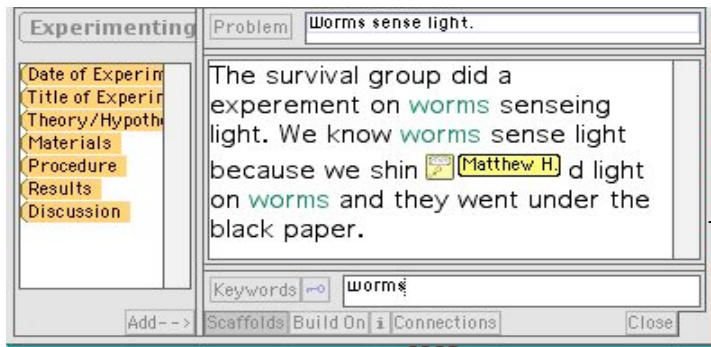


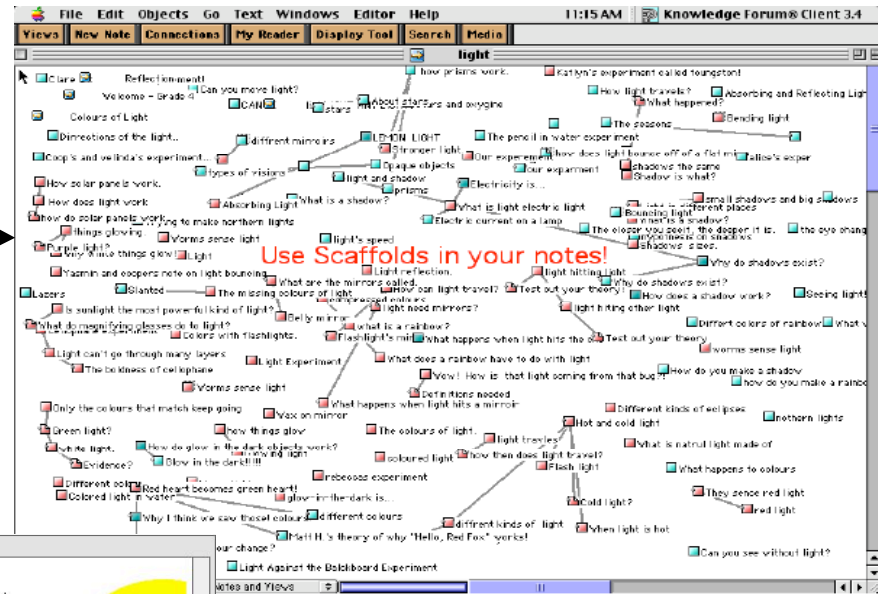
Discourse into the “Intellectual Heart” of a Domain

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Classroom talk on the Grade 3 notes about how worms sense light



- The initial Light view
- ↓
- New views:**
- Colours of Light;
 - Shadows;
 - Reflection (later changed to “Light and Materials”);
 - Other Light

