IMPROVING KNOWLEDGE-BUILDING DISCOURSE IN KNOWLEDGE FORUM

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KNOWLEDGE BUILDING

Emphasizes student-directed learning

   Advancing the state of knowledge of the community

Constructive use of authoritative texts

   Developing personal expertise

Discourse heavy

   Reflective

More than any of these ... a way of being when learning

DISCOURSE

James Paul Gee

- Small-d discourse: language (words) in use

- Big-D Discourse: add other social practices, such as values, ways of thinking, clothes, food, etc.

Michel Foucault

- "Ways of constituting knowledge, together with the social practices, forms of subjectivity and power relations, which inhere in such knowledges and relations between them."

DISCOURSE IN KNOWLEDGE BUILDING

- *"The state of public knowledge in a community only exists in the discourse of that community, and the progress of knowledge is just the progress of knowledge building discourse"* (Scardamalia and Bereiter, 2006, p. 106)

- So discourse is NOT a process to a achieve an end state (e.g., solve a problem), it is more like the "lifework" of the community (what the community does when it needs to learn)

- New meaning of transfer is relevant: preparation for future learning rather than application of knowledge (Bransford, Schwartz , et al.)

KB DISCOURSE TAKES MANY FORMS

- Maintaining social fabric of community
- Independent study of texts
- Searching for information
- Experimentation
- Small-group problem solving
- Poster sessions to share progress

- Demonstration of individual insights
- Deciding short-term ways of proceeding
- Working on shared and personal ideas
- Evaluating new ideas
- Evaluating progress
- Setting long-range goals

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Some individual, some collaborative, some F2F, some in KF, some in other technologies, some short-term, some long-term

KNOWLEDGE FORUM

- Not an ADD-ON to otherwise unchanged instructional program

- Not isolated discussions on topics

- Not an online version of conversation or sharing

- A RESOURCE that is integrated into the lifework of the community and is used habitually

- Used when ideas of many students are needed
- Used when substantial time is needed to work on ideas
- Used when substantial synthesis is needed to show how knowledge has developed over time, across topics (e.g., NRC "learning progressions")

KNOWLEDGE SHARING, CONSTRUCTION AND CREATION

- **Knowledge sharing**
- Often limited cognitive processing of new information (assimilation)
- Dominant in social media (Facebook, Twitter, etc.)
- But an important social practice in a community

- **Knowledge construction**
- Cognitively much more intensive (accommodation, some knowledge integration, problem solving, etc.)
- But usually occurs in small group in the context of a task of short duration (e.g., a few lessons)
- Lacks a general context—why are we solving the task in the first place?

- **Knowledge creation/building**
- Places knowledge construction in the context of the lifework of a community
- Not just the formulation of a new idea but doing the hard work to make that idea important in the lifework of the community

J. van Aalst (2009), ijCSCL

PROBLEMS WITH ONLINE DISCOURSE

- Misunderstanding of the purpose and nature of discourse in KF as an online version of f2f conversation

- Emphasis on equity and productivity in participation in KF through writing and reading notes

- Limited investment in technical capability in using the tools in KF designed to sustain discourse

- Cognitive economy, limited interest—people tend to want to be done quickly with work that is cognitively difficult ("quick learning" in the epistemological belief literature)

"Things are not as difficult as your professor would have you believe."
"If upon reading a text the first time you don't get it, there's no point trying again."

REMAINDER OF PRESENTATION

- Illustration of some problems

- Knowledge Connections Analyzer

- Application to an M. ED. Course

- Taxonomy of discourse patters in KF

| Class	School band	Course	Inquiry topic	Students	Total notes	Notes written	Notes Read
A	3	Gr. 9 Humanities	Sustainable development	43	495	11.5 (17.1)	159.5 (171.6)
B	3	Gr. 10 Humanities	Sustainable development	42	353	8.4 (8.4)	57.8 (84.1)
C	3	Gr. 10 Humanities	Community arts	19	292	15.4 (9.4)	247.6 (71.6)
D	1	Gr. 8 Chinese	Features of good novel	41	370	9.0 (5.0)	72.3 (44.2)
E	2	Gr. 10 Physics	Heat; mechanics	42	839	19.0 (8.6)	131.0 (63.9)

MEDIAN NOTES READ PER STUDENT
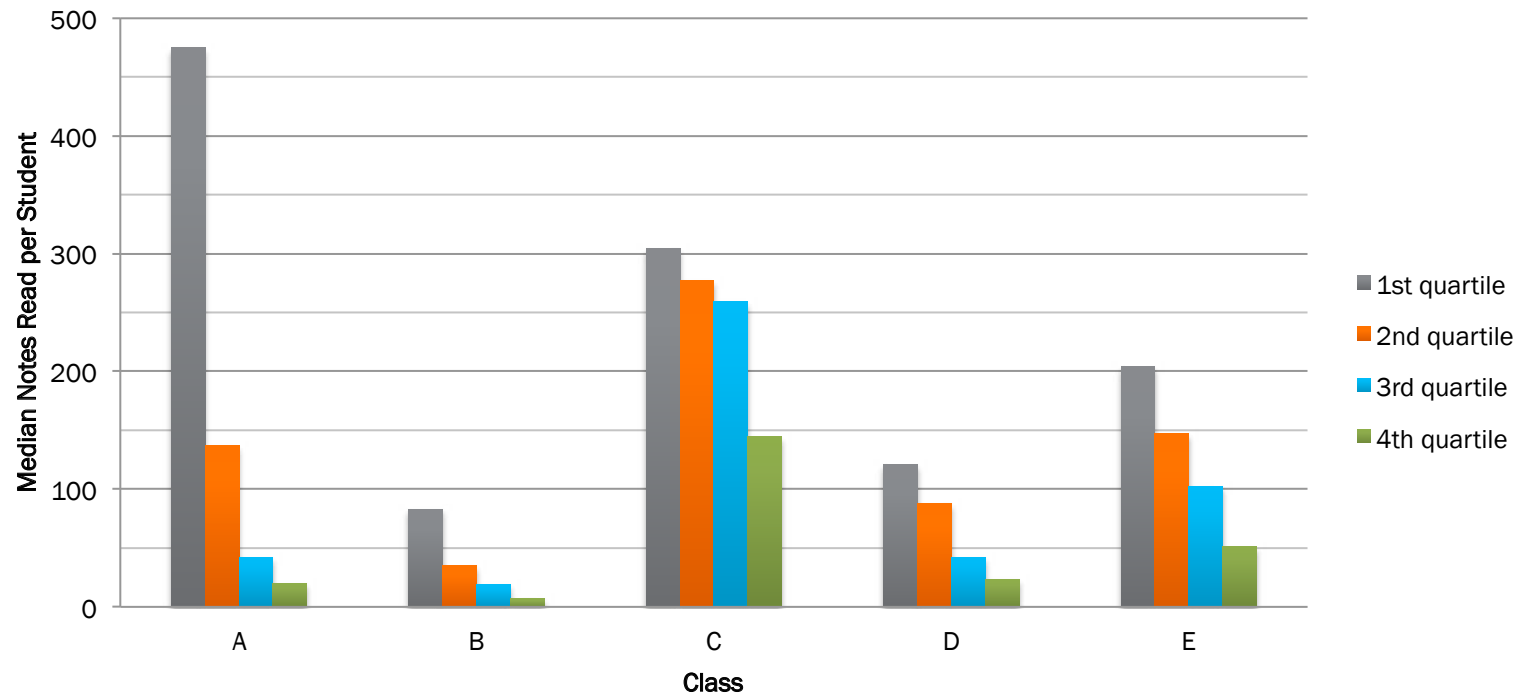
MAIN FEATURES

