

**From:** [Dodge, Gail](#)  
**To:** [Dodge, Gail](#)  
**Cc:** [Mccoy, Pinky A.](#); [Whitfield, Tiffany L.](#)  
**Subject:** Monday Matters: Brooks Crossing Innovation Lab  
**Date:** Monday, February 8, 2021 8:02:15 AM  
**Attachments:** [ANNUAL REPORT Brooks Crossing Innovation.docx](#)

---

Dear Colleagues:

An exciting opportunity for College of Sciences faculty has become available for you to share your expertise and help ODU build our community outreach on the Peninsula.

Pinky McCoy is the Dean's Fellow for Outreach and Recruitment. She wrote to me about the Brooks Crossing Innovation and Opportunity Center (BCIOC), a new facility in Newport News that opened in August 2019. It was established as a result of a collaboration between Newport News Shipbuilding, Old Dominion University, and the City of Newport News which serves K-12 to adult learners. It contains the STEM Digital Innovation/iLab and Fabrication Lab, which is managed and operated by ODU's Virginia Modeling Analysis, and Simulation Center (VMASC).

The website is <https://www.nnva.gov/2506/Brooks-Crossing> and additional information is attached.

The Center would like to engage faculty and students in providing additional STEM programming. I encourage faculty to offer their expertise to the center as part of our community outreach. Currently, the center has an immediate need for individuals to instruct the second part of the elementary level Urban Agriculture program, and also offer the first middle school level in the spring. The curriculum for the program is already in place and funding for materials is secured.

Some other areas/ideas that we could serve:

- Virtual science labs for 3<sup>rd</sup>-11<sup>th</sup> graders where they conduct safe experiments at home. The experiments could be two parts where they setup and start the experiment through a guided virtual step-by-step video, observe and document on their own, and compare their results in a follow-up virtual session. These labs could focus on any science (Biology, Ocean/Earth Science, Physics, BioChemistry, etc).
- Robotics/Coding and Cybersecurity programs for elementary and middle schoolers

Other ideas are welcome! Funding for required materials is available.

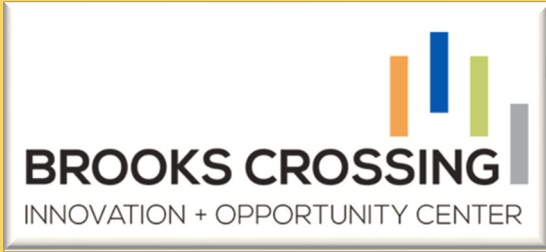
Thank you and I hope you will consider offering your time and talent to Brooks Crossing. Please contact Pinky if you would like to participate and/or have suggestions and ideas. Her email is [pmccoy@odu.edu](mailto:pmccoy@odu.edu).

Best Regards

Gail

---

Gail Dodge  
Dean, College of Sciences  
Old Dominion University  
[gdodge@odu.edu](mailto:gdodge@odu.edu)  
757-683-3432



# ANNUAL REPORT 2019-2020

Brooks Crossing Innovation Lab  
September 2, 2020

---

# HIGHLIGHTS

## Strategic Highlights

There are two sides to the Brooks Crossing Innovation and Opportunity Center. One side represents regional workforce development opportunities and the other side serves as an innovative fabrication and STEM resource to the community and regional school systems. This report is specific to the innovation lab (known as Brooks Crossing Innovation Lab/iLab) which is managed and operated by Old Dominion University's (ODU) Virginia Modeling Analysis, and Simulation Center (VMASC).