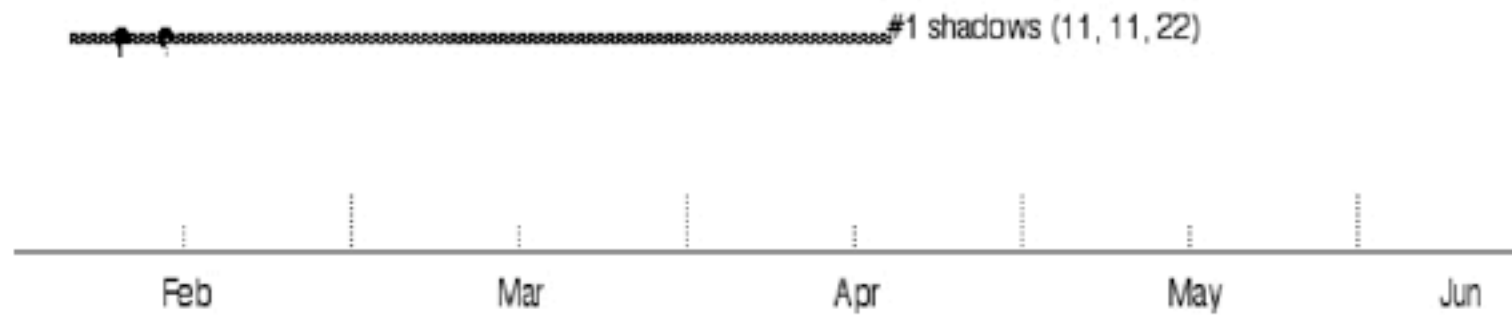


Discourses in the Colours of Light view

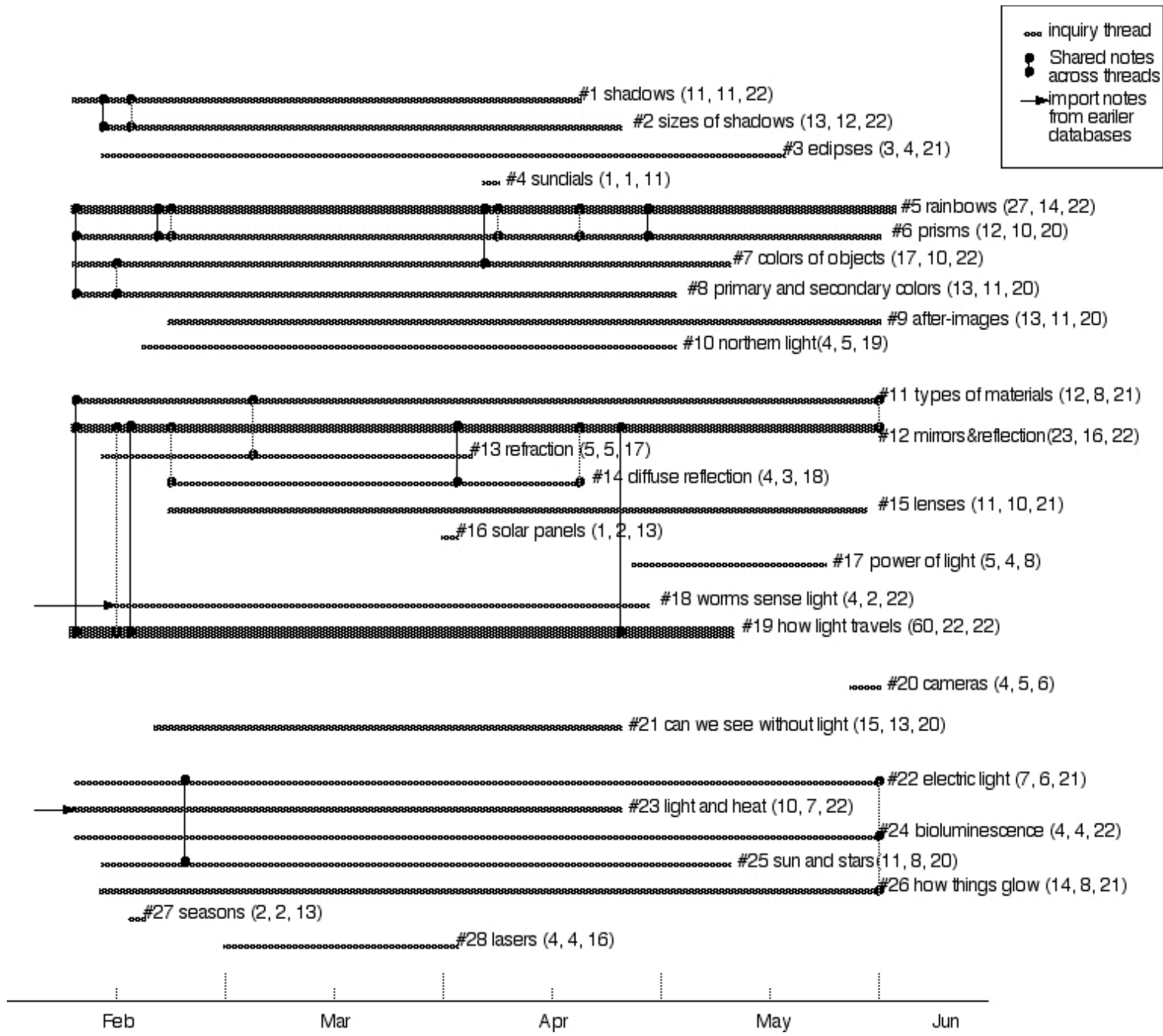
Knowledge building in Year 3

- ↓
- The Other Light view evolved into four new views:**
- How Light Travels
 - All We See Is Light?
 - Natural and Artificial Light
 - Images in Our Eyes and in Films

