Professional Learning Choice Community (PLCC)
Project Narrative
Table of Contents

Virginia Advanced Study Strategies, Inc. (VASS), a 501c(3) nonprofit organization doing business as Virginia Ed Strategies, in partnership with the Virginia Department of Education (VDOE) (meets *Competitive Preference Priority 2,* **see MOU in Appendix C**), and in collaboration with the Coalition of Small and Rural Schools of Virginia (**see MOU in Appendix C**) and its 88 eligible rural LEAs (see Part 6, Appendix F for locale code verification) propose to form the Professional Learning Choice Community (PLCC) to address *Absolute Priority 3: Teacher-Directed Professional Learning (CFDA 84.411C)*. Seven of the LEAs have provided MOUs (**see Appendix C**) to initiate the consortium application, with other eligible LEAs to join in year one of the project. The evidence to meet *Absolute Priority 1—Applications that Demonstrate a Rationale* is **presented in Part 6, Appendix I as a logic model** with narrative of research evidence to support key model components (ingredients).

Significance

PLCC directly acts on a critical policy recommendation from researchers (Darling-Hammond, Hyler, & Gardner 2017)—who reviewed 35 methodologically rigorous studies which demonstrated a positive link between teacher professional development (PD), teaching practices, and student outcomes—to conduct needs assessments that identify areas of professional learning most needed and desired by educators. The researchers note this "…can help ensure that professional learning is not disconnected from practice and supports the areas of knowledge and skills educators want to develop" (p. vii). Self-assessment of needs is the foundation of teacher-directed PD in the PLCC project. Moreover, the seven widely shared features of effective PD identified by the researchers are addressed in PLCC: is content focused, incorporates active teacher learning, supports collaboration, provides coaching and expert support, offers feedback and refection, and is of sustained duration. As important, this model of building statewide collective efficacy for STEM teachers in rural areas with high need students would address historical issues in meeting PD needs of teachers in such places.

For example, researchers have documented the inequitable professional development for rural teachers (Barrett-Tatum & Smith, 2018), time in PD as a significant predictor of

pedagogical content knowledge (Glover, 2016), physical distance barriers (Hansen, 2009), and outdated classrooms and labs (Marlow & Cooper, 2008). Half of rural school districts in the U.S. enroll less than 494 students (Showalter et al., 2019), where professional isolation, only teacher of a subject, and small budgets for professional development are the norm. Rural superintendents commonly face difficulties implementing effective teacher professional development (Cadero-Smith, 2020), including the rise of rural child poverty (Hertz & Farrigan, 2016) and the increasing diversity of rural schools (Showalter et al., 2019).

The PLCC model of a state DOE, a nonprofit, rural LEAs, PD providers and a community of practice (CoP) could demonstrate the new kind of collaboration necessary for evolving and sustaining the teacher-directed approach to high quality, effective professional development. Moreover, teacher choice of PD could be critical for rural teachers, as respected voices and leaders in their communities, to make public education a more prominent partner in the local solutions to cultural, health, economic and social justice issues that challenge the future prosperity for all in rural America. Academic success of students is only part of the equation for schools in meeting the future needs of rural communities (Brown & Schafft, 2019; Harmon, 2017; Scafft & Harmon, 2010), as the COVID-19 pandemic is making increasingly clear.

A. Quality of the Project Design

(1) Degree of Mandatory PD Replacement

(d1i) PLCC options replace 100 percent of required professional learning. In VA, the school division (LEA) employs teachers under an annual contract with specific number of days allocated and required for professional development. Each LEA is the approval entity for any professional development completed to meet the state's licensure renewal or other requirements. The state defines types of professional development that are acceptable, but it is the local LEA that approves and submits the evidence documents to the state. The LEA submits the teacher's information that documents requirements met for license renewal or other continuing education requirements. The Virginia Department of Education reviews it to ensure the type of professional

development and continuing education options completed, as approved by the LEA, are a type consistent with VDOE requirements.

(d2) LEAs in the PLCC are agreeing in their MOUs to allow all required professional development days in the annual teacher contract to be fulfilled with teacher-directed options in the PLCC project. MOU with VDOE notes PLCC options fully count as professional development types accepted. The state infrastructure for professional learning and teacher licensure uniquely situates PLCC for success. The VDOE, per Virginia State Board of Education policy, establishes the parameters for both professional learning and licensure. Implementation of these parameters is solely left to the individual school division (LEA). Thus, the LEAs participating in PLCC will have latitude in ensuring professional learning and development moves beyond seat-time and is credited for purposes of licensure. The project MOU established with the VDOE and individual school divisions (LEAs) stipulates that the professional learning and development directed by the teacher, through the self-assessment tool, will fully substitute for the mandatory professional development. Furthermore, the partnership allows for the teacher-directed professional learning to enable micro-credentialing to meet the requirements for initial licensure, license renewal, and contract required professional development hours established by the VDOE, but the LEA monitors and approves hours. Thus, the state infrastructure uniquely supports replacement of mandatory PD with the teacher-directed approach.

(2) Plan Ensures Stipends Used For High-Quality Professional Learning.

(c3) Within the PLCC dashboard, teachers select the PD and register to attend. This triggers the PD vendor to bill the PLCC finance department to make direct payment for the training on behalf of the teacher. Teachers who choose professional learning (PL) options not identified in advance by the PLCC apply in the same system and provide information to allow project staff to determine if the PPL opportunity meets professional standards and verify accuracy of direct payment requests by the vendor. Teachers will submit online expense vouchers for travel or materials, also within the PLCC, for costs not associated with PD vendors. Moreover, all

financial transactions of Virginia Ed Strategies are audited annually by an external, independent accounting firm.