Design Principles for Brooks Crossing Innovation Lab are:

- ❖ Be a place where, through team building and collaboration, students will develop social and communication skills as they become responsible citizens and leaders of the future.
- ❖ Establish an environment that will encourage participants (students, innovators, and all stakeholders) to be competitive locally, nationally, and globally.
- ❖ Be accessible to all learners by removing barriers to broad-scale engagement.
- ❖ Be an instructional hub for STEM Learning, driven by a value-added-based curriculum, allowing visitors to work in a safe environment to develop work-ready skills for existing and future industry needs as well as be a model for professional development and continuing education.
- ❖ Respond to the needs of a diverse and evolving community to create a welcoming, safe, inclusive, and collaborative environment where participants can learn and grow, both personally and professionally, as they innovate, transform, and create new opportunities.
- ❖ Model a relevant and diverse outreach and engagement strategy that empowers the community and garners buy-in.
- ❖ Cultivate a culture of producers and makers that will use their collaborative thinking and products to contribute to the community at large.
- ❖ Provide continuous learning opportunities for people of all ages, abilities, and disciplines to conceptualize and design creative solutions to real-world problems.
- ❖ Provide learning opportunities for pre-school aged children with the intent to foster interest in STEM prior to entering elementary school.

- ❖ Provide opportunities for ongoing internal and external evaluation and data analysis that is responsive to community needs in order to continue to improve programming in the lab.

The year of 2019 was momentous in that the Brooks Crossing Innovation Lab opened on August 24, 2019 and was a collective undertaking by Old Dominion University, Newport News Shipbuilding (NNS), and the City of Newport News, serving K-12 to adult learners. The strategic focus areas of the lab include: increase STEM education and opportunities for Newport News, Hampton, and regional students (K-12); elevate the economic status of the area (social mobility) by creating opportunities for digital innovation and upskilling to increase employability (18+); align post-secondary programs, workforce development training and technical certifications to increase employability (ages 18+), and fulfill future workforce demands in digitization forecasted by major industries in the region.

### Sustainability Highlights

- **GoVA VDSP** included funding to open and maintain Brooks Crossing Innovation Lab.
- **State Assembly** funded Director position to open and maintain Brooks Crossing Innovation Lab.
- **National Shipbuilding Research Program (NSRP):** Collaborated with Newport News Shipbuilding, Norfolk Naval Shipyard, Virginia Tech, and Skagit Community College.
- **Office of Naval Research (ONR):** Rapid Student Learning Project: Partnered with Dr Ghosh of ODU Department of Engineering. The proposal was awarded with Brooks Crossing as central location for ODU and Navy personnel collaboration.
- **Service-Learning Mini-Grant:** Proposal Awarded. Collaborated with Dr. Amason, Research Assistant Professor. Project included ODU service-learning class for ODU students.
- **Virginia Department of Education/Advancing Computer Science Education Grant:** In partnership with Dr. Garner of ODU Department of Educational Partnerships. The proposal was awarded. Grant works with five school systems for Teacher professional development. Brooks Crossing will serve as the Virginia State region 2 location for Teacher coding training.

- **Department of Labor Youth Build Grant:** In partnership with The City of Newport News, Habitat for Humanity, Volunteers of America, Peninsula Regional Education Program. Brooks Crossing equipment training will be used to teach construction trades to youth and young adults.
- **JP Morgan Chase Advancing Cities Grant:** In partnership with The City of Newport News, Versability, Goodwill, and Hampton Roads Community Action Program. Brooks Crossing was to provide instructional design and serve as the training pilot location.
- **Morgan Trust Grant:** ODU Education Foundation grant is an equipment grant awarded to the Brooks Crossing Innovation Lab.
- **Office of Naval Research (ONR):** White paper submitted in partnership with Boys and Girls club of America and Carderock NAVSEA. Brooks Crossing was to provide equipment training and serve as a location for STEM programs.
- **NASA National STEM Innovation Partnership:** Proposal submitted in partnership with Hampton Roads Community Action Program (HRCAP). Brooks Crossing was to provide instructional design services by developing eLearning opportunities for virtual STEM programming as well as provide equipment training for participants.
- **Choice Neighborhood Initiative (CNI):** There are three components of the Newport News CNI Grant; People, Neighborhood, and Housing. ODU was identified as part of the People and Neighborhood plans.
  - People Plan
    - Employment Goal 2: Boost Employment Opportunities
    - Strategy 2: Collaborate with existing and new area employers to set up training/apprenticeship programs for Ridley Place residents leading to full-time employment.
  - What have we done for this Goal/Strategy?
    - Conducted three after school programs with Jefferson Labs.
    - Partnered with the City of Newport News and Volunteers of America to propose and win the Youth Build Grant.
      - ❖ ODU committed the following equipment as in-kind matching funds, totaling \$23,931 per year of Implementation, and \$47,862 over the life of the grant.
      - ❖ Brooks Crossing Innovation Lab is a training location for construction trades as part of this grant.

