

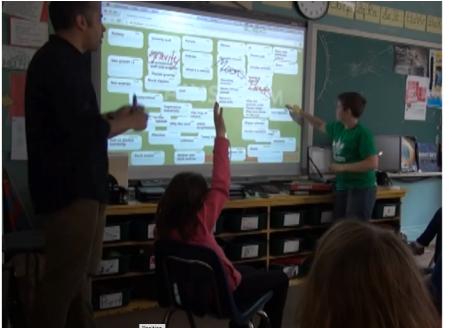
USING TEMPORAL ANALYTICS TO TRACK IDEA GROWTH & OBSOLESCENCE IN A KNOWLEDGE COMMUNITY AND INQUIRY APPROACH TO ELEMENTARY ASTRONOMY

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Practitioner Presentation

RESEARCH CONTEXT AND PARTICIPANTS



- 2 sections of a Grade 5/6 class (n=46)
- 9-week curriculum unit in "Astronomy"
- Online learning environment (Common Knowledge) within a face-to-face learning context
- Knowledge Community and Inquiry model (Slotta, 2014)

PHASE 1: BRAINSTORM



PHASE 1: BRAINSTORM

The interface shows a list of student ideas for a project, each with a name and a timestamp. The ideas are grouped into four main categories, each highlighted with a hand-drawn circle:

- sunrise/sunset** (Blue circle):
 - S Speed (saskia)
 - Time based on our solar system, time is (andrew)
 - Other galaxy's (maya)
 - What time does range. (mayo)
 - others set (jared)
 - Leap year sun (camille)
 - Civilization and moon (maya)
 - Planet switch (andrew)
 - Overlapping Co constitution on planets (honor)
 - Do stars move? (teacher)
 - Constellations forming (esme)
 - Thumb tack markers (esme)
- orbits + seasons** (Blue circle):
 - Planets close together alana (alana)
 - Entering planets. (esme)
 - Earth's axis (avital)
 - Do the earth spin in its own axis once a day? (maya)
 - Line up (maya)
 - Seasons (amy)
 - Sun rising on (andrew)
 - Sun rise comparing planets (meli)
 - Winter and snow (josh d)
 - Radical seasons in Canada (esme)
 - Moves (honor)
 - Orbiting around the sun (elias)
 - Flipping planets? (jared)
 - he moons station and orbits. (esme)
- Eclipses** (Black circle):
 - Bigger than the moon (alana)
 - at is a solar ipse? (julian)
 - Eclipses (tien)
 - Sun and moon (ashleigh)
 - eclipses (maya)
 - Eclipses by maya (ben)
 - Eclipse (josh d)
 - Solar and lunar (susikia)
- stays** (Red circle):
 - Stays (honor)

At the bottom of the interface are several buttons: Add Tag (orange), sunrise/sunset (text input), +, Pause, Show Word Cloud, Tagging, Propose, and Interpret.

PHASE 1: BRAINSTORM

iPad 2:01 AM 98 % Google

Common Knowledge - Tagging

Moons
So say Saturn has 26 moons do the moons orbit by themselves or do they hitch a ride along with SATURN?
~kay (4/8/2013 1:59:05 PM)

They orbit around Saturn not around the sun B-)
~allie (4/8/2013 2:04:53 PM)

