



The Learning Institute for Visionary Epistemologies (LIVES) in STEM Fields & Interdisciplinary Studies

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The Center for Black Studies Research presents a symposium on diverse epistemologies

March 3rd | 12:00-1:30 p.m. | UCSB South Hall 4603



Portia York, Ph.D.
C.E.O., Creative Director
York Creative Education Group



Bryant York, Ph.D.
Professor Emeritus

"Black girls and women are currently underrepresented in mathematics and the computing disciplines. In this work we explore a novel approach to the development in middle school Black girls of abstractions required for higher level mathematics and science exploration through the practice of crochet. We use the term abstraction to describe the generalization of a variety of pattern identification and manipulation techniques to broader contexts, in particular contexts related to mathematics, science and computing. Our project involves the development and testing of a tactile/visual curriculum in an informal learning environment such as a Girls Club, a Saturday program, or a museum. We are jointly developing a curriculum directed at Black girls in middle school, which combines hands-on instruction in crochet with interactive software for abstraction exercises. Using the software system the student is encouraged to visually design new crochet pieces using pre-stored images from a database of crocheted geometric shapes. Over the course of the curriculum the database of crochet patches becomes augmented by student work. The hybrid lessons are designed so that the student associates a personal semantics with each new design. Juxtaposed patches in a design can represent words in a sentence, a regular expression, a codeword, a tautology, an equation, and various other abstract concepts. We propose to test whether the generative aspect of design construction and the repetitive action of physically crocheting the piece enhance the cognitive development and retention of the abstract mathematical and computational concepts. In this presentation we describe our approach to the hybrid curriculum design and the associated software." -Dr. Bryant York & Dr. Portia York

Join us as we welcome Dr. Bryant York, Professor Emeritus, and Dr. Portia York, C.E.O. and Creative Director of York Creative Education Group, for their in person presentation on *#CryptoCrochet: A Tactile Introduction to Mathematics and Computing!* Dr. Bryant York earned the A.B. Mathematics at Brandeis University, M.S. Management at MIT, M.S. and Ph.D. Computer Science at University of Massachusetts - Amherst. While his professional positions include Research Staff Member, IBM San Jose Research Labs, Consulting Engineer, Digital Equipment Corporation's Artificial Intelligence Center, and professorial positions in computer science at Boston University, Northeastern University, and Portland State University. He is a co-founder of the Richard A Tapia Conference series (2001); co-founder/first board chairman, CMD- IT (2011); co-founder, Institute for African-American eCulture (IAAeC, 2000) and has research publications in computer vision, parallel computation, crystallographic computations, computational physics, computational algebra, and neural networks. His current research interests include STEM education, asynchronous algorithms, quantum computation and post-quantum cryptography. Dr. Portia York is an exhibiting fiber artist and adjunct professor who teaches fibers courses at University of North Carolina, Charlotte. She earned a B.A Sociology from Clark University, M. Management from Cambridge College, Master of Advanced Crochet Stitches and Techniques from Crochet Guild of America, and Ph.D. in Curriculum and Instruction, Urban Education from University of North Carolina at Charlotte. Through her company she offers training via innovative fiber arts workshops and curricula focusing on three areas: (1) Crochet and Mathematical Concepts in STEAM, (2) Diversity, Equity, Inclusion, and Expression through Crochet & Other Fiber Arts, and (3) Team Building through Crochet & Other Fiber Arts.

Food and drinks will be served!

This event will be recorded.

This event is co-sponsored by the Center for Information Technology and Society (CITS) and the Student Engagement and Enrichment in Data Science Program (SEEDS).

[Please RSVP for this in person event here](#)

[Please register for the livestream of this talk here](#)