(f2) Teacher selected options not on the list that meet PL definition, are reasonable, with timely payment. The PLCC system pays vendors directly for teacher-completed PL. This eliminates teacher out of pocket expenses, burden of completing reimbursement paperwork, and potential IRS miscellaneous income tax ramifications. The teacher submits an online expense voucher for travel or materials, with payment made within 10 days. High quality PL is ensured by the collective expertise of senior project personnel and collaboration with key professional organizations: the VASCD, VaSCL, The Commonwealth Learning Partnership, and CodeVA.

Though not directly involved in the execution of the PL, senior project personnel will work jointly with these partnering organizations to ensure that teacher-selected PL options meet essential components of high-quality PL experiences. Senior project personnel will ensure that: (1) all partners provide optimal conditions for effective professional development and learning at the school and district levels; and (2) each professional development and learning opportunity in the STEM disciplines include the effective design elements (see Darling-Hammond, Hyler, & Gardner, 2017; Timperley, Wilson, Barrar, & Fung, 2007; and Wade, 1985).

Optimal Conditions. Darling-Hammond, Hyler, and Gardner (2017) highlight the school-level barriers that often hinder the implementation of PL practices. These barriers all relate to competition for time to engage in the professional learning and implement the practices, in addition to other school and district demands on classroom teachers. Furthermore, the project addresses the lack of resources and supports for optimal conditions at the school level for teachers' to engage in both PL experiences and implementation of evidence-based practices.

At the system (district) level, Tooley and Connally (2016) identified four optimal conditions that correlated with implementation of professional development and learning practices: (1) diagnosing the specific professional learning needs of teachers; (2) identifying and selecting evidence-based practices that research says work best in science, mathematics, and computer science; (3) implementing those approaches with quality and fidelity; and (4) evaluating the

impact of such professional learning and development activities. This mirrors the approach documented by Hattie, Bustamante, Almarode, Fisher, and Frey (2020) in implementing what works best. In other words, the optimal system-level conditions are analogous to the optimal conditions necessary for teachers to implement what works best in their contexts. PLCC reinforces the conditions in a systematic approach with consistency.

Four specific actions are pursued. First, the development and utilization of a self-assessment tool will guide participating teachers in self-reflecting, self-monitoring, and self-evaluating their professional needs related to the six dimensions or standards of professional practice in Virginia. The tool focuses the teacher on the journey toward the dimensions: professional knowledge, planning, instruction, assessment, learning environment, and overall professionalism. The tool requires the teacher to examine their practices through the lens of student learning. This will require the use of student data to guide the teacher in understanding both their decisions related to teaching practice and the subsequent impact on student learning. Participating science, mathematics, and computer science teachers will also draw upon their own professional goals as articulated in the state-wide and division-wide (LEA) teacher evaluation process. Together, the self-assessment tool outcomes and goal reflections will ensure that teachers have a clear understanding of their professional learning and development needs. This will also guide senior project personnel and partnership organizations in identifying and organizing needed PL.

Second, PLCC does not emphasize the variable of seat time in professional learning and development. Instead, PD will focus on evidence-based practices or what works best in teaching and learning (see Brophy; 1998; Marzano 2017; Saphier, Haley-Speca, & Gower, 2018; Strong 2018; and Hattie & Zierer, 2019). Furthermore, the learning experiences will draw on the evidence about what types of PL opportunities lead to an impact on student learning (see Timperley, Wilson, Barrar, & Fung, 2007; and Wade, 1985). Thus, Virginia infrastructure for professional learning and teacher licensure strongly positions the PLCC project for success.

While the VDOE establishes the parameters for both professional learning and licensure, the implementation of these parameters is solely a decision left to the individual school division

(LEA), and ensures professional learning moves beyond seat-time and is credited for teacher licensure. To this end, PLCC will use micro-credentialing, which facilitates personal accountability and implementation (addressed below). The professional learning and development experiences will:

(1) come from collaboration of the professional organizations (e.g., VASCD, VaSCL, The Commonwealth Learning Partnership, and CodeVA);

(2) involve more than a one-and-done approach, but instead, require follow-up learning opportunities through continued professional learning and the support of an instructional coach or mentor for implementation;

(3) focus on evidence-based practices or what works best in teaching and learning in science, mathematics and computer science;

(4) require the active learning of teachers through the use of models or modeling that include, but are not limited to video cases, written case studies, demonstration lessons, peer-observations, the analysis of curriculum materials, and/or the analysis of student work samples (Darling-Hammon, Hyler, and Gardner, 2017);

(5) derive from the self-assessment tool and the personal reflecting, monitoring, and evaluating of the participating teacher to support the process of conceptual change by challenging the existing beliefs of the teacher;

(6) leverage the community of practice developed through this project, along with the collective efficacy (see Hattie and Zierer, 2019) to develop a shared language around teaching and learning among the teachers and all other stakeholders in the project; and

(7) draw on the support of the participating school divisions to ensure that the participating teachers are provided the time and resources to engage in professional learning that includes diagnosing the specific needs of teachers, identifying and selecting evidence-based practices that research says work best, implementing practices with quality and fidelity, and finally, evaluating the impact. Also, project collaboration with the Virginia Association of School Superintendents (VASS) and the Virginia Association of Secondary School Principals (VASSP) will provide key

support in building the capacity of division-level and building-level administrators to support teachers with both time and resources. Thus, the above-described components of the professional learning and development experiences align perfectly with components documented by Darling-Hammond, Hyler, and Gardner (2017), Timperley, Wilson, Barrar, and Fung (2007), and Wade (1985).

