

Towards a Disruptive and Transformative STEM Teaching Practices: Indigenizing and Globalizing Social and Political Consciousness of Marginalized Groups Through Critical Pedagogy

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Who Am I?

Immigrant from Nepal

Grew up in Indigenous Tharu Village
Southern Nepal – 34 in same house

Walked 1.5 hours to school in Early
Years

Went to a Boarding School
(4th-10th grade)

Attended Teachers College,
Columbia University; The University
of Texas at Austin

Have a wife and a son



Who is Marginalized?

- Those who have been excluded from the social, economic, cultural, or political privileges that a mainstream or dominant group enjoys (Freire, 1998).
- Those who live in a society with a power imbalance among different groups.

Who is Marginalized?

- Dominant group uses “identities, associations, experiences, and environments” of marginalized people to “oppress” them (Hall, Stevens, & Meleis, 1994, p. 25);

and

expose them to vulnerable economic, political, social, and personal conditions.

Pedagogy of Sociopolitical Consciousness: Disruption and Transformation

- critical thinking critical reflection critical actions
- Critically awareness of sociocultural, sociopolitical, historical, and economic injustices and taking actions to remedy them (Watts et al., 2002; 2011)

Pedagogy of Sociopolitical Consciousness: Disruption and Transformation

- critical consciousness:

individuals have multiple levels of consciousness of actions that could produce transformative changes (eg. Ladson-Billings, 1995, 2014; Steinberg & Kincheloe, 2012).

- Students take sociopolitically conscious actions in STEM when the pedagogy is sociopolitically conscious (Rogers & Terriquez, 2013; Upadhyay et al., in press)

Indigenizing: Making Pedagogy and Content Disruptive

- Rejecting “tokenized checklist response which tolerates indigenous knowledge(s) but embracing indigenous knowledge(s) so that its part of institutional fabric” (Pidgeon, 2016, p. 77).
- Disrupting histories of power associated with settler colonialism. (Battiste et al., 2004; Marker, 2004).

Indigenizing: Making Pedagogy and Content Disruptive

- Rejecting “othering” of indigenous knowledge and research (Battiste et al., 2004; Marker, 2004)
- Questioning the Western-centric model of education
- Transforming institutions (Alfred, 2004)

