

Exploring and Expanding Gender Responsive Pedagogies in Science Teacher Education: Case studies in Zimbabwe and South Africa

Research Goals

- ❖ to assess the level of gender responsiveness of SMTs teacher educators (*description of the life situation*)
- ❖ to develop mediation tools that support expansive learning for gender responsive pedagogies in SMTs teacher education (*intervention*)

Research Questions

- What capability set (opportunity freedom) is available for girls in the SMTs teacher education curriculum? (*assessment of life situation*)
- What are the underlying mechanisms that affect (promote or constrain) gender responsive curriculum practices in SMTs teacher education? (*cultural historicity*)
- What conceptual artefacts can the study develop to support expansive learning for gender responsive pedagogies in SMTs teacher education curriculum? (*intervention*)

Problem

Under representation of females in Science,
Mathematics and Technical subjects (SMTs)
.Visible from high school and beyond

Background and Context

Percentage of women and men in Faculties of Science in SADC countries

Angola		Botswana		Lesotho		Malawi		Mozambique		Swaziland		Tanzania		Zambia		Madagascar		Zimbabwe	
F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M
40	60	28	72	26	74	37	63	23	77	28	72	30	70	35	65	33	67	24	76

Background and Context continue

Research Evidence (FAWE, 2008; Chikunda, 2010; Cleggy, 2007; Kalu, 2005, etc.)

- major hindrance to participation of girls in SMTs is the lack of gender responsiveness in the pedagogy applied in schools.
- although it is now common knowledge that gender imbalances in SMTs exist, teachers are often unaware or unaccepting of this situation and would not naturally feel the need to address it
- Such research evidence seem to be pointing at that SMTs teachers are not receiving from their teacher education, the necessary skills, knowledge, values and attitude to engage with social issues such as gender in their curriculum practice.

Background and Context continue

Enabling environment for gender equality in ED

- UN sanctioned bodies Education for All (EFA), Millennium Development Goals (MDGs), the Beijing Platform for Action (BPfA) and the Education for Sustainable Development (ESD).
- Regional bodies e.g. SADC, NEPAD
- National policies on gender equality in ed

Theoretical Framing

3 approaches; Capability; feminist and CHAT

- The axiological assumptions of the three is associated with **critical theory**, which considers the process of change to be a predominant factor in the lives of people.
- twin intentions of critical research resonates with the goals of study: (1) naturalistic interpretive (exploration phase); (2) praxis-action, reflectivity with the aim to emancipate (expansive learning).

Feminist theories

- Gives explanatory critique of the gendered ontology and the epistemology of science as taught in school
- provide a framework on analysing the level of gender sensitivity of SMTs teacher educators

Capability approach

- The capability approach is a broad normative framework for the evaluation and assessment of individual well-being and social arrangements, the design of policies, and proposals about social change in society (Robeyns, 2007).
- Tool for curriculum evaluation (exploration phase) e.g. alerts us to differential conversation processes linked to gender and curriculum development.

