

# Science Education Researcher    Howard University



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I use applied cognitive theories to explore how students learn. I focus on creating culturally representative curricula that situates Black people in science education

## My areas of expertise

Merging interdisciplinary and multidisciplinary approaches to develop new research and new ways of seeing things. Combine schema theory, argumentation, and inquiry science pedagogy

## How I first became interested in this position

In some ways I stumbled into science education research. I received my Masters in Science Education from Teachers College, Columbia University and was teaching high school biology when my husband decided to return to college for a second career. We had no children and fewer responsibilities at the time, so I decided to enroll in a non-matriculated course at Teachers College. I took the course, *History of Science Education* and enjoyed researching the topics I was assigned, and the freedom to take my research and presentation in the direction I wanted. Most of all, the impact of my discoveries about Black people missing from this history led me wonder about the historical details. There began my pursuit and matriculation into a doctoral program.

## What helped me prepare for this job

I was always an independent worker and in some ways a workaholic when it came to academia. In high school I read the entire physics textbook on my own for a year, took the passing examinations, and graduated with a distinction in physics because my high school did not offer physics. Even though I met with a physics teacher a couple of times to do experiments I missed out on the hands-on experience so I'm more theoretical in my approach and experiences in science.

## My role models or inspirations

I have multiple role models in my family and acquired more and more as I go. In graduate school I admired how the then chair of the department, Dr. O. Roger Anderson was versatile in combining neurocognition, lab work, and science education effectively. I admired my dissertation advisor's focus on qualitative research methodology and on mentoring us as doctoral students.

## My education and training

My doctoral work was the beginning of my formal training. Since I wanted to re-invent how Black narratives and lived experiences were included, I spent a great deal of time reading, researching, testing approaches out, piloting, studying, and reading the research literature until I was able to put it all together. More specifically I wanted to further my training in curriculum development, so I began by implementing different, strange, or challenging curricula to stretch myself and my students. This was the fun part.

## What I like about my job

I like learning new things. I've come to realize that when I'm not cognitively stimulated, I become bored and uninterested so I like to try new things in my courses and set the courses up so that students can learn from me and from each other, and I can learn from them. I enjoy seeing their aha moments after they are done wrestling with ideas.

### **What I don't like about my job**

Because I like learning new things and seek cognitive challenges I don't like when my job is reduced to what seems to be menial tasks that anyone can do. I begin to feel like an administrative assistant without a vision or direction or meaning attached to my expertise and my talent.

### **My advice to anyone interested in this occupation**

Learn how to write well. Science education is itself an interdisciplinary field. Science educators come with a science background which they merge with one or more fields of interest by looking at science from different approaches – whether it is a focus on science education pedagogy, cognitive psychology, humanities, qualitative, quantitative, and so on. You begin to see and gauge your own interests, abilities, and goals when you begin to write. The long pages of feedback I receive from peers have helped me write better. Understand that expertise takes time to develop and take the time to learn about the areas you'd like to master. Use criticism and feedback to help you grow.

### **Additional challenges/obstacles I faced because of my race/ethnicity/culture**

I think I was lucky in this journey that people were placed in my path to help me succeed. In hindsight I call it divine intervention that in a predominantly White institution I had two mentors and role models whose ego did not surpass their interests in helping their students succeed – one a White male and another a Black female. However, I know that the interdisciplinary nature of my dissertation generated questions from outside faculty which my mentors foresaw might lead me to not graduate. Therefore, I'm going to reveal something for the first time – I was previously enrolled in a Doctor of Philosophy program and switched to the Doctor of Education after completing those requirements. While I was protected from the details, I went along with it because my research was entering into uncharted territory using schema theory in science education, which no one had done before, and that I risked inviting people from applied cognitive fields and I had the privilege of trusting my mentors.

### **How I made it this far despite obstacles/challenges**

Tenacity, vision, and self-awareness. I entered this field with one main goal in mind - to attend to the lack of Black representation in the narratives which define our belongingness, acceptance, significance, value, and recognition attached to our interests. Understanding people has helped me to redirect my energies to spaces that recognize the value I bring. I see my work as bigger than the individuals and egos I've worked with, whether Black or White, or other Races. Taking my expertise to the spaces that needed or wanted them has helped shed light on what I do. A lack of recognition can be painful, but self-awareness and continuous emotional growth has helped me to understand myself and other people while making the best decisions in spite of my feelings or their actions.

### **Advice to people of African origins interested in this occupation**

You're very needed in this role, and I've met some who unknowingly are interested in science education but are unfamiliar with the field or don't know that the field exists. I've met students in science whose research interests align best with science education than they do with science itself because they're more interested in working with people or teaching people or in researching social issues in science. My advice is to take the time to explore the field and to understand what job opportunities are in any field. You can do this by reading the research literature and looking at the job listings. I recommend starting with the two most popular organizations that are most reflective of the field to understand the field, the Association for Science Teacher Education (ASTE) ([theaste.org](http://theaste.org)), and the National Association for Research in Science Teaching (NARST) ([narst.org](http://narst.org)).

### **Additional information/links (optional)**

Visibility In STEM: <https://www.visibilityinstem.com>; BRISCLAB: <https://brisclab.org>;  
Howard University profile: <https://profiles.howard.edu/catherine-quinlan>