Stars and Nebulas

Moons, Gravity and Orbits

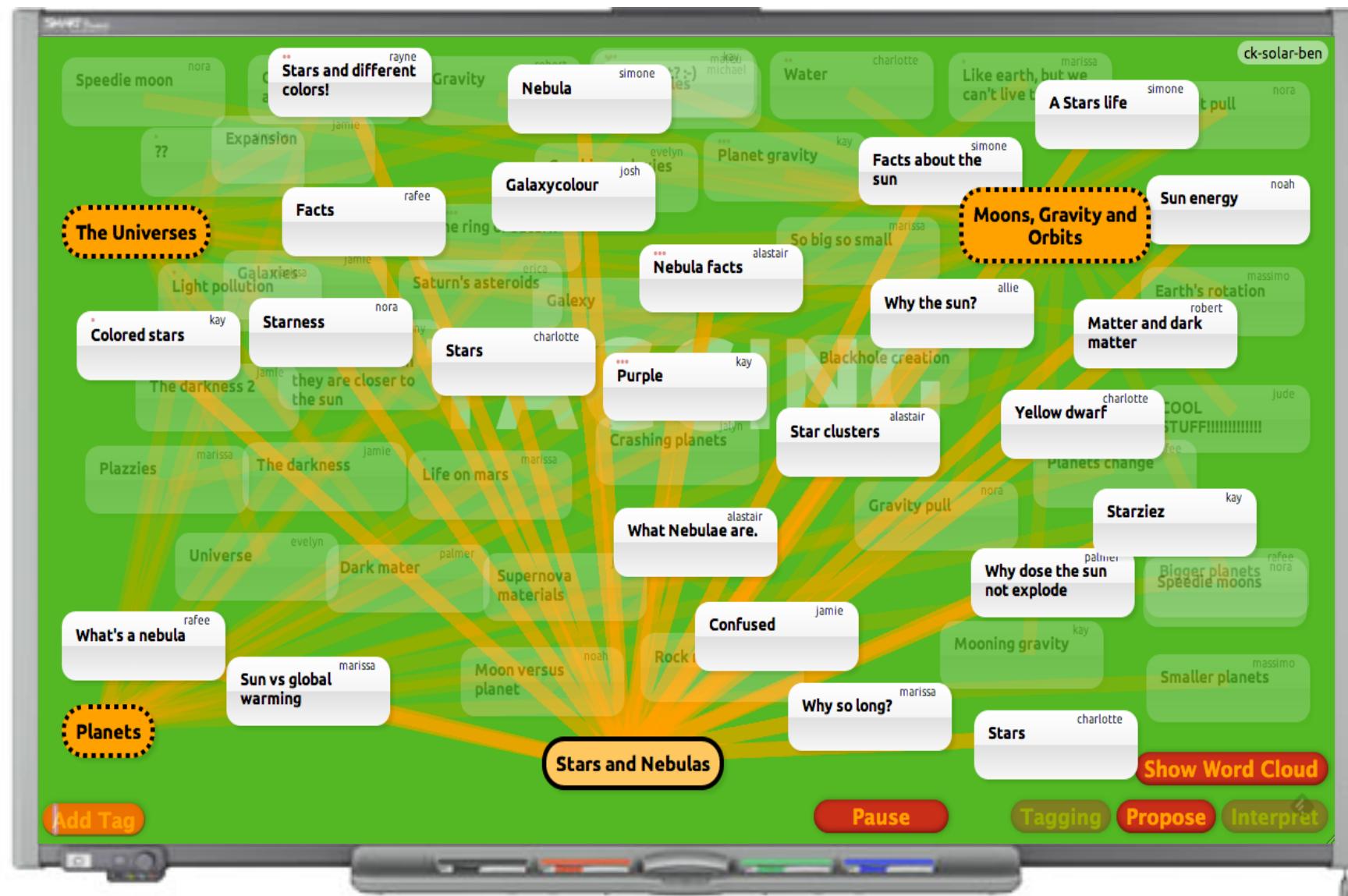
The Universes

Planets

None

Tag me!

PHASE 1: BRAINSTORM



PHASE 2: PROPOSALS

The image shows a digital interface for 'Propose and Justify'. At the top right, it says 'allie [Logout]'. Below that is a title bar with 'Propose and Justify'. On the left is a 'Headline (3 word max)...' input field. To its right are three buttons: 'Research', 'Experiment', and a green 'Share' button. Below these buttons is a text area containing the placeholder text 'What should we do? How should we do it?'. At the bottom is another text area containing 'What might we learn?'. The entire interface is framed by a thick grey border.

