

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

Status: Submitted

Last Updated: 06/18/2019 08:03 PM

## Technical Review Coversheet

Applicant: Louisiana State University (U411C190287)

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

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

# Technical Review Form

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

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

Applicant: Louisiana State University (U411C190287)

## 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 local and national significance of this project is evident. It highlights the importance of functional programming languages and mathematical competence through full engagement with the fundamental concepts of computer science. The presented research also indicates and supports the challenges of adequate professional development opportunities and the need for inquiry-based, collaborative PD using a model grounded in social learning. Teachers who are not themselves highly knowledgeable about computer science will be more comfortable and prepared to integrate these concepts in PBL activities. The increased learning transfer will allow students with diverse interests, and interests outside of software programming to understand fundamental principles. The proposed project offers an accelerated strategy for the delivery of professional development with smaller, targeted core concepts in a mostly online format for the first phases of the implementation. Novice teachers will find this alternative approach most valuable.

#### Weaknesses:

None. The operational strategies are elaborated further on in support of the significance.

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:**

One of the goals involves training two teachers in courses from Pre-Engineering Pathway including and Introduction to Engineering Design, and the recruitment of up to 50% of students into the Pre-Engineering Pathway program. This strategic plan will likely increase students' college and career readiness as well as strengthen computational thinking. The objectives and outcomes are clear and measurable (e35) with a detailed timeline for implementation across all five years of the project (e39). Impact studies at each phase will inform the evaluation of outcomes. The combination of two frameworks that complement each other (Cognitive Model and Pedagogical Model) fit well with the goals to increase both teacher capacity and student learning. Reducing the cognitive load through application of computer coding, to produce more explicit thought processes, supports abstract thinking. Multiple data sources and clear research questions are provided within the implementation of the project and includes a plan for the development of a fidelity protocol (rubric-based).

**Weaknesses:**

None noted for this area.

**Reader's Score: 35**

**Selection Criteria - Adequacy of Resources/Quality of Management Plan**

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

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

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

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

**Strengths:**

The management plan is thorough and include sufficient details of resource allocation for each milestone. The organizers of the plan have outlined enough information to ensure that the project remains fiscally sound and on target with budget goals. Collectively the key project personnel have a level of experience that will support the goals well. The roles are well matched. The budget narrative (e102) is thorough and deliverables are outlined. Overall, there is great potential for continuation of this project and support from key partnerships.

**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:**

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

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

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

**Strengths:**

The presented components meet this priority at a high level for computer science focus.

**Weaknesses:**

None noted in this category.

**Reader's Score: 5**

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**Last Updated:** 06/18/2019 08:03 PM

Status: Submitted

Last Updated: 06/13/2019 08:29 PM

## Technical Review Coversheet

Applicant: Louisiana State University (U411C190287)

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

	Points Possible	Points Scored
<b>Questions</b>		
<b>Selection Criteria</b>		
<b>Significance</b>		
1. Significance	25	23
<b>Quality of Project Design</b>		
1. Project Design	35	34
<b>Adequacy of Resources/Quality of Management Plan</b>		
1. Resources/Management Plan	20	19
<b>Sub Total</b>	<b>80</b>	<b>76</b>
<b>Priority Questions</b>		
<b>Competitive Preference Priority</b>		
<b>Competitive Preference Priority</b>		
1. Absolute Priority 3	5	5
<b>Sub Total</b>	<b>5</b>	<b>5</b>
<b>Total</b>	<b>85</b>	<b>81</b>

# Technical Review Form

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

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

Applicant: Louisiana State University (U411C190287)

## Questions

### Selection Criteria - Significance

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

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

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

#### Strengths:

The project is focused on improving student achievement in mathematics through computer science. This is a good approach since it has been difficult to find the time in the core curriculum for engaging students in computer science teaching and learning.

The project addresses curriculum redesign of courses to better align to mathematics standards (page e29) and to implement a research-based problem solving approach that integrates programming.

The proposal also includes a plan for sustained professional development to support the implementation of the new curriculum and complementing existing in-service and pre-service teacher training (page e29).

The choice to using CodeWorld is positive since it allows students to create complex models with few commands and taking advantage of common mathematical notation typically used in algebra and geometry.

#### Weaknesses:

The proposal would benefit for more information on how the training will be made available online for rural schools and ensure that the quality of the implementation would be similar to the face-to-face professional development.

Reader's Score: 23

### Selection Criteria - Quality of Project Design

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

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

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

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

**Strengths:**

The application includes a comprehensive conceptual design showing key components, outputs and intermediate and long-term outcomes through a clear logic model (p. e84).

The proposal includes detailed goals, objectives, and outcomes that show how different areas of the project would be implemented (page e34). This information is complemented by the clear logic model (page e84) and a project timeline (page e39) with specific milestones, and intermediate and long-term goals.

The project includes plans to gather formative feedback from school admin, lesson plans, and academic outcomes to improve development of curriculum and instructional resources as well as the implementation of the new curriculum. This includes a plan for monitoring student achievement to address curriculum areas that are hard to teach and difficult to understand.

**Weaknesses:**

Logic model includes teacher retention outcomes (page e84). However, there are no goals that support this area. Additionally, there are not sufficient details on how teacher turnover and retention would be affect other areas of the project such as resource development or teacher professional development.

