Culturally Relevant Pedagogy in the Preparation of Teachers to Work in High-Need School Districts

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Agenda

➢ Introduction

➢ Multiple Stakeholder Presentations
  ➢ National Researcher
    ➢ Q & A
  ➢ Preparation Program Principal Investigators
    ➢ Q & A
  ➢ STEM Teacher Leader
    ➢ Q & A

➢ Closing
  ➢ Overall Q & A, Takeaways, Resources
About ARISE

The AAAS seeks to
“advance science, engineering, and innovation throughout the world
for the benefit of all people.”

ARISE
Advancing Research & Innovation in the
STEM Education of Preservice Teachers
in High-Need School Districts

Overarching ARISE Goal:
This project, organized by the American Association for the Advancement of Science (AAAS) Education and Human Resources Programs, seeks to provide resources, tools, and a community to foster research and evidence-based innovation in STEM preservice teacher education and leadership development programs for high-need schools.
About the ARISE Community Webinar Series

Focus on: *Evidence-Based Transformative STEM Teacher Preparation*

- intended to encourage engagement with current research and experimentation to advance knowledge and solutions to persistent challenges in STEM teacher preparation, particularly for high-need school districts.

**OBJECTIVES**

As part of ARISE's outreach strategy, this webinar series seeks to:

- collect and share information about topics and strategies for research and evidence-based approaches, and
- provide quality presentations and opportunities for attendee engagement.
Teacher Preparation for Traditionally Underserved Students

Etta R. Hollins, Ph.D.
Professor and Kauffman Endowed Chair for Urban Teacher Education
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Teacher Preparation for Traditionally Underserved Students

- Specific elements of practice-based teacher preparation include:
  - well-designed, developmentally sequenced content and learning experiences where courses and field experiences are complementary and interconnected;
  - knowledge of the development of the whole child (academically, socially, and psychologically) within the context of home, community, and school; and
  - performance-based expectations demonstrated in evidence from validated key assessments that habituate specific epistemic practices through regular application across the program.

- The continuous improvement of Practice-based preservice programs requires:
  - practice-based research focused on the relationship among candidates’ progress in learning teaching, coursework, and field experiences;
  - candidates’ performance on key assessments; and
  - documentation of learning outcomes for traditionally underserved students taught by program completers.
Holistic Practice-based Preservice Teacher Preparation

Hollins, 2011

*Figure 1.* Learning to teach integrates academic knowledge and experience for teaching practice in an authentic context guided by a theoretical perspective and a philosophical stance.
Authentic context for development of the whole child

- Home Culture
- Academic
- Social
- Psychological
- Personal experiences
- Adult Guidance
- Community
- Peer Influence
Theory into Practice in Authentic Context

Courses

Field Experiences

Professional knowledge from coursework is observed and applied in field experiences.
Learning Teaching as Internalized Mental Processes

**Learning Teaching**

- Focused Inquiry
- Directed Observation
- Interpreting (Guided Practice)
- Translating (Guided Practice)

**Teaching Process**

- Planning
- Enacting
- Translating
- Interpreting
The Learning Process

1. Analysis
2. Inquiry
3. Extrapolation
4. Application
5. Interpretation

© Hollins 2015
Debriefing a Learning Segment

**Traditional Student Teaching Debriefing**
- What worked?
- What did not work?
- What would you change or do differently in the future?

**Interpretive Practice Debriefing: Guided Practice**
- Did all students meet the learning objectives?
- If not, which students struggled? What part of the learning experience was problematic? Did students have misconceptions or gaps in their prior knowledge that caused problems? What experiences will help these students meet the learning objectives?
- What did you observe about the students? How will you use this new knowledge about your students to plan future learning segments?
Teacher Preparation For Quality Teaching

Etta R. Hollins

Abstract
In this article, the author presents a holistic practice-based approach, consisting of two parts, to preparing candidates for quality teaching. The first part describes the essential knowledge, skills, and habits of mind for quality teaching. The emphasis is on understanding the learning process as influenced by the cultural and experiential background of particular learners and the philosophical stance through which the purpose of school learning is appropriated. The philosophical stance influences the design of learning experiences, the framing of the curriculum, and the social context in classrooms. The second part describes the design of opportunities for learning to teach with an emphasis on epistemic practices and program qualities. In this discussion, at the core, the practices in teacher preparation are a mirror image of practices for quality teaching in PK-12 schools. The standards of evidence for integrity and trustworthiness are the same in teacher preparation and in PK-12 schools.
Teaching to Transform
Urban Schools and Communities

