collection, analysis, and reporting. The chart also specifies which partner organization is responsible for this work (e101-e103). The proposal presents a budget that maintains salaries based on institutional contract guidelines and small materials stipends for participating teachers and student families (e117).

**Weaknesses:**

The proposal does not include a personal teacher participation stipend except for a small amount in years 3 and 4. Teacher stipends are a means to recognize the value of the teacher professional. The small stipends will not contribute significantly to the engagement and implementation with fidelity of the teachers.

**Reader's Score: 9**

**Priority Questions**

## Competitive Preference Priority - Competitive Preference Priority 1

### 1. Competitive Preference Priority 1:

**Promoting Equity in Student Access to Educational Resources and Opportunities: Implementers and Partners (up to 3 points)**

Under this priority, an applicant must demonstrate how the project will be implemented by or in partnership with one or more of the following entities:

- (a) Community colleges (as defined in the NIA)
- (b) Historically Black colleges and universities (as defined in the NIA)
- (c) Tribal Colleges and Universities (as defined in the NIA)
- (d) Minority-serving institutions (as defined in the NIA)

#### **Strengths:**

The partner from North Carolina State University, an eligible entity from an HBCU, is the lead contributor to the teacher professional learning modules which is a significant contributing feature to the success of the program.

#### **Weaknesses:**

No weaknesses are noted.

**Reader's Score: 3**

## Competitive Preference Priority - Competitive Preference Priority 2

### 1. Competitive Preference Priority 2:

**Addressing the Impact of COVID-19 on Students, Educators, and Faculty: Community Asset-Mapping and Needs Assessment and Evidence-Based Instructional Approaches and Supports (up to 3 points).**

Projects that are designed to address the impacts of the COVID-19 pandemic, including impacts that extend beyond the duration of the pandemic itself, on the students most impacted by the pandemic, with a focus on underserved students and the educators who serve them through the following priority areas:

- (a) Conducting community asset-mapping and needs assessments that may include an assessment of the extent to which students, including subgroups of students, have become disengaged from learning, including students not participating in in-person or remote instruction, and specific strategies for reengaging and supporting students and their families; and
- (b) Using evidence-based instructional approaches and supports, such as professional development, coaching, ongoing support for educators, high-quality tutoring, expanded access to rigorous coursework and content across K-12, and expanded learning time to accelerate learning for students in ways that ensure all students have the opportunity to successfully meet challenging academic content standards without contributing to tracking or remedial courses.

#### **Strengths:**

- (a) The applicant proposed to conduct community asset-mapping to identify the needs the target population has regarding deficiencies in scientific inquiry practices as a result of the COVID19 pandemic (e12).
- (b) The proposal specifically targets early childhood education (Pre-K) based on the evidence-based educational research supporting enhanced student achievement due to early exposure to inquiry (e13). The project targets Pre-K students with

the intent to accelerate their learning and increase readiness for kindergarten when the Next Generation Science Standards initiate (e14). The program also recognizes that COVID influenced student learning, but also disrupted science pedagogy. The applicant includes high-quality STEM professional learning for Pre-K teachers as another means to advance science instruction in the post-COVID era and better equip a target teacher population that often is characterized by low science teaching self-efficacy (e18).

**Weaknesses:**

No weaknesses are noted.

**Reader's Score:** 3

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**Status:** Submitted  
**Last Updated:** 09/16/2024 03:59 PM

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

Status: Submitted

Last Updated: 10/02/2024 01:07 PM

## Technical Review Coversheet

**Applicant:** Teachers College, Columbia University (S411C240225)

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

	Points Possible	Points Scored
<b>Questions</b>		
<b>Selection Criteria</b>		
<b>Quality of the Project Evaluation</b>		
1. Project Evaluation	30	27
<b>Sub Total</b>	30	27
<b>Total</b>	30	27



# Technical Review Form

Panel #2 - Early Tier 2 - 3: 84.411C

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

Applicant: Teachers College, Columbia University (S411C240225)

## 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:

Reader's Score: 27

#### Sub

1. (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). (20 points)

#### Strengths:

The applicant's plan is to retain an independent research team to conduct a blocked cluster randomized control trial of a projected 80 teachers and 800 students that, if well implemented, will meet What Works Clearinghouse without reservations (e31). To account for the attrition of study participants, the participants will receive books and \$600 stipends (e32).

#### Weaknesses:

Research question 1(RQ1) seeks to "examine the impact of the project on students' learning of science knowledge and vocabulary, compared to business-as-usual," yet does not provide a definition of "business as usual."

Reader's Score: 18

2. (2) The extent to which the methods of evaluation will provide performance feedback and permit periodic assessment of progress toward achieving intended outcomes. (5 points)

#### Strengths:

The evaluation team will interview teachers at the end of their participation to better understand the strengths and weaknesses of the project overall, which will permit performance feedback and periodic assessment of progress toward intended outcomes (e35). Additionally, the analysis will provide evidence of which professional learning activities are implemented with each teacher and the variations in classroom implementation across teachers (e35).

