



BOARD OF REGENTS
SUMMARY OF ITEM FOR ACTION,
INFORMATION, OR DISCUSSION

TOPIC: P-20 Overview and Update

COMMITTEE: Education Policy and Student Life

DATE OF COMMITTEE MEETING: May 10, 2016

SUMMARY: This information item will address three questions:

1. What is P-20: Where did it come from, how does it work, and why is it so fundamental to fulfilling USM's mission?
2. What are some examples of P-20 work?
3. What are the Regents' roles and responsibilities in P-20?

The USM Office of P-20 Education and Outreach is the policy umbrella that connects the three mission-driven goals of the USM's Office of Academic Affairs:

College Readiness, College Completion, and Citizenship and Career Readiness.

USM P-20's mission is to "mind the gaps," that is, to facilitate seamless alignments between high school and college, between two year and four year institutions, between college and workforce to support the VCAA mission.

This year USM's P-20 work centered in five areas:

- Teacher Education, Preparation and Professional Development (JCR report, SB493, P-20 Workgroup)
- Mathematics Reform Initiatives
- Governor's P-20 Leadership Council Workforce Development Workgroup
- College Readiness, Retention and Completion (MCCRS and PARCC, ACES, Baltimore's Promise)
- NSF Funded STEM Education Projects
 - Math Science Partnership with Prince George's County Schools
 - Math Science Partnership-Computer Science with PGCPS
 - Climate Change Education in partnership with the University of Delaware

The Board presentation will focus on two of these topics:
Mathematics Reform and Teacher Education

Interim State Superintendent Dr. Jack Smith will join Dr. Nancy Shapiro to engage the Board in a discussion of Teacher Education.

A summary report, with briefing/background materials on each of the five areas, is included in this packet.

ALTERNATIVE(S): This is an information item only.

USM P-20 Update Narrative May 10, 2016

Teacher Preparation and Professional Development:

This past year, our work has focused heavily on policies and practices in teacher preparation that determine who becomes a teacher, and whether or not those teachers stay in the profession.

After completing the Summer JCR report on Teacher Preparation, teacher induction and career ladders for teachers, Associate Vice Chancellor Nancy Shapiro and Interim State Superintendent Jack Smith were invited to work with Senator Pinsky to write SB493: Teacher Retention and Induction Bill, which incorporated many of the recommendations made the report to the Joint Chairs in December 2015. The legislation passed included the establishment of a new workgroup (2016-17) charged by the state legislature to develop additional implementation strategies and fiscal analysis of the key recommendations. (*Attachments 1 and 2*)

Mathematics Reform Initiatives:

Developmental mathematics has been called a “graveyard” for college students’ aspirations, slowing their progress to degree completion, increasing costs, and unfairly impacting the most vulnerable students. In September 2015, USM was awarded a highly competitive four-year, three million dollar “First in the World” grant from the U.S. Department of Education FIPSE office to develop new mathematics pathways for students that are aligned with their major programs of study. This new project has been developed in collaboration with seven community colleges and five USM institutions, and is being heralded as a national model for mathematics reform in undergraduate education. On April 5, 2016, Dr. Shapiro was invited to the White House to present on the mathematics project. (*Attachment 3*)

Workforce Development and the Governor’s P-20 Leadership Council:

Chancellor Caret chairs the P-20 Workforce Development Workgroup, and is a national leader in the Business Higher Education Forum. The Governor’s P-20 Workgroup researches workforce needs and priorities, in collaboration with DLLR and GWIB, in order to advise the governor on strategic directions for education pipelines. The P-20 workgroup is also exploring apprenticeships, internships, articulated pathways, badging and micro credentialing, and certificates as vehicles for promoting college and career readiness. USM’s P-20 office has also worked with BHEF to secure funding from the Sloan foundation for USM institutions to support cyber-networks. These collaborative networks are designed to increase and enhance computer science and cybersecurity career pathways for undergraduates at all four institutions by facilitating security clearances through internships. (*Attachment 4*)