- All databases substantial: > 290 notes should be enough to make substantial knowledge advances

- On average, between 1 and 3 notes per week per student

- Between-class differences
- Academic level of class (Class A and B parallel versions of same course), but Class A was higher-achieving in previous grade (ranking in Hog Kong)
- Class D was from a well-performing school on government examinations
- Class E read little for the length of time—use of small groups

- Within-class differences
- In most classes considerable differences among students on writing and reading

Class E
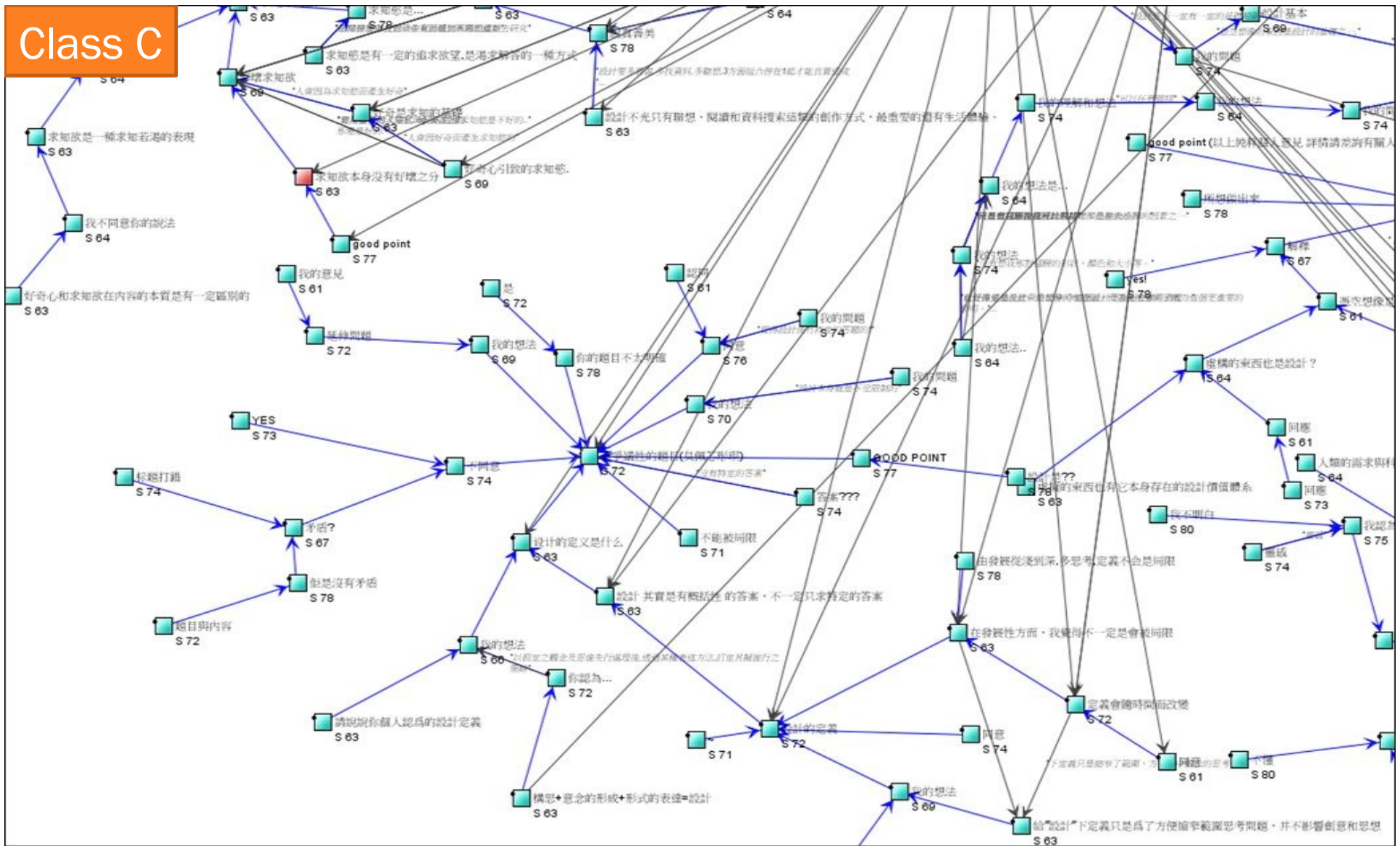
MAIN FEATURES

CLASS E (HIGHER ACHIEVEMENT)

- Many notes and build-on notes
- Isolated star-like clusters
- Fragmented

CLASS C (LOWER ACHIEVEMENT)

- Many notes and build-on notes
- More complex build-on structures
- Many reference links in portfolio notes
- Less fragmented

Knowledge Connections Analyzer for Knowledge Forum

Database: KBTN_Science_0708, Group: (ELCHKLSS)2007-08_F4E
There are 43 people in our community, we have altogether written 924 notes.
Views to analyze: (ELCHKLSS)2007-08_F4E_Mechanics

Explanation to the questions:

Are we collaborating?
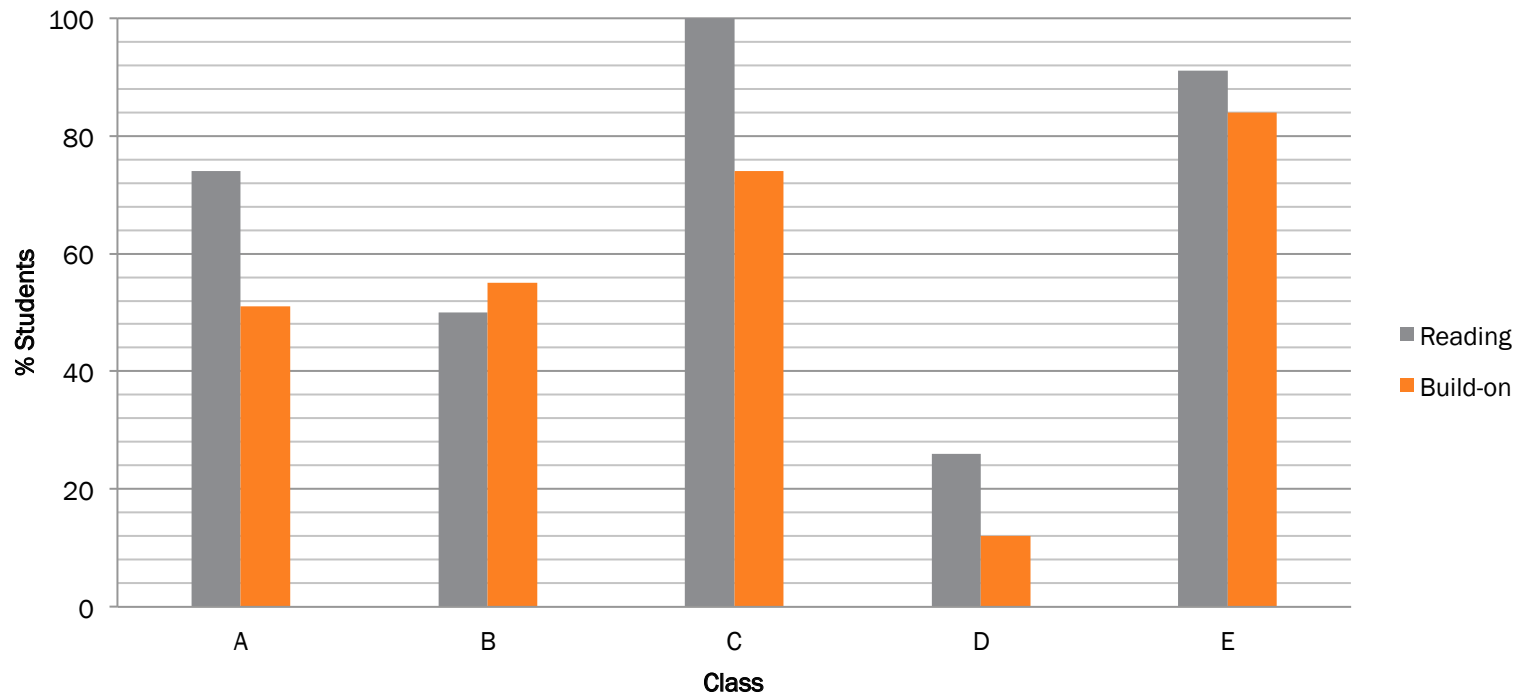
Are we putting our knowledge together?

