

VIRGINIA DEPARTMENT OF EDUCATION

Planning Grant Application for a College Partnership Laboratory School

A. GENERAL INFORMATION

1. **Name of Eligible Entity (Planning Grant Applicant):** *Old Dominion University*
2. **Authorized Official Representative:** Dan Zimmerman
3. **Name of Contact Person for Application:** Brian Payne
4. **Telephone:** 757-683-4757
5. **Email:** bpayne@odu.edu
6. **Office Telephone Number:** *Click or tap here to enter text.*
7. **Date of Submission:** January 5, 2023 *Click or tap here to enter text.*
8. **Amount of Funding Requested (\$200,000 maximum):**
9. Public institutions of higher education (IHE); public higher education centers, institutes, or authorities; or eligible institutions of higher education as defined in the Tuition Assistance Grant Program, as provided in [§ 23.1-628](#), (eligible entity or entities) may apply for a Virginia Board of Education (Board) College Partnership Laboratory School Planning Grant (Planning Grant).
10. Each Planning Grant Applicant (Applicant) seeking a Planning Grant must read and comply with the Instructions for Application for a Planning Grant for a College Partnership Laboratory School (Lab School), which are available on the Virginia Department of Education's (Department) website, and fully complete this Planning Grant Application (application) to be eligible for a Planning Grant.
11. Applications may be submitted, and will be evaluated for Planning Grant awards based on factors set forth herein, on a rolling basis.
12. **Planning Grant Term: This application is for a one-time Planning Grant, the term for which will not exceed 12 months from the date of any award hereunder.**

13. The completed PDF version of the application and related materials must be sent to labschools@doe.virginia.gov by email. The Department may return or reject proposals that are incomplete.
14. Please contact labschools@doe.virginia.gov by email if there are any questions about the application process.

B. DEFINITIONS

1. **College Partnership Laboratory School:** In accordance with [Item 4-14](#) of the General Assembly’s 2022-2024 Biennium budget, the Code of Virginia § [22.1-349.1](#) is amended and reenacted, and the types of IHE eligible entities to establish Lab Schools are defined as follows:
 - a. "College Partnership Laboratory School" means a public, nonsectarian, nonreligious school in the Commonwealth established by a public institution of higher education; public higher education center, institute, or authority; or an eligible institution, as defined in § [23.1-628](#). Notwithstanding the provisions of § [22.1-349.5](#), a public institution of higher education; a public higher education center, institute, or authority; or an eligible institution, as defined in § [23.1-628](#) may submit an application for formation of a college partnership laboratory school.”
 - b. An “eligible institution” as provided above is an institution of higher education as defined in the Tuition Assistance Grant Program in accordance with § [23.1-628](#).
2. **At-risk student:** As provided in the Code of Virginia § [22.1-349.1](#), "at-risk student" means a student having a physical, emotional, intellectual, socioeconomic, or cultural risk factor, as defined in Board criteria, that research indicates may negatively influence educational success.

For the purpose of these guidelines and any Planning Grant awards, “at-risk students” include (a) students who have experienced learning loss as the result of the COVID-19 pandemic; (b) students served by low-performing schools that are designated as “accredited with conditions” or “accreditation denied” based on the Virginia Board of Education’s accreditation ratings; and (c) students attending schools identified under the Every Student Succeeds Act within three support categories: (i) Comprehensive Support and Improvement, (ii) Targeted Support and Improvement, or (iii) Additional Targeted Support Category.

3. **Regional diversity:** For the purpose of evaluation of this application, regional diversity reflects representation from each of the Department’s eight Superintendent [regions](#).

C. ASSURANCES AND SIGNATURES

1. ASSURANCES

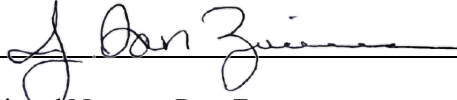
- a. By signing and submitting this application, the applicant assures that it will adhere to state and federal laws and regulations governing public schools, including the *Virginia Standards of Quality*, the *Virginia Standards of Learning*, and the Board’s *Regulations Establishing Standards for Accrediting Public Schools in Virginia*.
- b. The applicant assures that all elements of the proposed school(s) will comport with all applicable state and federal laws and regulations.
- c. The applicant certifies that to the best of his/her knowledge the information in the application is correct, that all application elements have been addressed as required in this application, and that the applicant understands and will comply with the assurances.
- d. The applicant agrees to conduct a review of their planning phase, and submit milestones and deliverables as required, including, but not limited to, a comprehensive report with details for the projected Lab School implementation, expenses, and other items as may be prescribed by the Department.
- e. Applicants receiving a Planning Grant are expected, by the end of the term of such grant, to submit a subsequent application for the launch of a Lab School to the Department, for review and approval by the Board.
- f. Applicant provides assurance to subscribe to the following reporting requirements timetable:

TIMELINE	BENCHMARK AND DELIVERABLES
On or before the end of the first quarter of the grant term	Awardee must present a proposed list of milestones, measures of success, and deliverables.
On or before the end of the second quarter of the grant term	Awardee must submit a progress report in order to be eligible for the second installment of the award.
On or before the end of the third quarter of the grant term	Awardee must present progress on milestones and deliverables, including submission to the Board of an application for approval to launch a Lab School.
On or before the end of the grant term	Awardee is expected to have attained approval by the Board to launch a Lab School.

2. SIGNATURES

a. Higher Education Authorization:

Signature of [AUTHORIZED REPRESENTATIVE of public institution of higher education; public higher education center, institute, or authority; or an eligible institution]:



Printed Name: Dan Zimmerman

Title: Interim Assistant Vice President

Date: 1-5-23

b. Fiscal Agent Authorization (if applicable):

Signature of Division Superintendent of Fiscal Agent School Division:

Printed Name: Dr. Jared A. Cotton

Title: SUPERINTENDENT

Date:

c. Signature of Chairman of School Board of Fiscal Agent:

Printed Name: Mr. Harry A. Murphy

Title: CHAIRMAN

Date:

D. REGIONAL AND APPLICANT DIVERSITY

1. Planning Grants will be awarded in a manner that encourages ready access to Lab School options and the establishment of Lab Schools in each of the Department's [eight Superintendent regions](#).
2. Indicate Proposed Name(s) of Lab School:
IB/CS Academy at Oscar Smith Middle (OSM) (Lab School).
3. Identify Proposed Physical Location(s) of Lab School:
Oscar Smith Middle School, 2500 Rodgers Street, Chesapeake, VA 23324.

E. PROGRAM DESCRIPTION, GOAL, AND TIMELINE

1. PROGRAM DESCRIPTION

- a. General description of the program (2-3 paragraphs maximum):

The Lab School at Oscar Smith Middle (OSM) will use a human-centered design thinking framework to infuse computer science into the IB Middle Years Program (MYP) curriculum. As a part of the statewide Computer Science Lab School Network, the academy will be administered through a partnership between Chesapeake City Public Schools (CPS), Old Dominion University (ODU), and Tidewater Community College. Supported by research showing early academic preparation's importance in bringing underrepresented students into the technology talent pipeline, the academy will offer all students in grades 6-8 the IB Design curriculum.

Additionally, 60 students from across the district will be accepted into a full IB MYP incorporating all eight IB areas (Language Acquisition, Language and Literature, Individuals and Societies, Sciences, Mathematics, Arts, Physical and Health Education, and Design) offered at Oscar Smith Middle and open to all Chesapeake students in grades 6-8 through an application process. Design thinking practices will be applied to K-12 students, teachers, college students, and industry representatives to shape innovative teaching and learning activities. Project-based learning activities and other experiential learning practices will promote the development of computational thinking, problem-solving, critical thinking abilities, and other skills required for success in computer science coursework. The curriculum will be designed to prepare students for three tracks in high school – a career track, an IB track, and a dual enrollment track with Tidewater Community College.

- b. Rationale for the program (2-3 paragraphs maximum):

The need for computer science and computer engineering professionals has escalated in the past decade. With 627,763 computing jobs available in the United States and less than 71,226 new computer science graduates each year, the need for more computing graduates is clear. [1] Computing jobs requiring a bachelor's degree pay between \$89,190 and \$116,780. [2] Experts agree that the future growth of the technology sector requires a workforce trained in computer science and computer engineering. The Commonwealth of Virginia recently announced a two-billion dollar investment in expanding the number of computer science and computer engineering graduates, with the bulk of these funds going to new faculty, capital costs, and operational support. [3] While efforts are underway to prepare the future computing workforce, without measures specifically tailored to low-income and disadvantaged students, the social, racial, and gender inequity currently found in the computing workforce will expand. Experts note that waiting until students are in high school or college to prepare them for computer science pathways is insufficient. [4] A clear need exists to introduce low-income, academically-gifted middle school students to computer science coursework.