College Readiness, Retention and Completion:

Central to the P-20 mission is collaboration with K-12 to prepare students for college. USM’s P-20 Office draws on faculty from USM institutions to work on policy issues related to college ready standards and assessments. Dr. Shapiro is a member of the national Higher Education Leadership Team for the PARCC Assessments, and with MSDE, co-leads the P-20 Leadership Council Workgroup on PARCC and Maryland College and Career Readiness Standards (Common Core). College readiness is essential to student success in college, but it is not the only factor in student retention and completion. USM’s P-20 Office is currently working with a

variety of projects working to support better transition to college for at risk students, including ACES (Montgomery County's college access program), Baltimore's Promise (Baltimore City's college access program).

NSF Funded Projects:

For the past 15 years, USM has won a continuous stream of extremely competitive, federally funded grants from the National Science Foundation that focus on School-University Partnerships to support professional development for STEM teachers in K-12 schools, dual enrollment and early college programs in STEM courses, and researching and investing in learning sciences to better understand how students learn. There are currently three separate projects led by the USM:

- (MSP)2—Math Science Partnership/Minority Student Pipeline, with Prince George's County Public Schools (\$12 Million/5 years) (*Attachment 5*)
- MSP-C—Math Science Partnership—Computer Science, with Prince George's County Public Schools (\$500,000/3 years) (*Attachment 6*)
- MADE CLEAR—Maryland Delaware Climate Education, Assessment and Research, with the University of Delaware (\$6 Million/5 years) (*Attachment 7 and 8*)
 - USM hosted a regional conference for 200 faculty and administrators from Maryland and Delaware to share best practices in Climate Change Education. Keynote speakers were Maryland Secretary of the Environment, Ben Grumbles, and Dr. Robert Orr, Dean of the UMCP School of Public Policy and former United Nations Assistant Secretary-General for Policy Coordination and Strategic Planning for Climate Change.

Teacher Education, Preparation, and Professional Development

In April of last year, the Joint Chairmen of the Senate Budget and Tax Committee and the House Appropriations Committee made a request of P-20 to submit a report on teacher education by November 14, 2015. USM collaborated with MSDE to submit this report. The JCR report was based on prior work by the P-20 Teacher Preparation Task Force, co-chaired by Interim State Superintendent Jack Smith and Senior Vice Chancellor Joann Boughman, presented to the Governor's P-20 Leadership Council in 2014-15.

R75T00 p. 130

Report to Ensure High Quality Teachers: The P-20 Council established a task force on teacher education to develop recommendations and an action plan to ensure Maryland Programs produce high quality teachers. The budget committees are interested in the task force examining identified best practices of high performing countries and developing recommendations to producing high quality teachers and making teaching a profession with career ladders. The committees request the task force to submit a report with recommendations to ensure Maryland produces high quality teachers based on identified best practices by November 14, 2015.

Executive Summary

In response to the JCR request (R75T00), this report provides a review of best practices of high performing education systems from around the world, a set of recommendations for producing high quality teachers based on those practices, and recommendations for transforming teaching into a profession with career ladders. High performing systems have lower rates of teacher attrition, as teachers who are well prepared and supported stay on the job longer, become even more effective over time, and have positive impact on student achievement.

Enacting the reforms and recommendations included in this report will require rethinking how current resources are used, revising current regulations and legislation to allow for greater flexibility, being open to reallocating some current resources, and investing some additional resources to earn a higher return on investment in the form of both increased teacher retention and student achievement.

Key recommendations from this report fall into four categories (specific recommendations in each of the four categories are included below):

- 1) Pre-service preparation and teacher induction;
- 2) Professional development for current teachers, including collaborations with higher education;
- 3) Continuous improvement through accountability; and
- 4) Career ladders for teachers that could include joint appointments in higher education.

