



The Policy Studies Organization

Speaker

Horace Walcott - *Brooklyn Technical High School*

DUPONT SUMMIT 2013

..... Pressing Issues, Economic Realities

December 6, 2013 * Historic Whittemore House, Washington, DC

“The Teacher-Scientist and the Making of STEM Scholars at the Pre-Tertiary Level in the Information Age”

Medicine in this post modern era has evolved from techno-medicine to info-medicine.⁷ The same can be said for science, mathematics and engineering. In medicine, since the mid-ninetieth century and especially after the two major world wars, there has been the emergence of the physician-scientist.⁵ Physician-scientists have played key roles in bridging the gap between the ward and the world of discovery and innovation.² Though Physician-Scientists may be a vanishing breed, they have a job title recognized by policy and backed economically.⁴ STEM education in the USA and globally needs the creation of the job-title of Teacher-Scientist, similar yet with differences to the title of Physician-Scientist. STEM educators in the role of Teacher-Scientists have been bridging the gap between the classroom and the world of discovery and innovation. However, the role has been voluntary, the financial rewards inconsistent and the demands highly stressful. Usually, the Teacher-Scientist will mentor students conducting multi-year graduate level research in high school, in stringently funded afterschool programs. The current Information Era requires the students to undergo a transformation from apprentice to genius.⁸ Such students need a mentor who is a bench scientist as well as a STEM educator. The bench scientist/educator or Teacher-Scientist should have a reduced teaching load, so that she or he can pursue individual scholarship in STEM at the bench and simultaneously guide students conducting authentic research.

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The Partners in Science Program funded by the Murdock Charitable Trust; the Columbia University Summer Research Program for Teachers ; Intel Fellowship Research Program for Teachers and ; the NYU-Poly SMART Program: do provide opportunities for teachers to become Teacher-Scientists. ^{3,6,9} However, these pioneering STEM educators operate in a culture, which does not fully appreciate the high level of professionalism in STEM teaching. The financial and policy making support for Teacher-Scientists is vital to America’s national security and to the US maintaining global superiority in STEM. ¹

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Biography

Dr. Horace E. Walcott is a toxicologist, zoo veterinarian and science educator. He is a Weston Research Scholars' Mentor and Chemistry Teacher at Brooklyn Technical High School. For more than a decade, Dr. Walcott and his research teams of students have been conducting pioneering research in a new and emerging sub-discipline they define as solar hydrogen electric bio-mimetic energetics. The sub-discipline has as its pillars the following domains: The fluid dynamics of flying and aquatic animals; bio-mechanics; mechatronics; the chemical kinetics and electrochemical thermodynamics of hydrogen combustion, bio-mimicry and; bio-mimetics. Teams of research students, under Dr. Walcott's supervision have been designing and developing drones which use water as a fuel. The drones will be employed for environmental and ecological monitoring.

Dr. Walcott is the recipient of the Siemens Founders' Award and the STAR Award. Recently he received the World's Who's Who Award for Zoological Medicine and nominated to become a Fellow of the Royal Society of Arts. He is a Visiting Scientist in the Dynamics Systems Laboratory of Dr. Maurizio Porfiri at NYU, where he has been conducting research in under-water robotics. He received his Doctorate in Veterinary Medicine from Tuskegee University in 1984; a Master of Science in Public Health from Tulane University School of Public Health and Tropical Medicine in 1991 and; a Master of Science in Wild Animal Health from the Royal Veterinary College, University of London in 1997.