Cultural Historical Activity Theory

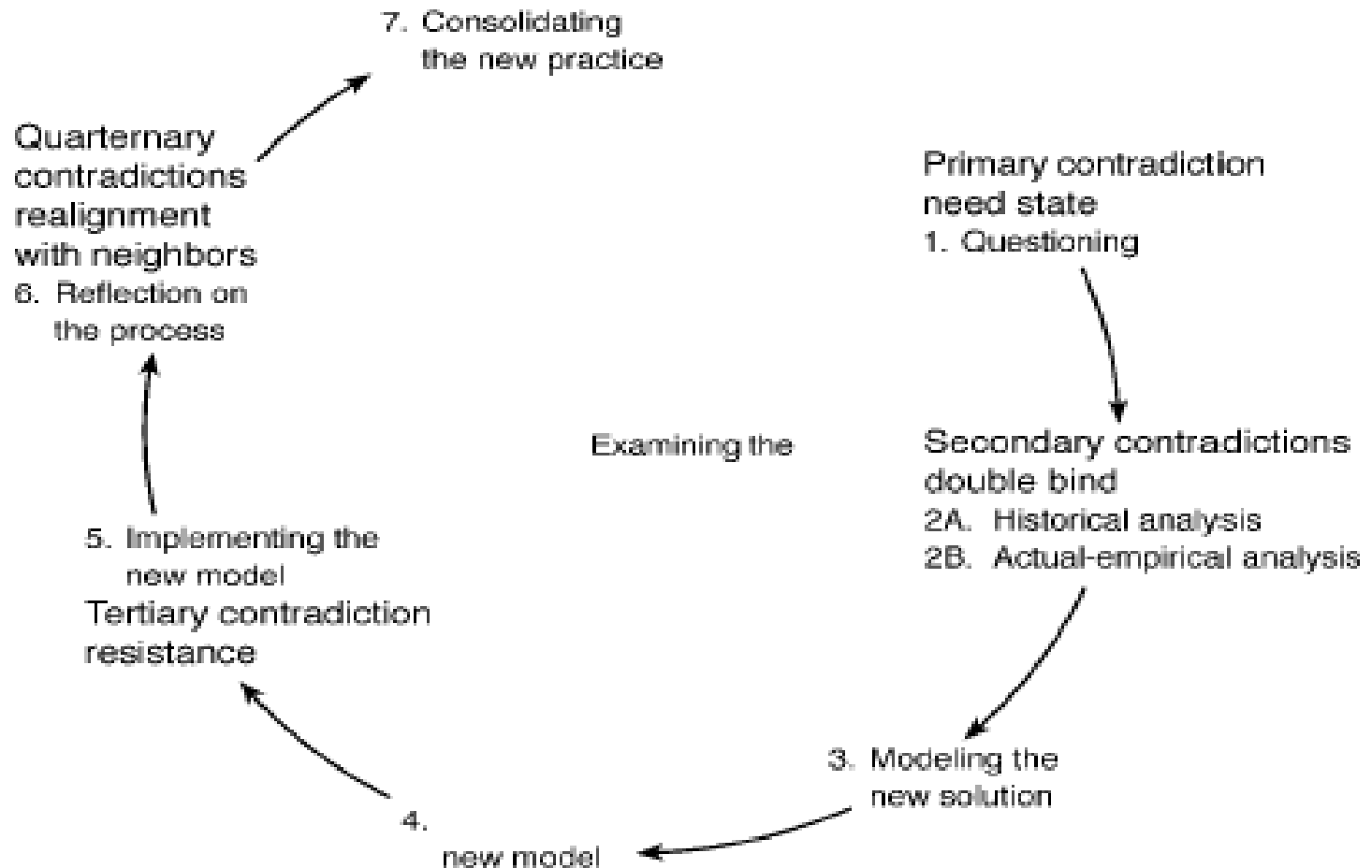
- Gender issues are contextually embedded in culture and history; these in turn influence our perception, thinking and practice.
- CHAT helps understanding of historically specific local practices, their objects, mediating artifacts, and social organization), and
- expand (developmental... influencing qualitative changes in human practices

Cultural Historical Activity Theory cont

CHAT through Developmental Work Research offers the opportunity for participants to come together

- to question and analyse curriculum practices using research evidence
- model or construct as well as examining new ways of working basing on the need for capabilities development of both sexes in SMTs

Methodology



Methods

- Exploration phase: In-depth interviews; Focus Group interviews; Document analysis; critical Discourse analysis.
- Expansive learning: Change laboratory Workshops

Surfacing contradictions

- **Researcher:** *Why do you think girls become less and less interested in sciences as they continue with their education?*

Surfacing contradictions cont

- **Participants (several interviewees)**
 - *-they (girls) believe that science is for boys/is difficult*
 - *-they put less and less effort in science as they proceed in high school education*
 - *-girls are socialised to do easier stuff*
 - *-they are capable/able but they put less effort*