This report concludes with the following recommendations:

1. The Maryland State Department of Education (MSDE) and the Maryland Higher Education Commission (MHEC) should prepare a cost analysis for the high priority recommendations offered in this report, and make recommendations for the 2017-18 fiscal year for budget reallocations to support those recommendations that have the

greatest evidence of high return on investment as defined by higher teacher retention and student achievement.

2. MSDE, in collaboration with MHEC, should establish an incentive fund for pilot projects, and review evidence of progress on the key goals of recruiting and retaining high quality teachers in Maryland public schools, with the goal of improving student learning outcomes and increased college and career readiness.
3. A reallocation of current resources should be considered in several categories of current funding:
 - District-level and school-wide professional development funds: Current professional development funds in every district could be reallocated for new priorities and career ladder incentives.
 - Quality Teacher Incentive Funds (QTI): Restructuring the QTI funding to include several different buckets, including, but not limited to:
 - Rewarding teachers for National Board Certification and/or teaching in the lowest performing schools;
 - Creating competitive pilot projects to improve teacher retention and recruitment and using 2015 PARCC scores as baseline; and
 - Establishing three-year cycles with flexibility for determining the actual measures as needed.
- Projected teacher retention savings: an “advance” on teacher retention savings, based on the estimate that Prince George’s County Public Schools (PGCPS) and Baltimore City Public Schools alone spend \$42 million per year to attract and train replacement teachers (NCTAF, 2007).
- Improving Teacher Quality State Grants (ITQ): These grants, authorized by Title II, Part A of the No Child Left Behind Act of 2001, overseen by MHEC, support higher education to prepare quality teachers and principals.



Complete List of Recommendations Submitted in JCR Report:

A. Pre-Service Teacher Preparation

1. Establish higher Maryland standards for admission to all teacher preparation programs.
2. Align teacher preparation programs, including Associate of Arts in Teaching (AAT) programs, with Maryland College and Career Readiness Standards (MCCRS).
3. Transition to Professional Learning Networks built on a model of internships and residencies to increase the number and variety of field placements for teacher candidates.
4. Increase the number and variety of field placements to promote adaptive expertise, with the final placement organized in a way that simulates what is expected in the first year of teaching.
5. Prioritize in-state programs for field placements, internships, and post-baccalaureate residencies.
6. Invest in scholarships, loan forgiveness, and early college/teacher academies to recruit highly qualified students into teaching careers.

B. Pre-Tenure Induction

1. Establish a 3-year residency model for all pre-tenured teachers that engages higher education teacher preparation programs in collaborative partnerships with school districts.
2. Establish collaboratively supported Teaching Innovation Centers (hubs of innovation).
3. Fund three initial pilot Teaching Innovation Centers with state “seed” money and subsequently with savings from reduced teacher attrition.

C. Professional Development for Current Teachers

1. Establish career-long professional development programs and career ladders for educators that are aligned with the high expectations of MCCRS.
2. Establish a school/university partnership process for building professional development programs for educators.
 - a. Programs should be collaboratively developed by PreK-12 and higher education.
 - b. Programs should build strong content and pedagogy competencies.
3. Reallocate existing funds for professional development to support the new collaboratively developed models.

D. Continuous Improvement through Accountability

1. Build Maryland accountability recommendations around the ideal conditions that contribute to the development of highly effective teachers and set a high bar for qualifications and expectations for all teacher preparation programs.
2. Align current Institutional Performance Criteria to reflect school reform initiatives.
3. Ensure that higher education institutions have access to all data necessary for continuous improvement research.
4. Align elements of the Council for the Accreditation of Educator Preparation (CAEP) standards for accreditation with Maryland’s priorities to ensure efficient and effective use of resources.