Powerful Pedagogy in Practice
Etta R. Hollins

Forthcoming
March 2019
Contact for Further Information

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Fostering Noyce Scholars’ Critical Science Teaching Agency

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Graduate Students

STEM LAs

FIUteach students & Sponsors

STEM Transformation Institute
Project Goal

Prepare at least 33 Noyce scholars to serve in critical needs schools as agents of change that empower students
Florida International University Context

- FIU is the urban public research university in Miami, FL
- 58,000+ students; 11,000+ STEM majors; over 75% of which are URG; 50% are transfers; about 1/3 are first generation; and many from South Florida
- The only Majority-Minority Carnegie R1 Institution in US

STEM Transformation Institute: Situates FIU as laboratory for the future of STEM
FIUteach as Noyce Foundation

- UTeach Replication Site
- Launched Fall 2014, Now 3rd largest UTeach site in nation (350+ active students)
- Secondary (grades 6-12) STEM teacher preparation
- Recruit STEM Majors: Graduates earn disciplinary degrees + teaching endorsement (Biology, Chemistry, Earth Science, Physics, Mathematics)
Noyce Experience

- Recruitment Workshops
  - Year 0
  - Post-Graduation
  - Year 1
  - Year 2

- Professional Development
- Induction Support
- On-Site Mentor
- Alumni Meetings

- Cohort Experiences
- Authentic Field Experiences
- Leadership Opportunities
- Mentor
Current Scholars

Cohort 1: 2017-2018
- 7 Scholars
  - 5 Biology
  - 1 Earth Science
  - 1 Mathematics

Workshop: 11 participants
- 9 applied for scholarship
- 5 selected

Cohort 2: 2018-2019
- 7 Scholars
  - 3 Biology
  - 1 Physics
  - 1 Earth Science
  - 2 Mathematics

Workshop: 11 participants
- 7 applied for scholarship
- 3 selected

At least 33 scholarships over 5 years
Teaching Identity

Role Identity framework based on how individuals see themselves with respect to teaching (Based on Hazari et al., 2010)
Critical Science Teaching Agency (CSTA)

Individuals’ ability to enact change in the world through teaching. (Basu et al, 2010; Godwin et al., 2016; McNeil et al., 2012)

1. **Teaching Identity**: How an individual sees themselves in regards to teaching (Subconstructs: Interest, Recognition, Performance/Competence)

2. **Criticality**: Awareness and ability to problematize

3. **Agency**: Beliefs and practices to enact change
Fostering Criticality and Agency

- Discussion topics
  - History of communities (gentrification, historical, white flight, red lining, community visits, etc.)
  - Self Study (experiences, biases, privilege, microaggressions, etc.)
  - Policy (funding, emphasis on literacy, access for parents, safety, etc.)
  - Curriculum Development (Social Justice, Multicultural, Culturally Relevant)

- Engagement
  - Authentic Field Experiences in High Needs schools
  - Instructional Leadership Internship in FIUteach class
  - Education Research Internship with faculty
Project’s Research Questions

1. How does teaching identity and critical teaching agency change longitudinally for Noyce scholars?

2. How do teaching identity and critical teaching agency relate to Noyce scholars’ persistence towards pursuing math/science teaching careers?

3. How do experiences help in the development of teaching identity and critical teaching agency?
Teaching Identity Instrument

- Pre/post survey administered every semester
- Items (Likert scale) were adapted from disciplinary identity scales to address Math and Science Teaching Identity (Hazari., et al 2010)

Teaching Identity: Constructs

- **Recognition:** 3 Items (Ex. My family sees me as good at teaching math or science)
- **Interest:** 4 Items (Ex. I enjoy teaching others math or science)
- **Performance Competence:** 5 Items (Ex. I know the steps necessary to teach math or science concepts effectively)
CSTA Instrument

