

Fostering Critical Awareness: Incorporating a Critical Consciousness Framework into Engineering Professional Development

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Jameka Wiggins is a Ph.D. Candidate in Engineering Education, specializing in Organizational Change in Higher Education and Industry at The Ohio State University. Concurrently, she is pursuing a Master's in Engineering Management. Jameka's current research explores how engineering faculties' positionality and lived experiences shape their critical consciousness development. As a scholar and advocate, she seeks to amplify the voices of underrepresented groups in engineering by exploring their experiences, engaging in critical questioning, and offering support. Outside of academic studies, Jameka serves as an ambassador for her department, reviewer for ASEE, and active volunteer for a Columbus STEM non-profit See Brilliance. Jameka has been recognized by her undergraduate institution for her commitment to achieving the vision of the Ronald E. McNair Scholars Program and most recently by her department for her scholarship as a graduate researcher. Jameka strives to be a well-rounded scholar and exhibit her dedication to people and scholarship.

Dr. Monica Cox, The Ohio State University

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Fostering Critical Consciousness

Incorporating a Critical Consciousness Framework into Engineering Professional Development

Presentation By: Jameka Wiggins



WHAT WE WILL TALK ABOUT

- Introduction
- Background
- Integrated Conceptual Framework
- Implementing Critical Consciousness in Engineering
- Conclusion



Introduction

About Me

- Ph.D. Candidate at The Ohio State University
- Advisor: Dr. Monica Cox
- Research Interests:
 - Student Support & Retention
 - Faculty Development
 - Critical Theories & Methodologies
 - Assessment

Motivation

My experience as an undergraduate in chemical engineering sparked my interest in wanting to understand the experiences & knowledge of faculty, specifically the experiences that influenced their pedagogical practices.



Knowledge Check

Critical

When you hear the term critical, what does it mean to you?

Critical Consciousness

Have you heard of the concept critical consciousness? If so, where and what is your understanding of it?



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Background

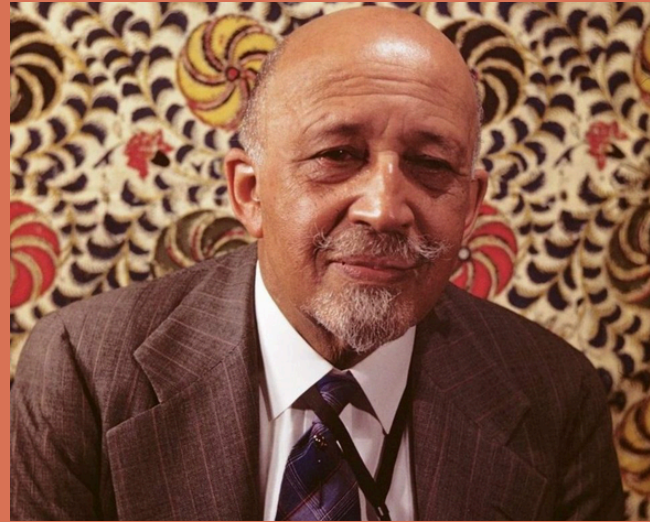
Critical Consciousness Defined

Critical consciousness has multiple historical and contemporary definitions.

An individual's **awareness** of oppressive systemic forces in society, a **sense of efficacy** to work against oppression, and engagement in individual or collective **action** against oppression (Heberle, 2020, p. 5).

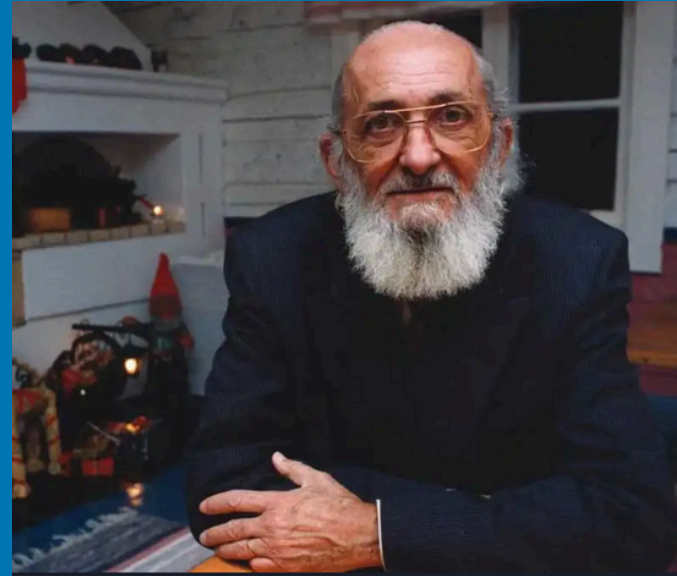
Critical Consciousness Scholars

W.E.B. Dubois's Double Consciousness



Double consciousness focused on an inward twoness generally experienced by African Americans.

