Teaching for Conceptual Learning and Assessing

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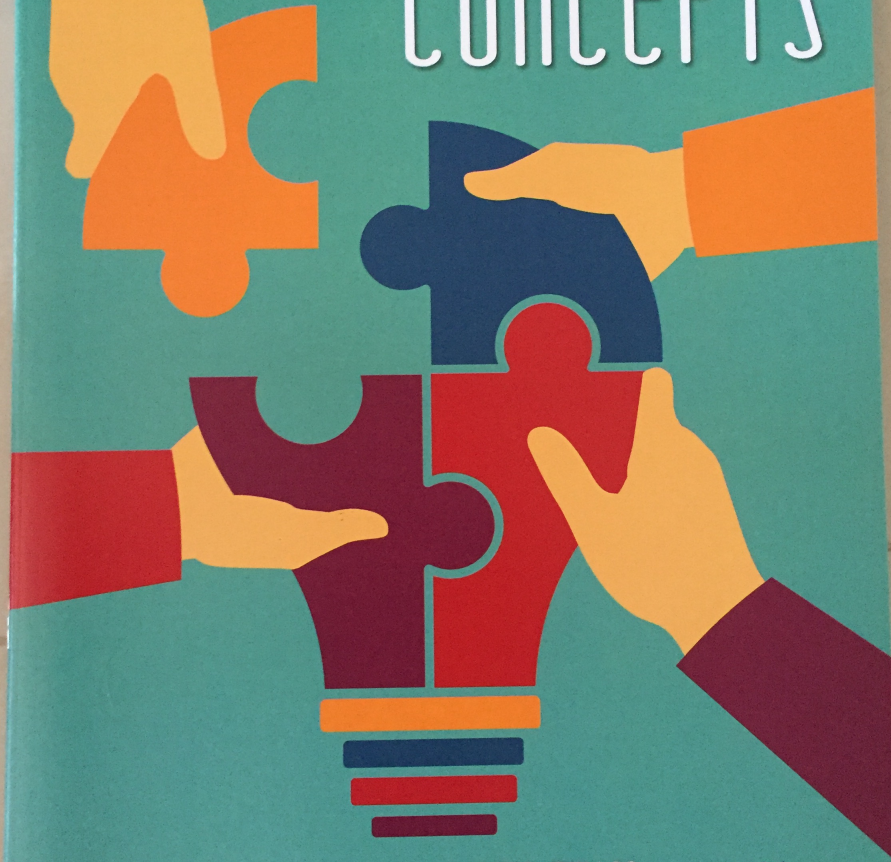Email: tania@innovativeglobaled.org

Provocations

Compliance to Innovation

https://twitter.com/kalebrashad/status/701069592492273664

8 Things to look for in today's classroom

https://georgecouros.ca/blog/archives/3586

TAKING THE COMPLEXITY OUT OF CONCEPTS

TANIA LATTANZIO & ANDREA MULLER

WITH NICOLE GINNANE

ALIGNED TO THE AUSTRALIAN CURRICULUM

What Would You Prefer:

Students name the different species of whales, their size, appearance and diet.

Or

Students discuss the ideas of ecosystems, adaptations and diversity.

Moving From Topics to Concepts

Topic	Concept
Games	
Painting	
States of matter	
Recorder	
Numbers	
Text Types	
Clothes	

Reflection Time

"At best, schools teach one-billionth of one percent of what knowledge exists in the universe, yet we quibble endlessly over what one-billionth of one percent is important." – Seymour Papert

Concepts are:

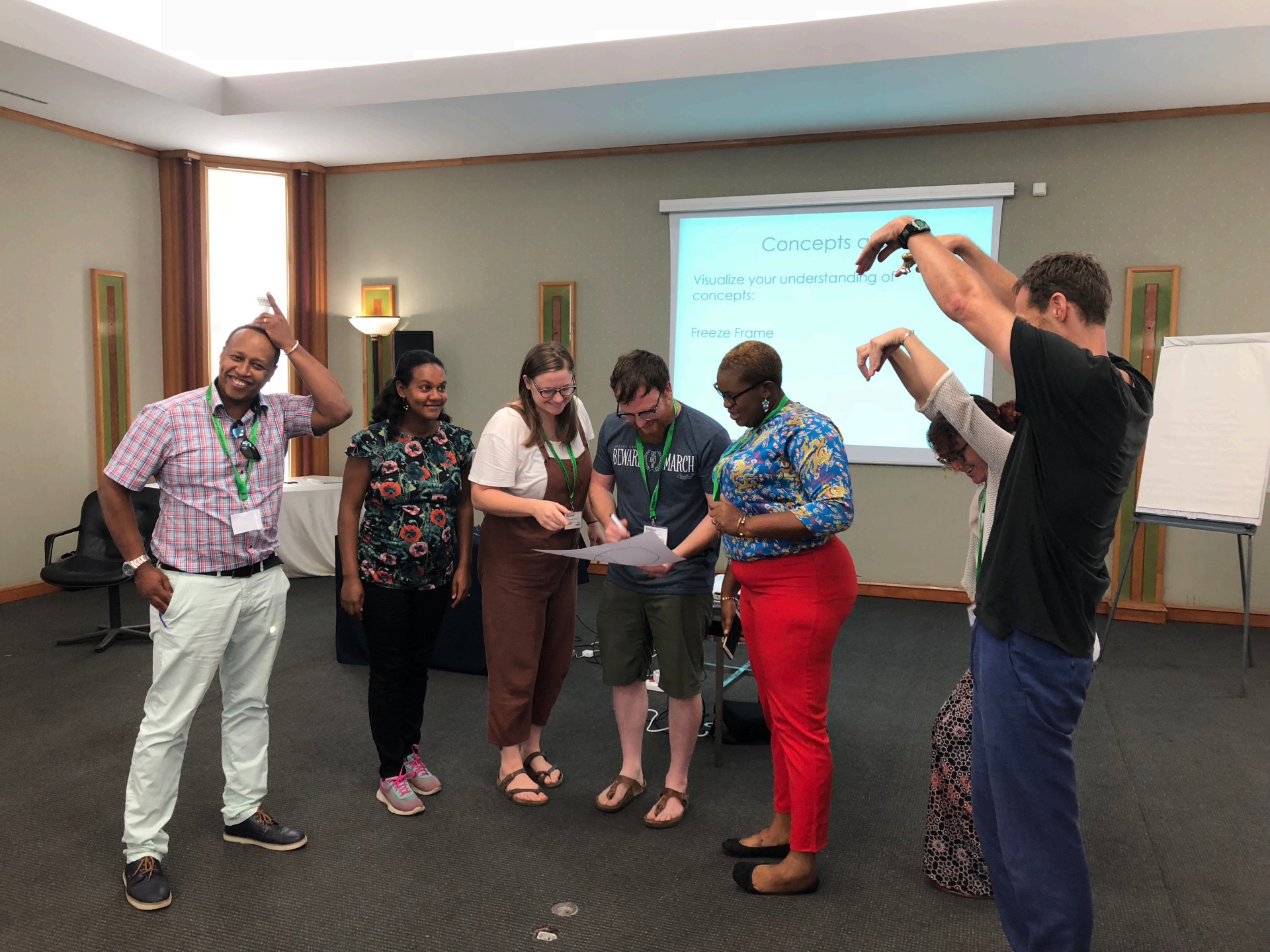Visualize your understanding of concepts:

Freeze Frame

How People Learn

"A key finding in the learning and transfer literature is that organizing information into a conceptual framework allows for greater "transfer"; that is, it allows the student to apply what was learned in new situations and to learn related information more quickly…. Transfer is affected by the degree to which people learn with understanding rather than merely memorize sets of facts or follow a fixed set of procedures; the research also shows clearly that "usable knowledge" is not the same as a mere list of disconnected facts"

Bransford, J., Brown, A., & Cocking, R. (Eds.). (2001). How people learn: Brain, mind, experience, and school. Washington, DC: National Research Council

Criteria for deciding on units of learning:

Criteria for deciding on units of learning	Yes/No
Is the unit conceptual? Is it focused on learning about big ideas of importance rather than disconnected facts?	
Is the unit significant? Is it of interest and relevance to the students, does it connect to their real world?	
Is the unit purposeful? Is it about something that is worth knowing, does it extend beyond student's prior knowledge and have the 'so what'?	
Is the unit comprehensive? Is there enough complexity to ensure that students spend their time in meaningful inquiry?	
Is the unit intriguing? Will it produce learning engagements that capture students' attention and curiosity?	
Does the unit provide scope for student interest? Does it allow scope within the unit for students to follow their own interests?	
Does the unit provide an opportunity for students to develop skills/dispositions that are enduring? Can skills and/or dispositions that are enduring be embedded and focussed on as a part of the unit? (e.g. critical thinking, collaboration, empathy, analysis, open minded)	
Does the unit provide scope for creativity, problem solving and/or innovation? Does it promote opportunities for creativity, innovation and/or problem finding/solving?	