**The University System of Maryland
First in the World Maryland Mathematics Reform Initiative (FITW MMRI)
Project Overview**



Background

The University System of Maryland, in collaboration with the Maryland Community Colleges and the other private and public institutions of higher education in Maryland, are working to address the mathematics “pipeline” issues that have created a significant bottleneck for postsecondary students. The Maryland Mathematics Reform Initiative (MMRI) is a collaborative effort currently underway between the public four-year USM institutions and the two-year community colleges in Maryland to develop and implement multiple high-quality mathematics pathways for students that are relevant for their chosen career path while also ensuring that the new courses have sufficient mathematical integrity and rigor to be deemed “college-level.”

As part of that larger statewide MMRI steering committee work, the USM applied for and was awarded a grant from the U.S. Department of Education’s First in the World (FITW) program to develop, implement, and evaluate a statistics pathway in order to accelerate developmental students’ progress into credit-bearing postsecondary courses and help more of those students reach certificate or degree completion effectively and efficiently. Project goals include reducing costs for students who will not have to languish in developmental courses, and saving the state and higher education institutions at least a portion of the estimated \$72 million spent annually in Maryland on developmental education.

In order to meet those goals, the FITW MMRI program will support the development of a new developmental statistics pathway leading to a general education statistics course. The twelve partnering institutions—five USM institutions and seven community colleges serving approximately 158,000 new students each year—will be the “early adopters” of the new mathematics pathway and will lead the development of the new pathway for Maryland’s 29 public higher education institutions.

Partner Institutions
Anne Arundel Community College
Cecil College
College of Southern Maryland
Coppin State University
Garrett College
Harford Community College
Howard Community College
Montgomery College
Towson University
University of Baltimore
University of Maryland, Baltimore County
University of Maryland, University College

Theory of Action

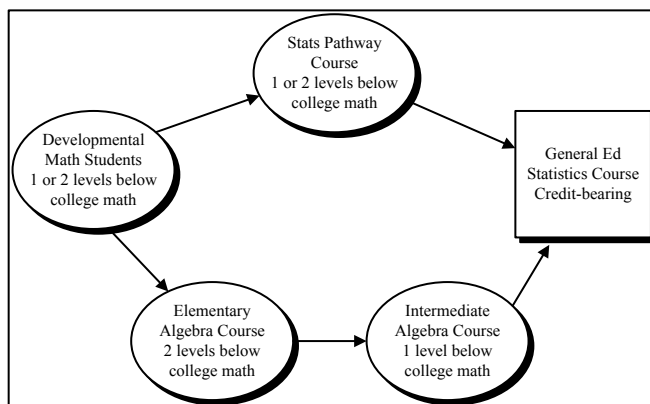
FITW MMRI hypothesizes that one significant underlying problem with developmental mathematics course sequences is the “disconnect” between the mathematics content students are learning and the mathematics they need to be successful. The key intervention in the project proposed here focuses on a rigorous pathway in statistical reasoning. In the FITW MMRI theory of action, this pathway would be more appropriate, more relevant, and more useful for students who are either undecided about their major or whose college major relies on a fundamental-studies statistics course either in place of, or in addition to a traditional college algebra course. By creating a single, intellectually-rigorous developmental statistics course that meets the needs of students who are up to two levels below college-level math and for whom algebra is not a requirement, the new Statistics Pathway is a strategy with the potential to reduce barriers (costs and time associated with taking multiple developmental-level math courses) to college credit accumulation and successful completion of a postsecondary degree.

**The University System of Maryland
First in the World Maryland Mathematics Reform Initiative (FITW MMRI)
Project Overview**



Research Questions

The goal of the project evaluation will be to generate evidence of the effects of a newly designed developmental statistics course on student rates of enrollment and success in a college-level statistics course, college retention, and persistence towards degree completion when compared to a matched comparison group of students who take traditional developmental algebra courses.