The third condition addresses the implementation of professional learning and development. The implementation process must move beyond the professional learning experience and be translated into teaching practice by making adaptations necessary for the local context. The project will provide instructional coaches and mentors to support teachers. These instructional coaches/mentors will use a coaching framework (Virginia New Teacher Support Program, 2020) that supports implementation of practices by teachers. This support will include instructive, facilitative, and collaborative coaching around the four key elements of implementation: fidelity to clear and visible learning goals, necessary dosage of learning experiences that embed the interventions, adaptations for specific needs of learners, and quality delivery in a conducive learning environment (Hattie, Bustamante, Almarode, Fisher, & Frey, 2020).

The coaching framework is designed to integrate baseline data from the self-assessment and then focus on identifying specific practices, implementing those practices, and evaluating the impact of those practices on student learning. Instructional coaches/mentors will engage in one-on-one coaching that supports implementing practices consistent with the teacher's context. Coaching conversations will focus on use of the self-assessment results as a baseline and provide instructive, facilitative, and collaborative coaching. The coaching supports the teacher's professional growth along the continuum in the self-assessment tool rubric.

Finally, the fourth condition for optimal professional learning and development focuses on assessing the outcomes of the professional learning experiences. The comprehensive evaluation model, presented in the evaluation section, is guided by the research-based logic model and includes assessment of project implementation activities and intended outcomes.

(3) Teacher Flexibility and Autonomy

(d3) Provision of information to teachers about professional learning options not previously available to teachers draws upon the collaboration of the state-level professional organizations. The collective expertise of these professional organizations, informed and infused from the data generated from the self-assessment of participating science, mathematics, and computer science teachers, will allow the organizations to generate a targeted list of professional learning experiences. All participating teachers will gain access to the list through the PLCC professional learning dashboard. The dashboard will offer teachers great flexibility and autonomy in selecting professional learning that meets their specific professional needs – moving beyond a one-size-fits-all approach. In addition, the data generated from instructional coaching and mentoring will further guide the development of innovative options by our qualified state-level professional organizations.

The professional learning dashboard also enables an ever-evolving menu of options to reflect the specific professional learning and development needs of the participating teachers (see Darling-Hammond, Hyler, & Gardner, 2017; Timperley, Wilson, Barrar, & Fung, 2007; and Wade, 1985). In addition, senior project personnel, instructional coaches and mentors will remain in constant contact as a community of practice to provide ongoing information to the teachers with coaching sessions, newsletter, and email-based communications.

(d4) Mechanisms for teacher selection of unlisted professional learning activities to instruct high-needs students is grounded in knowing both teacher and student needs in the learning environment. In the PLCC project, high-needs students are defined as students enrolled in an LEA eligible for the USED federal Rural Education Achievement Program (REAP), and or with an NCES CCD urban centric locale code of 32, 32, 41, 42, 43 where one or more of the contextual challenges of rurality noted in the *Demonstrate a Rationale (*Part 6, Appendix I) influences the teaching and learning environment of their students.

Consequently, this project will develop a self-assessment tool that provides formative assessment data on the professional practice of project teachers. Using the Standards for the

Professional Practice of Teachers (Virginia Department of Education, 2012), self-assessment rubrics will be developed to reflect the continuum of proficiency related to teaching and learning across the six domains of professional knowledge, planning, instruction, assessment, learning environment, and overall professionalism. Each rubric will provide a level of proficiency with evidence to support the initial scoring of each rubric. Evidence might include, but is not limited to: planning documents, student work, assignments and tasks, and student growth and achievement data. A teacher will also draw upon their own professional goals as articulated in the state-wide and division-wide teacher evaluation process. The self-assessment tool engages the instructional coaches/mentors in helping the teacher understand what high-quality, instructionally relevant professional learning activities will meet the learning needs of their students in the rural context. This mechanism is solely based on teacher-identified needs.

To preserve teacher flexibility and autonomy in selecting professional learning, there must be a mechanism in place when the dashboard of choices does not align with the established professional needs identified by the self-assessment tool. PLCC will leverage the collaboration of the state-level professional organizations in micro-credentialing professional learning experiences that meet the individual's professional need. For example, the commitment expressed by VASCD allows PLCC to utilize the cadre of professionals whose expertise is in developing and assessing the micro-credentialing of professional learning experiences. We believe this is a significant strength of this project – a customized technical assistance approach through the ability to leverage collaborative partnerships to respond to the specific professional needs of the participating science, mathematics, and computer science teachers.

(4) Simple Process to Select or Request Professional Learning

(b2) In meeting the anticipated level of 2,100 teachers in the project, PLCC staff will collaborate with superintendents of the LEAs and principals to ensure teachers know about the teacher-directed PL opportunities. Moreover, the PLCC dashboard will provide an interactive choice-board containing professional learning experiences that result in micro-credentialing and provide

100% replacement of the LEA's expected professional learning requirements. This dashboard will provide a simplified process for identifying, selecting, and requesting needs-based professional learning experiences with minimal burden. Simplicity is reinforced by using an interactive web-based platform, whereby teachers participating in PLCC will use the formative assessment data generated by the self-assessment tool and instructional coaching/mentoring to reinforce teacher choice of experiences that ensures flexibility and autonomy.