**Reader's Score: 34**

**Selection Criteria - Adequacy of Resources/Quality of Management Plan**

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

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

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

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

**Strengths:**

The key personnel has extensive academic experience and expertise that greatly supports the successful implementation of this project. The project takes advantage of this human capital by identifying roles and responsibilities that are well matched each individual's strengths. (pp. e40-41).

The project offers a detailed management plan and detailed budget (page e102) that is adequate for the project scope of the project.

The proposal includes an excellent sustainability plan for additional schools to participate of the project with LaDoE CTE/CDF funding (e41) that is provided to fund similar projects.



**Weaknesses:**

It would be helpful to have performance metrics for all program objectives (e116-e120). This would be helpful in understanding the full scope of the project implementation.

**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:**

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

**Weaknesses:**

n/a

**Reader's Score:** 5

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Status: Submitted

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## Technical Review Coversheet

Applicant: Louisiana State University (U411C190287)

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

	Points Possible	Points Scored
<b>Questions</b>		
<b>Selection Criteria</b>		
<b>Significance</b>		
1. Significance	25	25
<b>Quality of Project Design</b>		
1. Project Design	35	34
<b>Adequacy of Resources/Quality of Management Plan</b>		
1. Resources/Management Plan	20	18
<b>Sub Total</b>	<b>80</b>	<b>77</b>
<b>Priority Questions</b>		
<b>Competitive Preference Priority</b>		
<b>Competitive Preference Priority</b>		
1. Absolute Priority 3	5	5
<b>Sub Total</b>	<b>5</b>	<b>5</b>
<b>Total</b>	<b>85</b>	<b>82</b>

# Technical Review Form

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

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

Applicant: Louisiana State University (U411C190287)

## 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 proposed project grows from a program currently used in 15 ninth and 10th grade classrooms in Louisiana (p. e23), so lessons learned through this project would continue to build upon what has already been learned by integrating the teaching of mathematics, programming and problem solving with the hope of helping students see that that they can be both creative and proficient in STEM.

The Applicant's proposed project is strong because it focuses on both students and teachers, rather than one or the other (p. e23). It does a good job in sharing research and explaining its approach to professional development for teachers in such a way that would maintain student engagement with knowledgeable and competent teachers (p. e28).

The proposed Introduction to Computational Thinking (ICT) approach is unique and based on research that moves away from teaching computer science (CS) by learning a CS language first but rather by focusing on elements of programming that would be useful to the learner whether they pursue CS as a career or not (p. e25)

The Applicant provides a supporting explanation regarding the value of exploring ways to move parts of its professional development for teachers from an existing five-day, face-to-face summer institute to online. Doing so makes it more accessible for remote, rural districts (p. e29).

The proposed project would also include the development of two undergraduate college courses for students considering teaching careers in CS (p. e29). This would prepare teachers in the new ICT teaching approach in advance of their entering the field.

### Weaknesses:

No weaknesses identified.

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 Applicant includes a clear logic model that presents its conceptual design in an accessible way, showing key components, outputs and intermediate and long-term outcomes (p. e84).

The Applicant does a great job of clearly stating its goals and objectives for the project. For example, "To train teachers to implement a CS curriculum that integrates learning computer programming and learning math while improving student outcomes..."

The Applicant does a good job describing its process for gathering information and feedback and ensuring continuing improvement as the project progresses (p. e37), including interviews with school administrators, reviewing intervention incidents around lesson plans, planned data analysis procedures, and student grades, etc. Student grades particularly would be monitored to note where students are not making expected progress and consider in lessons are too difficult or if there are gaps in the teaching progression or the teaching is ineffective (p. e38).

There would be opportunity for quick turn around to make modifications because the plan calls for researchers to meet every two weeks to review assessments and progress review (p. e38).

#### Weaknesses:

While the Logic Model includes an outcome for increased teacher retention, there is no discussion of that outcome in the proposal's narrative. Such discussion would show that strategies are already being considered in the project's overall plan.

There is no reference to how trained teachers would be retained. This would be important to have a plan for ways to keep trained teachers after resources have been expended to help them become skilled in teaching STEM.

Reader's Score: 34

### 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:**

There is a management plan which shows clear timelines for activities and a separate chart showing goals, objectives and outcomes.

The proposal includes resumes of key project personnel. They are highly qualified and have previous experience working on STEM projects with the Applicant (p. e40).

The plan includes identification of roles and responsibilities for key personnel matched to their strengths. (pp. e40-41).

#### **Weaknesses:**

It is unclear if the Applicant is referring to sustainability of the whole project when it states "We will try to answer how sustainable the design is after the project ends," (p. e38). It would be helpful to note if exploratory avenues have already been identified or considered, e.g., pursuing foundation grants.

It is unclear if milestones were presented.

**Reader's Score: 18**

#### **Priority Questions**

##### **Competitive Preference Priority - Competitive Preference Priority**

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

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**Note: Projects addressing this priority must be administered in a manner consistent with**

**nondiscrimination requirements contained in the U.S. Constitution and Federal civil rights laws.**

**Strengths:**

The Applicant clearly discusses its priority focus on CS throughout the proposal.

The Applicant's approach to focusing on CS during the school day is strong and balances it with teaching mathematics.

The Applicant does a good job explaining its rationale for focusing on CS and plan to expand the curriculum it uses to more high schools (with 85 percent of underrepresented minorities and 75 percent from economically disadvantaged families) and rural districts in the state (p. e28).

**Weaknesses:**

No weaknesses identified.

**Reader's Score: 5**

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**Status:** Submitted  
**Last Updated:** 06/14/2019 04:12 PM