Many efforts to prepare students for computer science pathways suffer from one of three limitations – (1) they wait until it is too late to begin to prepare students for computer science, (2) they offer an individual pathway rather than multiple pathways, or (3) they don't adequately prepare current or future teachers. This Lab School will introduce students to computer science earlier in their educational careers by focusing on middle school students. In addition, students will be able to select from three pathways after completing the Lab School – a career pathway, an IB pathway, and a dual enrollment pathway with Tidewater Community College. To address the third limitation, the focus of the Lab School at OSM is to prepare students for the technology talent pipeline and to increase the number of K-12 teachers prepared to teach computer science in support of that pipeline.

The Lab School will develop a complete program of study focused on computer science and a regional focus that aligns with workforce needs. In addition to exposure and experience with programming concepts through various coding languages, the prospective program of study will integrate with the International Baccalaureate (IB) Middle Years Program at Oscar Smith Middle School. Oscar Smith Middle School (OSM) is located in the South Norfolk area of Chesapeake. With just over 1,050 students, minority enrollment at OSM is 84%. Students at OSM fall into the bottom half of all schools in Virginia on SOL testing results. The school has over 97% free and reduced lunch-eligible students ([VDOE, 2019-2020 data](#)).

- c. Nature of innovation proposed for the program, including how it will improve student academic proficiency, mastery, college and career readiness, and long-term outcome goal (2-3 paragraphs maximum):

Embracing the value of interdisciplinary frameworks to introduce computing to diverse students, the Lab School at Oscar Smith Middle (OSM) will be integrated into the International Baccalaureate (IB) Middle Years Program (MYP), a challenging framework that encourages students to make practical connections between their studies and the real world. The IB MYP curriculum framework comprises eight subject groups (Language Acquisition, Language and Literature, Individuals and Societies, Sciences, Mathematics, Arts, Physical and Health Education, and Design), providing a broad and balanced education for early adolescents. The IB MYP is inclusive by design; students of all interests and academic abilities can benefit from their participation. Implementing the IB MYP is a whole-school endeavor, although the program can accommodate academically-selective models. Each year, students in the IB MYP also engage in at least one collaboratively planned [interdisciplinary unit](#) that involves at least two subject groups.

IB MYP students also complete a [long-term project](#), where they decide what they want to learn, identify what they already know, discover what they need to know to complete the project and create a proposal or criteria for completing it. The IB

MYP aims to help students develop their understanding, emerging sense of self, and responsibility in their community.

Central to the school's design will be, (1) coursework emphasizing the integration of computer science and computational thinking with other STEM and humanities content areas, (2) professional development for current teachers, (3) the development of a robust student-teacher program to prepare future educators for interdisciplinary computer science teaching, (4) the development of mentoring programs connecting middle school students and teachers with college students and professors and regional industry leaders, and (5) the creation of a school leadership community of practice embedded with professional development. Through the IB MYP the interdisciplinary units and long-term projects would focus on computer science and career-focused areas within our regional workforce, preparing students for high school and beyond. Experiential learning opportunities would be embedded throughout the program.

d. *Expected student learning benefits (2-3 paragraphs maximum):*

According to Code.org, computing jobs are the number one source of new wages in the United States. However, computer science remains underrepresented throughout K-12 education. Virginia currently has 29,633 open computing jobs with an average salary of \$106,580. Utilizing a best-practice mode to integrate computer science and developing a Lab School at OSM, students will be equipped to enter the workforce to fill the talent gap in technology.

All OSM students will participate in the IB Design curriculum through Core Plus and elective opportunities. Students will learn to apply practical and creative thinking skills to solve design problems, explore the role of design in both historical and contemporary contexts and raise awareness when making design decisions and actions. The IB Design curriculum will prepare students for careers within our region, including areas of need in the technology talent pipeline. IB MYP Design courses help specifically to prepare students for the study of computer science, design technology and information technology in a global society (ITGS) in the Diploma Programme (DP).