The interactive dashboard will utilize web-based technology (e.g., Tableau: https://public.tableau.com/profile/jmu.office.of.institutional.research#!/vizhome/shared/93KHNMKMM) that allows the collaborative partners to easily update their offerings through an Excel spreadsheet linked to the dashboard. Access to the PLCC dashboard will be given to each participating science, mathematics, and computer science teacher. Access will be password protected to ensure that only participating teachers have access to the dashboard and each individual has a protected account for their own unique professional learning needs. Project personnel and instructional coaches/mentors remain in constant contact as a community of practice through one-on-one coaching sessions, newsletter, and email-based communications.

(d3) PLCC will provide information to teachers about professional learning options not previously available to teachers by again drawing upon the collaborative partnerships with several state-level professional organizations and following the process previously described. Collective expertise of the organizations, informed and infused from the data generated from the self-assessment of teachers will allow the organizations to generate a targeted list of professional learning experiences that is available to all participating teachers through the professional learning dashboard. In addition, the data generated from instructional coaching and mentoring will further guide the development and implementation of innovative options by the organizations. The dashboard will simplify the process for identifying, selecting, and/or requesting PL and maintain the ever-evolving menu of options for teachers.

(d4) The self-assessment tool is a key mechanism for teachers to independently select different high-quality, instructionally relevant professional learning activities to serve high-need students. The tool provides formative assessment data on the professional practice of teachers participating in the project. Using the Standards for the Professional Practice of Teachers (Virginia Department of Education, 2012), self-assessment rubrics will be developed to reflect the continuum of proficiency related to teaching and learning across the six domains of professional knowledge, planning, instruction, assessment, learning environment, and overall professionalism. Each rubric will provide a level of proficiency with evidence to support the initial scoring. Rubric evidence might include, but is not limited to: planning documents, student work, assignments and tasks, and student growth and achievement data. Teachers will also draw upon their own professional goals as articulated in the state-wide and division-wide teacher evaluation process. In completing the self-assessment tool, instructional coaches/mentors help teachers understand what PL activities address needs of students in rural learning environments. This self-assessment tool mechanism is solely based on teacher-identified needs and facilitates a simplified process to minimize the burden on PLCC teachers.

(5) Goal with Measurable Objectives and Outcomes

The project goal is to build sustainable teacher effectiveness capacity of secondary mathematics, science and computer science (STEM) teachers in rural settings across the Commonwealth of Virginia through systematic, teacher-directed selection of professional learning experiences that increase collective teacher efficacy within a community of practice (CoP). Three core objectives, as noted in the management plan and timelines table with key tasks for achieving each, guide attainment of the goal and achievement of the outcomes specified in the project's logic model (**see Appendix I for logic model)**: (1) To enable all teachers to self-evaluate individual learning needs for selecting professional learning experiences, (2) To ensure professional learning options for 95% of teachers to self-select experiences that align with their individual learning needs, and (3) To provide supports for 90% of teachers to participate in CoP as collective efficacy to sustain implementation of the professional learning. Outcomes are

specified in the logic model, with a research-based rationale for their achievement, and measured in the project's strong evaluation plan.

B. Adequacy of Resources and Quality of the Management Plan (up to 30 points).

(1) Sufficient Funding for Professional Learning Experiences

(c1) [redacted] about [redacted] of the federal funds requested, is allocated to support direct payment of professional learning experiences for teachers. The PLCC budget provides [redacted] per teacher for access to PD, an additional [redacted] per teacher than is on average the customary amount provided by a rural LEA. Most professional development offerings accessed by VA teachers cost in the range of about [redacted] per day, and therefore, [redacted] for 5 days of training per year is a reasonable amount to cover the direct PD cost, given a range of 2-10 days possible among participating LEAs. The majority of mandated professional learning occurs within the LEA, so travel cost is generally not necessary or is covered by the division; however, PLCC supports teachers also acquiring training outside the LEA to meet individual needs. Thus, grant funds also pay for travel, materials, or other PD-associated costs.

(c2) Rationale for the estimated dollar amount in the budget is based on an average of 5 PD days per year per teacher. In Virginia, the employment, and thus the professional development, of public school teachers is controlled by local school divisions (LEA), not by the state education agency. Generally, teacher contracts provide for 180 days of teaching and 20 days of other work as assigned. LEA-required PD days are within the 20 days. VA Ed Strategies determined from VDOE sources, polling teachers in multiple LEAs, and select organizations providing teachers PD that mandated LEAs PD ranges from 2 to 10 days in one academic year; therefore, 5 PD days per year per teacher is a reasonable estimate.

(2) Costs Reasonable with Scale and Significance

Estimated number of teachers in PLCC is 2,100. Therefore, PLCC will impact thousands of students. Because of the partnership (MOU) with the Virginia DOE, the collaboration with four

key organizations (MOUs provided) that serve teachers state-wide, the additional collaboration with the Virginia Association of School Superintendents (VASS) and the Virginia Association of Secondary School Principals (VASSP), the project has exceptional capacity to reach all secondary level math, science and computer science teachers in all rural areas of the state. Moreover, Fairfax City Public Schools (10th largest school system in the U.S.) has signed a MOU to participate in the project, as the evaluation proposes an exploratory study of rural vs urban.