How do ideas develop over time?

What's happening to my stuff?

(c) 2011-13 The University of Hong Kong. All Right Reserved. Contact us
Analyzer version 1.1

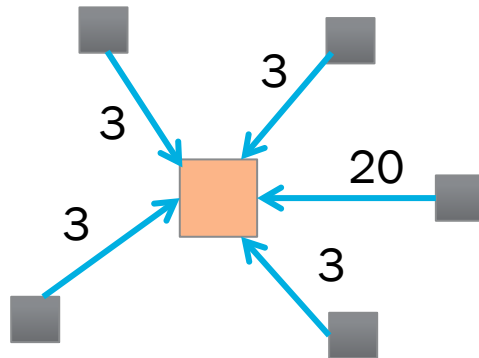# % STUDENTS WITH AUDIENCES OF 5 STUDENTS

Read 3 notes or built onto 1

KCA also shows the "audience for the student who is logged in

STUDENT REFLECTION

- "One person's thoughts can be limited; no matter how perfect you think your idea is, there is always room for improvement. I feel happy that not only my buddies but also others came and built onto my notes. I will certainly write more notes that inquire [into] things happening around me every day. Then, everyone will be able to say something, to write responses to my notes. Ultimately, I want to expand my thoughts by seeing how others respond to my notes." *(Student from band 3 school after using KCA on own database.)*

AN ESTIMATION

- **Audience of 5 students, each reading ≥ 3 notes**

- Each student needs to read at least 15 notes

- If a student reads more than 3 notes of another student (e.g., 20), most notes do not contribute to the audience size

Class B: notes read per student 57.8, but only < 2/3 of students had audience of 5 students reading 3 notes. ... Not question of reading too little but of distributing it differently.
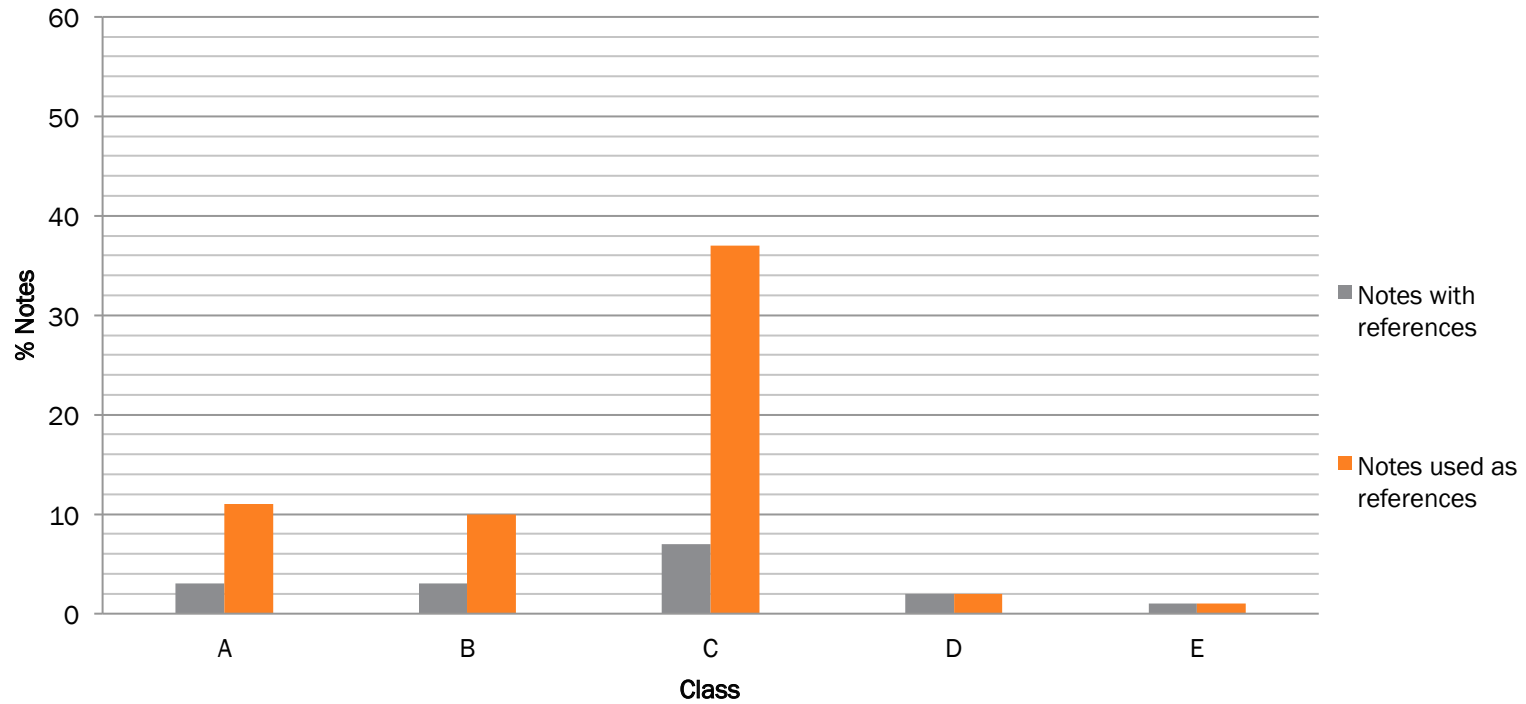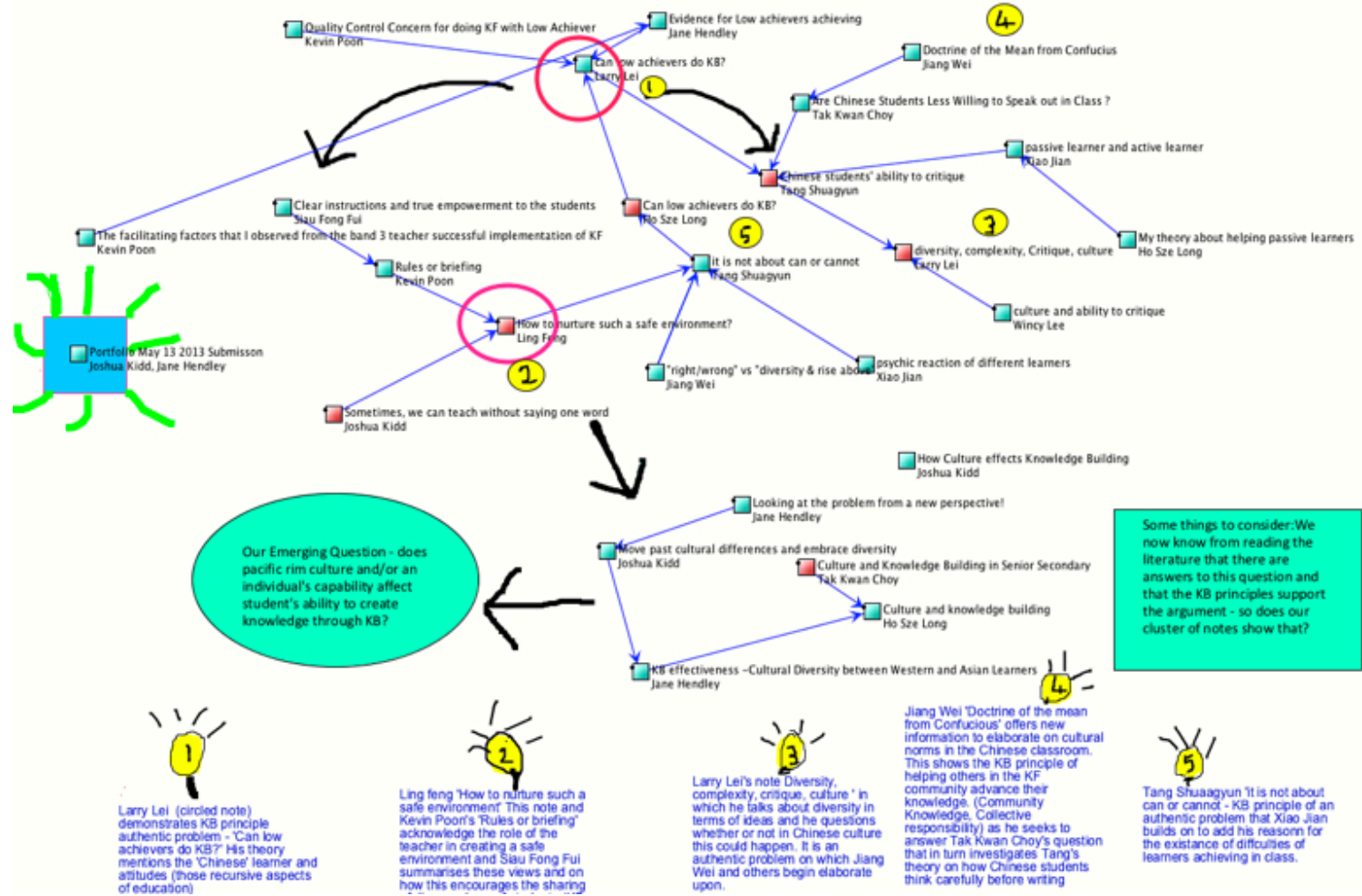
LARGER AUDIENCE

