

## **The Role of Convergence in Education**

### *Building an Innovation Bridge to Address Strategic 21<sup>st</sup> Century Grand Challenges*

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#### **Abstract**

This presentation highlights the roles of convergent and sustainable Nanoscale STE(A)M<sup>+</sup> education for addressing strategic twenty-first century academic, government, industrial and societal needs. These roles leverage the mutually supportive interdependence of all key stakeholders within the formal and informal educational supply chain. This presentation builds upon the 2017 Global Perspectives in Convergence Education conference presentation and the 2015 NSF sponsored report entitled, Nanoscale Science and Engineering Education (NSEE) - the Next Steps<sup>i</sup> and the 2016 Science Policy Report entitled, *Global Perspectives of Nanoscience and Engineering Education*.<sup>ii</sup> Key recommendations include ways to: 1) Catalyze and sustain interest in convergent Nano-STE(A)M<sup>+</sup> education; 2) nurture sustainable, collaborative and innovative educational infrastructures, which instill a culture of adaptability; and 3) leverage similarities between the processes of innovation and education.

Dr. Herr serves as professor and Nanoscience department chair at the University of North Carolina's Joint School of Nanoscience and Engineering (JSNN). He leads a highly collaborative and transdisciplinary team that explores and addresses emerging and convergent nanoscale research opportunities, with a focus on functional nanomaterials, nanobioelectronics, computational nanotechnology, nanobiology/medicine, nanometrology, functional self-assembled nanomaterials and biomimetic systems. Dr. Herr also is passionate about communicating the joy of science and STEAM opportunities to the community and to the next generations of scientists, engineers, and other creative people. His current research interests include useful sustainable and nanoenhanced agriculture, self-assembled and biomimetic nanosystems, nanobioelectronics, composite nanomaterials, and nanoenergy.

i Murday, James (Chair), National Science Foundation, Report from the Nanoscale Science and Engineering Education (NSEE) – the Next Steps Workshop, 2015. <http://nseeducation.org/2014-documents/NSEE%20The%20Next%20Steps-Final.pdf> (accessed January 23, 2016).

ii Herr, D.J.C. (2016). The Need for Convergence and Emergence in Twenty-First century Nano- STEAM+ Educational Ecosystems, in K. Winkelmann and B. Bhushan (Eds.). *Global Perspectives of Nanoscience and Engineering Education*, Springer, July 2016.