

How can IBSE contribute to promoting science education in the intermediate phase?

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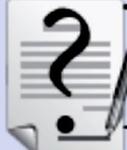
Aim: To present IBSE as a teaching methodology, as a way of working with children as they conduct independent inquiry - investigations that will enable them to acquire knowledge, skills and habits as well as develop their cognitive abilities.

What is IBSE?

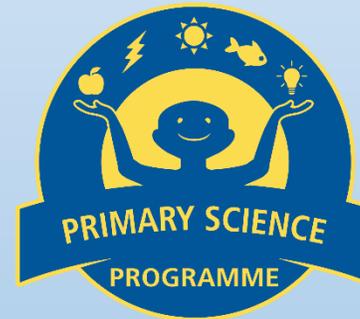
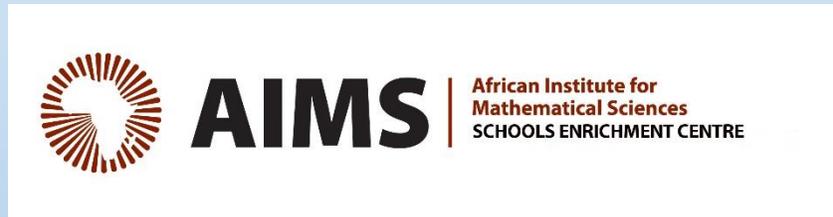
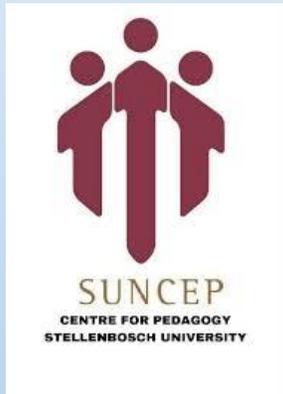
“Inquiry-based science education comprises experiences that enable students to develop understanding about the scientific aspects of the world around them through the development and use of inquiry skills.”

Harlen and Allende, 2009:11

(Harlen, W, and Allende, JE, 2009. *Teacher Professional Development in Pre-Secondary School Inquiry-Based Science Education (IBSE)*).

	It is based on observation
	It is based on experimentation
	Asking questions
	Making hypotheses
	Designing investigations
	Grappling with data
	Drawing inferences
	Redesigning investigations
	Building and revising theories

Who is involved - WC IBSE?



Finding out more?



22 countries at 9th International Seminar of La main à la pâte, an international conference on IBSE in Paris, 18 - 23 June 2018

In October 2018 four Cape Town delegates, Suanne Rampou (WCED, Head of Science), Andre Lamprecht (WCED, Head of Mathematics), Dr Barrie Barnard (AIMSSEC) and Gary Powell (SDU-UCT) attended the La main à la pâte training in Trieste, Italy

In January 2019 Andre Lamprecht (WCED) and Gary Powell (SDU-UCT) attended the Cesame training conference in Tunis to share their ideas on developing Inquiry-based mathematics education (IBME).



Training



Steps of an IBE activity

1. Individual situation (challenge)
2. Individual phase (independent thinking, solving, hypothesis)
3. Group share (agreeing to one protocol, hypothesis)
4. Develop a scheme / prototype / model / solution
5. Experiment, test your scheme / prototype / model / solution
6. Observe, analyze the result, review
7. Improve – one variable at a time, experiment, test
8. Present final design/scheme/model
9. Formalize the scientific/mathematical concepts
10. Elicit the cross-cutting concepts, instances of integration, re-investment

Lots and lots of doing,
sharing, talking and writing

Pilot IBSE: Expertise & experience

The aim is to contextualise IBSE, align with the national curriculum and facilitate implementation in local schools with teachers.



