

Inquiry by Karen

Conceptual Underpinning of CRI to School Interaction



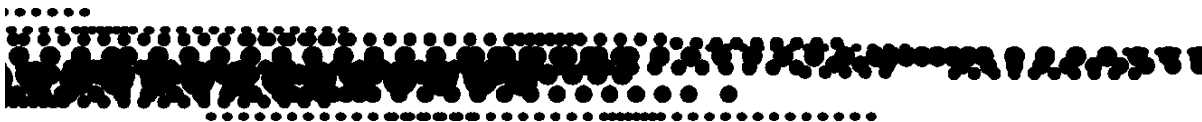
Overview

- Scion
- Science literacy
- Inquiry by Karen
- Constructivist Learning Theory
- Implications
- Inquiry Pedagogy
- Attributes of learning
- Interaction



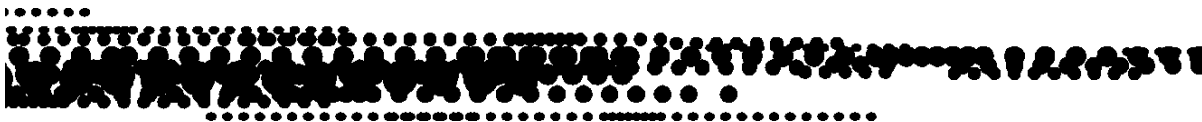
Scion

- A Crown Research Institute, based in Rotorua (Formerly the Forest Research Institute, FRI)
- Organised into three groups:
 - ▶ New Forests & Forest Science
 - ▶ Biomaterials
 - ▶ Sustainable Design
 - Science literacy
- www.ForestsofLife.org and Science for Life



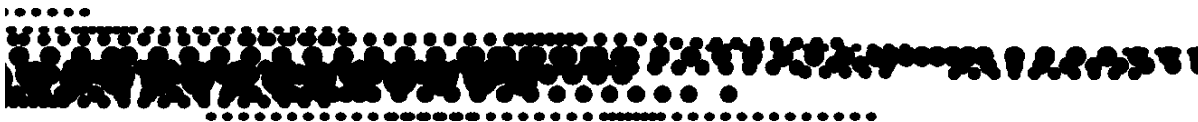
Scientifically Literate People

- Are interested in and understand the world about them
- Can identify and investigate questions and draw evidence based conclusions
- Are able to engage in discussions of and about science matters
- Are skeptical and questioning of claims made by others
- Can make informed decisions about the environment and their own health and well-being



Inquiry by Karen

- Capability Build Fund Project
- The aims are to:
 - ▶ Undertaken a (constructivist) inquiry in partnership with school students and Scion
 - ▶ The scientist engages as a facilitator and mentor and is located remotely.
 - ▶ Explore how effectively advanced video conferencing promotes the learning experience
 - Communication
 - Discourse
 - Interaction



Constructivist Learning Theory in Science

- Constructivism presupposes that knowledge is actively constructed by learners through interaction with physical phenomena and interpersonal exchanges (Watts et al 1997)



Five Ingredients of Constructivist Learning Theory

- Orientation
 - ▶ Focusing interest in a science issue
- Elicitation
 - ▶ Helping students be aware of their prior knowledge
- Restructuring ideas
 - ▶ Becoming aware of new ideas, critical examination
-> test, modify or expand prior knowledge.
- Application of new ideas
 - ▶ Reinforcement
- Review
 - ▶ Reflection on how original ideas have changed



Constructivist Learning Theory - Implications

- Learners are unique individuals.
- Developing motivation to learn - By confidence building through first-hand mastery of past problems.
- Teachers as facilitator, consultant and coach.
- Learning is an active social process and is collaborative.
- Learning context is critical
 - ▶ Real world problems will trigger different views and explanations than exercises due to the inclusion of real-world complexity.
 - ▶ School-world knowledge v real-world. (school world irrelevant in general situations)



Inquiry Pedagogy

- Students are guided through a science investigation of their [scaffolded] choice:
- The stages of an inquiry are:
 - ▶ Immersion – wondering, questions ...
 - ▶ Questioning, reflection and prior knowledge discovery
 - ▶ Hypothesis & method development
 - ▶ Execution
 - ▶ Reporting and Review
- Cognitive and meta-cognitive learning



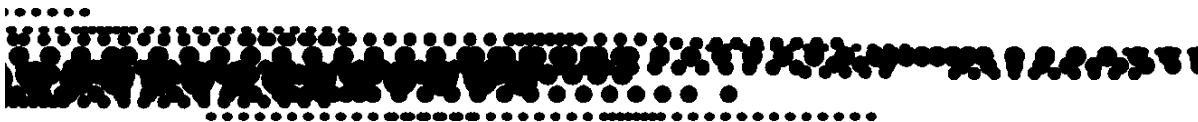
Attributes of Learning (Bransford et al 1999)

