

***"Doing Science": Pedagogies and
Strategies to enhance participation
and performance of Girls in the
Sciences***

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*"Tell me and I forget, show me and I
remember, involve me and I
understand."*

The Inquiry

- Inquiry → involvement that leads to understanding.
- Involvement in learning → skills and attitudes → resolutions to questions and issues → constructing new knowledge

INQUIRY BASED

TRADITIONAL

Principle Learning Theory

Constructivism

Behaviorism

Student Participation

Active

Passive

**Student Involvement in
Outcomes**

**Increased
Responsibility**

**Decreased
Responsibility**

Student Role

Problem solver

Direction follower

Curriculum Goals

Process oriented

Product oriented

Teachers Role

Guide/facilitator

Director/ transmitter

IBSE Pedagogies

- “Inductive Approach” or “Bottom-up” → more observation, experimentation and the teacher-guided construction of knowledge by the learner
- Problem-Based Learning → learning begins with a problem to be solved
- Problem posing and problem solving pedagogy

IBSE Pedagogies

- Constructivism → through processes of accommodation and assimilation, individuals construct new knowledge from their experiences.

Relevance to Girls

- Freire (1984) → any pedagogy must be of demonstrable relevance to the immediate worlds of the students and it must enable them to analyse, theorise and intellectually engage with those worlds.
- Dewey (1997) → optimal learning and human development and growth occur when people are confronted with substantive, real problems to solve.

IBSE Strategies

- Hands-on activities
- Group work v/s Team-work
- Allow critical thinking
- Allowing learners to own the learning process

Relevance to Girls

- Dewey (1997) → Curriculum and instruction should be based on integrated, community-based tasks and activities that engage learners in forms of pragmatic social action that have real value in the world.
- Ideas are best introduced when students see a need or a reason for their use—this helps them see relevant uses of knowledge to make sense of what they are learning.

IBSE and the Facilitator

- Structure activities such that students are able to explore, explain, extend, and evaluate their progress.
- Facilitate a guided discovery
e.g.:
 1. Rhythm and sound
 2. A hot cup of tea
 3. Collection of waste materials

IBSE and the Facilitator

- The need to know:
 - how people learn
 - people's interests and career paths
 - the right time
- Provide sufficient support to promote learning when concepts and skills are being first introduced to students → Scaffolding.

Implementation Resources

- Human Resources
- Facilities
- Finances

Sources

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Thank You