Paulo Freire Critical Consciousness



Brazilian men are knowledge holders and use it to transform their realities. Comprised elements are reciprocal and unidirectional elements of reflection and action.

Gloria Ladson-Billings Culturally Relevant Pedagogy



A “pedagogy of opposition not unlike critical pedagogy but specifically committed to collective, not merely individual, empowerment” (Ladson-Billings, 1995, p. 160).

Critical Consciousness in Higher Education

The formal education system **reinforces** white supremacist, patriarchal, and hegemonic ideologies that limit human liberation and progress (Trbusic, 2014; Waite, 2021).

Faculty revealed **critical incidents** that prompted reflection, and aha moments that **connected with their life experiences** influenced consciousness development (Landreman et al., 2007).

Literature Review

Current Scholarship on Critical Consciousness in Engineering

Engineering must “**design, work, and lead** with critical consciousness [because it strengthens] their ability to identify injustices, including how technology might contribute to injustices” (Kantharajah, 2022, p. 10).

Reform in engineering education **lies in critical thinking**, engaging in community contexts with a focus on **problem-posing education**, and **dialogical praxis** to reflect and act (Trbušić, 2014; Kantharajah, 2022).

Critical Consciousness Development

Scholars recommend analyzing **social group membership and social identity** as they are factors that influence collective action (Watts et al., 2011).

Techniques or carefully developed and tested approaches are **needed** for transforming consciousness (Montero, 2009).

Limited knowledge of evaluating individuals who wield significant power.

There is an absence of analysis of an oppressor
perspective, privilege, and intersectionality
(Jemal, 2017).



Why Faculty?

01



Power

Faculty have the power to make changes to their teaching practices & can encourage change through professional connections.

02



Access

Faculty play an instrumental role in student development & can use a critical pedagogy approach to inform engineering identity.

03



Privilege & Influence

Faculty, especially those in leadership roles can facilitate change in policies and practices that students cannot make.

Research Questions

How do engineering faculties' descriptions of critical consciousness vary based on their positionality and lived experiences?

How does engineering faculties' critical consciousness development from childhood to career vary based on their positionality and lived experiences?

How do instructors engage critical consciousness in their professional practices if it all?



Integrated Conceptual Framework



Developing the Conceptual Framework

Addressing limitations with a focus
on adults (i.e. faculty) who yield
power and privilege.

My conceptual framework incorporates
the theoretical works of four authors:

- R.I.S.A – Dr. Waite (2021)
- Three Components of Critical Consciousness – Diemer et al. (2015)
- Transformative Potential – Jemal (2017)
- Five Stages of Sociopolitical Development – Watts et al. (1999)

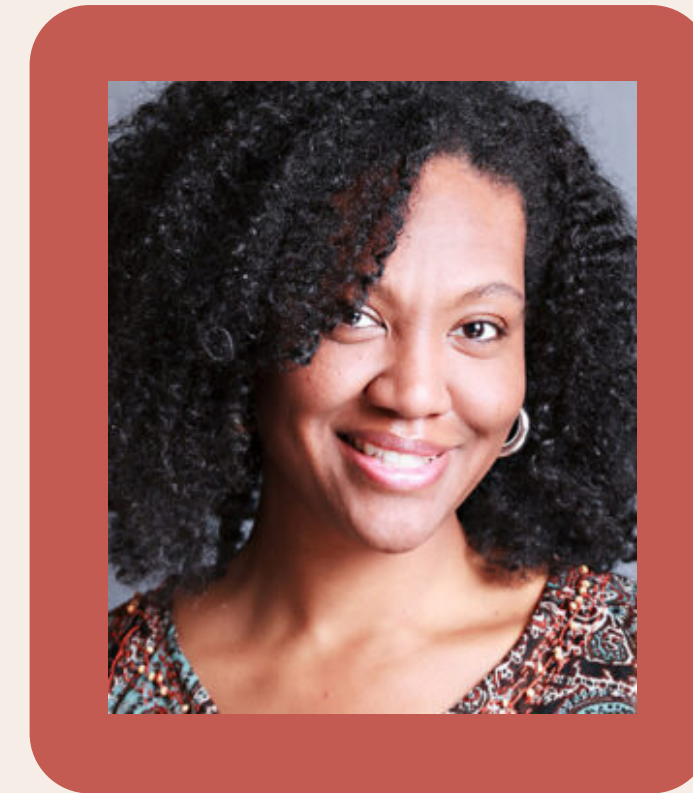
Scholars & Theories Expanding Critical Consciousness