As a rural project, and in partnership (see MOU) with the Coalition of Small and Rural Schools of Virginia (COSARS), great potential exists to scale the teacher-directed PD concept and instructional practices found effective to the 88 school divisions that are rural (as defined by urban centric codes of 32, 33, 41, 42 43). The state-wide PLCC collaboration model, if successful, would have exceptional potential as a solution to offering meaningful PD for teachers across rural America. Evaluation results of this project would clearly advance the field of rural education regarding the provision of PD for teachers in high poverty rural areas. Giving rural teachers PD choice, especially in STEM subjects, also could mean giving them a voice in critical community and economic development needs in most rural communities of the nation. The scale and significance of this project offers unparalleled opportunity and is a reasonable investment in the future of rural students, schools and communities by USED.

(3) Minimum Burden Payment Structure for Teachers

(f1) The proposed system of accessing and paying for teacher selected PD is highly efficient. The PLCC will be contained and customized within the Canvas platform. Teachers will be able to log in 24 hours a day, 7 days a week to view professional learning options that have been identified by Virginia Ed Strategies and partners as high-quality and instructionally-relevant. Additionally, as many providers of PD in Virginia are consulting on this project, they are uniquely positioned to develop opportunities for teachers to meet needs identified in the self-assessments. Within the PLCC dashboard, teachers will not only select the PD, they will register to attend and trigger the PD vendor to bill the PLCC finance department to make direct payment for the training on behalf

of the teacher. In this scenario, teachers will not have upfront out-of-pocket expense or have the burden of dealing with reimbursement later. They will also not have to be concerned with potential tax ramifications later, as stipends are generally considered taxable miscellaneous income by the IRS. When teachers choose professional learning options that are NOT identified in advance by the PLCC, they will apply in the same system. Submitted information allows the project staff to verify the opportunity met professional standards and generate direct payment to the vendor. For costs not associated with PD vendors, such as travel or materials, teachers will submit online expense vouchers for reimbursement, also within the PLCC system, and payment will be made within 10 days.

(f2) The process for ensuring quality of teacher selected PL not on the applicant's list of options as "professional learning" is the same process described previously under section A2f2 Quality of Project Design. This professional learning will pose a minimal burden on the participating science, mathematics, and computer science teachers by serving as a 100% replacement of the expected professional learning required by the school and school division. Minimal burden is imposed on the teacher as project personnel work directly with the collaborative partners for registration and payment. Identifying and selecting the professional learning experiences are the only burden placed upon participating teachers—without which teacher-directed PD would have no meaning.

(f2) The process ensuring timely vendor payment or reimbursement to teachers with minimal burden as described in (3f1) above.

(4) Key Personnel Qualifications, Training & Experience

Resumes for key personnel are in Part 6, Appendix B. Brief qualifications and role descriptions are presented here. Key personnel include:

Jennifer Stevens, President and CEO of Virginia Ed Strategies, will serve as the Project Director (70% FTE). She has over 25 years of experience in K-12 education, as a public school teacher, then as leader of grant-funded education projects (Longwood University, Virginia Tech,

and NASA Langley Research Center). In 2007, Stevens held a lead role on the team of educators and community leaders that secured a $13.2 million grant from the National Math and Science Initiative to start the nonprofit corporation, Virginia Advanced Study Strategies – now known as Virginia Ed Strategies – to increase student enrollment and success in advanced STEM coursework across the Commonwealth. Stevens has been in a leadership role with the organization since that time, and now serves as the Project Director for the Rural Math Innovation Network (RMIN), the second of two multi-million-dollar Investing in Innovation (i3) grants awarded to Virginia Ed Strategies by the U.S. Department of Education to research and develop new, innovative education models. With Virginia Ed Strategies being an affiliate of James Madison University, Stevens is a faculty member of JMU's College of Education and the Office of Professional & Continuing Education.

Dr. John Almarode, lead project consultant, is Associate Professor of Mathematics at James Madison University and Executive Director of Teaching and Learning. He has worked with hundreds of school districts and thousands of teachers in Australia, Canada, England, Saudi Arabia, Scotland, South Korea, and Thailand. He has authored 11 books and numerous articles with Dr. John Hattie and other colleagues. John has made presentations to the U. S. Congress, Virginia Senate, USED and the Office of Science and Technology Policy at The White House.

Sandy Wilborn, Director of Programs at Virginia Ed Strategies, will serve as the PLCC Project Manager (70% FTE) to supervise the fiscal manager and assist the project director in coordinating the activities of the PLCC, particularly for teachers. With a background in finance and almost 20 years of experience as a math educator, Wilborn has held key technical assistance roles to support teacher implementation of innovations in two USED i3 projects.

Amanda Adams, the organization's Director of Public Relations, will serve as the communications and technology specialist for the project at 70% FTE, a role she currently serves in the USED-funded i3 RMIN project. Adams has extensive expertise in website development, social media, and customizing online platforms for use with communities of practice.

Darla Edwards, Director of Partnerships for Virginia Ed Strategies, will serve as the Facilitator of the PLLC for School Administrators at 70% FTE. Edwards is a former school principal and currently holds a similar role in the i3 RMIN project.