PHASE 2: PROPOSALS

Common Knowledge - Specializing in Moons, Gravity and Orbits

- marissa (5/6/2013 3:13:01 PM) ➤
- Proposal - Between Galaxies
jude (5/6/2013 2:47:53 PM) ➤
- Proposal - Colours and models
charlotte (5/6/2013 2:47:15 PM) ➤
- Proposal - Earth's orbit
simone (5/6/2013 2:47:59 PM) ➤
- Proposal - Wobbling planets
nora (5/6/2013 2:47:56 PM) ➤
- Proposal - Planets being born
marissa (5/6/2013 3:01:33 PM) ➤
- Proposal - Sun is dying 2
kay (5/6/2013 2:57:24 PM) ➤

New Proposal

Wobbling planets

Proposal: Someone thought that as well as an orbit planets have a wobble... So I think to find the answer to this theory we should do some observations because if we fast forward time on stellarium we could see if as well as orbiting the planets wobble. Another way we could go about doing this is we could do some Research on a specific planet and then another planet and see if they other have some sort of other type of spin.

Reflection: I think that we would

Should we work on this? 

PHASE 2: PROPOSALS



PHASE 3: INVESTIGATIONS

Common Knowledge - Investigating Moons, Gravity and Orbits

- Proposal - Moon orbits
nora (5/6/2013 3:09:36 PM) >
- Proposal - Moony moon moon
allie (5/13/2013 2:26:54 PM) >
- Proposal - Earth's orbit
simone (5/6/2013 2:47:59 PM) >
- Proposal - Wobbling planets
nora (5/6/2013 2:47:56 PM) >
- Inquiry - Big moons
(5/9/2013 11:40:59 AM) >
- Inquiry - Orbits of satellites
(5/9/2013 11:53:04 AM) >
- Inquiry - Black hole model