Matthew Diemer Three
Components of Critical
Consciousness



Diemer et al. (2015) expanded upon Freire's components of CrC (i.e., critical reflection & action) by adding critical motivation or political self-efficacy.

Alexis Jemal Transformative
Potential



Transformative potential uses an intersectional approach to social analysis focusing on both the positions of oppression and privilege as forms of inequity.

Scholars & Theories Expanding Critical Consciousness (cont.)

Shannon Waite R.I.S.A. Conceptual Framework



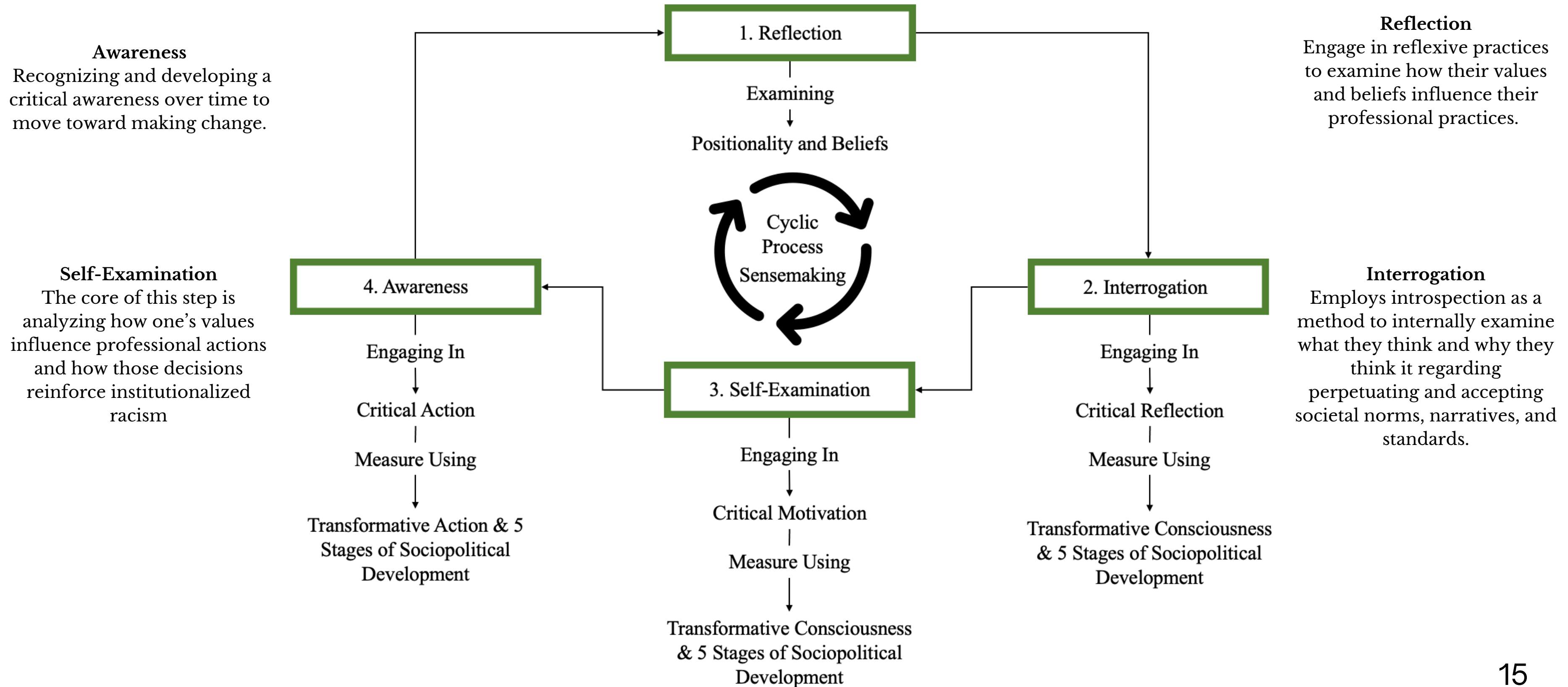
Waite (2021) Incorporates critical theories & liberatory practices to address the social & political climate in education.