Surfacing contradictions cont

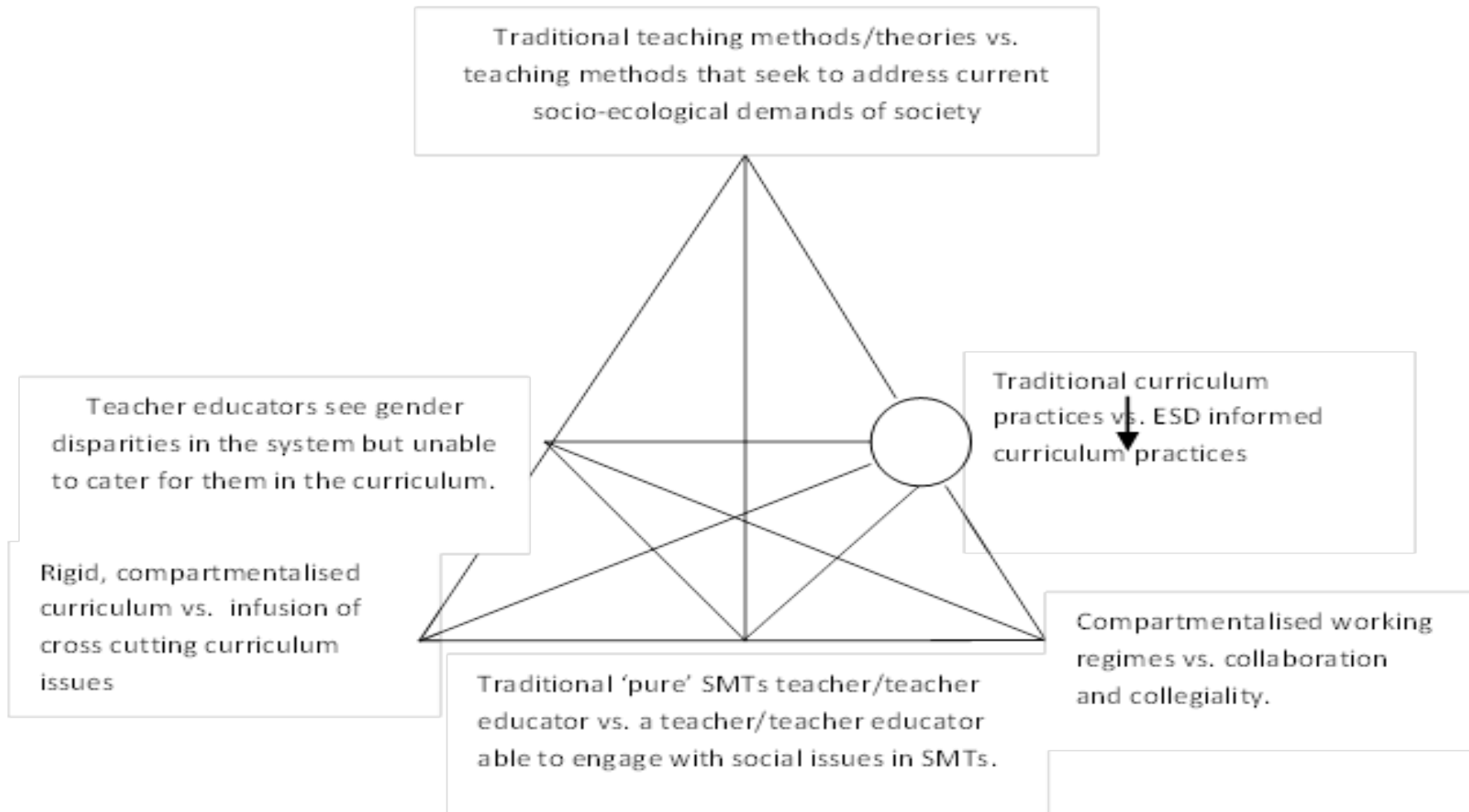


Fig 7.1: Primary contradictions in the teacher education activity system.

Surfacing contradictions cont

- Low level of gender awareness (1ry contradiction)
- 1ry contradiction manifests itself in a series of secondary contradictions, that is teacher educators being unable to address gender issues in their curriculum practices.