#### Weaknesses:

The applicant does not provide details as to whom the Leadership Team (LT) that the evaluators will share progress with, is comprised of.

Sub

Reader's Score: 4

3. (3) 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. (5 points)

**Strengths:**

The proposed evaluation details the key components, mediators, and outcomes within the logic model, including that teachers will use lesson plans and books/materials, complete online Professional Development (PD) modules, and receive coaching to enhance their science content knowledge and science teaching self-efficacy (e36). The evaluation team will identify quantifiable indicators for the key activities in the logic model, such as teacher participation in PD modules, and determine thresholds for acceptable implementation (e36).

**Weaknesses:**

None noted.

Reader's Score: 5

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**Status:** Submitted  
**Last Updated:** 10/02/2024 01:07 PM

Status: Submitted

Last Updated: 10/07/2024 04:35 PM

## Technical Review Coversheet

**Applicant:** Teachers College, Columbia University (S411C240225)

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

	Points Possible	Points Scored
<b>Questions</b>		
<b>Selection Criteria</b>		
<b>Quality of the Project Evaluation</b>		
1. Project Evaluation	30	27
<b>Sub Total</b>	30	27
<b>Total</b>	30	27

# Technical Review Form

Panel #2 - Early Tier 2 - 3: 84.411C

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

Applicant: Teachers College, Columbia University (S411C240225)

## 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:

Reader's Score: 27

#### Sub

1. (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). (20 points)

#### Strengths:

The evaluation of the Exceptional Coaching for Early Language and Literacy (ExCELL) in Science (EiS) program by the American Institutes for Research (AIR) uses a blocked cluster randomized controlled trial (RCT) of 80 teachers and 800 teachers design, enhancing its reliability by ensuring treatment and control groups are comparable. This approach allows for clear conclusions about the program's effects on both student learning and teacher practices. The evaluation addresses specific outcomes for students and teachers, providing a comprehensive view of the program's impact.

Valid and reliable assessment tools align with What Works Clearinghouse (WWC) without reservations standards, boosting the credibility of the findings (example - ECLS-K Science Measure, Peabody Picture Vocabulary Test, 5th Edition (PPVT-5), Science Teaching and Environment Rating Scale (STERS)). Random assignment allows a connecting conclusion about the program's effectiveness. Measures are in place to ensure consistent delivery of the program, helping to identify factors that influence effectiveness.

#### Weaknesses:

Randomizing teachers within the same school could lead to information sharing between treatment and control groups, potentially affecting outcomes for the control group – potential cross contamination of participants. If participants drop out, especially those in the control group, it may give bias results.

Reader's Score: 18

2. (2) The extent to which the methods of evaluation will provide performance feedback and permit periodic assessment of progress toward achieving intended outcomes. (5 points)

#### Strengths:

The Leadership Team (LT) collaborates with the AIR team to provide ongoing feedback and adjust based on evaluation insights. By collecting data on teachers' completion of professional development (PD) modules, coaching hours, and implementation ratings, the evaluation gains a comprehensive view of teacher engagement and program

**Sub**

fidelity. Clear benchmarks, such as completing online modules and participating in coaching, ensure consistent implementation. Analyzing diverse data sources helps identify trends and patterns among teachers. Feedback on teacher satisfaction and perceived challenges informs areas that need support, making the program more responsive to participants. This continuous feedback loop allows for ongoing improvements to the program.

**Weaknesses:**

To achieve fidelity, project participants must complete all online modules, participate in 90% of coaching cycles, and implement 85% of instructional strategies. The plan indicates that if these percentages are not met, the data gathered will still be used to advance to the next step.

The sample size of teachers is small, with each cohort consisting of only 12 teachers. If teachers in Cohort 2 drop out, or if Cohort 2 does not achieve the same number of teachers and/or students participating, there will be implications for the project.

The leadership team (LT) will share information, but it is unclear who constitutes this team and that will have an impact. Mostly because it is not specified where the data shared by the LT goes or who is responsible for determining data-related changes during the implementation phases.

**Reader's Score: 4**

- 3. (3) 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. (5 points)

**Strengths:**

The evaluation plan clearly outlines the key components, mediators, and outcomes of the EiS intervention based on its logic model. Teachers will utilize lesson plans, complete online professional development (PD) modules, and receive coaching, which will enhance their science knowledge, self-efficacy, and teaching strategies. The evaluation will explore how teachers' practices affect student outcomes and will establish measurable indicators and thresholds for effective implementation. They show that they are set up to measure the threshold for effective implementation.

**Weaknesses:**

No weakness noted.

**Reader's Score: 5**

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**Status:** Submitted  
**Last Updated:** 10/07/2024 04:35 PM