A Tharu Indigenous Woman from Nepal: Transforming Learning Through Our Story

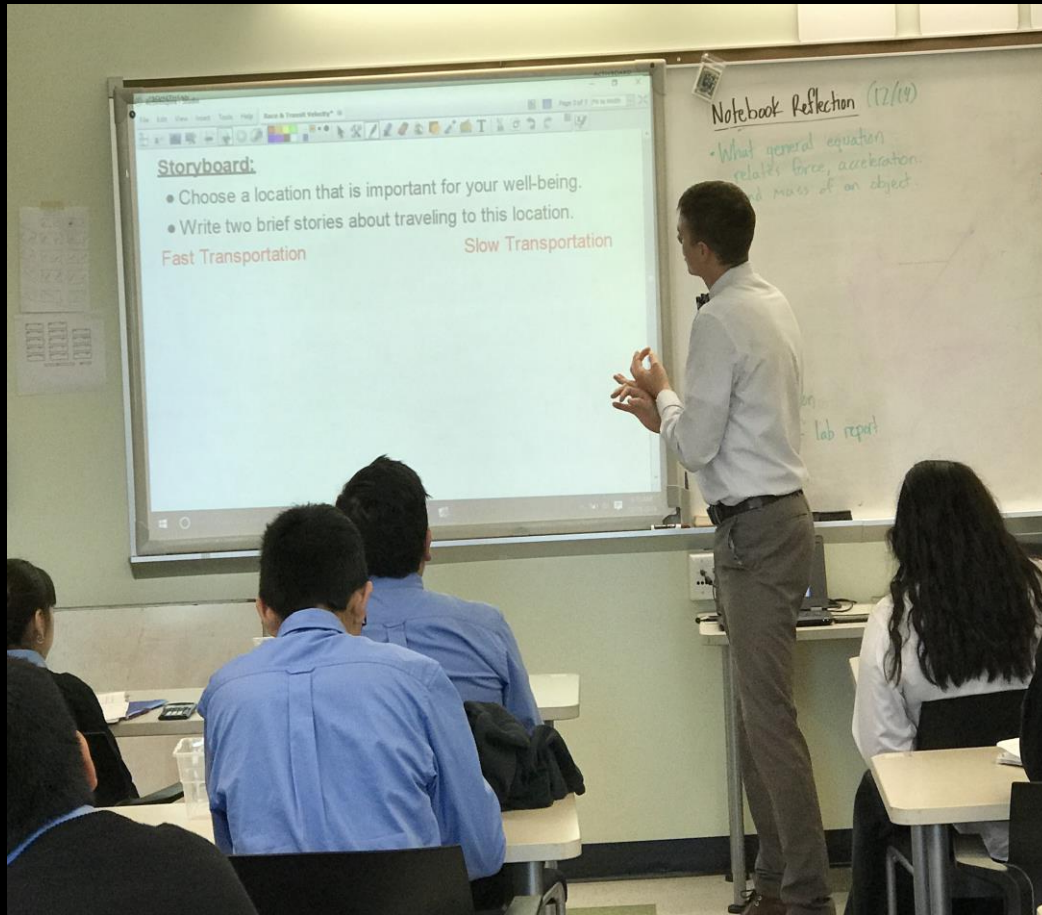


Fishing: An Indigenous
Practice of Sustainability

A Fishing Tool for Girls:
Diversifying Fishing Tools
for Sustainability

Sharing Knowledge on Local
Resources and Indigenous
Knowledge and Skills

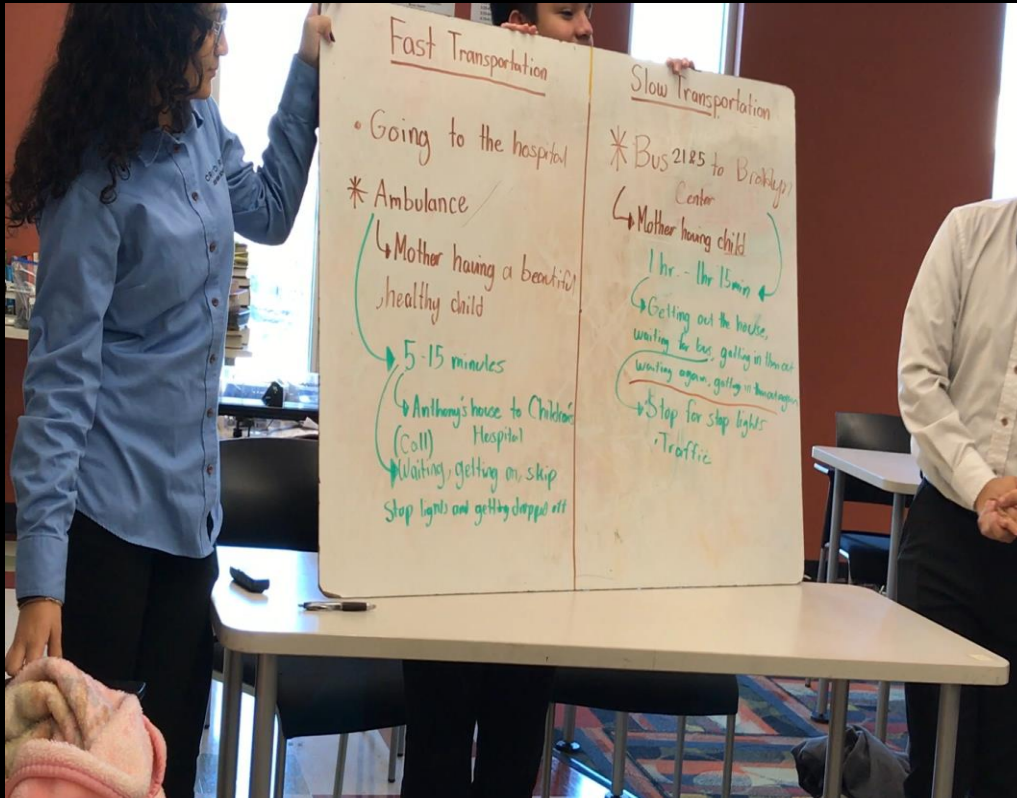
A Physics Classroom: My Transportation Story



Choose a location that is important for your well-being.

Write two brief stories about traveling to this location.

Our Transportation Story: Birth of a Child



FAST

**Ambulance
to Brooklyn
Center**

**Mother having
beautiful
healthy child**

Slow

BUS 2185

**Mother a
having a
child**

Our Story: Brick Designers for Brick Manson(s)



Labor, Power,
and Politics

Unsustainable
Economy

Loss of Fertile
Land

Food Deserts

Our Story: Migration - A Disrupted Education & Action



Personal Story:
Glue to Cultural
and Sociopolitical
Connections

False Choices:
Sustainability,
Wellness and
Personal Economy

Dissonance:
Between School-
Home Cultures

Our Story: Earthquake – Disruption & Action



Sustaining
Cultural Heritage
and Knowledge

Political and
Cultural
Intersections

Case Against
UNESCO

Decision to Disrupt
Western Hegemony
on World Heritage
Sites and Knowledge

What Does This Mean to Learners, Teachers, & Educators

- STEM is a Story told by people in power
- STEM needs to be a Story told by YOU
- STEM happens in a local social and cultural contexts
- STEM should be leveraged to take actions for social and political change
- STEM is about personal Transformation
- STEM is about personal Wellbeing
-

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Thank You
&
QUESTIONS?



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