Three additional positions (100% FTE each) will be hired as key personnel: a Professional Learning Coordinator (PLC), a Lead Instructional Coach (LIC), and a Fiscal Manager (FM). The PLC will serve as a liaison between the Virginia Department of Education and project partners to ensure policies, procedures and project activities support teacher choice of professional learning and 100% of the PD teachers select counts in employment contracts and toward license renewal. The LIC will train and supervise PLCC contracted coaches who support teachers in implementing PD. The FM will be responsible for all fiscal aspects of the project.

Also, significant expertise is acquired through in-kind and paid consulting with experts in the highly-respected education organizations who have committed as project partners with Virginia Ed Strategies. Michael Bolling, the VDOE Assistant Superintendent of Learning and Innovation, will provide oversight for the VDOE partnership role. He, and the leaders of VASCD, VASS, the CLP, VASCL, Code VA, COSARS, and VASSP bring hundreds of years of experience in K-12 education and will serve on the Advisory Leadership Team. Their resumes are included on Appendix B.

(5) Management Plan & Timelines -- **See table in Appendix I (Other) in Part 6.**

(6) Leveraging Program to Improve & Change Professional Learning

(g1) The strategy to improve, refine and scale the professional learning model includes participating teachers and principals serving on the Advisory Leadership Team to ensure field-based reflections inform necessary refinements, including in the system used to pay for teacher-selected PD credit that will count as replacement of LEA requirements. Further, scaling of continuous improvement and systematic changes in PL is grounded in the project's community of practice (CoP) and collaboration model. The CoP drives continuous discovery of what works as effective teaching practices, which will stimulate increases in collective teacher efficacy. Teachers become the strongest advocates for the teacher-directed PD approach, as the state-wide

professional organizations continuously create and promote teacher-directed PD opportunities. The VDOE and professional organizations also provide key opportunities for teachers to share their success stories. The Virginia Association of School Superintendents, the Virginia Association of Secondary School Principals, and the Coalition of Small and Rural Schools in VA provide strong linkages for informing other LEA leaders and state policymakers of the project's success. Thus, the customized and collaborative model of teacher-directed professional growth seeks to replace the "teacher needs improvement" deficit model approach across the state.

(7) Partner Relevance and Commitment

Each key partner has provided a MOU (**see Part 6, Appendix C**) that describes commitment and role functions. The Management Plan table (**in Appendix I**) also shows their key responsibilities. These roles have been described in appropriate sections (i.e., relevance) throughout the narrative. These include the Virginia Department of Education (VDOE), Virginia Association of School Superintendents (VASS), Virginia Association of Secondary School Principals (VASSP), the Coalition of Small and Rural Schools of Virginia (COSARS), Virginia Association for Curriculum Development (VASCD), Virginia School Consortium for Learning (VaSCL), The Commonwealth Learning Partnership, and CodeVA.

C. Quality of the Project Evaluation

1. Methods Consistent with WWC Standards

ICF, the external evaluator, will conduct a rigorous implementation and impact evaluation to inform project development and assess its efficacy. ICF has provided research and evaluation services since 1969 and served as a subcontractor to the WWC between 2002 and 2016. ICF is the external evaluator for five Investing in Innovation (i3) grants (the predecessor of EIR) including three Validation and two Development grants. Dr. Xiaodong Zhang, a WWC-certified reviewer who served as Technical Assistance liaison from the i3 national evaluation team, will provide evaluation oversight. The proposed project manager, Dr. Kimberly Cowley, serves as the evaluation lead for one of the i3 Development grant evaluations currently underway.

The first half of Year 1 will focus on developing data collection instruments and securing Institutional Review Board review, securing a contract with Virginia Ed Strategies and the Virginia Department of Education (VDOE) for a Non-VLDS Data Dissemination Request, negotiating data sharing agreements with local education agencies (if needed in addition to the VDOE agreement), and finalizing the evaluation plan. During the second half of Year 1 and the first half of Year 2, a pilot study involving a small sample (Cohort 0) of approximately 100 rural Virginia high school math, science, or computer science teachers will test evaluation instruments and procedures, and provide formative feedback to help inform project refinement. Years 2-3 and 3-4 will each involve implementation and impact studies (matched comparison groups from nonparticipating teachers within participating schools and divisions) using two-year cohorts (Cohorts 1 and 2) of Virginia high school teachers of math, science, or computer science, respectively. Cohort 1 will involve only rural teachers; Cohort 2 will include nonrural teachers as well. Year 5 will include final data collection for Cohort 2, final analyses and reporting, and dissemination activities. We will draw a sample of 75 treatment teachers each for Cohort 1 and Cohort 2 from the estimated treatment group size of up to 1,000 teachers per cohort.

Research Questions	Data Sources	Design/Analysis
Q1. What is the project's impact on student achievement after two years of implementation? **(Impact Study - Confirmatory)** COHORTS 1-2	Virginia Standards of Learning (SOL) math and science scores (Years 2-5)*	QED using matched comparison groups and hierarchical linear (HLM) modeling
Q2 What are the project's impacts on teacher self-efficacy and practices? (**Impact Study - Exploratory**) COHORTS 1-2	National Teacher Ques-tionnaire and Self-Efficacy Survey (Years 2-5)	QED
Q3. What are the project's differential impacts on student achievement and teacher efficacy and practices by options of the teacher-directed PD? **(Impact Study - Exploratory)** COHORTS 1-2	Virginia SOL math and science scores (Years 2-5)	QED
Q4. What are the impacts on students' attitudes toward STEM as a result of teachers' practices? **(Impact Study - Exploratory)** COHORTS 1-2	Student Attitudes Toward STEM Survey (Years 2-5)	QED

