

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

Status: Submitted

Last Updated: 06/14/2019 02:50 PM

Technical Review Coversheet

Applicant: Lumity (U411C190285)

Reader #2: *****

	Points Possible	Points Scored
Questions		
Selection Criteria		
Significance		
1. Significance	25	24
Quality of Project Design		
1. Project Design	35	30
Adequacy of Resources/Quality of Management Plan		
1. Resources/Management Plan	20	19
Sub Total	80	73
Priority Questions		
Competitive Preference Priority		
Competitive Preference Priority		
1. Absolute Priority 3	5	4
Sub Total	5	4
Total	85	77

Technical Review Form

Panel #22 - EIR Early Phase Tier 1 - 25: 84.411C

Reader #2: *****

Applicant: Lumity (U411C190285)

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:

Lumity proposes to conduct a study of its model that has developed over its collaborations with school partners. In this case, they provide a collection of strategies that contextualize STEM careers along with the development of Social/Emotional Learning skills that may be best associated with career success (p 2-3). The Model incorporates a number of proven components or strategies as evidenced by What Works Clearinghouse (p 12). With its clearly articulated challenges, focused population for participation, and well-defined strategies, such as experiential learning strategies and one-day challenges (p 6-10), offers an opportunity to increase knowledge about the impact of these approaches within the defined context. Further the data collected may also examine which strategies were more impactful than others and how they interact with one another.

Weaknesses:

Ultimately the collection of strategies used are not necessarily novel, nor is their use in combination particularly rare.

Reader's Score: 24

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:

A thorough collection of rubrics and activities assist in understanding how the project unfolds across cohorts and how qualitative aspects are examined (Appendix p e85-e100). Goals are consistent and well-thought out for the broader impacts of the project, including the progressions in teacher capacity development and the depth of student engagement with careers (p 16-17). The project incorporates a wide variety of strategies (p 6-10) but retains cohesiveness through its well-defined logic model and approach to STEM careers (p 12). The table for student experiences is particularly helpful in envisioning the project from the eyes of student participants and in understanding its potential for impact on students at the individual level (p 16). The project provides clear initial data related to its work in partnership schools (p 5) and seeks to establish baseline data (p 11), making it easier to ultimately determine the impacts of the projects and demonstrating their ability to measure the intended outcomes.

The Model is built on a collection of evidence-based strategies, and the proposed project seeks to better understand their interactions and impacts so to develop a more conceptual framework (p 2).

A detailed explanation of feedback for continuous improvement is provided that includes the roles of the Advisory Committee and School Working Groups in providing and responding to feedback (p 13-14). The description of the evaluator as a "critical friend" is particularly appropriate to the way that the feedback role is characterized, and the use of existing meeting structures ensures that conversations will take place (p 13).

Weaknesses:

The proposal speaks to Social and Emotional Learning (SEL) as characteristics of participating students that are to be improved. However, the measures for these include truancy rates and disciplinary referrals (p 11). Because of the contextual factors faced by participating students, these rates may not be entirely accurate ways to capture these components, either because of truancy resulting from home factors or from the increased disciplinary rates that often emerge from cultural disconnects between teacher and administrator expectations and students' home cultures.

Additionally, the project does not thoroughly address potential academic barriers to student success, such as achievement in mathematics and science, which may be important in identifying, understanding, and preempting challenges that students will experience. The underlying assumption appears to be that these activities will result in greater student achievement, but it is not entirely clear.

Reader's Score: **30**

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 project staff have a history of collaboration with the three target schools (p 5), and a list of current active partners helps to envision the kinds of impacts and levels of interaction to be accomplished (p e114). Staffing appears to cover all aspects of the project, and the project timeline is very clearly detailed and organized, including planning and implementation phases followed by sustainability (p 18-19; Appendix).

Sustainability appears to be built into the project through its model, which includes a gradual release of control (p 17) and

the development of course materials that are available to teachers.

Weaknesses:

Part of the sustainability model is fee-based, prompting a question about how well the work of the project will be sustained or to the benefit of what groups should the project not find a market or connect well with the targeted population.

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 incorporates a variety of engaging activities and targets diverse learners in selected schools. Measures, including rubrics of activities and engagement, provide data that can be used to articulate impact.

Weaknesses:

The project is largely STEM focused with little specificity to the specific CS components. There are certainly CS focused partners included, but a more specific description of targeted CS outcomes or components would be helpful.