Surfacing Contradictions

Contradictions are historically accumulating structural tensions within and between activity systems ... (Engeström, 2001)

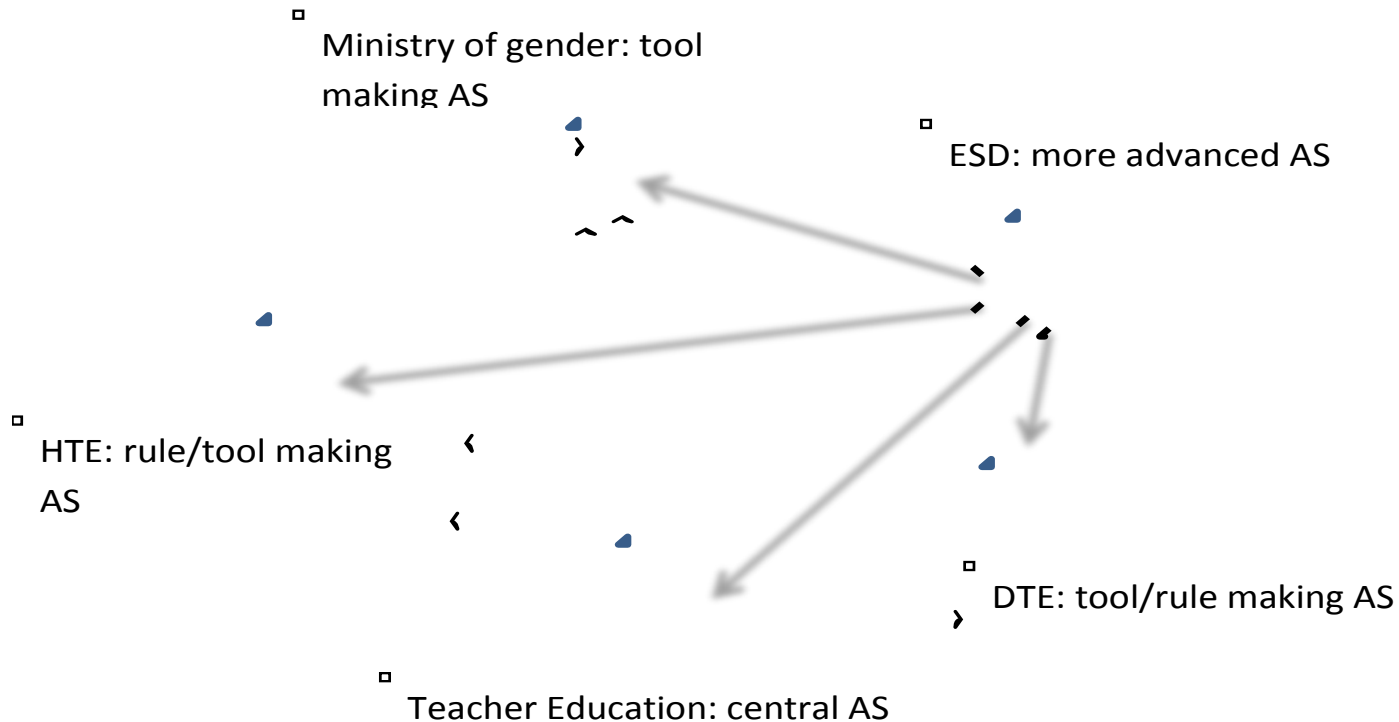
1ry contrad manifesting as 2ry contrad i.e. b/w subject and object

Results in a 3ry contrd i.e. clash with a higher esteemed AS (policies on gender in Science Ed)

Why is policy not being translated into curriculum practice?...further exploration into other ASs

Activity systems

Networked Activity Systems for the BTTC case study



Key: 1. Supposed to feed into and 2. Supposed to interact

Supposed to interact

Expansive learning with TE AS

Mirror data:

- *findings from the exploration phase*
- *Policy formulations*
- *Gender responsive pedagogies (literature)*

Expansive learning with various ASs

- Horizontal and vertical boundary crossing
- Horizontal
- Vertical: Policy formulation and implementation (what- interpretation; how-translating policy into curriculum practice)

Challenges

- Writing, coherence, pulling theoretical threads throughout (responding to the questions).
- Not enough done on cultural historicity (historicising the cultural context)