- Audience of 20 students (1/2 of class), each reading ≥ 3 notes

- Each student needs to read at least 60 notes
- Considering inefficiencies, each student may need to read at least 5 times as many notes, e.g., 300 to 400 notes—would be a lot of reading effort, well beyond what classes were doing!

LEVELS OF PUTTING KNOWLEDGE TOGETHER

1. Creating hyperlinks to other notes when a student creates a new note

2. A few students "manage" a view

3. Students create notes (or a view) that summarize a whole discussion

4. Students create links between major themes (views)

NOTES WITH REFERENCES OR USED AS REFERENCES

Learning Culture and Diversity in KB 2013

Quality Control Concern for doing KF with Low Achiever
Kevin Poon

Evidence for Low achievers achieving
Jane Hendley

Can low achievers do KB?
Larry Lei

Doctrine of the Mean from Confucius
Jiang Wei

Are Chinese Students Less Willing to Speak out in Class ?
Tak Kwan Choy

passive learner and active learner
Xiao Jian

Chinese students' ability to critique
Tang Shuagyun

Clear instructions and true empowerment to the students
Siau Fong Fui

The facilitating factors that I observed from the band 3 teacher successful implementation of KF
Kevin Poon

Can low achievers do KB?
Ho Sze Long

My theory about helping passive learners
Ho Sze Long

Rules or briefing
Kevin Poon

it is not about can or cannot
Tang Shuagyun

diversity, complexity, Critique, culture
Larry Lei

Portfolio May 13 2013 Submisson
Joshua Kidd, Jane Hendley

How to nurture such a safe environment?
Ling Feng

culture and ability to critique
Wincy Lee

"right/wrong" vs "diversity & rise above"
Jiang Wei

psychic reaction of different learners
Xiao Jian

Sometimes, we can teach without saying one word
Joshua Kidd

How Culture effects Knowledge Building
Joshua Kidd

Looking at the problem from a new perspective!
Jane Hendley

Some things to consider: We now know from reading the literature that there are answers to this question and that the KB principles support the argument - so does our cluster of notes show that?

Our Emerging Question - does pacific rim culture and/or an individual's capability affect student's ability to create knowledge through KB?

Move past cultural differences and embrace diversity
Joshua Kidd

Culture and Knowledge Building in Senior Secondary
Tak Kwan Choy

Culture and knowledge building
Ho Sze Long

KB effectiveness –Cultural Diversity between Western and Asian Learners
Jane Hendley

1. Larry Lei (circled note) demonstrates KB principle authentic problem - 'Can low achievers do KB?' His theory mentions the 'Chinese' learner and attitudes (those recursive aspects of education)

2. Ling feng 'How to nurture such a safe environment' This note and Kevin Poon's 'Rules or briefing' acknowledge the role of the teacher in creating a safe environment and Siau Fong Fui summarises these views and on how this encourages the sharing

3. Larry Lei's note Diversity, complexity, critique, culture ' in which he talks about diversity in terms of ideas and he questions whether or not in Chinese culture this could happen. It is an authentic problem on which Jiang Wei and others begin elaborate upon.

4. Jiang Wei 'Doctrine of the mean from Confucious' offers new information to elaborate on cultural norms in the Chinese classroom. This shows the KB principle of helping others in the KF community advance their knowledge. (Community Knowledge, Collective responsibility) as he seeks to answer Tak Kwan Choy's question that in turn investigates Tang's theory on how Chinese students think carefully before writing

5. Tang Shuaagyun 'it is not about can or cannot - KB principle of an authentic problem that Xiao Jian builds on to add his reasonn for the existance of difficulties of learners achieving in class.

LEVELS OF COMMUNITY KNOWLEDGE DEVELOPMENT

1. Subject knowledge of individual students is assessed

2. The ideas contributed to the online discourse are considered shared epistemic objects of the community, and their development is analyzed within specific lines of inquiry in the discourse

3. Advances in the community's state of knowledge are examined. Here, the interest is not in specific inquiry questions, but in how the various lines of inquiry lead to the advancement of a *field* of inquiry.

Note 1, March 13, "Bead in oil", 18 readers

The bead accelerates and remains **constant velocity**.

At the beginning, the bead is placed in air. It accelerates before entering the oil. After that, the bead reaches a certain velocity and remains **constant velocity**. Although the **gravitational force** is still acting on the bead, **friction** occurred between the surface of the bead and oil. The **density** of the bead must be higher than that of the oil. If not, the bead does not fall.