To that end, our project will address the following research questions:

- To what extent do students who are one level below college-level math in the Stats Pathways course (treatment group) have higher levels of persistence at the end of the course than students who take Intermediate Algebra (comparison group)?
- To what extent do students who are one level below college-level math in the treatment group have higher rates of enrollment and success in college-level statistics within one year compared to students who enroll in Intermediate Algebra?
- To what extent do students who take the Stats Pathway course have higher rates of retention at the end of three years in college than students who take Intermediate Algebra (Spring 2019)?
- To what extent do students who are two levels below college-level math in the Stats Pathways course have higher levels of persistence at the end of the course than students who take Elementary Algebra?
- To what extent do students who are two levels below college-level math in the treatment group have higher rates of enrollment and success in college-level statistics within one year compared to students who enroll in Elementary Algebra?
- To what extent do students who take the Stats Pathway course have higher rates of retention in college than students who take Elementary Algebra at the end of three years (Spring 2019)?

Timeline

- October 2015 – Project launch
- November 2015 – Project planning
- December 2015 – March 2016 – Determine data sharing processes; gain IRB approvals; determine placement and advising strategies
- December 2015 – August 2016 – Pathways course design and development
- March 2016 - September 2016 – Advisor training, student recruitment for study
- August/September 2016 – Launch MMRI Statistics Pathways courses at partner institutions
- 2016-2019 – Data collection, analysis and reporting on findings
- 2018-2019 – Dissemination and scaling to other Maryland public institutions

Governor's P-20 Leadership Council Workforce Development Workgroup

Overview

In January 2016, the Governor's P20 Leadership Council created the Workforce Development group, which is charged to use education and workforce data to identify projected workforce needs, prioritize education pipelines, and examine whether students are prepared for current workforce requirements, and recommend approaches to addressing deficiencies. The workgroup is exploring apprenticeships and internships, articulated pathways, badging and micro-credentialing and certificates.

Chancellor Caret chairs the P-20 Workforce Development Workgroup and is a national leader in the Business Higher Education Forum. The Governor's P-20 Workgroup researches workforce needs and priorities, in collaboration with Department of Labor, Licensing, and Regulation and Government Workforce Investment Board, to advise the governor on strategic directions for education pipelines. USM's P-20 office has also worked with Business Higher Education Forum to secure funding from the Sloan foundation for USM institutions to support cyber-networks. These collaborative networks are designed to increase and enhance computer science and cybersecurity career pathways for undergraduates at all four institutions by facilitating security clearances through internships.

Workgroup Progress to Date

The Workforce Workgroup held two meetings (1/14/16 and 2/11/16), focusing on two key questions:

1. How do we determine our workforce needs?
2. How do we determine the adequacy of the preparedness of our students for the workforce?

USM, GWIB, and DLLR collaborated in using data from the Workforce Innovation and Opportunity Act State Plan, the Jacob Frances Center, and Georgetown's Center on Education and the Workforce to look at occupation categories and their average wages, ten-year growth rates, and education pipelines. The sectors with the greatest potential for growth and most responsive education pipelines are STEM, IT, and Health Sciences.

Ongoing Work

The workgroup is collecting areas of inquiry that could be studied by MLDS. For example, job growth areas, pathways to jobs, and production of workforce in growth areas.

USM is analyzing the status of its pipelines that lead to the highlighted growth areas of STEM and Health Sciences.

GWIB is putting together committees to conduct skills gap analyses by sector.

GWIB and USM will be collaborating to summarize findings including: where career opportunities exist, where programs exist to meet those needs, and where middle skills job opportunities exist.



The Minority Student Pipeline Math Science Partnership

2008-2014 • *Strengthening the science pipeline in Prince George's County*

Summary of Outcomes

The Minority Student Pipeline, or (MSP)², was an integrated set of programs for science teachers, high-school students, and college science majors. Partners include BSU, TU, UMCP, Prince George's County Public Schools, Prince George's Community College, and the USM Office. The project was funded with \$12.5 million from NSF.

THE PROGRAM

Elementary and Middle Schools

Professional development in science and student-centered approaches for teaching science, for teachers of grades 4-8.

High Schools

Dual-enrollment (early college) courses for students, and teacher learning communities focused on the Nature of Science.

