

**An Implementation Plan for a *Voyage* Scale Model Solar System at
Montgomery County Community College – Pottstown Campus
101 College Drive
Pottstown, PA 19464**

Partner Organizations and Contacts

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Lead Organization

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Partner Organization

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The Community

Founded in 1964, Montgomery County Community College (“MCCC”) strives to meet the lifelong learning needs of Montgomery County residents, visitors and businesses. Known for academic excellence based on the successes of more than 65,000 alumni, MCCC has been recognized for having the nation’s top faculty and for being the most technologically advanced community college in the country. Funded by Montgomery County, the Commonwealth of Pennsylvania, and student tuition, MCCC is governed by a 15-person Board of Trustees appointed by the Montgomery County Commissioners and is fully accredited by the Commission of Higher Education of the Middle States Association of Colleges and Secondary Schools. As a member of the Achieving the Dream: Community Colleges Count network, MCCC is constantly honing research-based strategies that support student success. Our comprehensive curriculum includes more than 100 associate's degree and certificate programs—including nearly a dozen online degree and certificate programs and several hybrid online/traditional programs—offered at the Blue Bell Campus, Pottstown Campus, The Culinary Arts Institute in Lansdale, PA, and online. MCCC also offers career training and continuing education programs for learners of all ages and backgrounds.

As our Pottstown Campus celebrates its 25th anniversary year in serving students and our community, and as the Pottstown Borough undergoes a significant community-wide revitalization effort, MCCC submits this plan to purchase and install at the Pottstown Campus a Voyage Mark II Scale Exhibit Solar System (the “Voyage Exhibit”), creating a dynamic solar system walking path along the center of the campus that will be an important focal point for science, technology, engineering, and mathematics (“STEM”) education. As part of MCCC’s “pathways” initiative for engaging the community in all phases and stages of education, acquisition of a Voyage Exhibit would also be a strategic addition to the new Challenger Learning Center at Montco Pottstown (the “Challenger Center”), which is scheduled to open in the spring of 2022 and will be the very first Challenger Learning Center located in the Commonwealth of Pennsylvania (<https://www.mc3.edu/for-our-community/challenger-center>). Focused on engaging students in grades 5-8 in space-inspired STEM learning, the Challenger Center will serve ~7,000-8,000 students of all backgrounds each year, with approximately 50% coming from low income or historically underrepresented communities in Montgomery County as well as 6 adjacent counties (Philadelphia, Berks, Chester, Bucks, Delaware, and Lehigh) in the southeastern Pennsylvania region, who will embark on simulated space missions, working together to run hands-on experiments and solve real-world problems.

The Pottstown School District is a priority in the Borough’s revitalization efforts, and the Challenger Center will aid in accelerating their efforts to boost academic achievement, draw in business, and support future generations. MCCC continues to place value on the importance of our Pottstown Campus to serve and support these critical Pottstown Borough revitalization efforts, of which 36% of Pottstown children live at, or below, the poverty line, nearly double the Pennsylvania average. To this end, MCCC has offered our Hanover Building, on the eastern edge of the Pottstown Campus, as the operational “home” of the new Pottstown Children’s Discovery Center (“PCDC”). Opening in late 2022, PCDC will be a hands-on interactive educational

experience for children from PreK-grade 3 and their families and will also serve as an anchor institution for these revitalization efforts along with MCCC (<https://www.pottstowndiscoverykids.org/>). PCDC will work with area and regional families, day care centers, schools, and childhood learning organizations to bring curriculum to life, focusing on health and wellness, emotional well-being, STEM, exercise, and other topics for the nearly 575,000 students living within 50 miles of Pottstown, not including others that live in nearby Philadelphia, New Jersey, and Delaware. The incorporation of the Voyage Exhibit could also provide a crucial extension to PCDC's STEM literacy programming as well as a much-needed outdoor component to their early childhood educational learning experience.

Strategic Objectives In STEM

There is a natural synergy between the Voyage Exhibit and the Challenger Center. With the Voyage Exhibit and its accompanying curriculum combined with the Challenger Center curriculum, MCCC will offer an immersive experience to complement what students learn at K-12 partner institutions and create a pipeline for future students to matriculate. These interactive adventures will encourage students to work together and to solve space-derived STEM problems, with the ultimate goal being to spark ongoing STEM engagement, college STEM degree exploration, pathways to STEM internships, apprenticeships and careers, and workforce development. These hands-on activities empower educators to excite students about possible future careers in STEM fields. Through these immersive educational experiences, thousands of students will be exposed annually to new skills and ideas that can prepare them for success in their careers and lives.

With the potential addition of the Voyage Exhibit, MCCC would position the Pottstown Campus as a regional hub for experiential STEM education, creating a cascading positive economic impact for the Borough of Pottstown, the greater 6-County Area, and beyond. The combined Voyage Exhibit and Challenger experience could enable MCCC to offer opportunities for community programming and engagement, including teacher training, corporate professional development and team building, summer camp and out-of-schooltime program activities, as well as College and community celebratory events. Such engagement opportunities could expand MCCC's reach and contribute to the revitalization of the Pottstown community and to the western region of Montgomery County.

Lastly, as a community partner and anchor institution for the Pottstown community, PCDC could incorporate the Voyage Exhibit into its proposed *Micronauts* programming providing young children with an authentic STEM experience as they travel through a simulated mission to the International Space Station. The Voyage Exhibit could be integrated into their outdoor learning activities for the mission that models "best practices" in early childhood education capitalizing on a young child's natural curiosity to explore and learn about the world they are a part of. By making STEM education a focus of a child's early education, the incorporation of and exposure to the Voyage Exhibit would help with instilling a lifelong passion to learn about and care for our planet earth, as well as our individual place within it. By inspiring and educating young children, PCDC's programming in combination with the Challenger Center and the incorporation of the Voyage Exhibit could contribute to the national goal of a scientifically literate society.