The IB Design curriculum enable students to:

- *Enjoy the design process, develop an appreciation of its elegance and power*
- *Develop knowledge, understanding, and skills from different disciplines to design and create solutions to problems using the design cycle*
- *Use and apply technology effectively as a means to access, process, and communicate information, model and create solutions, and to solve problems*
- *Develop an appreciation of the impact of design innovations for life, global society, and environments*
- *Appreciate past, present, and emerging design within cultural, political, social, historical, and environmental contexts*
- *Develop respect for others' viewpoints and appreciate alternative solutions to problems*

- *Act with integrity and honesty, and take responsibility for their own actions, developing effective working practices.*

This integrated program will support project-based learning across the curriculums and will focus student learning around the Virginia 5C's; Critical Thinking, Creative Thinking, Communication, Collaboration, and Citizenship Skills.

In addition to the IB Design curriculum available to all students, the Lab School at OSM will offer a complete IB Middle Years Program. Students will be accepted from across the district and transported to OSM. They will participate in the IB Middle Years Program and will have priority acceptance into the Oscar Smith High School (OSH) IB Academy. For those students at OSM who choose not to attend the OSH IB Academy, the IB MYP and Design curriculum will prepare them for computer science courses at the high school level, including Cybersecurity Fundamentals, Introduction to Information Technology, Computer Science, AP Computer Science and Cybersecurity intensive course at the Chesapeake Career Center or another Chesapeake Academy program.

All students at OSM who successfully complete the IB MYP and the IB Design curriculum will be awarded a certificate indicating their completion of the program. They will also be on a pathway to a possible dual enrollment program in computer science between CPS and Tidewater Community College.

- e. Expected teacher learning and professional development benefits (2-3 paragraphs maximum):

The Lab School at OSM will encourage greater collaboration between education providers from preschool to the postsecondary level. Through professional development opportunities with CodeVA, teachers will collaborate to build best practices, create a culture that values computer science and provide rich academic learning. Professional development opportunities will provide teachers with supportive resources and allow them to dive deeply into computer science integration. The Lab School at OSM will emphasize collaboration with higher education partners and CodeVA in developing resources and teacher training methodologies to benefit all schools in the partner region and throughout the Commonwealth.

Specific teacher learning and professional development benefits include:

- *An improved ability to teach computer science through an interdisciplinary framework*
- *Increased awareness about the different ways computer science is taught across the Commonwealth and in higher education*
- *Access to online curricula generated by the statewide computer science network*
- *Stronger connections to other educators and professors across the Commonwealth*

- *Establishing a robust community of practice for school leaders and teachers*
- *Computer science integration microcredentials for classroom and resource teachers offered through the ODU School of Continuing Education.*

f. Content areas addressed:

The Lab School will infuse computer science into the IB Middle Years Program (MYP) through the Design coursework in the MYP curriculum.

2. GOAL

State the overall proposed goal for the program:

A part of the statewide Computer Science Lab School Network, the goal of the Lab School is to develop a replicable model for expanding the technology talent pipeline through the infusion of computer science into the IB MYP curriculum.

3. TIMELINE

Provide a timeline of the planning process, including the proposed date/school year for launch of a Lab School:

TENTATIVE TIME FRAME	ACTIVITY
January 2023	<ul style="list-style-type: none"> ● Submit Planning Proposal ● Lab School Project Team Meeting
February	<ul style="list-style-type: none"> ● Attend bi-weekly computer science state hub meeting ● Begin IB MYP approval process for OSM site (\$4,000 application fee, after awarded \$9,500) ● Work collaboratively with Chesapeake Public Schools (CPS) on identifying required school building updates and other logistics ● Design Thinking: Identify current and potential stakeholders for empathy/input. Schedule empathy/input sessions to help inform design of the proposal ● Coordinate site visit(s) for design empathy session(s) ● Lab School Project Team Meeting ● Establish Lab School project sub-committees
March	<ul style="list-style-type: none"> ● Design Thinking sprint sessions with stakeholders ● Site visit(s) for design/empathy session(s) ● Continue IB MYP approval process ● Lab School project team meeting ● Lab School project sub-committee meetings ● Meet with Stanford Research Institute (SRI) consultants for grant writing