- Conducted three Newport News Shipbuilding Apprentice School Youth Builder programs which focused on Shipbuilding careers and Trades Training.
    - Conducted two after school programs with Newport News Shipbuilding's GEMs (Girls with Engineering MindS) programs.
    - Conducted two Young Adult Police Commissioner after school programs.
    - Conducted over 40 tours to introduce and encourage employer-based programming and presence within the facility.
    - Served as workshop site for Newport News Shipbuilding, Ferguson Enterprises, and Newport News Public Schools.
  - Neighborhood Plan
    - Economic Development Goal 2: Foster economic development along Jefferson Avenue to create a vibrant commercial corridor, support locally owned and operated businesses.
    - Strategy D: Improve Communications and outreach for existing job training and workforce readiness programs.
  - What have we done for this goal/strategy?
    - Conducted 16 sessions of Social Entrepreneurship classes for youth.
    - Conducted an ODU-sponsored Social Entrepreneurship Youth Challenge titled "Believe in Brooks".
    - Conducted two "Start your own business" workshops.
    - Conducted ODU Department of Management-sponsored "Brooks Crossing Ideation/Incubation" workshop (Entrepreneurship Mentoring Program which will be continued in the fall (2020). NOTE: The community was extremely excited about this program which started with Elko Klijn as the POC. Unfortunately, it was interrupted by COVID-19.
    - Served as Employer Mentoring site for the Hampton Roads Community Action Program's STEP job readiness program.
    - Served as Newport News Shipbuilding eShip/iShip youth program work site.
- **National Science Foundation (NSF) Innovative Technology Experiences for Students and Teachers (ITEST):** Partnering with Newport News Public Schools and William and Mary University in support of a proposal entitled "A Partnership between Middle School Science Teachers and Black Undergraduate Mentors to

Promote Culturally Relevant Engineering for Underrepresented Students" with Dr. Meredith Kier as the Principal Investigator.

- **Commonwealth of Virginia:** Letter of Commitment in support for the designation of the Hampton Roads Maritime Industrial Base Ecosystem (MIBE) Consortium to be Designated a Defense Manufacturing Community and for an Office of Economic Adjustment Defense Manufacturing Community Support Program Grant Proposal

# INNOVATION LAB PROGRAMMING

## Summary

The iLab engaged a total of 2,025 participants between August 2019 and August 2020 with a participant breakdown as follows:

- Community: 1328 (Adults and Children for equipment training, promotional events)
- Industry: 150 (Including workshops led by Newport News Shipbuilding)
- Teachers (Professional Development): 112
- Students (Field Trips): 136 (Chesapeake, Hampton, and Newport News Public Schools)
- COVID-19 Response Virtual Events: 299

Between August 2019 and August 2020, the iLab hosted 157 sessions to include community events, training, and educational programs:

- Lab Equipment Training (including Fab Fellows and Volunteers): 33
- Mentoring: 26 (Side by Side learning)
- Industry Workshops: 38
- School Field Trips: 8 (Chesapeake, Newport News, Hampton)
- Teacher Professional Development: 6 (Newport News Public Schools)
- iLab Programs/Community Events: 27
- COVID-19 Response Virtual Programs: 19

During the height of the pandemic Brooks Crossing Innovation Lab manufactured over 100 3D printed facemasks to be used by Norfolk General Emergency personnel and Kings Daughters Hospital staff. In addition, the iLab produced over 70 3D-printed masks for distribution by City of Newport News employees to promote census enumeration.