Reader's Score: 4

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Technical Review Coversheet

Applicant: Lumity (U411C190285)

Reader #1: *****

	Points Possible	Points Scored
Questions		
Selection Criteria		
Significance		
1. Significance	25	25
Quality of Project Design		
1. Project Design	35	32
Adequacy of Resources/Quality of Management Plan		
1. Resources/Management Plan	20	19
Sub Total	80	76
Priority Questions		
Competitive Preference Priority		
Competitive Preference Priority		
1. Absolute Priority 3	5	5
Sub Total	5	5
Total	85	81

Technical Review Form

Panel #22 - EIR Early Phase Tier 1 - 25: 84.411C

Reader #1: *****

Applicant: Lumity (U411C190285)

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:

1. Lumity, in partnership with the Chicago Public Schools (CPS) and more than 25 large, diverse companies, such as Accenture and Google, is engaging high-need teens with transformational experiences to prepare them for STEM careers. The applicant has provided a robust explanation for the need of the project and it will benefit particularly low-income students and/or minority students. The STEM Career Prep Logic Model or the MODEL will involve 650 students in a control group. Its impact on students' academic, social-emotional, and identity/attitude outcomes on STEM and STEM careers isolating the components appears poised to have a significant impact.

2. The project strategies build on, test, refine, and codify the emerging STEM learning strategies that have been successful in pilot schools: a) Teaching students career skills and SEL competencies through in-class, interactive lessons; b) Engaging students in developing and applying STEM, career, and SEL skills in Real World Projects and One-Day Challenges with STEM corporate volunteers to design solutions to real-world problems; c) Connecting students with area business leaders through STEM Talks so students hear and see how people from similar backgrounds are successful in STEM; d) Exposing students to STEM careers via Corporate Site Visits; and e) Reinforcing STEM career readiness by providing 4-week summer enrichment courses following grades 9 & 10. These approaches are strong and will help in receiving the intended outcome of this proposal. Therefore, this proposal is using tested and successful strategies to enhance the learning potential of students mainly from underrepresented groups in computer science.

Weaknesses:

1. None noted.

2. 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:

1. The applicant seeks to impact participating students in three key areas: student academic success, student development of emotional and social skills, and student access to STEM careers. The goals and objectives are very clear and measurable. For example, the Model will ultimately result in at least 25% of participating students holding a position in a STEM career and it will be measured by collecting data via surveys of alumni about their employment status, job title, industry, and wages.
2. The conceptual framework of this proposal is based on a robust logic model. This logic model is self-explanatory and clearly demonstrates activities, outputs, and outcomes. According to the logic model, it will input resources such as STEM professionals, corporate partners, the enhanced curriculum for STEM careers, and real-world problem curriculum. These resources will focus on different activities such as STEM Talks, curriculum implementation and career site visits by partners.
3. The applicant has multiple ways of collecting feedback from stakeholders. For example, they will receive feedback from the advisory committee, school working group, day-to-day improvement, staff, and feedback about curriculum effectiveness by administering annual surveys.

Weaknesses:

1. On page e38 more information needed to explain the outputs and outcome.
2. None noted.
3. None noted.

Reader's Score: 32

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:

1. A strong management plan has been proposed by the PI. The objectives of the proposal are within the budget, the timeline is comprehensive and milestones have been provided for the proposal. For example, table 4 explains the “model roll out” plan. This table clearly defines the yearly progression of students and activities such as a summer enrichment program with a definitive timeline.
2. Lumity Executive Director Kara Kennedy will lead the proposal efforts. There will be an advisory committee, social working groups, and many corporate partners such as Google. The qualification and skills of the project personnel are provided in detail.
3. After the award, Lumity will take critical steps to ensure sustainability and continued support. First, they will continue to build out self-sustaining revenue streams such as writing more grants to federal agencies and assuring money from the private sector.

Weaknesses:

1. None noted.
2. None noted
3. It was not clear if there was guaranteed support beyond the funding period to sustain the activities of this proposal.

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:

This proposal will pilot and test “The Model” in three Chicago schools engaging 650 high-need students (83% of whom receive free/reduced lunch, and 76% of color including Latinx, up to 50% female and/or students struggling academically) in two cohorts throughout their 4 years of high school. Therefore, the applicant has designed strategies that will enhance student achievement or other educational outcomes in computer science.

Weaknesses:

There was no weakness noted.