Note 2, March 13, untitled
Not directly retrieved by KCA, but as build-on on Note 1

There are two forces. The weight and frictions [sic]. I want to know are they constant values? Which one is larger? How will they affect the motions of the bead.There are two forces. The weight and frictions [sic]. I want to know are they constant values? Which one is larger? How will they affect the motions of the bead.

Note 3, March 16, "Suffer from trouble", 11 readers

Firstly, the motion of the bead remains at rest. By Newton's first law, it will remain at rest. When it falls, **gravitational force** is acting on it but the **friction** is not as same as the **gravitational force**. It will accelerate. Until the value of weight and **friction** is the same. By Newton's second law, Fnet = 0. And by the Newton's first law, it moves at a **constant velocity.** When the bead is falling, **friction** and weight which is larger?

Note 4, March 22, "Moon vs. Earth", 14 readers

Yes, it's true. They can jump higher and easier on moon, the main reason is the **gravitational force** on moon (which is 1/6N on the Earth). Less force (**gravitational force** on moon) exert on the people when they jump, so take upward as +ve, by N2, Fnet = ma-->R-W = ma--> a = (R-W) /m -----> they decelerate very slowly and the deceleration on moon is smaller than that on the Earth. …

Note 5, March 22, "The balance measuring", 10 readers

NO, the balance is **measuring** the **gravitational force** acting on the girl.

WHAT IS HAPPENING TO MY OWN NOTES?

- Allows students to reflect on the effectiveness of their own notes

- Rank student's own notes by #reads, build-on notes, etc.

- Propose theories about patterns between students

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WHAT'S HAPPENING TO MY OWN NOTES?

Id	# of read	Title	Content
1	12	Build-on Detail Experiment	1) Add the same amount of tomato sauce onto 8 pieces of clothes with the identical size and type. 2) Pour a standard amount of biological washing powder into four beakers which contain 4 different temperatures, i.e. 0°C, room temperature, 37°C, and 100°C respective... 3) Repeat... powder. 4) Put the... 5) After a ... dirt better. **precauti... less
2	1	Build-on Detail The lemon will become bad??	I would lik... generation... less

Title	Content
Build-on Detail Improvements - temperature	For step 2, I think you can omit the two set-ups which are at 0°C & 100°C. As the... more
Build-on Detail Good design	The experiment is easy to carry out and steps are clearly written.
Build-on Detail suggestion	Good design. By the way , i think you should have some actions after putting the... more
Build-on Detail good design	The steps are clear and easy to understand
Build-on Detail suggestions	Would it be better if you give the size of the cloth?
Build-on Detail good design	The procedures are easy to understand.
Build-on Detail improvement	The steps can be written in detail.
Build-on Detail POSSIBLE IMPROVEMENTS	1.As you said,you will prepare 4 beakers with water of temperatures 0/room temp./37/100... more
Build-on Detail good design	Your design is understandable and meaninful. It can show the main ideas of this experiment... more
Build-on Detail Comments/Suggestion	I think the steps are too rough. You should add more detail in it. For example,... more
Build-on Detail Good Design	All the steps are clear and can be easily understood.
Build-on Detail Something wrong	Are you sure that the clothes should be put into the washing powder only, without... more

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WHAT'S HAPPENING TO MY NOTES? RESULTS FROM FOCUS GROUP

- "Notes that are written earlier are more likely to evoke a response."

- "Notes that included difficult words were not likely to evoke a response."

- "This student further argued that in one note that was read by only three students but built on by two, the author 'included key points instead of words used merely to make a long note or fulfill the assignment requirement. ... The student is serious. Other students respect that student, so they build onto the note.'"
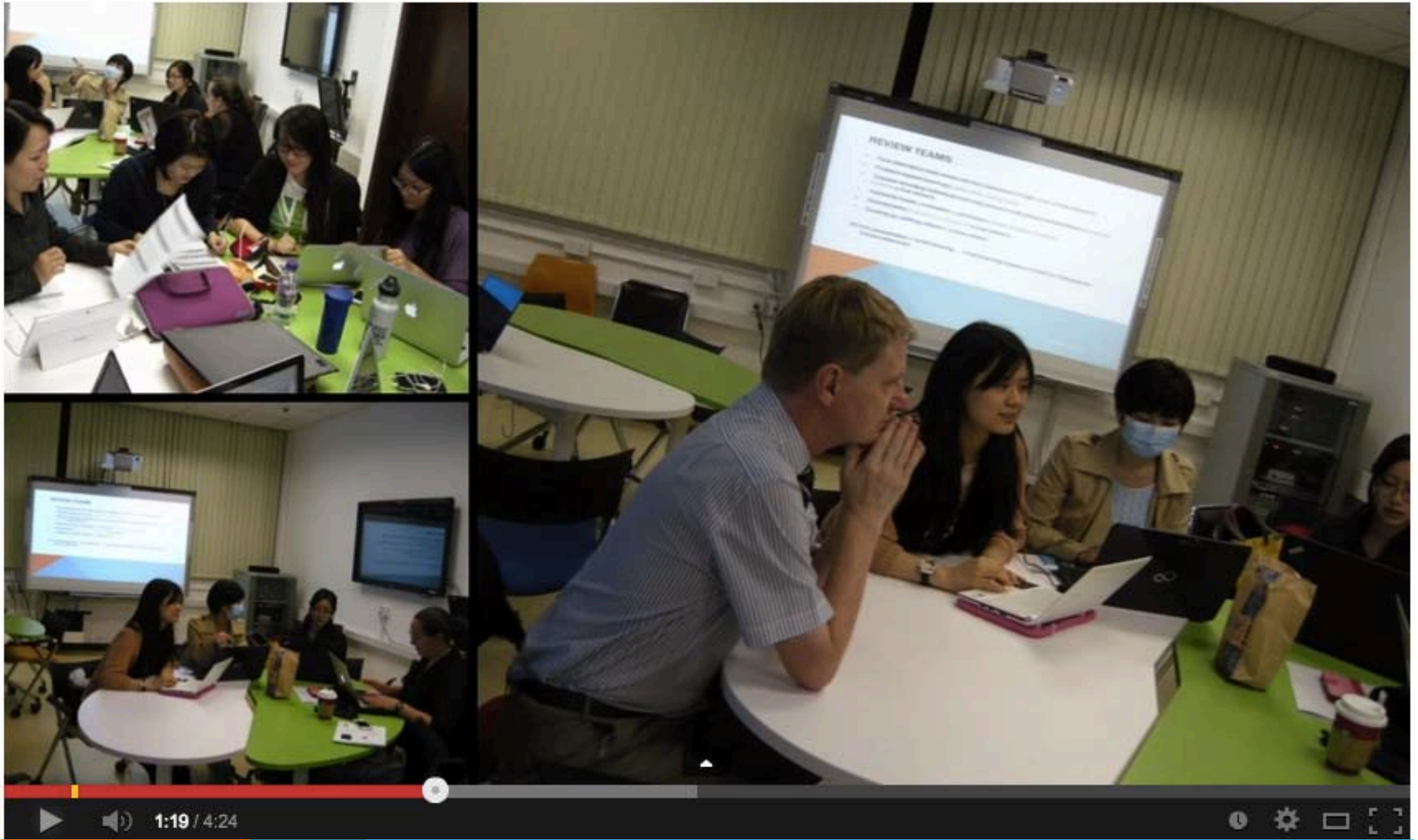
5 VIEWS

1. Why learning is difficult
2. Problem exploration
3. Visible learning
4. Literacy
5. Inquiry, project-based learning, PBL, and knowledge building

~ 250 notes, or 14 notes per student for around 7 weeks

SUMMARY OF PROCESSES

- Sharing resources on Edmodo
- Whole-class discourse on KF
- Goal oriented small-group tasks
- Self-directed reading
- Use of digital resources

- Peer teaching
- Formative assessment
- Lecturing
- Building community
- Setting high standard for work
- A happy place
- Setting a high standard for perseverance

Me ∨

Nov 19, 2013 · Reply · ☺ ∨

Me to ▪ DPLE 2013 intake

A few pictures from the revision last night. What would your principal say about the learning environment (if it were your class)? Thanks to Angela for taking the pictures.