Proposed Community Engagement

Through the creation of innovative and sustainable opportunities, MCCC and its community partners will support the continued and expanded education of diverse populations to ensure that students and learners of all types are offered accessible, longitudinal experiences with measurable outcomes on student learning. Along with PCDC, and by partnering with local groups such as PA Seed Ecosystem, Achieving the Dream, and Montgomery County Intermediate Unit, MCCC's Pottstown Campus will continue to be a local hub of innovative learning experiences that gives back to the communities. The Voyage Exhibit would not only provide a beautiful exhibit experience that connects our campus buildings and provides an opportunity for our students and community members to explore, but it could potentially be the "connective tissue" to our future pathways STEM programming:

- (A) **Challenger Learning Center in-person programming.** Students will embark on simulated missions to the surface of the Moon and Mars, or land on a comet. During these interactive adventures, every student has a role to play, building confidence in their own abilities and demonstrating the power of teamwork. Challenger Center missions create "jobs," such as a mission control specialist and/or space flight officer, for students to spark ongoing STEM engagement, college STEM degree exploration, pathways to STEM internships, apprenticeships and careers. Through integration of the Voyage Exhibit and its accompanying curriculum, students would be able to learn about the connections between exploration, science, and the natural world. With eight missions offered at different grade levels, students will run their missions with 2+ hours of space simulation. All missions include pre- and post-mission teacher materials. The space-related missions are designed around national education standards and are informed by real science data. The Challenger Center in conjunction with the Voyage Exhibit in our PA community would mean that students will be able to see the real-life applications of their classroom learning in dynamic and interactive ways, not replicable in a typical school setting. Students will learn problem solving skills through team building exercises that help to connect education to career pathways. Beyond the daily missions designed for the students, additional service missions at the Challenger Center will consist of summer camp programs, primary/elementary school programs, as well as corporate missions. These complementary programs will allow participants to explore customizable hands-on activities in STEM and learn the fundamentals of teamwork and communication. The Challenger Center will serve as a vehicle to expand access and spark a passion for learning and teamwork across groups.
- (B) **Challenger STEM Extension Programs:** Our Challenger Center Extension Programs will provide large cohorts of 50+ students with a full-day Challenger Center and MCCC experience that combines an in-person space mission and an accompanying selection of STEM activities to choose from. The programs are designed for students to enjoy a hands-on foray into STEM while covering topics including, but not limited to, drone technology, robotics, Minecraft, and Challenger's *Classroom Adventure* missions. The Voyage Exhibit could be integrated as an Extension Program selection that would be facilitated by our Challenger staff. Students could walk the Voyage Exhibit pathway exploring and discussing the scale and scope of the Solar System and then potentially end their tour with a presentation in MCCC's *Science on a Sphere* as they extend their physical tour into a virtual

tour of the solar system through datasets provided by NOAA and NASA, as presented by the Challenger staff. MCCC is exploring the potential future purchase and installation of *Science on a Sphere* as an immersive teaching and presentational tool that would be an additional educational resource for our faculty, students and the community.

- (C) **Challenger & STEM Teacher Professional Development:** Challenger educator professional development will be designed to provide teachers with an overview of a Challenger mission, as well as STEM-based resources that they can utilize in their classroom. Educators will fly a mission, learn about the teams/science stations, content, storyline, and other related curriculum. Teachers could be given a tour of the Pottstown Campus that would include an overview of the Voyager Exhibit as an Extension Program as well as a complete walking tour of the Voyage Exhibit itself.
- (D) **Challenger Corporate Team Building Programs:** Challenger team building programs will “fly” adult-groups on various in-person group missions to enhance the team’s problem-solving, teamwork, and communication skills. Participants will work together to complete space-derived challenges and discover new strategies to be a more effective team back on Earth. The Voyage Exhibit could be integrated into these teamwork exercises providing an atypical, value-added outdoor experiential component to the program.
- (E) **Community Nights/Star Parties:** Challenger Learning Center star parties will take attendees on a journey across the night sky, including close-up views of our Solar System’s planets and moons. Telescopes are set up for observing the Moon, Venus, Jupiter, Saturn, and other celestial sights that are available for observing. The location of the telescopes could be placed at both the Challenger Center and PCDC, and throughout the Voyage Exhibit allowing our amateur astronomers an opportunity to experience the scale of the solar system.
- (F) **Janet’s Planet Astronaut Academy Summer Camps:** Summer campers aged 7-14 will “blast off” and launch a lifelong love of all things space and science with our in-person *Janet’s Planet Astronaut Academy*, a week-long summer camp that creates space-derived STEM engagement facilitated by renowned & award-winning space science communicator, Janet Ivey and her team of educators and space experts. Each day will bring a new mission and new expert guests from the scientific community. Astronaut challenges, science experiments, and hands-on experiences incorporating both the Challenger Center missions and potentially the Voyage Exhibit, will contribute to boosting student confidence in their STEM abilities and spark an interest in a future career in the space industry.
- (G) **Community Events:** Through various community-based STEM events, such as an annual *5k “Space Race”* and Family STEM Days, the Voyage Exhibit could be an integral component to the programming as our Pottstown Campus resources are shared with the community.
- (H) **PCDC Micronauts Program:** As noted above, PCDC will facilitate this Challenger Center property, space-inspired STEM early learning resource for students and their families. Students travel through a simulated mission to the International Space Station. The Voyage Exhibit could be integrated into the activities as an experiential outdoor learning component that would include a walking tour and accompanying age-appropriate space-inspired STEM activity or craft.