March 2019 Training workshops with WCED subject advisors

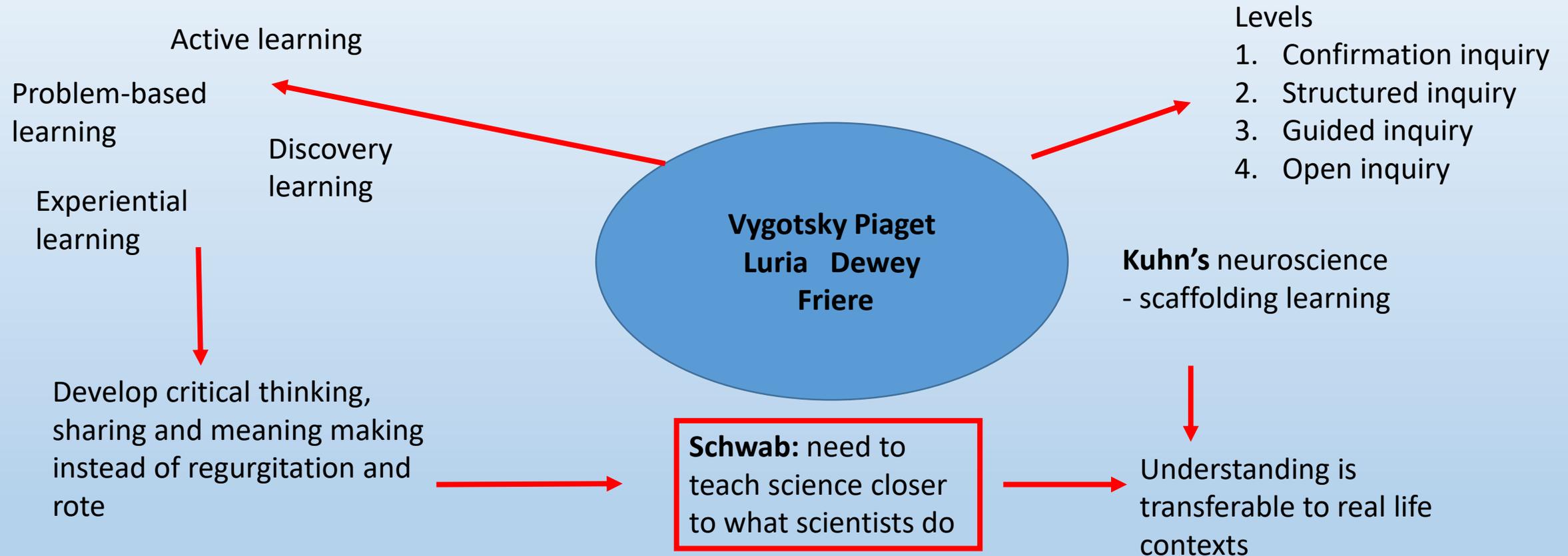


Activity: Bread and bubbles

Activity: Build a small vehicle that rolls as far as possible. This vehicle must carry its own propulsion system with it.



What is new?



Differences between IBSE & traditional approach

IBSE	Traditional approach
1. Focus on using and learning content as a means to develop information-processing and problem-solving skills	1. Focus on mastering of content and less emphasis on development of skills
2. Learner centred	2. Teacher centred
3. Teacher is a facilitator of learning	3. The teacher focuses on giving information, and the learners must receive it
4. Emphasis on 'how we come to know what we know'	4. Emphasis on 'what we know about science'
5. Learners are more involved in the construction of knowledge through active involvement	5. Learners are recipients of knowledge and less questioning is expected
6. Assessment focuses on the progress of skills development and content understanding	6. Assessment is focused on the one right answer
7. Learners are encouraged to search and make use of resources beyond the classroom and the school	7. Resources are limited to what is available in the school and there is no emphasis on the use of resources in the learner's outside environment
8. Emphasis on learning things through experimentation	8. Emphasis is on memorizing scientific concepts

Challenges

- Teachers need time, effort and expertise
- Teachers' own knowledge and skills
- Definite implications for teacher training
- Professional collaboration
- Resources

Further

- Involve scientists
- Involve science, technology and engineering etc students
- Establish pilot centres