Class pictures
Embed
📊

Nov 19, 2013 · 3 Replies · ☺ ∨

Tracy T. · Nov 19, 2013

What a smart-looking group of people! Thanks for taking the photos, Angela!

Zoe N. · Nov 20, 2013

'Everyone participated with serious facial expression.
All pay great attention to the speakers. This is a good illustration of effecting teaching.' the principal said.

Zhang L. · Nov 20, 2013

Haha, it is my pleasure!!!! ^_^

Natalie C. to ▪ DPLE 2013 intake

Obstacles for Scaling Up
1. At an Individual level - teachers are reluctant to make changes to their pedagogy , do not know how to implement the new pedagogy because they are used to teaching the way they learnt
2. At School level - new pedagogy might not be aligned with societal needs, costly to implement training with teachers and administrators to adapt new pedagogy
3. At the societal level - It is possible that the current model of education does not support scaling up because its existing framework is limited to adjustment. There may be a lack of stepping...
Show Full Post

🕐 Nov 18, 2013 · 💬 Reply · ☺ ⌄

Hugh W. to ▪ DPLE 2013 intake   ⚙

Hey guys, this is the reflection guide Gus and I used after his class. Cheers.

131102_class_debriefing_w...et_bell_scott_v_2.docx
DOCX File
📖 4 📄 👁

🕐 Nov 18, 2013 · 💬 Reply · ☺ ⌄

Top 30 Influences on Learning (Hattie, 2009)

Rank	Influence	d	Rank	Influence	d
1	Self-report grades	1.44	16	Repeated reading programs	0.67
2	Piagetian programs	1.28	17	Creativity programs	0.65
3	Providing formative evaluation	0.90	18	Self-verbalization, self-questioning	0.64
4	Micro teaching	0.88	19	Professional development	0.62
5	Acceleration	0.88	20	Problem-solving teaching	0.61
6	Classroom behavioral	0.80	21	Not labeling students	0.60
7	Comprehensive interventions for learning disabled students	0.77	22	Phonics instruction	0.60
8	Teacher clarity	0.75	23	Teaching strategies	0.60
9	Reciprocal teaching	0.74	24	Cooperative vs. individualistic learning	0.59
10	Feedback	0.73	25	Study skills	0.59
11	Teacher-student relationships	0.72	26	Direct instruction	0.59
12	Spaced vs. mass practice	0.71	27	Tactile stimulation programs	0.58
13	Meta-cognitive strategies	0.69	28	Comprehension programs	0.58
14	Prior achievement	0.67	29	Mastery learning	0.58
15	Vocabulary programs	0.67	30	Worked examples	0.57

Welcome   1. What makes learning difficult?   3. Literacy

OUR INTERPRETATIONS, QUESTIONS, IDEAS

All of the effects show here are better than average (i.e., > 0.40). For some of them it would be good to know what the effect actually is. For example, what is "cooperative learning vs individualistic learning" all about? Formulate some conjectures that we can test by looking at the research literature.

We also need to think about what is not being measured by the studies included in Hattie's analysis and why.

And try to make connections with the first topic. There we mentioned the debates about constructivism and direct teaching/cognitive apparatus.
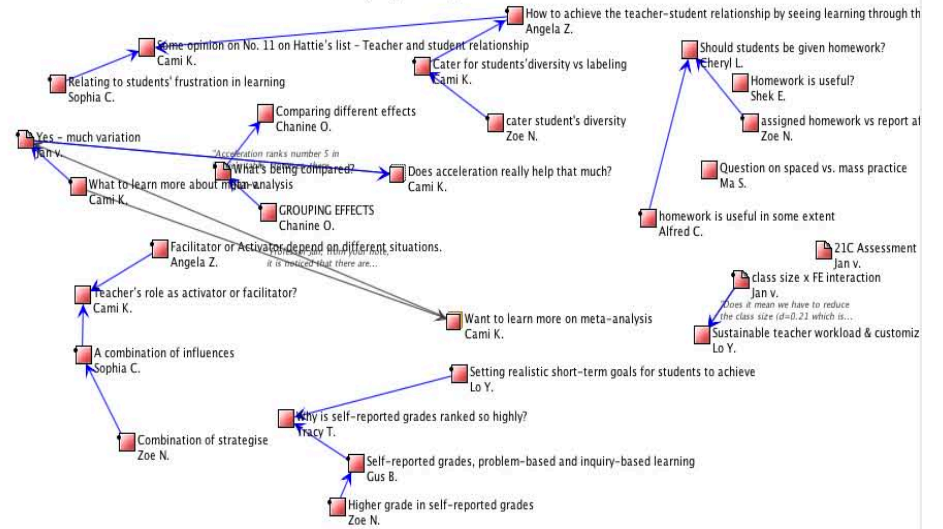
LEARNING ISSUES
The three students assigned to this view summarize the main themes and issues for further learning. (Use the paint tool.)

1. Doubts on the ranking of many learning factors (e.g. small class size, acceleration, teacher's role as activator, self-reported grades, problem based and inquiry based learning, homework)