April	<ul style="list-style-type: none"> ● Design Thinking sprint sessions with stakeholders ● Continue IB MYP approval process ● Lab School project team meeting ● Lab School project sub-committee meetings ● Meet with SRI consultants for grant writing
May - July	<ul style="list-style-type: none"> ● Lab School project team meeting ● Lab school project sub-committee meetings ● Collaborative review of design thinking sprint sessions for proposal development ● Continue IB MYP approval process ● Create Marketing plan for information students of program ● Determine needed building modifications ● Determine equipment needs ● Begin working on full grant proposal ● Meet with SRI Consultants for grant writing
July-Aug	<ul style="list-style-type: none"> ● Submit full grant proposal to VDOE ● Continue IB MYP approval process ● Finalize Marketing Plan ● Advertise for Lab School Coordinator ● Lab School Project Team meeting ● Lab School Project sub-committee meetings
Sept-Dec	<ul style="list-style-type: none"> ● Lab School Project Team meeting ● Lab School Project sub-committee meetings ● Finalize IB MYP approval process ● Market program to current 5th grade students ● Select Lab School Coordinator
January - June, 2024	<ul style="list-style-type: none"> ● Lab School Coordinator hired and starts at the Lab School at OSM ● Curriculum Development ● Professional Development for teachers ● Purchase needed equipment ● Lab School Project Team meeting ● Lab School Project sub-committee meetings
June - August, 2024	<ul style="list-style-type: none"> ● Lab School Project Team meeting ● Lab School Project sub-committee meetings ● Needed building updates and modifications completed ● Equipment received at OSM ● Professional Development for teachers ● Host Academy student orientation (August)
September, 2024	<ul style="list-style-type: none"> ● IB/CS Academy at OSM to open

F. STUDENT POPULATION AND RELEVANT RESEARCH

1. TARGETED STUDENT POPULATION

- a. Describe the student population and discuss why they are proposed. Include the number of students, reporting group(s), and grade level(s):

(2022-23) • Grades: 6-8 • Enrollment: 1,055 students • Student-Teacher Ratio: 13:1 • Minority Enrollment: 84% • Overall Testing Rank: Bottom 50% in VA. The student population is made up of 47% female students and 53% male students.

GRADES TO BE SERVED FOR THE FULL TERM OF THE APPROVED LAB SCHOOL CONTRACT (PLEASE CHECK ALL THAT APPLY*)			
Pre-K		Sixth Grade	✓
Kindergarten		Seventh Grade	✓
First Grade		Eighth Grade	✓
Second Grade		Ninth Grade	
Third Grade		Tenth Grade	
Fourth Grade		Eleventh Grade	
Fifth Grade		Twelfth Grade	

***If the applicant intends to add or change grade levels at some point during the Lab School’s operation, please provide this information in the education program section of the narrative.**

- b. Describe the community(ies) the school(s) serves:

The school's minority student enrollment is 84% (majority Black), which is higher than the Virginia state average of 54% (majority Black). The student-teacher ratio is 13:1 is lower than the Virginia state level of 14:1. The student population is made up of 47% female students and 53% male students. Oscar Smith Middle School placed in the bottom 50% of all schools in Virginia for overall test scores (math proficiency is bottom 50%, and reading proficiency is bottom 50%) for the 2018-19 school year. The percentage of students achieving proficiency in math is 64% (which is lower than the Virginia state average of 82%) for the 2018-19 school year. The percentage of students achieving proficiency in reading/language arts is 61% (lower than the Virginia state average of 78%) for the 2018-19 school year.

- c. If the Lab School is going to have a specialized focus (e.g., Science, Technology, Engineering, Mathematics [STEM], at-risk students, special education, career and technical education, gifted education, classical education, etc.), please describe the focus:

The IB/CS Academy at Oscar Smith Middle will be part of the planned statewide hub network of computer science lab schools. The purpose of the statewide hub network is to provide connections between regional school districts as they expand their efforts to develop the future computer science tech talent pipeline in the Commonwealth of Virginia. Specific goals of the network include:

- *Assessing and identifying best practices for computer science education in K-12*
- *Leveraging regional strengths to address opportunities to enhance computer science education*
- *Providing opportunities for statewide research projects on computer science education*
- *Ensuring that K-12 students receive the computer science training they need for career readiness and college pathways*
- *Building communication channels between K-12 educators and university partners*
- *Connecting current and future Virginia industries with computer science educators.*

2. RELEVANT RESEARCH

Discuss any relevant research tied to the proposed student population and overall goal of the program to demonstrate that it will improve student academic proficiency, mastery, college and career readiness, and long-term outcomes:

The activities of IB/CS Academy are supported by research showing the value of project-based learning, [5] experiential learning, [6] early introduction to computational thinking, [7] interdisciplinary foundations for computer science, [8] peer mentoring, [9] and design thinking. The program is also supported by a large amount of research showing the importance of early introduction to computing as a key factor for success in computer science college coursework. In this case, the School provides an early introduction to computing along with placement on a pathway to a possible dual enrollment program after they complete the lab school.