Colleges and Universities

Structured opportunities for undergraduate science majors to learn about teaching.

THE PARTICIPANTS

380

Elementary and Middle-School Teachers

381

High-School Students

60

High-School Teachers

111

Undergraduate Science Majors

THE OUTCOMES

Increased Student Achievement

Scores on the science portion of the Maryland State Assessments **increased twice as much** in schools with participating teachers.

Maintained Student Interest

Students of participating teachers were **more interested in science** than their peers after instruction.

Students are Prepared for College

Many students **entered STEM programs** in college and are still there today.

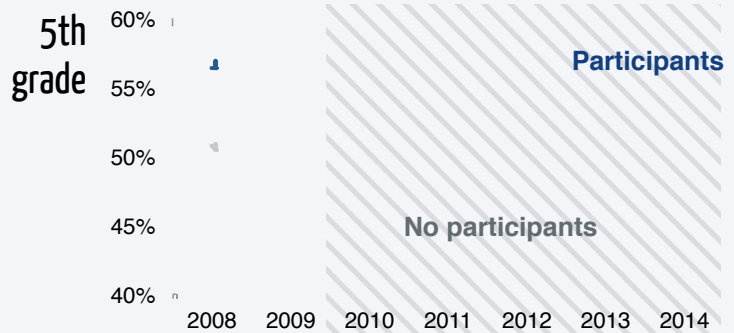
KEY EVALUATION FINDINGS

Participating teachers helped increase their schools' test scores faster than other schools were able to increase them.

Elementary schools with participating teachers consistently had MSA science pass rates

6-7% higher

during the (MSP)² program.



Middle schools with participating teachers usually had MSA science pass rates

24-28% higher

during the (MSP)² program.



Their students maintained higher interest in science than those of other teachers after a year of instruction.

The same trend appears in three different questions probing interest, including this one:

When you start working, would it be fun and interesting to have a science-related job?



Dual-enrollment students went on to study STEM in college in large numbers.

3,000 college-credit hours were awarded to the 381 students by BSU and PGCC.

51% of those who continued with enrollment at PGCC entered a STEM-related degree program.

80% of these students remained in STEM for over one year and/or are still in STEM today.

USM's Computer Science Expansion to the Minority Student Pipeline MSP

Overview

The Minority Student Pipeline Math Science Partnership—known as (MSP)²—has established a strong, multifaceted partnership among the essential P-20 players in one of the largest minority-majority counties in the country (Prince George's County, Maryland-PGCPS), and strengthened the minority student pipeline into STEM fields in higher education. With a focus on inquiry instruction in science, the partnership has used multiple strategies involving STEM faculty targeted at multiple populations (teachers, K-12 students, and undergraduates). USM's original Math Science Partnership with PGCPS brings a successful model of professional development that relies on collaboration between higher-education faculty and K-12 instructional specialists, on-the-ground coaching by these specialists, and a focus on student-centered, inquiry-based pedagogy.

With this **STEM-C Partnerships Computer Science Education Expansion project**, we are using elements of our successful model of partnership-driven, inquiry-oriented professional development, modified by collaboration with the NSF-funded *Structured CS Principles* project, to prepare teachers in Prince George's County to teach rigorous computer science (CS) lessons and courses. Summer 2015 was our pilot year and we trained five PGCPS teachers. In Summer 2016, we will be running at capacity with 15 PGCPS teachers. Ultimately, teacher participants will be supported in implementing both *Exploring Computer Science* and *Computer Science Principles (AP)* in at least five schools, doubling the number of computer science courses offered in the county and bringing nationally designed and piloted courses to approximately 500 more students. This effort promises to further strengthen the minority student pipeline into STEM majors and careers by expanding the opportunities for these students into computer science.