Watts, Griffith, & Abdul-Adil Sociopolitical Development



Watts et al. (1999) provides five stages of sociopolitical development that describe how consciousness can be measured in various stages.

Assessing Critical Awareness Integrated Frameworks



Reflecting on the Framework

After hearing about the framework, please reflect on the following questions about the Assessing Critical Awareness in Higher Education Framework.

Do any aspects of the framework resonate with you? If so, which parts?

How could you see yourself engaging in this type of framework?

What are some advantages to engineering educators and practitioners partaking in this framework?

What are some potential limitations and areas of resistance that this work may face?





Implementing Critical Consciousness in Engineering



Critical Consciousness in Engineering

Incorporating critical consciousness into engineering can be a pathway for developing the next generation of engineers who:

- Critically question
- Engage in reflexive praxis
- Take action to make a change
- Addressing systemic barriers that inhibit broadening participation

Practices for Faculty Professional Development

The previous slide discussed the potential results of implementing critical consciousness in engineering.

I will discuss four methods for using critical consciousness in professional development practices:

1. Case Studies
2. Reflective Practice
3. Annual Evaluations
4. Workshops



Practice Based Learning: Case Studies

Mann et al. (2020) PBE framework encourages authentic practice, supporting learner agency, and working & learning simultaneously.

Practice-based learning is an educational strategy that calls for practice-relevant contexts and reflection In-and-out of practice (Mann et al., 2020; Higgs, 2011).

Combining elements of practice-based learning and critical consciousness could result in:

- Faculty case-studies that use experiences from the classroom paired with reflection prompts to encourage critical thinking about pedagogical practices

Reflective Practices



Schon (2017) encourages professionals to engage in the ongoing process of reflecting on one's knowledge and practices in real-time.

There are various ways faculty can reflect, I suggest the following to get started:

- **Self Reflection:** Examining positionality, lived experiences, and their influence on personal & professional practices
- **Group Dialogue:** Insight to new perspectives, encourage accountability, provide a space for knowledge construction
- **Programming:** Participating in spaces that encourage discussion of professional practices (e.g., teaching, leadership, advising)

Annual Evaluations



Preliminary findings from my dissertation study revealed annual evaluations could be used as a tool for assessing critical consciousness.

Implementing critical consciousness in annual evaluations could look like:

- **Reflection Prompts:** Using guided reflection prompts that call for interrogation and self-examination of professional practices.
- **Incentive for Intentional Critical Scholarship:** Providing Incentives to faculty who engage in Intentional critical scholarship through research, teaching, and/or service.
- **Providing Space for Dialogue:** Annual evaluations can provide a safe space for critical dialogue.

Engagement in Development Workshops

Dialogic praxis can serve as a fundamental way for faculty to critically question & formulate critical incidents.

Vallejo Peña's (2012) study revealed the use of dialogic exchanges during inquiry meetings helped faculty encourage other members to question their assumptions about students of color.

Potential faculty workshops could focus on the following topics:

- Culturally Sustaining Pedagogy (Paris, 2021)
- Holistic Mentoring & Advising
- Challenging Dominant Ideologies in Engineering Education & Practice

Limitations to Consciousness Raising



CrC development is a
cyclic process



Resistance to engage in
dialogue & development



Establishing systems of
accountability &
measurement



Limiting ability to
exercise critical action



Racial Battle Fatigue,
Reharm, Guilt

Development of critical consciousness is a *journey* not a destination.

It takes work and commitment, we must be constantly involved in the process of learning and unlearning to grow in our critical awareness.



Contact Form:



Thank you for listening!

Connect with Me:



Fostering Critical Consciousness: Incorporating a Critical Consciousness Framework into Engineering Professional Development

If interested in collaborating, meeting, or
sharing resources, contact me!

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