

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

Status: Submitted

Last Updated: 06/14/2019 12:58 AM

Technical Review Coversheet

Applicant: The Regents of the University of California, Irvine (U411C190092)

Reader #1: *****

	Points Possible	Points Scored
Questions		
Selection Criteria		
Significance		
1. Significance	25	25
Quality of Project Design		
1. Project Design	35	33
Adequacy of Resources/Quality of Management Plan		
1. Resources/Management Plan	20	19
Sub Total	80	77
Priority Questions		
Competitive Preference Priority		
Competitive Preference Priority		
1. Absolute Priority 3	5	5
Sub Total	5	5
Total	85	82

Technical Review Form

Panel #17 - EIR Early Phase Tier 1 - 17: 84.411C

Reader #1: *****

Applicant: The Regents of the University of California, Irvine (U411C190092)

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:

Comment - UC Irvine ePage

The literature review is comprehensive, including relevant articles from recent and reputable peer-reviewed journals. 24-28

The project utilizes an existing Computer Science platform in Scratch. This offers an opportunity to build upon a widely used and popular program. 17

The proposal looks to integrate English Language Arts standards more prominently. This attempt to engage an interdisciplinary design provides additional contribution to the educational research field. 17

The students will be from primary grade level 4. This offers an earlier grade-level intervention and a focused age range for study. 21

The plan builds on recent and promising research on curriculum supports. The project leaders recognize significant work within the field and present a design that builds on this work. 26-30

The plan goes beyond one-off or random experiences and seeks a long-term intervention strategy. The research base clearly promotes long-term, sustained interventions with both students and adult learners. 31

The project team specifies how they plan to disseminate findings through conferences and journal publications. 37,39

Weaknesses:

None noted.

Reader's Score: 25

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 provides details on various Institutional Review Board issues and procedures. It is important to carefully consider any research conducted with human subjects and particularly with children. 16

Primary goal of the work is to integrate disciplinary language in a variety of ways. The concept of utilizing disciplinary language across subject areas that includes CS is innovative. 27

The proposal provides a sample activity with standards, rubric, and content details. The level of specificity in the design is noteworthy. 28

The computer science language functions table demonstrates how integrated discourse can be scaffolded. This scaffolding is important when working with English Language Learners and with students experiencing CS learning for the first time. 29

The evaluation instruments are validated. The proposal identifies accepted measures and survey instruments. 44

Project collects written consent from teachers. It is equally important to collect consent for privacy and to advocate for the professional work of the teacher participants. 17

The proposal utilizes a design-based research approach. DBR is an appropriate model for educational research settings. 38

Weaknesses:

The plan does not clearly indicate how the program deals with low instructional time. The concern would be that any loss of ELA instructional time would be a difficult adjustment for primary grade teachers. 26

The inclusion of visual (multiple) representations is stated but not clearly detailed. The use of multiple representations is encouraged but the details lag in the overall design plan. 31

The plan does not elaborate extensively on the whole class dialogue aspects of the project. The outcomes focus mainly on individual student learning and do not fully consider the whole class thinking that is crucial to a primary grade learning environment. 32

The teacher observation protocol is not defined. It is preferred to have identified a validated observation protocol in the design plan. 35

The leader of the teacher professional learning assumes a tremendous amount of the content responsibilities. The design plan is detailed and comprehensive, placing a significant burden on the lead personnel. 41

The teachers do not have a chance to pilot instruction before working in regular classrooms. There is evidence in the research that teachers need to see evidence of success before a full willingness to implement in their regular classroom setting. 249

The plan does not detail how focal group teachers will be selected. The proposal should specify if the participants will join because of willingness or a readiness to engage the pedagogical changes proposed. 17

The plan does not provide potential interview questions/protocol for the focal group. The potential interview questions would be informative and help define the project outcomes. 17

Reader's Score: 33

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 plan provides 1 year for research and development before fully engaging students. The deliberate first year of action should assist the project leaders as they refine the design and prepare materials. 34

The management plan is extremely detailed. The level of organization and detail provides a high level of confidence that milestones and outcomes will be achievable. 253-289

Collaborating sites and project partners are well-established and experienced. The extensive expertise among leaders and collaborators should provide ample resource to help make the project successful. 19

The project team has identified a known evaluator group. The identification of an outside evaluator builds confidence in the potential project conclusions. 35

The lead organizations have a strong history of grant funding. While no specific funding is indicated, the likelihood of future funding is high. 42

Weaknesses:

The evaluation schedule is aggressive. The number of observations and depth of analysis is daunting and may pose issues with timeline maintenance. 47

No tentative plan is included for specific funding sources after the grant period is completed. Naming likely sources or strategies would raise confidence in the long-term viability of the program. 41-42

Reader's Score: 19

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:

There is an emphasis on under-represented minorities (Hispanics) in CS. The absolute priority specifies target populations that are underrepresented in CS and the design attends to this consideration. 18

The program works with primary grade level CS. The research base in primary grade CS is thin and this target population is a significant contribution. 21

Weaknesses:

None noted.