Furthermore, USM is an important leader in a new collaborative computer science project, *Structured Computer Science Principles Approach to Professional Development for Maryland High School Teachers (SCSP)*, which brings to bear quality, inquiry-oriented professional development and a new curriculum for the *Computer Science Principles* course to teachers across the state. The SCSP project will join the leadership team of (MSP)² and bring content and leadership for our teacher workshops, support and networking for teachers through an online community, and curriculum modules designed by and especially for Maryland teachers.

Support for Our Design

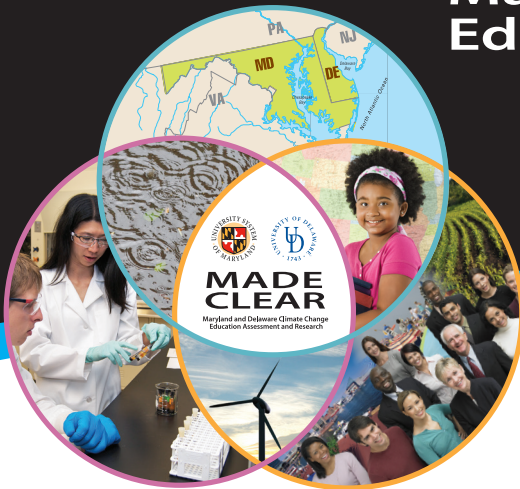
The intellectual basis on which this effort rests is threefold. First, the extensive research and development that went into the creation of the *Exploring Computer Science* and *Computer Science Principles* courses; second, the peer-reviewed and evidence-based design of the *Structured Computer Science Principles Approach to Professional Development for Maryland High School Teachers* award; and third, the evidence for the success of the (MSP)² partnership's model of teacher professional development, which itself was based on current research in STEM education. The (MSP)² partnership-driven model, modified over the past five years in response to ongoing formative evaluation, has resulted in significant gains in (a) teacher content knowledge, (b) student achievement in science, and (c) student interest in science as a course of study and career. This project is designed around a research plan that will collaboratively adapt and examine the impact of this model for professional development in computer science, centered around preparing teachers for the rollout of rigorous and well-designed courses across Prince George's County and the state of Maryland, thereby strengthening the minority student pipeline in computer science.

Broader Impact

Minorities are underrepresented in STEM disciplines (including computer science) at every level from secondary courses through graduate school. The (MSP)² partnership has already succeeded in strengthening the science part of this pipeline in Prince George’s County—one of the largest majority-minority school systems in the nation, with 124,000 students enrolled in grades K-12 (67% African American, 22% are Hispanic), but the lack of preparation of teachers in computer science limits the potential of these students and undermines enrollment and success in college and career choices later in life. By bringing together computer scientists, mathematics teachers, and science educators on a project that’s based on a successful model for teacher development, this Computer Science Expansion to (MSP)² promises to bring rigorous computer-science opportunities to thousands of students, further integrate efforts to improve instruction in *all* of the STEM disciplines in the county, and learn even more important lessons about a professional-development model that can help address the opportunities and the challenges of fostering a robust pipeline for bringing underrepresented minority students into STEM professions and fields of study.

Maryland Delaware Climate Change Education, Assessment and Research

is an active collaboration that inspires and supports climate change science education in middle schools, on campus, and in public education settings. A 5-year program funded by the National Science Foundation, **MADE CLEAR** is part of the Climate Change Education Partnership Alliance.



Global climate patterns are changing rapidly, and communities around the nation are already feeling the impacts of increasing heat waves, storm damage, and coastal flooding.

The most effective responses to climate change require excellent education in science, technology, engineering, and math; broad and active partnerships among climate science and education providers; and coordinated efforts to support climate education at the local and regional levels.



National Science Foundation
WHERE DISCOVERIES BEGIN

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FOR MORE INFORMATION

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MADE CLEAR is hard at work on...

Climate and STEM education



MADE CLEAR is working to ensure that this generation of students is able to make informed choices through active learning experiences and research-based lessons about the climate system and climate change. We are infusing climate change education into formal and informal education throughout Maryland and Delaware by integrating with state Next Generation Science Standards implementation plans, and by training educators to deepen student understanding of climate change and the process of science. **MADE CLEAR** climate education programs incorporate engineering and technology, as these skills will be of central importance in meeting the challenges of climate change.