2. Doubts on the methdologies of the studies like assessment methods, sample sizes, quality and quantity, social cultural background etc. (Hattie assumes facts are discrete)
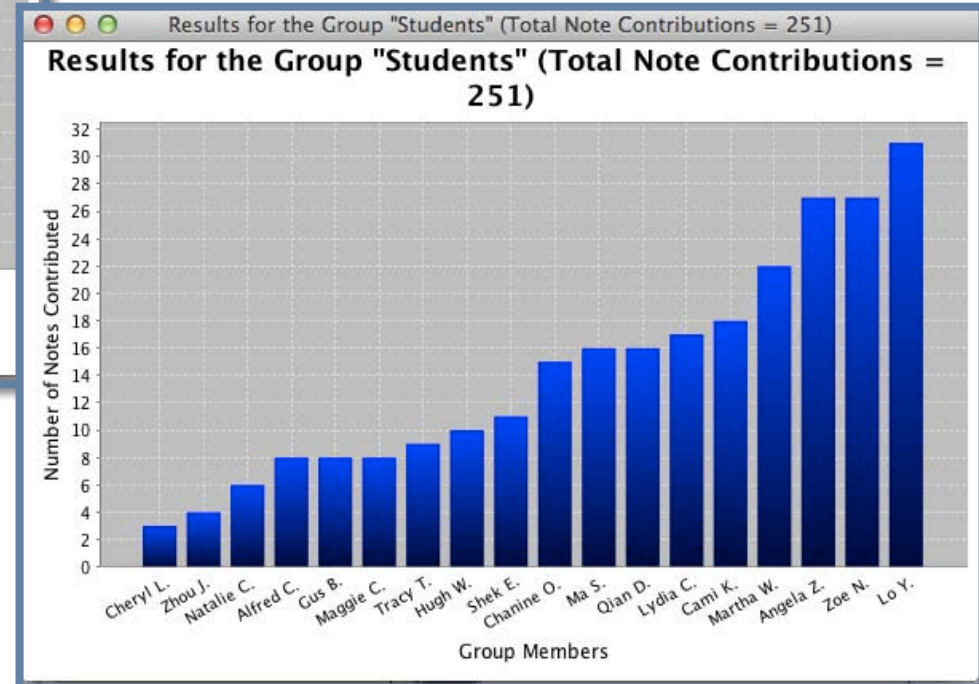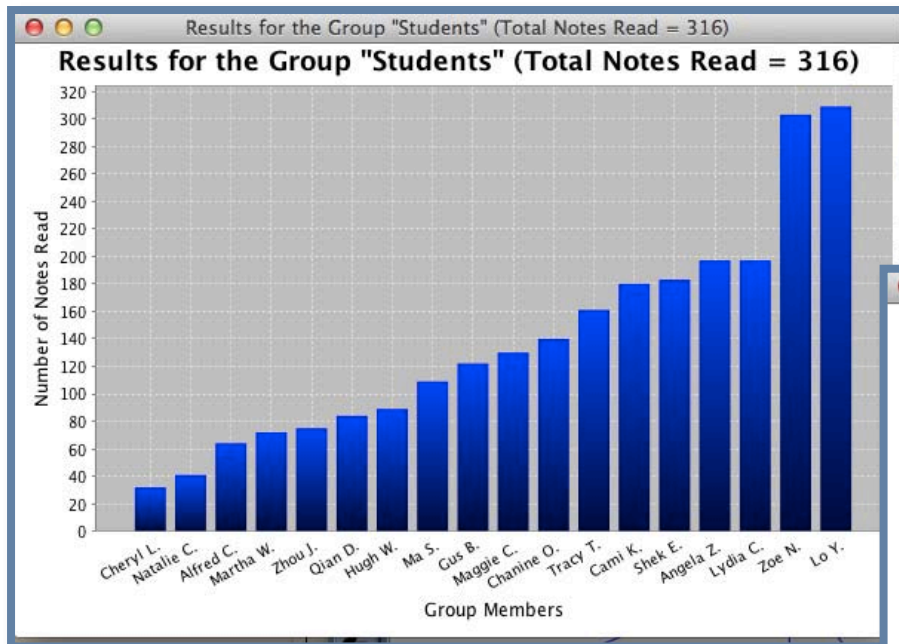
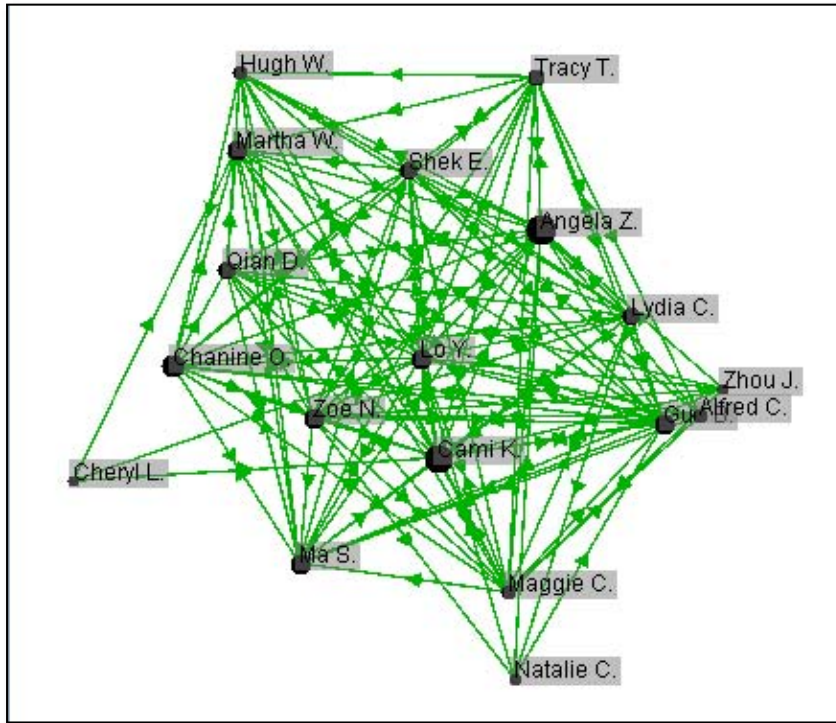3. Themes against constructivist teaching, prefer guided instruction.