Reader's Score: **5**

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Technical Review Coversheet

Applicant: Lumity (U411C190285)

Reader #3: *****

	Points Possible	Points Scored
Questions		
Selection Criteria		
Significance		
1. Significance	25	22
Quality of Project Design		
1. Project Design	35	30
Adequacy of Resources/Quality of Management Plan		
1. Resources/Management Plan	20	18
Sub Total	80	70
Priority Questions		
Competitive Preference Priority		
Competitive Preference Priority		
1. Absolute Priority 3	5	5
Sub Total	5	5
Total	85	75

Technical Review Form

Panel #22 - EIR Early Phase Tier 1 - 25: 84.411C

Reader #3: *****

Applicant: Lumity (U411C190285)

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:

(1) The application proposes The STEM Career Prep Logic Model (The Model) to address barriers related to student access to computer science. The proposal acknowledges specific barriers such as “Gender Bias, Supports and activities for English Language Learners, and Attending Real World Challenge Competitions” (Page e15). The application incorporates solutions to these barriers within the proposal that uniquely focuses on strategies to engage and “recruit women, particularly women of color,” address career skills relevant to English Language Learners, and appropriately budgets a portion of requested grant money to provide opportunities for students to have access to all out of school events (Page e15). The applicant demonstrates a comprehensive awareness to student barriers and provides equitable solutions to each problem.

(2) The applicant seeks to provide STEM Career Readiness through the development of social-emotional skills (SEL) such as “complex problem-solving skills, critical thinking, creativity... or ‘soft skills’” (page e25). The applicant intentionally builds student experiences to combine computer science/computational thinking and professional “soft” skills through career site visits and real-world challenge competitions (Page 32). Significance is added by the intentional design of the career visits to scaffold over time, allowing 9th and 10th grades a broad overview of careers including tours and an interactive project (Page e32). The applicant provides an in-depth career visit model for 11th and 12th grades to participate in internships and job shadowing (Page e32). These different experiences are age appropriate and developmentally relevant to students and increase as they approach college or career decisions.

(3) The applicant provides an opportunity for national significance through the scalability of their model. Specifically, the applicant states that “partner high schools mirror high-need, large and medium-sized urban districts across the nation, making findings from The Model significant to solving this common challenge as scale” (Page e26). Additionally, the applicant incorporates a plan to use an external evaluator to analyze the effects of a full-scale model (Page e27). The commitment to providing opportunities to enhance access to all students is shown through their considerations for project dissemination at a national scale and intentional incorporation of analysis to ensure universal success and application.

(4) The applicant provides a plan to “adopt and adapt WWC validated strategies” (Page e23) in order to connect school work to college and careers, surround students with mentors and role models, engaging classroom environments, and connect math and science to careers in ways that promote diversity (Page e23). The inclusion of WWC validated strategies increases the significance as it is built on research and national statistics demonstrating success and evidence of best practices. The proposed initiatives elaborate on the evidence based WWC strategies with the integration of social-emotion skills and STEM learning strategies.

Weaknesses:

- (1) The applicant intends to utilize the Code.org Principles curriculum and teacher professional development program to increase computer science course offerings. The proposal indicates this course will be taken by 9th and 10th graders (Page e30). While code.org is an excellent and successful curriculum provider, the Computer Science Principles course may be too rigorous for the grades addressed. The applicant fails to include the code.org Discoveries Course offering as an introductory class for 9/10th graders to build confidence and gain the prerequisite knowledge for success in Computer Science Principles. This is a weakness because it overlooks the vertical alignment of course curriculum and risks diminishing student self-efficacy in a course above their ability.
- (2) The applicant fails to establish strategies that are either new or innovative. The strategies included are simply a combination of existing strategies and does not indicate a novel approach or opportunity for new research. Specifically the applicant addresses their intention to “seek support to further research, refine, and codify field tests strategies,” (Page e24), but fails to alter the strategies in a manner that fulfills the criteria.

Reader's Score: **22**

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:

- (1) The project design incorporates a comprehensive approach to executing their proposal strategies in the selected high schools, detailing the project goals, objectives, and outcomes in narrative format. Objectives identify specific tasks and milestones necessary to meeting the goals, for example the tracking of school graduation is mentioned with details including specific benchmarks and comparison to historical district and school data (Page e33). The project design addresses include outcomes for student success, social and emotional development, and career awareness skills and competencies along with a measurement tool. Activities are further broken down in the appendix (Page e90-100) with extensive details provided for each grade band, beginning with freshman. The expanded project design model includes a thorough plan that illustrates organization and methodology to ensure success of the program.
- (2) The proposed initiative involves implementation in three high needs districts; the applicant provides comprehensive evidence of student graduation rates, college and community college enrollment rates, SAT scores, socioeconomic status (Page e27) to support the selection of these schools for partnership. Additionally, the applicant's successful relationship with the selected school dates back to 2014 (Page e117). This is a strength of the applicant because it highlights their long-term commitment to the school district outside of the scope of the application.
- (3) The application states that a key focus of their professional development, “is integrating continuous improvement, so that teachers have opportunities to think about, receive input on, and make change to their practices.” (Page e30). Letters from principals support this focus, referencing their successful history of teacher feedback resulting in changes made to the educational strategies in their letters of commitment to the project proposal (Page 117). In addition to the letter testimonials, the project design includes a detailed plan for multiple avenues feedback to be collected throughout the course of the project. The applicant plans to have two groups in place to ensure feedback from multiple stakeholders including professionals such as key corporate partners, principals, teachers, and staff. The documentation and demonstration of prior feedback and continuous improvement paired with the detailed plan for the application strengthens this approach to addressing the selection criterion.

(4) The logic model (Page e82) shows the data driven methods to tracking outputs across the three focus areas of students, social emotion learning, and career awareness. The model is well organized and includes color coordination between resources into activities and outcomes. The proposed project design is built on a thorough analysis of the current barriers faced by students within their partner schools (page e15).

Weaknesses:

(1) The model roll out chart (Page e38) identifies course content areas for phase-in implementation, however the application fails to explain what the “phasing in”(page e39) process entails. This is a weakness in the project design, because it fails to establish content integration and relationship to the overall program goals. The narrative provides only a narrow description of “phasing” as it relates to the increasing cohort participation, progressing from 9th to 12th grade (Page e39).

(2) The applicant identifies goals and measurement tools, but does not provide a system or plan of quantitative measurement. For example, the applicant states that it will measure the impact of school leaders’ understanding of the impact on teacher practice and student outcome using questionnaires and interviews, however there are not parameters for success. Furthermore, the applicant does not identify resources or strategies for collecting baseline data. The combined absence of an adequate system of measurement and baseline data limit the proposal’s ability to show potential effectiveness.

(3) While the applicant successfully identifies barriers related to socioeconomic status and gender, the applicant fails to address academic barriers to student success. This oversight has the potential to drastically affect the success of the project if students are not academically ready for the college and career projects and competitions and code.org curriculum available to them. The applicant does not include scaffolding strategies to level the academic playing field for the student participants.

Reader's Score: 30

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:

(1) The management plan is comprehensive and the applicant includes all of the requirements on the credentialed staff and their responsibilities for implementing the project. For example, the established Project Lead has a diverse and successful background with demonstrated experience and training with high-needs teens (page e41). Additional personnel positions and descriptions provide a well thought out plan for how staffing will be used. Selected project support personnel are experienced in their field as it applies to the project goals, specifically the personnel include experienced a Director of STEM Programs, Director of Career Social Emotional Learning, and teachers from special education and paraprofessional. New project support staff to be hired in conjunction with the execution of the project are clearly identified with relevant back ground experience requirements identified. Additionally, the applicant heavily incorporates their external evaluator in evaluating all levels of data of the project.

(2) The applicant has the commitment of key players of the project such as school districts, community partners for

real world competitions and one day challenges, as well as other business partners (page e116-132). The applicant provides a narrative stating their intention to continuing to explore funding after the Federal funding ends. The budget shows fiscal accountability in their plan to taper off materials over the course of the project.

(3) The management plan is very well organized in table format detailing the planning phase and progressing to implantation and sustainability. Within each phase the applicant organized information in chronological order showing connections between work area, activity, due date, and responsible personnel (Page e40-41). This attention to detail and comprehensive plan ensure the tracking of task accomplishment and ensures project success.

Weaknesses:

(1) The narrative indicates a very general intention to explore funding opportunities to sustain the project after Federal funding ends (Page e42). This vague commitment fails to demonstrate a plan of action or potential support avenues to explore. While the applicant has stated they will explore funding, that statement alone does not support the selection criterion.

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:

(1) The applicant uses the code.org curriculum and STEM college/career readiness activities such as competitions, shadowing, and tours (Page e24) to increase access and participation in three school demonstrating a high level of low-income students (page e27). Additionally, the applicant will pair this curriculum with opportunities support and enhance the social emotional learning (soft skills) of the students to better prepare them for a future in STEM careers (Page 25).

Weaknesses:

There are no weaknesses related to the selection criteria.

Reader's Score: 5

Status: Submitted

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