Conceptual Understanding
Include where appropriate some of the concepts you have chosen.

Concepts
What concepts are the focus for the unit?

Understanding Goals
What 3-4 ideas should students understand by the end of the unit?

Topic
Derived from the curriculum.

Most compelling

Understanding Goal: Students will understand…

A habitat provides living things with its survival needs
The connection between adaptations of living things and the habitat they live in

Conceptual Understanding

Living things survival is dependent on their adaptations and their habitat.

Contemporary Unit/Student Agency

Where in the unit is there opportunity for the principles of heutagogy (agency), problem finding/solving and innovation?

The So What!

This often means developing a line of inquiry/s that has the so what…

Often going beyond the content….

Going beyond the content..

Understanding Goals: Students will understand:
A habitat provides living things with its **survival** needs
The connection between adaptations of living things and the **habitat** they live in
The **impact** of humans on habitats
Solutions to maintain and redevelop habitats

Conceptual Understanding

Human impact on habitats requires solutions for the survival of living things.

v's

Living things survival is dependent on their adaptations and their habitat.

Students will understand

The connection between historical evidence and the past? (evidence)
What the validity of historical evidence is (significance)
How historical evidence provides insight into the past and whose story it tells (perspective)
How historical evidence is curated to tell a story (curation)

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Conceptual Understanding

Curating historical **evidence** provides insight into **significant** events and **perspectives** of the past.

Reflection

It is not the standards or scope and sequence documents that promote quality learning, it is what teachers do with them that counts.

It is the creativity of a teacher to take the above and turn them into engaging relevant learning experiences for children.

Wiggins & McTighe (1998)

Identify desired results

Determine acceptable evidence

Plan learning experiences & activities

Evidence

You need to ask yourself.

What evidence (assessments) supports the conclusions and claims about understanding we want to focus on with regard to student learning?

How do I know students have understood the understanding goals?

How Will You Use the Rubric?

- ongoing formative assessment tool.
- collect evidence around the levels to check for student understanding.
- provide feedback to students based on their level for next steps.
- plan next steps based on where students are.

Nothing planned for should not come back to the understanding in the levels.

LEVEL OF UNDERSTANDING	RELATED VERBS	LEARNING ENGAGEMENTS
Level 1: Recalling Students recall knowledge that relates to the understanding goal.	• remember • state • name • retell • identify • recognise • label	• make a list • create an illustration • label items • answer quiz questions • recite from memory
Level 2: Describing Going beyond recall to describe involves students describing in some detail information related to the understanding goal. Students begin to make inferences and interpret their understandings.	• categorise • describe • interpret • classify • define • determine	• create a cause-and-effect graphic organiser • group similar items • construct a model • write a description
Level 3: Explaining and connecting Students make comparisons between existing knowledge and the concepts. They are able to explain in detail what they have learnt and the connections within it.	• compare • contrast • connect • explain • distinguish • formulate • differentiate	• create a concept map (p. 52) • make a Venn diagram • distinguish between items • explain connections between ideas • compare and contrast ideas with those of peers
Level 4: Analysing and applying Analysing and evaluating through reasoning and application, involves students analysing in detail how everything is connected. Students can make new connections and analyse with reasoning and logical evidence the reasons these connections exist.	• evaluate • analyse • reason • synthesise • critique • interpret • prove • transfer • apply	• create a concept map (p. 52), accompanied by a detailed explanation of the reasoning behind it • construct a model, then analyse it and make improvements • debate ideas with peers • write a persuasive text • problem-solve and problem-pose

Table 4.1   Levels of understanding
Adapted from Webb (2002)

Summative Assessment Task/s

Consider what your evidence of understanding is before you develop the task.

Consider what you are assessing before you develop the task.

Consider the role of choice and if all students can access the summative assessment task.

Conceptual Learning

Forces: Scientific journal: in their scientific journal students build up an understanding of forces, each time different forces are introduced students write in their scientific journal how they work. The teacher uses this to determine what students understand about different forces in simple machines.

Conceptual Learning

Evidence: Throughout the unit students have an evidence box, this is used to collect their historical evidence. Each piece has to have a tag on it explaining what it is and how it is connected to their family history and identity. This is looked at by the teacher to check on their understanding.