## Innovation Lab Community Events

Brooks Crossing Innovation Lab is very community focused with relationships with multiple community partners. The lab participated in the following community-based events:

- Brooks Crossing Innovation Lab promotional table at the City of Newport News Community Day celebration
- Participated in The City of Newport News' "ARTech Lights" celebration event which was to include several fabrication activities.
- Brooks Crossing Innovation Lab promotional table at Bridging the Gap youth Program Juneteenth Event
- Participated in The City of Newport News' "Valentine Lights" celebration event which was to include several fabrication activities.



- Hampton Roads Big “3” Meet and Greet as lab promotional event was held at Brooks Crossing Innovation Lab.
- Teen “STEAM on Spectrum” event was held at Brooks Crossing Innovation Lab and included several fabrication activities.
- “Jack of Spade” Bridging the Gap Youth Program Community event which was held at Brooks Crossing Innovation Lab
- “Christmas Ice Cream Social” Bridging the Gap Youth Program event which was held at Brooks Crossing Innovation Lab
- “Fab Fellows” program for Heritage High School students. This program was critical for lab start up and students worked preschool and elementary digital arts program for smaller children during lab equipment training.
- Christopher Newport University (CNU) volunteer recruitment event. This event resulted in eight CNU volunteers who rotated within the lab until COVID-19.
- Transportation was provided for Newport News Public School students for the ODU Math Festival held on the main campus.
- Congressman Bobby Scott’s Congressional App Challenge Awards Ceremony was held at Brooks Crossing Innovation Lab.
- International Women’s Day Brunch was a “Girl -preneur” program with a 2020 campaign theme of #EachforEqual: An equal world is an enabled world.

## Innovation Lab Programming

Brooks Crossing Innovation Lab programming includes equipment training, k-12 school field trips, after-school/work programs, Teacher professional development workshops, mentoring programs, and industry workshops.

- **Equipment Training:** Equipment training were held once a week, 5pm - 8:30pm. All equipment training includes an aspect of computer-aided design to include the overall engineering design process.
  - **Recording Studio:** Sound research and production space that focuses on learning the equipment involved with pre- and post-production of audio engineering. Standards of Learning in this training can include Science, Physics, Math, and Physical Science.
  - **3D Printing:** Additive manufacturing which builds 3D objects from a computer-aided design model by adding material layer-by-layer. Standards of Learning in this training can include Science, Biology, Physics, Math, Geometry, Chemistry, and Engineering.

- **Laser Cutting:** Subtractive manufacturing which uses a highly focused laser beam to cut materials. Standards of Learning in this training can include Science, Biology, Physics, Math, Earth Science, Geometry, US History, VA Studies, and World History.
  - **Vinyl Cutting:** Subtractive manufacturing which uses a computer-controlled machine to navigate the movement of a sharp blade over the surface of various types of material. The blade is used to cut shapes and letters from materials. Standards of Learning in this training can include Science, Biology, Physics, Math, Geometry, Language Arts, Chemistry.
  - **Woodshop:** A computer numerically controlled (CNC) tool which is used in prototyping and full production for cutting, carving, machining, and milling a variety of materials. Standards of Learning in this training can include Science, Biology, Physics, Math, Earth Science, Geometry,
  - **Mixed Reality:** A simulated experience and interaction within a 3D, or virtually transposed, environment. Standards of Learning in this training can include Science, Biology, Physics, Math, Earth Science, Geometry
- **K12 School Field Trips:** The lab completed eight school field trips for; Hampton High School, Kecoughtan High School, Hugo Owens Middle School, Huntington Middle School, Hines Middle School. School field trips involved equipment challenges as well as a full tour of the lab.
  - **After-school/work programs:** Community partners completed after-school programs for children and adults.
    - **Social Entrepreneurship:** Unreasonable Kids Youth program for teens and tweens included social business development, 3D printing, and vinyl cutting business logo accessories.
    - **GEMs:** NNS Girls with Engineering Minds toured the lab and completed fabrication equipment challenges.
    - **Young Adult Police Commissioners (YAPC):** This is an organization of high school students that meets weekly during the school year with the police department. Two sessions were held at Brooks Crossing Innovation Lab where participants completed four fabrication equipment challenges.
    - **Jefferson Labs:** JLAB Science Education completed two sessions of their “Escape Room” after school program.
    - **TURNT:** Tunes Used to Release Negative Thoughts. A social learning program that includes learning BEATZ and recording studio equipment.
    - **ODU:** “Believe in Brooks” Social Entrepreneurship competition where ODU students worked directly with middle-schoolers to pitch social change businesses.
    - **Literacy for Life “Empowering Parents”:** Literacy program to teach parents how to read books to their children. Six sessions were completed, and parents received cash and a book for each session.
    - **First Time Homebuyers:** Six sessions to guide individuals through the homebuying process considering the community development plans currently underway for the Marshall-Ridley neighborhood.
    - **HRCAP:** Preschool Digital Arts program during workforce development event.
    - **NNS eShip/iShip:** A Newport News Shipbuilding program where 10 Newport News public school engineering and IT students spent Monday afternoons in