- Piloted Spring 2018 and Fall 2018
- Social Justice Instrument (Ludlow et al., 2008)
  - 12 items (ex. Although teachers have to appreciate diversity, it’s not their job to change society. Issues related to racism and inequity should be openly discussed in the classroom)
- Approaches to Multicultural Curriculum Reform (Based on Banks et al., 1999)
  - 14 items (ex. There will be posters of mathematicians/scientist, that reflect various ethnic backgrounds, on my math/science class wall. I will design math/science curriculum that encourages students to take personal, social or civic action)
Outcomes to Date

- Scholars: On track with 14 in first two cohorts
- Recruitment workshops drives strong applicant pool
- Teaching Identity Instrument is valid and reliable
  - Teaching Identity is correlated with career interest and taking next course
  - Found that instructor and Mentor Teacher feedback, use of manipulatives in field, and recognition as teacher predictive of teaching identity
- Designed and piloted CSTA

Informed instructor practice and mentor teacher PD
References


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NSF Grant No. DUE-1660776
Addressing Class in Class

Darbie Valenti
Gifted Teacher
St. Joseph School District
True or False

Poverty is not a culture.
Mindset and Education

- Research shows a powerful correlation between mindset and student achievement.
- Students that are considered to have a growth mindset typically score higher on achievement tests while students with a fixed mindset tend to typically score lower.

as the great EQUALIZER
Helping Foster a Growth Mindset
Convergent Thinking vs. Divergent Thinking

- **Convergent Thinking**
  - Fact → Answer → Fact → Fact

- **Divergent Thinking**
  - Idea → Question → Idea → Idea
Antonetti, J., & Garver, J. (2015). *17,000 classroom visits can’t be wrong: Strategies that engage students, promote active learning, and boost achievement*. Alexandria, VA: ASCD.
Learning

should be something

NEW

and something

YOU

~John Antonetti
What are three things that these images have in common?
Which one doesn’t belong and why?
The volume of this object is 52 cubic units. Convince a skeptic that this is true.
You are a civil engineer teaching an engineering student about beam bridges. Which of these pictures would you use to explain the parts of a beam bridge? Why did you choose that picture?
Rank the following fractions in order from easiest to simplify to hardest to simplify.

\[
\frac{21}{27} = \quad \frac{12}{16} = \quad \frac{10}{24} = \quad \frac{21}{24} =
\]
Choose nine of these terms to place into a Tic Tac Toe grid.

- Sun
- Producer
- Primary consumer
- Secondary consumer
- Tertiary consumer
- Omnivore
- Herbivore
- Carnivore
- Photosynthesis
- Decomposers
- Energy
- Food chain
- Energy pyramid
Fostering a Growth Mindset

We must begin here…
Contact for Further Information

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WEBINAR SUMMARY
Overall Q & A
Takeaways & Action Steps

In the Question panel, identify an action step you will take based on your participation today.
Webinar Key Points

Investigating the development of teacher identity and critical agency for teaching during both the preservice and induction phases is needed to generate critical insight into best practices for how to prepare preservice teachers to serve in diverse, urban schools.

Preliminary findings:
- Teaching Identity is correlated with career interest and taking next course.
- Instructor and Mentor Teacher feedback, use of manipulatives in field, and recognition as teacher are predictive of teaching identity.
- We must recognize the barriers that our students from poverty are experiencing in traditional classrooms.
- Low floor, high ceiling tasks allow everyone to participate regardless of academic level or background, while promoting divergent thinking.
- Promoting growth mindset helps move students beyond the power of yet by changing their beliefs in themselves and their capabilities, helping them succeed in STEM as well as other subjects.
Resources

Shared by National Researcher - Dr. Etta Hollins, University of Missouri, Kansas City:
- Book:

Shared by Preparation Program Principal Investigators – Drs. Vishwada Tamotharan & Laird Kramer, Florida International University:
- Book:

Shared by STEM Teacher Leader – Ms. Darbie Valentie, St. Joseph School District – St. Joseph, MO:
- Website:
  - This website provides a variety of resources regarding how to build a growth mindset: www.tamhoxy.com
- Dr. Donna Seeger, President and founder of Communication Across Barriers shares her research and life experience about poverty in America. https://www.youtube.com/watch?v=nXiL6BuAwXU

Shared by the American Association for the Advancement of Science (AAAS):
- Association of American Colleges & Universities (AAC&U) website contains Cultural Competency Resources:
  - Teaching to Increase Diversity and Equity in STEM Resources for a culture-responsive classroom.
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Stay tuned . . .
We Want Your Feedback

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