Reader's Score: 5

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Technical Review Coversheet

Applicant: The Regents of the University of California, Irvine (U411C190092)

Reader #2: *****

	Points Possible	Points Scored
Questions		
Selection Criteria		
Significance		
1. Significance	25	25
Quality of Project Design		
1. Project Design	35	33
Adequacy of Resources/Quality of Management Plan		
1. Resources/Management Plan	20	20
Sub Total	80	78
Priority Questions		
Competitive Preference Priority		
Competitive Preference Priority		
1. Absolute Priority 3	5	5
Sub Total	5	5
Total	85	83

Technical Review Form

Panel #17 - EIR Early Phase Tier 1 - 17: 84.411C

Reader #2: *****

Applicant: The Regents of the University of California, Irvine (U411C190092)

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:

Applicant identifies the educational problem – current trend in Computer Science degrees will lead to a shortage of 50,000 graduates to fill CS job openings. UC Irvine’s project seeks to broaden the CS pipeline, with attention to serve underrepresented students in CS education, especially Hispanics who are a major of K-12 students in CA. The project will target barriers to CS education for Hispanics, and proposes a clear research question – can their intervention, integrated within ELA instruction result in gains in computational thinking and CS identity.

Applicant outlines a promising strategy to develop an existing curriculum and will combine three innovations to amplify potential to impact Hispanics, English learners, and other high-need groups.

Table 1 details sample learning goals, demonstrating the integration of California Science Teacher Association, English Language Development and English Language Arts learning standards. The strategies (learning scaffolding and strategy instruction, linguistic scaffolding, and ELA integration) build on studies that show these strategies have been effective.

Weaknesses:

None noted.

Reader's Score: 25

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:

Applicant clearly describes the Research & Design and evaluation stages. They have identified the school districts, and have a plan to implement outcome measures in a control school to validate them. Goals, objectives, and outcomes are detailed in Table 4. Each goal directly aligns with outcomes and measures.

Conceptual framework is based on Universal Design for Learning. Using Universal Design Learning they will incorporate methods to ensure different ways to learn, express and engage in the learning environment at the start, to address particular needs of Hispanic ELL's.

Feedback and improvement procedures will involve PDSA cycles (Grunow, 2015), repeating throughout R&D stage to ensure continuous improvement until end of project. In Evaluation year will look at RCT results and implement changes in curriculum and PD. Applicant also proposes a dissemination plan to obtain feedback, through presentations to educators, scholars, and policy makers.

Weaknesses:

Although Universal Design Learning is a well-known conceptual framework, the applicant does not describe in this section how UDL is proven framework that makes it suitable for this project.

Reader's Score: 33

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:

Applicant provides detailed timeline with tasks (curriculum, PD, measures, analysis, dissemination, and partnership mgmt.) for each year of project.

Table 6 identifies personnel at the lead institution as well as the implementation partner school districts and external evaluators.

Applicant indicates strong commitment to solicit funding before end of project. PI has history of obtaining funding for research projects.

Weaknesses:

None noted.

Reader's Score: 20

Priority Questions

Competitive Preference Priority - Competitive Preference Priority

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

Applicant provides a well-defined plan to expand Hispanic students' participation in computer science coursework through ELA and STEM integration. The plan is designed to improve students' academic performance in ELA and math (p. e37).

Weaknesses:

None noted.

Reader's Score: 5

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Technical Review Coversheet

Applicant: The Regents of the University of California, Irvine (U411C190092)

Reader #3: *****

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

Technical Review Form

Panel #17 - EIR Early Phase Tier 1 - 17: 84.411C

Reader #3: *****

Applicant: The Regents of the University of California, Irvine (U411C190092)

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 methodically uses research to develop the argument that there is a diversity problem in computer science, especially when it comes to students of color and students from low socioeconomic backgrounds (p. e24 and p. e25).

Applicant utilizes a high-quality existing resource, Harvard's Creative Computing curriculum, as the starting point of their proposed project, as opposed to building something duplicative. This curriculum is well-suited to 4th grade students, which are the target audience of the proposed project. Additionally, it should be commended that the applicant has chosen to build off of a curriculum that has a Creative Commons license that allows for anyone to modify the content.

Applicant's proposed project focuses on resources for an elementary grade, which is an area of need in CS education (p. e21). In addition to the elementary focus, specifically addressing the needs of English language learners will make this project have a high national significance.

Weaknesses:

None

Reader's Score: 25

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:

Goals, objectives, and outcomes are clearly identified and measurable (p. e36 and e37).

Partner districts have been identified (p. e35). These districts are spread over 2 geographic regions in California and one is in Chicago.

Applicant proposes iterating through the use of PDSA cycles. The applicant provides specific detail on how the PDSA cycles will be used to improve the content being created (p. e38).

The Universal Design for Learning (UDL) framework makes sense to use with this type of project and is especially appropriate for creating content for 4th grade students (p. e37). UDL's influence can be seen in the sample learning goals provided on page e28.

Weaknesses:

None

Reader's Score: 35

Selection Criteria - Adequacy of Resources/Quality of Management Plan

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- (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:

Key personnel have been identified and are sufficiently qualified. The PI and Co-PIs have lengthy careers in academia and have worked on projects related to K-12 education.

Applicant provides a well-developed timeline for the proposed project (p. e40). This timeline details what activities will happen in each 3-month block of the project and the following Personnel table details which personnel are responsible for the specific aspects of the proposed project (p. e41). The high level of clear detail provided in the project proposal yields a confidence that this applicant can complete the proposed project on time and within budget.

Applicant provides specific details about soliciting additional funding toward the end of the grant in order to keep the project moving forward (e41). Several team members have track records to successfully securing long-term funded research grants.

Weaknesses:

None

Reader's Score: 20

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:

This project clearly focuses on expanding access and participation in rigorous computer science to underrepresented students. In this case, the applicant is focusing on 4th grade Hispanic students. The rigor from this program draws from using the Creative Computing curriculum from Harvard as a base on which to build their proposed interventions.

Weaknesses:

None

Reader's Score: 5

Status: Submitted
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