- the shipyard learning how engineering and IT is incorporated into everyday job tasks. Multiple sessions were planned but interrupted by COVID-19.
- **The Apprentice School Youth Builders:** Multiple sessions were conducted to include fabrication equipment challenges.
  - **How to start a Business:** Sessions completed to guide adults through the process of starting a business.
- **Teacher Professional Development:** In partnership with Newport News Public Schools, six “STEM under Construction” teacher development workshops and ODU conducted a Teacher Design Thinking workshop. These workshops included an introduction to lab equipment with details on how the technology could be incorporated into technology-based lesson plans.
  - **Mentoring Programs:** The lab included two mentoring programs in partnership with two community partners. Both programs met consistently and included equipment training for participants as a means by which mentors would be able to build relationships with mentees.
    - **WE ARE Mentorship:** Abu Unity Foundation program goals include, but not limited to decreasing/preventing youth violence, increasing financial independence, discouraging association with negative peers, enhancing self-awareness and expression, and increasing family bonds.
    - **Pain on Paper (POP):** Social learning mentoring program which is focused on teaching youth how to put their anger, pain, frustration, and trauma into music by learning how to write songs and poetry. The curriculum includes learning recording studio equipment, videography equipment, and self-evaluative techniques.
  - **Industry Workshops:** Following are a few industry partners workshops that were held Brooks Crossing Innovation Lab:
    - NNS Lean Assessment Leadership Workshops
    - NNS Lean Development Workshops
    - NNS IDT Program Mgmt Workshops
    - HRCAP Community Project Workshop
    - National Veterans Small Business Workshops
    - NNS USW Labor Management Meeting/Tour
    - ODU Training Specialist Advisory Meeting/Tour
    - NNS Design Thinking Workshops
    - Ferguson Enterprise employee workshop
    - NNPS STEM Team meeting/Tour

## COVID-19 Virtual Response

Brooks Crossing Innovation Lab has engaged 288 participants by offering virtual programs with multiple community partners.