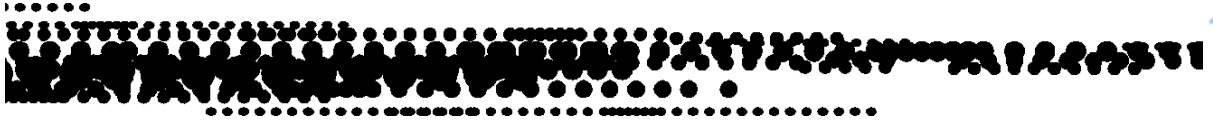
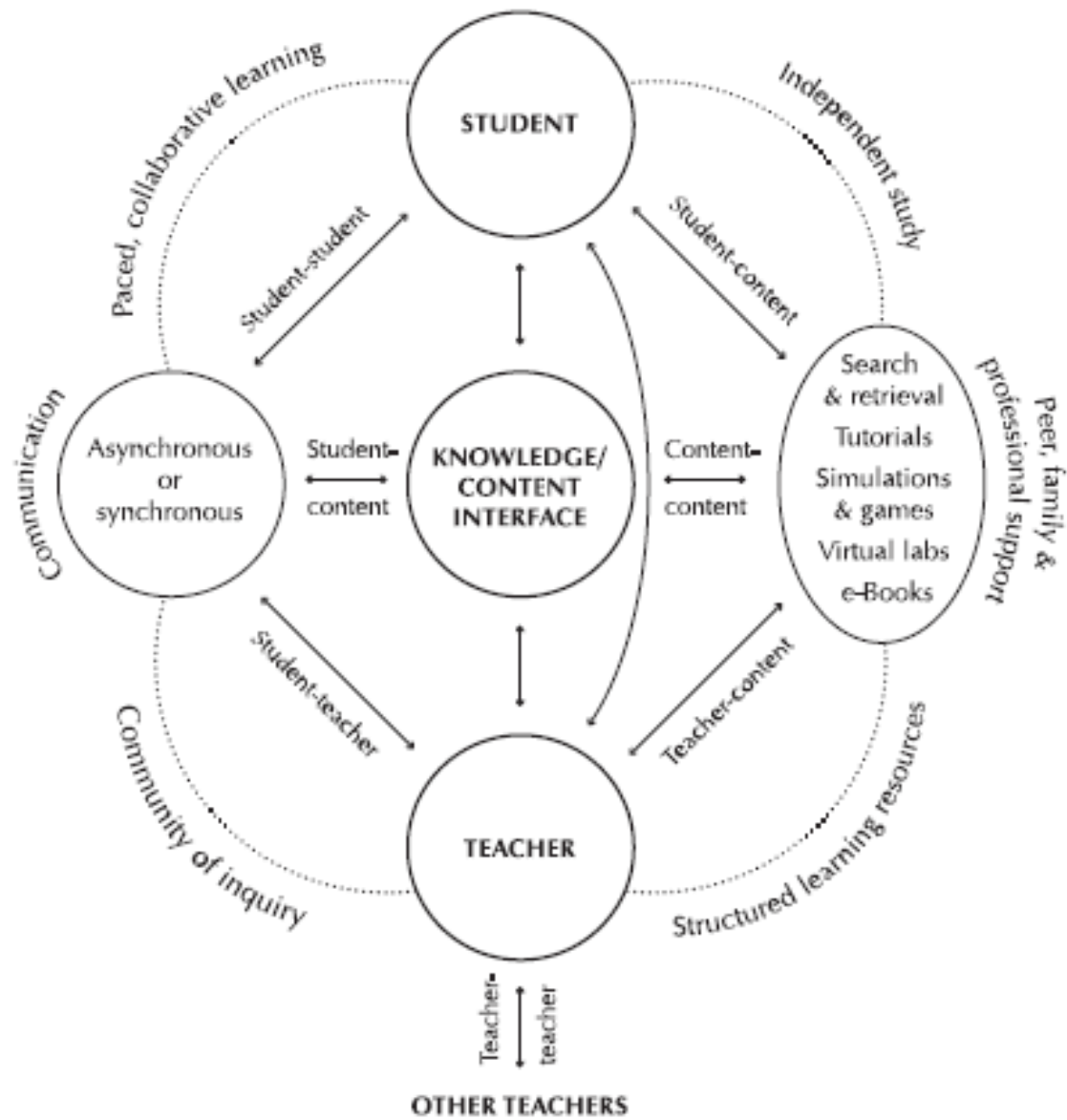
- Learning centred
 - ▶ Communication efficiency / norms – i.e., non-verbal
 - ▶ Prerequisite knowledge
 - ▶ Cultural attributes
- Knowledge centred
 - ▶ Effective learning doesn't happen in a vacuum
- Community centred
 - ▶ Support and challenge each other to effective and relevant knowledge construction.
 - ▶ Interactions: Student – teacher - content
- Assessment centred
 - ▶ Motivate, inform, and provide feedback to learners



Interaction...

- “defining component of the educational process that occurs when students transform the inert information passed to them from another and construct it into knowledge with personal application and value” Dewey 1916
 - ▶ Interaction defined by the actors participating
 - Teacher, Student, Content





Technology

- Evo (?)
- Conference XP
- Commercial solutions