These activities will be developed using a human-centered design thinking framework, which is a strategy ODU faculty members have leveraged over the past several years. Using design thinking as a framework, ODU created the INNOVATE Monarch program where students use design thinking strategies to identify solutions to problems the students face in pursuit of their degrees. [10] Design thinking is a strategy used “to solve complex (wicked) problems...and to generate innovative solutions, based on a user-centered approach with multi-disciplinary teams.” [11] Design thinking is used by health care professionals, [12] businesses, [13] entrepreneurs, [14] educators, [15] computer scientists, [16] engineers, [17] and others to figure out solutions to the kinds of problems they address. Engineers are quick to point out that the design thinking process grew out of engineering practices related to systems and product development. With a foundation in the STEM disciplines, it makes sense that design thinking can be used to address STEM education problems such as the following: (1) How do we introduce disadvantaged middle school students to computing? (2) How might we better prepare middle school teachers to teach about computer science? (3) How might we enhance the

diversification of the computing workforce by designing interdisciplinary courses for middle schoolers? (4) How might we use better connect students, teachers, and professors within the region and across the Commonwealth?

From a product development standpoint, the premise of design thinking is simple – users should be involved in the development of new products. The same can be said of identifying strategies to help teach about computer science. Students and teachers must be involved in developing mechanisms to improve student success.

[1] “Why Computer Science?” Available online at <https://code.org/promote/va>

[2] Bureau of Labor Statistics. (2020). Computer and Information Technology Occupations. <https://www.bls.gov/ooh/computer-and-information-technology/home.htm>

[3] Tech Talent Investment Program. (2020). <https://www.vedp.org/sites/default/files/vedp-media/key-industries/TTIP%20Brochure/Tech%20Talent%20Investment%20Program%20%28TTIP%29%20Brochure.pdf>

[4] Carter, E., Blank, G., & Walz, J. (2012, February). Bringing the breadth of computer science to middle schools. In *Proceedings of the 43rd ACM technical symposium on Computer Science Education* (pp. 203-208).

[5] Liu, M., & Hsiao, Y. P. (2002). Middle school students as multimedia designers: A project-based learning approach. *Journal of interactive learning research*, 13(4), 311-337.

[6] Rihtaršič, D., Avsec, S., & Kocijancic, S. (2016). Experiential learning of electronics subject matter in middle school robotics courses. *International journal of technology and design education*, 26(2), 205-224.

[7] Heintz, F., Mannila, L., & Färnqvist, T. (2016, October). A review of models for introducing computational thinking, computer science and computing in K-12 education. In *2016 IEEE Frontiers in Education conference (FIE)* (pp. 1-9). IEEE.

[8] Goldschmidt, D., MacDonald, I., O'Rourke, J., & Milonovich, B. (2011). An interdisciplinary approach to injecting computer science into the K-12 classroom. *Journal of Computing Sciences in Colleges*, 26(6), 78-85.

[9] Jovanovic, V. M., Kuzlu, M., Popescu, O., Badawi, A. R., Marshall, D. K., Sarp, S., ... & Wu, H. (2020). An initial look into the computer science and cybersecurity pathways project for career and technical education curricula.

[10] INNOVATE Monarch. (no date). Available online at <https://www.odu.edu/asis/innovatemonarchs>.

[11] Thoring, K., & Müller, R. M. (2011). Understanding design thinking: A process model based on method engineering. In *DS 69: Proceedings of E&PDE 2011, the 13th International Conference on Engineering and Product Design Education*, London, UK, 08.-09.09. 2011 (pp. 493-498).

[12] Eines, T. F., & Vatne, S. (2018). Nurses and nurse assistants' experiences with using a design thinking approach to innovation in a nursing home. *Journal of Nursing Management*, 26(4), 425-431.

[13] Martin, R., & Martin, R. L. (2009). The design of business: Why design thinking is the next competitive advantage. Harvard Business Press.

[14] Sarooghi, H., Sunny, S., Hornsby, J., & Fernhaber, S. (2019). Design thinking and entrepreneurship education: Where are we, and what are the possibilities?. Journal of Small Business Management, 57, 78-93.