- Virtual Kid Business Course: Rocket Ideas Monday Meetups with Kid CEO Samaira Mehta
- Virtual Breakfast with Gabriela Corbera, Business and Human Rights Strategist at Global Social Innovation, LLC
- Virtual Breakfast with Luc Lapointe, CEO and Founder of BC Lab
- Virtual Brunch with Damon Kwame Mason, Soul on Ice: Past/Present/Future Producer
- Virtual Earth Day 2020, ClimateAction Virtual Discussion for Parents and Kids
- Virtual Breakfast with Shireen Hafeez: Founder of “Deaf Kids can Code”
- Virtual Lunch with Claudia Romo Edelman, Founder and CEO, We Are All Human Foundation
- Virtual Start your own social enterprise for Adults
- Virtual National Superhero Day All Day, A Day to Honor Medical Superheroes
- Virtual Dinner with Nate Johnson, Leadership and Mindset Coach, Writer, Speaker
- Brooks Crossing Innovation Lab Sponsorships for Newport News Public School children to attend: How to become an Unreasonable Kid Elementary Camp
- Virtual Entrepreneurship Class for Adults (2-Part Series)
  - Entrepreneurs 101 (Definition, Small Business Brainstorm, Entrepreneur characteristics and brainstorm, 4P’s of Marketing, Q&A)
  - Legal Aspects of Entrepreneurship (Registered and unregistered trademarks; What is their function, how do you use them and what is the difference?)
- Brooks Crossing Innovation Lab Sponsorships for Newport News Public School children to attend: How to become an Unreasonable Kid for Middle Schoolers
- Brooks Crossing Innovation Lab Sponsorships for Newport News Public School children to attend: How to Build a Moneymaking Business for Kids camp.
- Brooks Crossing Innovation Lab Sponsorships for Newport News Public School children to attend: Super Kid Entrepreneurs: Ready, Set, Go
- Virtual Summer STEM Camp offered in partnership with Northern Virginia Community College to Newport News Public School students: Robotics
- Virtual Summer STEM Camp offered in partnership with Northern Virginia Community College to Newport News Public School students: Cybersecurity
- Virtual Summer STEM Camp offered in partnership with Northern Virginia Community College to Newport News Public School students: Fabrication (Levels 1-3)

# Pictures



Equipment Training at Brooks Crossing Innovation Lab



International Women's Day Brunch



ODU: "Believe in Brooks" Social Entrepreneurship Competition



"STEM under Construction" Teacher Development

## What will Year TWO look like?

Given the current environment, Brooks Crossing Innovation Lab and its community partners have planned an exciting portfolio of Fall Hybrid/Virtual programs.

- **Equipment Training**
  - Introduction to Fabrication Design (Part 1)
  - Introduction to Fabrication Design (Part 2)
  - Introduction to Project-Based Laser-Cutting
  - Introduction to Project-Based 3D Printing
  - Introduction to Project-Based Vinyl-Cutting
  - Augmented Reality Coding Class
  - Virtual Reality Coding Class
  - Recording Studio Equipment Training (Multiple sessions will be conducted to allow one-on-one instruction)
  - Videography 101: The iLab also hopes to purchase additional studio and videography equipment (to include Drones) with “Morgan Trust” funds.
  - Introduction to Project-Based Woodshop
- **Social Entrepreneurship**
  - How to start a Social Enterprise for Youth
  - How to start a business for Adults
- **Mentoring Programs**
  - Pain On Paper (POP) Virtual Mentoring
  - WE ARE Virtual Mentoring
- **Washington Area Lawyers for the ARTS (WALA) Classes**
  - Session #1: Copyright/Trademark Protection & Use
  - Session #2: Business Entities Formation
  - Session #3: Contracts & Licensing
  - Session #4: Negotiation Strategies
  - Session #5: Tax Strategies
  - Session #6: Grants
- **Urban Agriculture:** The USDA has classified the area surrounding Brooks Crossing Innovation Lab (iLab) as a “Low income, Low Access (Food) zone. A food desert is defined when a community is both low-income and low access (Spears, Powell, & Yang, 2014). Individuals that live in food deserts have inadequate options to purchase fresh fruits and vegetables. In addition, individuals who live in food deserts are more likely to purchase convenient food which is high in sugar, fat, and sodium (Johns Hopkins Public Health, 2014). The iLab hopes to offer an Urban Agriculture program for middle and high school students which will include hydroponic farming technology

where students will explore biodiversity, sustainability, and technology through hands-on, real-life experience with a focus on STEM-related disciplines and career development. Specific subjects associated with urban agriculture include biology, chemistry, earth science, math, technology, and engineering.

- **eTextiles:** In this age of wearable technology the iLab hopes to launch a new eTextile program that will include purchasing additional sewing/embroidery equipment using Morgan Trust funding.
- **Electronic Workbench:** The iLab plans to use Morgan Trust funding to purchase an electronic workbench which will allow program expansion to include electrical courses.