New Proposal

Big moons

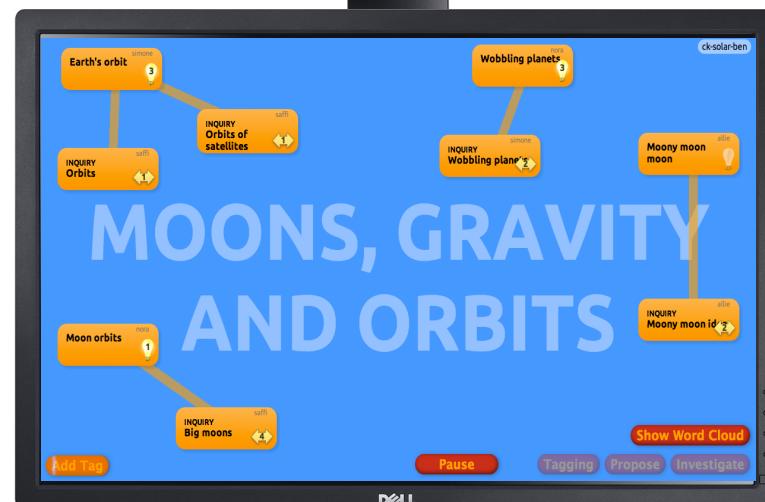
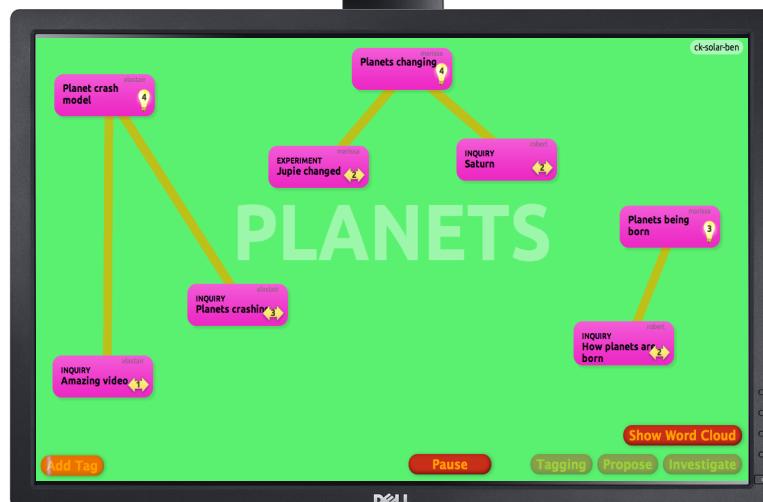
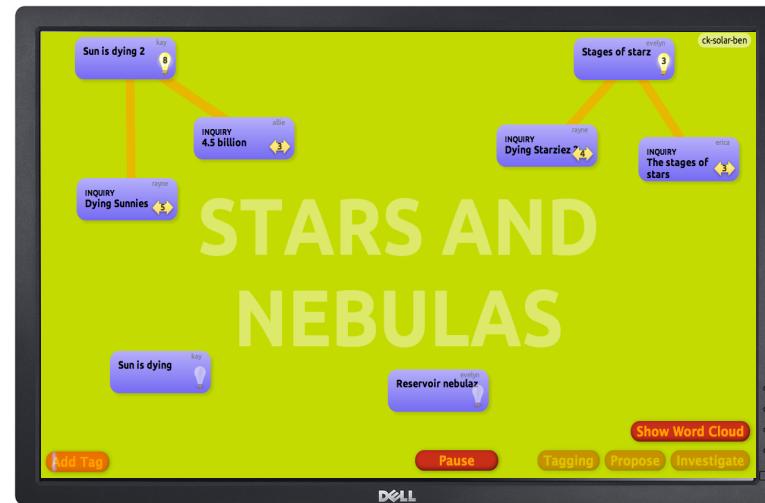
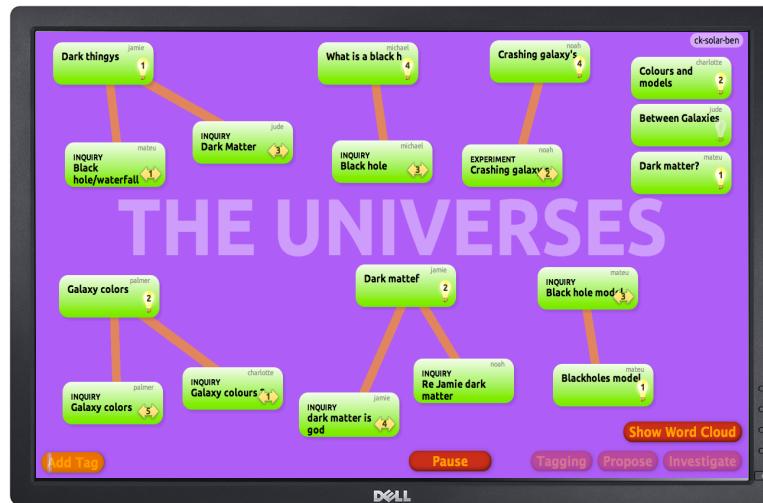
Type: inquiry

New Information: A lot of people think that moons are smaller than planets, that is not true. There are only a few large moons in the solar system, they are larger than Mercury and Pluto. Some of these moons have volcanoes, atmosphere's and liquid water ocean's. Moons are moons because they circle around planets, planets are planets because they circle around the sun.

Moons can be ignored which is usual

This connects to another idea we've worked on

PHASE 3: INVESTIGATIONS



CONCEPTIONS OF TEMPORALITY

- Ways that the ideas that students generated in the brainstorm phase were carried forward in time through the subsequent phases of inquiry
- Exploring and understanding the patterns by which ideas ‘grew’ or were rendered obsolete as students progressed through each inquiry phase

BURNING QUESTIONS

1. How can we capture and aggregate student ideas in such a way that fosters a sense of *community progress* and serves the targeted learning goals?
2. What analytic information does the teacher need, and when, to help guide the progression of inquiry?
3. How do transitions between individual, small group, and whole class activities allow for dissemination and growth of ideas within a knowledge community?

CHALLENGES TO IMPLEMENTING LA

1. The ability to capture and transcribe clear audio/video data within a classroom of 20+ kids over a 9-week period is prohibitive in terms of time and equipment needed.

2. While the content that students contributed to the CK database over each inquiry phase represents good *outcome* data, it is difficult to capture and code the collaborative *process* data that occurs surrounding this content.

THANK YOU!