Force

Hand pressing calculator buttons
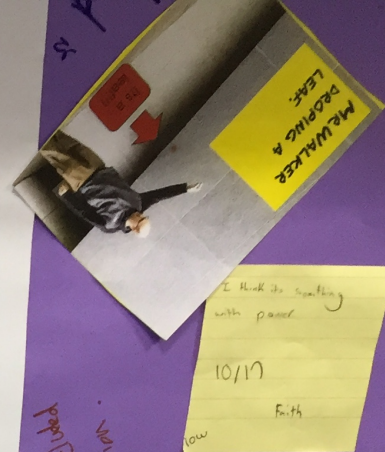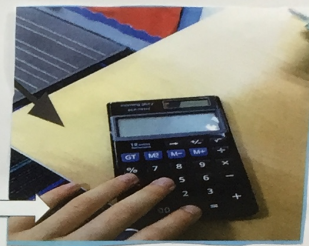
1/2 Jimu mom because it is it someone presses the Buttons the go away Buttons

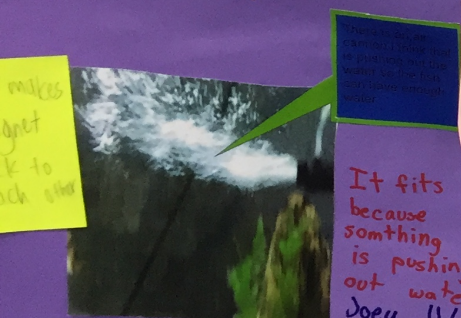It is when you kick a soccer ball it moves afowards Noah

when you pull the Balloon it shoot Marshmallow Isabell 11-2-16

My question is Does everything have force and motion in it?

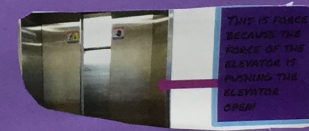When I do the Magnet I used force.

Force is when you pull or push something

This is force because the force of the elevator is pushing the elevator open!

Force is a push or a Pull. Justinw 11/2/16

Force can be a push.

I think Force Means Push and Pull 10-18-2016 Nora

10-18-16 Aditi force is like pushing pulling shoving like Nora's sticky note

And Isabell's Note!

And like Aidan's sticky note

It fits because somthing is pushing out water Joey 11/2/2016

Nora 11/2/16 far.

Ball is Push and Pull Aidan 10-18-2016

I learned that when a plain lands it rolls out a parachute to help it land. Nora 11/2/16

11/2 force is strength. Example, you force the window to open and go forwards.

Jungwoon Lim 11/2/2016

Caely kay 10-2-16 Force mean pull.

Faith 10/17

Sophia 11/2/2016

I think Magnet is force Anna Walke
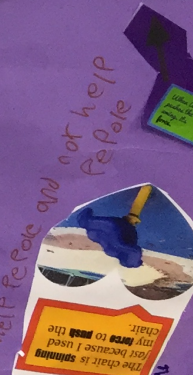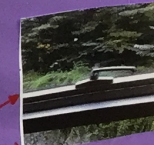
This is force and motion too. That is because a teacher let go of a leaf. So, the leaf is going straight down toward the ground. And it is because force is forcing it to go down to the ground like a big push. The motion is when the teacher lets go of the leaf and the leaf is going down and the motion is part of the force. Because the push is motion for the force so motion is part of force.

How does force work?
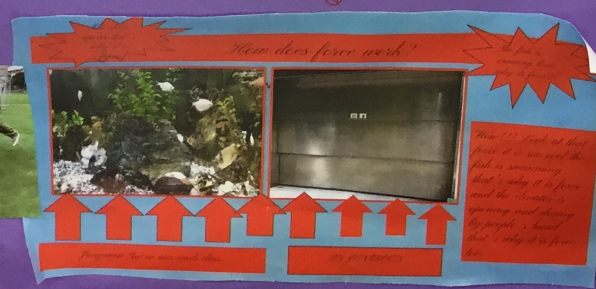
Why is this like this when force happens it is a pull or push Philip 11/2/16

11/2/16 When you go down the slide you have a lot of force.

Forces can help people and not help people.

I learned from a book that gravity is

By Aidan Song 3SE

Ongoing Reflection

Index cards/summaries/questions
Four corners
Hand signals
I used to think…..But now I think
Sentence starters
Exit Cards
Continuums
Traffic Lights

Provocations:
Connecting Students to the Concepts

Inquiry as Provocation and Connection:

How can I help students make connections between their own lives and the concepts driving the unit?

What resources will encourage students to connect to the concepts?

Examples

Topic
Reduce Reuse Recycle

Concepts
Sustainability

Student Connection/Provocations
Students bring in something they have kept since they were a baby. Something special to them. They discuss how they have kept their special thing and what they have done to make sure it is still around today.

The word sustain is introduced connected to why their special thing is still around today.