Models and sustainability



MADE CLEAR is piloting models for teacher professional development, university faculty education, educator communities of practice, best practices in climate education, and articulation with state science education initiatives that will serve as pathways to building a sustainable capacity for climate education in other states and regions.

Research on learning



The sociocultural diversity within the small geographic footprint of Delaware and Maryland provides rich learning opportunities. The **MADE CLEAR** team includes experts in learning sciences who are identifying best practices for teaching about climate change in urban, rural, coastal, and inland areas across the two states.

Partnerships



MADE CLEAR has become an integral educational component of the policy responses to the climate change challenge in the two states. **MADE CLEAR's** strong network of partners includes scientists, teachers, informal educators, university faculty, state education administrators, and federal agencies. We collaborate with regional groups, state agencies, and non-profit organizations to support and promote climate education and science literacy at every level from state policy to individual instruction.



SPECIAL THANKS TO

The Honorable Ben Grumbles
Dr. Timothy J. L. Chandler
Dr. Anne Waple
Dr. Robert C. Orr
Dr. David Vanko
Dr. Joann Boughman
edBridge Partners
Towson University
National Science Foundation
MADE CLEAR Advisory Committee

Maryland Delaware Climate Change Education Summit

*Expanding Accomplishments to
Meet Commitments and Needs*

April 6, 2016
9:00 am to 3:00 pm

Towson University
University Union
Chesapeake 1 and 2



This event is sponsored by MADE CLEAR, Maryland and Delaware Climate Change Education Assessment and Research, a Climate Change Education Partnership program supported by National Science Foundation Grant 1239758.

Support also provided by National Science Foundation Grant DUE 1257496, Mobilizing STEM Education for a Sustainable Future.

Attachment 8

AGENDA

8:30 - 9:00 AM	Breakfast and Registration
9:00 - 9:15 AM	Introductions and Welcome Dr. Donald Boesch, UMCES
9:15 - 9:30 AM	Charge to Participants and Overview Dr. Nancy Shapiro, USM
9:30 - 10:30 AM	Panel: Achieving the Presidents' Climate Commitment Introductions: Dr. Joann Boughman (USM) Dr. Anne Waple (Second Nature) Dr. Nancy Targett (UD) Dr. David Vanko (TU) Dr. Robert Orr (UMD)
10:30 - 10:45 AM	Break
10:45 - 11:45 AM	Morning Breakout Session: Climate Change Across the Curriculum
12:00 - 12:30 PM	Lunch and Welcome to Towson University Dr. Timothy Chandler, TU
12:30 - 1:00 PM	A Climate of Opportunity for Education and Collaboration The Honorable Ben Grumbles, Maryland Secretary of the Environment
1:00 - 1:15 PM	Break
1:15 - 2:15 PM	Afternoon Breakout Sessions
2:15 - 2:30 PM	Break
2:30 - 3:00 PM	Report Out, Closing Remarks, and Next Steps MADE CLEAR PIs

CLIMATE CHANGE ACROSS THE CURRICULUM

Location See name badge for room assignment (305, 306, 307, 308, 315/316)

Facilitated By MADE CLEAR PIs, Team Members, and Advisors

AFTERNOON BREAKOUT SESSIONS

Please select one of the following breakout sessions

SESSION A

Achieving the Presidents' Climate Change Commitment: Making carbon neutrality and resilience a part of the educational experiences for all students.

Location 305 and 306

Facilitated By MADE CLEAR Advisors and MADE CLEAR PIs

SESSION B

Raising climate change knowledge and awareness on our campuses: Best practices for collaboration between academic affairs and sustainability offices.

Location 307 and 308

Facilitated By MADE CLEAR Advisors and MADE CLEAR PIs