Q5. What are the project's differential impacts on student achievement and teacher efficacy and practices between rural and non-rural**? (Impact Study - Exploratory)** COHORT 2	National Teacher Questionnaire and Self-Efficacy Survey (Years 3-5); Virginia SOL math and science scores (Years 3-5)	QED
Q6. To what extent are the project components implemented with fidelity? What are areas for improvement? What facilitates or impedes implementation? **(Implementation Study)** COHORTS 1-2	Teacher surveys; teacher, principal, and project staff interviews; project records (Years 2-5)	Descriptive statistical analyses for quantitative data; thematic analysis for qualitative

*Or alternative data such as end-of-course grades, AP test scores, ACT/SAT scores, depending on the availability of SOL data.

Research Design. Questions 1-5 are designed to measure the project impact on student and teacher outcomes. For Q1 (confirmatory), we will employ a quasi-experimental design to examine the project impact on student outcomes. A comparison group of matched teachers will be identified, using propensity score matching on relevant teacher and student-level variables within the schools and divisions participating in the project. Treatment teachers will be provided with PD options; comparison teachers will be business-as-usual (BAU) and participating in regular division-required PD during the years when their outcomes will be compared to the treatment group. For Q2, we will compare teacher outcomes using the same quasi-experimental design. For Q3, we will compare student achievement between teachers who select various PD options. Q4 is designed to measure changes in students' attitudes toward STEM, to determine whether this serves as a preliminary indicator for subsequent changes in student achievement outcomes. Q5 will explore whether the project leads to differing teacher and student outcomes by rurality (rural compared to nonrural). Q6 is an implementation study designed to measure fidelity and provide feedback for continuous program improvement. Data collected during the pilot study will inform changes to the various instruments and protocols to be used to answer Questions 1-6.

Sampling and Statistical Power. Assuming an intraclass correlation of 0.15, a level-1 R^2 (variance explained by covariates) = 0.50 with baseline student achievement as a covariate and a level-2 R^2= 0.50 with an aggregate student achievement measure as covariate and fixed-effect blocking scheme for school, a sample of 25 schools contributing three teachers each with an average class size of 15 (in each semester, so 30) the design would yield a minimum detectable effect size (MDES) value of 0.172 were teachers randomly assigned. We adjust our sample size by a factor of four (100 schools or 50 in each cohort), given we anticipate having adequate teacher and student data to use in generating propensity scores and will be able to trim the sample to the area of common support (overlap between units; Smith & Todd, 2005). This will result in treatment and comparison groups of approximately 75 teachers each, per cohort.

2. Plan Articulates Key Components

The project logic model identifies the key project components, inputs, activities, outputs, and outcomes (short-term, intermediate, and long-term), as well as overall impact. Each of the key project components will be operationally defined, measured, and weighted. This measurement scheme will allow us to calculate a quantifiable score for key components by school and overall. The project logic model identifies key components, and associated measures and thresholds for acceptable implementation will be identified. Individual scores will be calculated and coded (low, medium, or high) based on level of implementation for each teacher, then summed for a total school implementation score. We will calculate the percentage of treatment schools meeting the criteria for high implementation for each component and compare this to an established threshold for high fidelity (> 80%) to determine whether the project meets its fidelity of implementation threshold.

Student academic outcomes (RQ 1, 3, 5) will be modeled using the multilevel framework to account for the clustering of students within teacher and schools (Raudenbush & Bryk, 2002) as:

$$Y_{ij} = \gamma_{0j} + \gamma_{1j} TX_j + \sum_{p=1}^{p} \gamma_{pij} X_{pj} + \sum_{q=1}^{Q_p} \gamma_{pq} Z_{qj} + u_{pqj} + e_{ij}$$

where γ_{0j} is the intercept, γ_{1j} is the treatment effect, γ_{pij} are the effects associated with student covariates (e.g., baseline 8th grade math scores) and γ_{pq} are the effects associated with teacher covariates (including PD options; RQ3) and school fixed-effects. Teacher outcomes (RQ2, 3) will be modeled using ordinary least squares regression with school fixed-effects and robust standard errors accounting for clustering (Abadie, Athey, Imbens, & Wooldridge, 2017).

3. Methods Provide Feedback & Progress Assessment Toward Outcomes

The research questions will generate periodic feedback to the project. By analyzing student achievement data annually and by PD options, we will assess the extent to which the project improves student achievement in science, math, and computer science. The implementation study will assess project progress in achieving its goals and identify areas to improve implementation fidelity.

The implementation study will draw on data from three sources. (1) *Teacher surveys.* A treatment group survey will be used to measure the extent to which each project component is implemented as designed; a comparison group survey will be used to understand the business-as-usual conditions. Both will measure changes in short-term outcomes such as PD, efficacy, and practices using sections of the teacher questionnaire from the Schools and Staffing Survey by the National Center for Education Statistics (NCES) as well as surveys focusing on teacher self-efficacy, teacher efficacy and attitudes toward STEM, and collective teacher efficacy. (2) *Interviews of teachers, principals, and project staff* are designed to provide in-depth exploration of implementation from key stakeholders and solicit suggestions for improvement, best practices, and lessons learned. (3) *Project records* will measure progress regarding level of teacher participation, stipend structure and distribution, release time, and instructional support strategies. Quantitative data will be summarized using descriptive statistics. Qualitative data will be coded according to priori and emerging codes. Themes and patterns will be analyzed based on triangulation of data across respondents to inform measures of implementation fidelity.