[15] Koh, J. H. L., Chai, C. S., Wong, B., & Hong, H. Y. (2015). Design thinking and education. In Design thinking for education (pp. 1-15). Springer, Singapore.

[16] O'Callaghan, G., & Connolly, C. (2020, September). Developing creativity in computer science initial teacher education through design thinking. In United Kingdom & Ireland Computing Education Research conference. (pp. 45-50).

[17] Lammi, M., & Becker, K. (2013). Engineering Design Thinking. Journal of Technology Education, 24(2), 55-77.

G. COLLABORATION AND STAKEHOLDER INVOLVEMENT

1. Describe the involvement of local school divisions, community-based organizations, employers, teachers, and parents in the planning, development, and implementation of the proposed program:

The Lab School is a partnership between Old Dominion University, Tidewater Community College, and Chesapeake City Public Schools. Situated within the statewide computer science network, input has been provided from partners operating across the state. Several planning meetings with representatives from industry, higher education, and K-12 have been convened. Those meetings have demonstrated the need to develop lab schools responsive to community needs. The value of such an approach is that the activities of one region's computer science lab school can inform the activities of other lab schools in the statewide network. Within the IB/CS Academy, those involved in planning have included teachers, K-12 administrators, higher education professors, higher education administrators, and education researchers.

2. If the Lab School is going to be in partnership with a local school division(s), please describe the partnership briefly:

Old Dominion University, Tidewater Community College, and Chesapeake City Public Schools (CCPS) are partnering to develop the Lab School at OSM. The three entities have a long history of working together on various projects. Past and ongoing partnerships include student teaching, internship collaborations, research projects, and service on advisory boards. Home to the largest teacher education program in the Commonwealth and a nationally recognized education leadership graduate program, several graduates from Old Dominion University's College of Education and Professional Studies either work at CCPS or have provided different types of service to the school district.

H. SUSTAINABILITY

1. The goal of the Planning Grant program is to support public institutions of higher education; public higher education centers, institutes, or authorities; or eligible institutions of higher education as defined in the Tuition Assistance Grant Program, as

defined in § 23.1-628, as they develop and implement programs in order to create or improve capacity to operate and sustain a Lab School independently of long-term state funding, and in a manner that promotes quality, innovation, and program results.

2. Please describe the capacity of your public institution of higher education; public higher education center, institute, or authority; or eligible institution to implement a Lab School:

Old Dominion University has capacity to implement the lab school Using the human-centered design thinking framework as a foundation aligns with ongoing design thinking efforts at the institution. The two institutions have a long history of working together, including on projects related to cyber technology. Using the design thinking framework, the ODU Design Thinking Institute has developed programs that bring students and professors together to identify and solve challenges in a cohort led by a design thinking expert. Innovate Monarch was developed to provide ODU students the opportunity to work with one another on challenges students believe need addressed. Innovate Cyber was designed to connect students from across the region and identify solutions to cyber problems identified by business partners. In the first cohort, 20 students from seven different institutions were assigned to four groups to work with business partners. More recently, Innovate Cyber brought together 54 students from 14 institutions to address cybersecurity problems across the Commonwealth of Virginia. In addition, an Innovate Online program is being created with the aim of giving online students and professors from across the Commonwealth of Virginia the opportunity to engage in design thinking programming that will identify strategies needed to better design student support services for online learners. At the end of the Innovate programs, which typically are spread over a semester, students present their solutions to business and community partners. The Innovate IB/CS programs will follow the same successful framework that has been used in the previous design thinking programs. The success of these previous programs demonstrates the institution's ability to implement the IB/CS Academy.

3. Identify potential affiliates, partners, and describe potential sustainable funding sources:

The IB/CS Academy will be part of the statewide Computer Science Lab School Network. As noted in an announcement by Governor Youngkin in April 2022, educational partners include Stafford County Public School and University of Mary Washington, Chesapeake Public Schools and Old Dominion University, Harrisonburg City Public Schools and James Madison University, as well as Loudoun County Public School, Roanoke Higher Education Center, and Southwest Higher Education Center, The Network will be facilitated by CodeVA. The facilitator role is highlighted in a proposal CodeVA developed for the the creation of the statewide network:

Since 2014, CodeVA has been at the forefront of computer science education in Virginia and the nation. In its role as a computer science education K-12 advocacy organization, CodeVA has had statewide and national impact by working with Virginia's legislature to develop and implement Virginia's first-in-the-nation CS SOLs. Designated by the state, and partnered through legislation with the Virginia Department of Education (VDOE) to provide free computer science professional learning for Virginia's public school educators, CodeVA has implemented a network of strategically placed professional learning hubs across the commonwealth to increase community access to activities such as professional development, formal and informal computer science programs, and curriculum development. CodeVA is committed to serving the whole child, and in addition to its formal education programs, CodeVA's Eureka Workshop offers computer science education using an informal lens, working

with community organizations and families to offer innovative arts-based computer science experiences and curricula outside of the formal school setting. As a nationally recognized thought leader in computer science education, CodeVA partners with Virginia school divisions, institutions of higher education, and research organizations across the United States on federally and state funded research projects focused on providing computer science opportunities and education to all students by developing and evaluating effective, responsive computer science and computational thinking integration across core content areas in elementary and middle and high school.

- Identify potential barriers to the planning process and possible ways to address them:

BARRIER	HOW TO ADDRESS
Resistance to interdisciplinary perspectives	Using key stakeholders to demonstrate the value of interdisciplinary approach
Student awareness about computer science	Targeted marketing
Student interest in computer science	Integrating computer science into materials students find interesting
Lack of trust between partners	Regular meetings over time and open communication

I. BUDGET OF DIRECT COSTS (WITH \$200,000 MAXIMUM)

- Complete the budget table below outlining the financial plan of how the Planning Grant will be used in the effort to establish a Lab School. The Planning Grant period and use of funds may not exceed 12 months from the date of award.
- Only include direct operating costs. Indirect costs and capital outlay costs are not allowed. Include a description of expenses that explains appropriateness of expenses based on the category descriptions shown below.
- All expenses must be directly related to the proposed Planning Grant activities. Applicants are not guaranteed the requested award amount and any award may be proportionally adjusted according to application's weighted Planning Grant Application Evaluation Rubric score and to reflect only those expenditures that are designated as permissible.
- Note: Any unspent Planning Grant funds remaining at the end of the grant term must be returned by the recipient to the Department.**

CATEGORY	DESCRIPTION OF EXPENSES	FUNDING REQUESTED
1000 – Personal Services	Faculty release time Design thinking stipends Substitute teacher costs Program Coordinator	\$130,000
2000 – Employee Benefits		\$ 35,000
3000 – Purchased/Contractual Services	Travel to visit comparable schools and meetings IB Fees	\$ 5,000 \$ 15,000
4000 – Internal Services		
5000 – Other Services		
6000 – Materials and Supplies	Marketing materials Design thinking meetings	\$ 15,000
Total		\$200,000

*** Total cannot exceed \$200,000 with additional funding considered at the discretion of the Department on a case-by-case basis and in accordance with available funds.**

Please visit the [Virginia Department of Education OMEGA object codes universal guidelines](#) for a complete description of the budget categories.

APPENDIX: PLANNING GRANT APPLICATION EVALUATION RUBRIC

For the applicant’s information, the following will be used as the Planning Grant Application Evaluation Rubric for this application. Applicant does not need to complete this section.

AREA OF CONSIDERATION	DESCRIPTION	POINTS AVAILABLE
Targeted Student Population(s) and Relevant Research	Application proposes intention to serve at-risk students and/or offer a new, innovative model of instruction grounded in evidence-based practices to improve student academic proficiency, mastery, college and career readiness, and long-term outcomes.	30
Clarity of Program Description Goal, and Timeline	The program description and goal are clear and attainable. Indication of programmatic, operational, and infrastructural capacity to advance an application to launch a Lab School program, as well as launch a Lab School no later than the 2024-2025 school year. Additional preference will be given to applicants with an earlier Lab School launch timeline.	20
Sustainability	Evidence of institutional commitment to the viability of a Lab School in a manner that promotes quality, innovation, program results, and sustainability.	20
Collaboration	Evidence of engagement and collaboration with stakeholders, including local school divisions, community-based organizations, employers, teachers and parents.	15
Regional and Applicant Diversity	Evidence of diversity of location, with the goal of Lab Schools in each Superintendent region. For applicant diversity, preference will be given to new applicants in the event a concurrent applicant has previously received a Planning Grant during the current application period.	15