An Example of Inquiry Threads



The inquiry thread of “shadows,” lasting from early February to mid-April, included 11 notes authored by 11 students seeking a deeper understanding of the nature of shadows, with all 22 students as readers.



(Zhang et al., 2007)

Idea Improvement in a Thread

- Code ideas on a four-point scale (1 - pre-scientific, 2 - hybrid, 3 - basically scientific, and 4 - scientific)

	Stage 1	Stage 2	Stage 3
Mean	1.93	2.46	2.86
<u>SD</u>	.90	.90	.99
<u>n</u>	57	55	50

($F(2, 159) = 13.51, p < .001, \eta^2 = 0.15$).

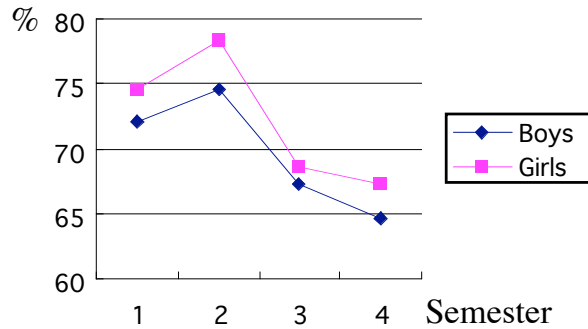


Figure 2. The percentage of the 1st 1000 words in each student's writing.

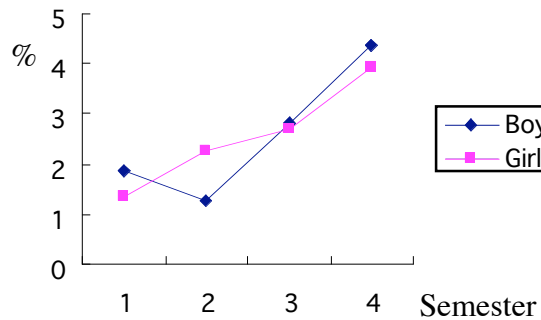


Figure 4. The percentage of academic words in each student's writing.

e.g., theory, evidence, hypothesis, approach, challenge, clarify, identify, expand, adjust, category, conclude

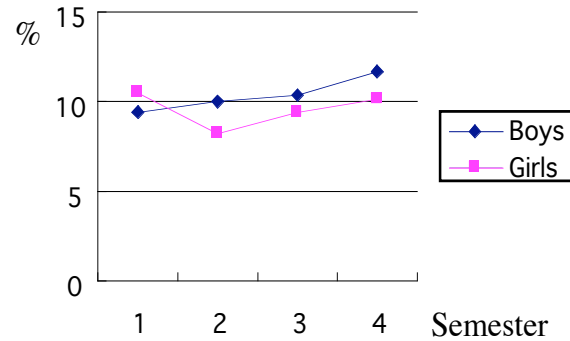


Figure 3. The percentage of the 2nd 1000 words in each student's writing.

Domain-Specific Vocabulary

	Of or below Grade 4	Beyond Grade 4	Total
# of domain words identified	46	43	89
# of domain words used by students	41	30	71

(Sun, Zhang, & Scardamalia, in press)

<http://tccl.rit.albany.edu>

Correlations between lexical indicators and depth of understanding

	Total words written	Total domain words	Unique domain words	% of the academic words	% of the 1st 1,000 words
Depth of understanding	.646 (.001)	.660 (.001)	.458 (.032)	.506 (.016)	-.646 (.001)

Discourse into the “Intellectual Heart” of a Domain

- Children’s questions
- Key concepts, not as answers to remember, but to use as “think devices,” to formulate new inquiries