The confirmatory impact study will rely on Virginia high school math, science, and computer science statewide achievement test scores (z-scores) as the primary outcome, though end-of-

course grades, AP test scores, or ACT/SAT scores may also be explored. Virginia Ed Strategies and ICF will work with the VDOE to secure access to student-level achievement and demographic data for treatment and comparison teachers. As an exploratory measure, the impact study will also administer a student survey on their attitudes toward STEM, to see if attitudinal changes are a precursor to changes in achievement outcomes. The impact study on teacher outcomes will rely on data related to PD, efficacy, and practices from the NCES teacher questionnaire and teacher efficacy surveys.

D. Other Requirements

(a) Teacher Pool & Eligibility

The pool of teachers are secondary math, science and computer science teachers in Virginia public schools. Teachers serve high need students, meaning the LEA employing the teacher is eligible for the USED federal Rural Education Achievement Program (REAP), and or has an NCES CCD urban centric locale code of 32, 32, 41, 42, 43 where one or more of the contextual challenges of rurality noted in the *Demonstrate a Rationale (***Part 6, Appendix I**) influences the teaching and learning environment of their students. Teachers in urban schools may be in the pool and fully participate, such as the Fairfax Public Schools (MOU provided), to satisfy the needs of the evaluation's rural vs urban exploratory study. Selection is based on final identification of participating LEAs and teachers required to satisfy teacher cohorts noted in evaluation section.

(b1) Teacher Satisfaction with Existing Professional Learning

Over the 13 years, staff of Virginia Ed Strategies have worked with teachers in many of the eligible rural schools districts in leading two USED-funded rural i3 projects and the VA Math and Science Initiative (NMSI) funded by EXXON Mobile. Teachers have consistently expressed dissatisfaction with the usual PD available in their LEAs. Common issues include lack of opportunities relevant to subjects taught, long distances to attend (e.g., often held in Richmond), no follow-up assistance after training, no substitutes available, or budgets that greatly limit PD opportunities. PD often reinforces a teacher deficit perspective: the teacher needs improved so

the school and LEA can meet state accountability mandates. Many of these issues are well documented in the literature (Cadero-Smith, 2020; Podolsky et al., 2016).

(b3) Teachers Involvement in Developing Proposed Project

In 2017 Virginia Advanced Study Strategies, Inc. (DBA as VA Ed Strategies) received a USED i3 grant to conduct the Rural Math Innovation Network (RMIN) project. The network is comprised of high school Algebra teachers from more than 15 rural LEAs; all are among the eligible LEAs for the proposed PLCC project. Selected teachers in the network provided input to project designers with suggestions on what teachers in their schools desire as learning experiences and supports to better meet their instructional challenges in the changing learning environment (e.g., remote and blended delivery). Some teachers will continue their involvement in the proposed pilot in year 1 and as members of the PLCC Adversary Leadership Team.

(b4) Teacher Inclusion in Payment System Decision-making

Participating teachers contribute to decision-making primarily in three ways. Up to 5 teachers are on the project's Advisory Leadership Team (ALT). All teachers can contribute as members of the CoP in discussions of project improvement that lead to recommendations. Teachers also can contribute to project decisions through conversations with their mentors and coaches.

(c4) Prioritization of Teacher Participation Payment Structure

The budget is based on average of the range of pay for PD days common in the rural schools districts, with an additional [redacted] budgeted based on estimated number of teachers needed in each cohort. Therefore, the amount budgeted is considered sufficient for all participating teachers to replace LEA PD day requirements with the project's teacher-directed PL options.

(e) Strategies for Supporting Teachers' Implementation of Professional Learnings

The strategies described in previous narrative sections and shown in the logic model (**see Appendix I**) are instructional support coaches/mentors, principals, and the project' CoP.

(g2) Strategy to Expand Payment Structure & Effective Practices Discovered

Principals are encouraged to integrate project discoveries and PL options in their schools' PD plan. Training and interaction with their teachers, coaches and mentors support this strategy.

LEA leaders also receive information on discoveries of teacher effectiveness and efficacy reported in the CoP. Teachers in these schools can join new cohorts of the project and thus benefit from the payment structure for teacher-directed PL experiences.

Assurances: (h1) No information in the MOUs or LEAs agreements provided by partnering organizations, including the VA Department of Education, lead the applicant to conclude that supplanting or cuts in current fiscal and administrative levels of effort in teacher professional development are intended. (h2) Funds focus only on instructionally relevant professional learning activities consistent with outputs and outcomes depicted in the project's logic model—which do not include solely obtaining advanced degrees, taking or preparing for licensure exams, or for pursuing personal enrichment activities. (h3) Teacher's needs assessment is sole factor in creation and provision of PL choice options. Teacher's independent choice and completion of the PL learning experience(s) are the sole factors in determining use of federal funds.

Teachers have independent choice to select the PD learning experience from any provider, whether on the project list or self-identified as a source by the teacher. Once the teacher completes the PD experience, the provider of the experience invoices VA Ed Strategies as payment for direct services provided. This needs-based approach increases teacher flexibility in choice, reduces teacher paperwork, eliminates complications of stipends as teacher income for tax purposes, and prevents any vendor from influencing teacher choice or cost.

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