4. Teaching for individual needs. Feedback is an important part of teaching strategies
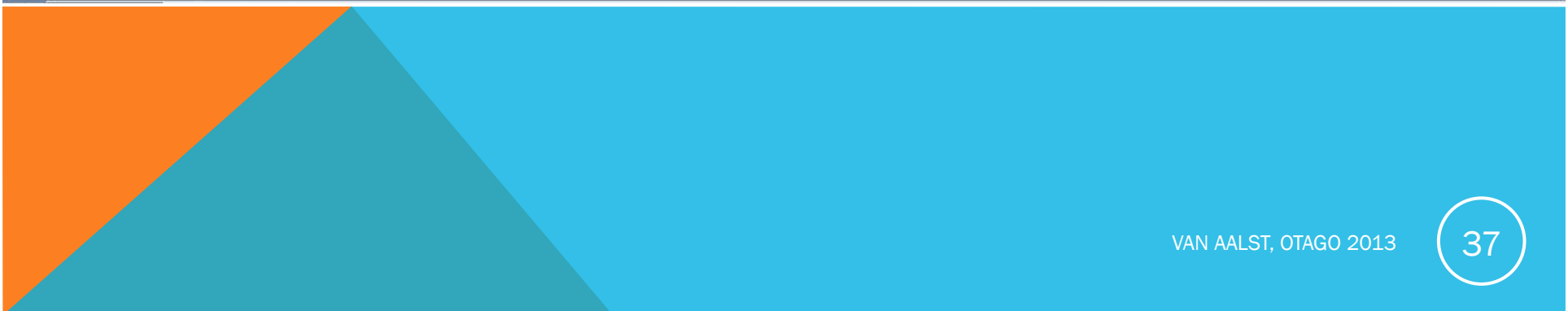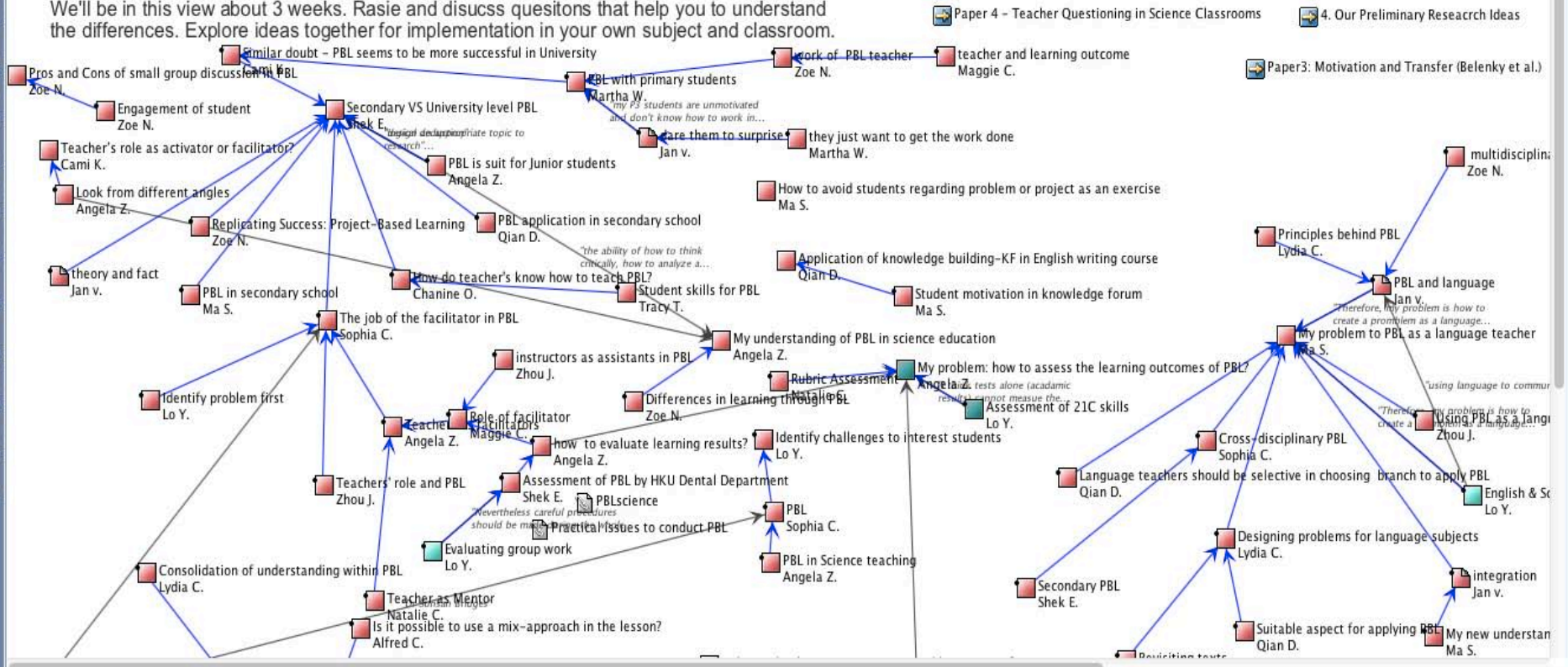
Reading, d = 96%
5 notes
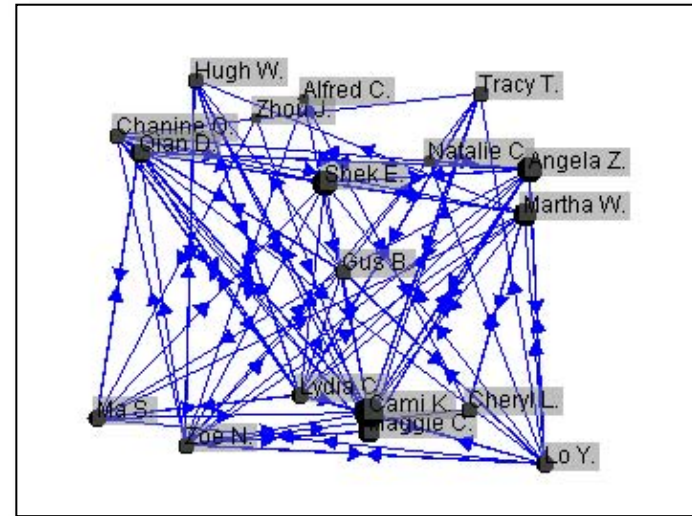
Building-on, d = 46%
1 note

End date:

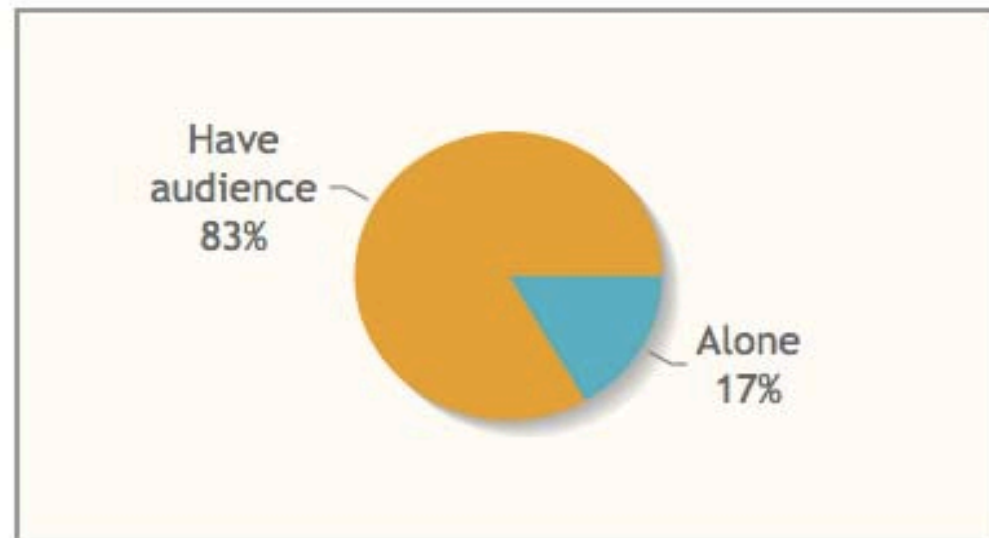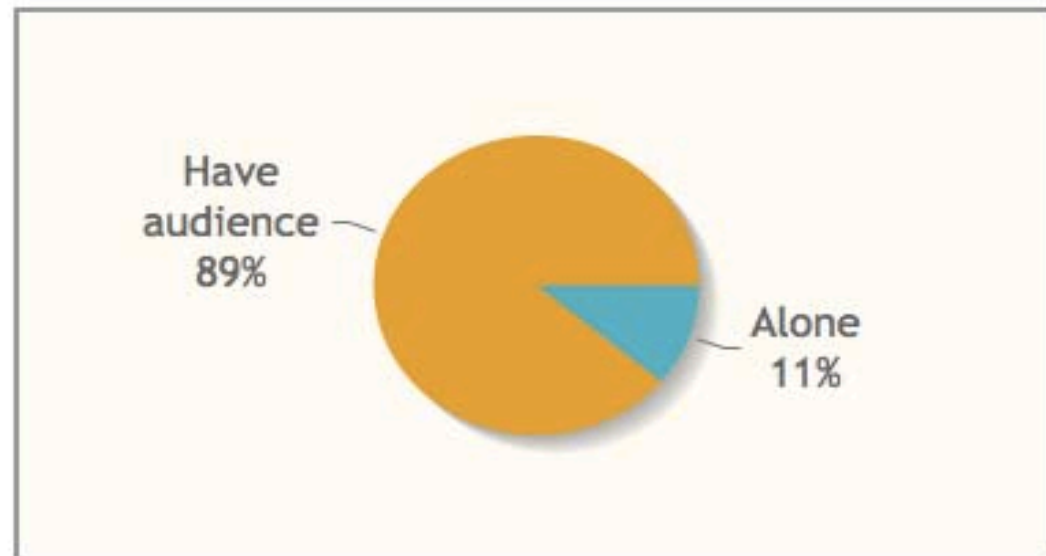Analyzer main page -> Are we collaborating?
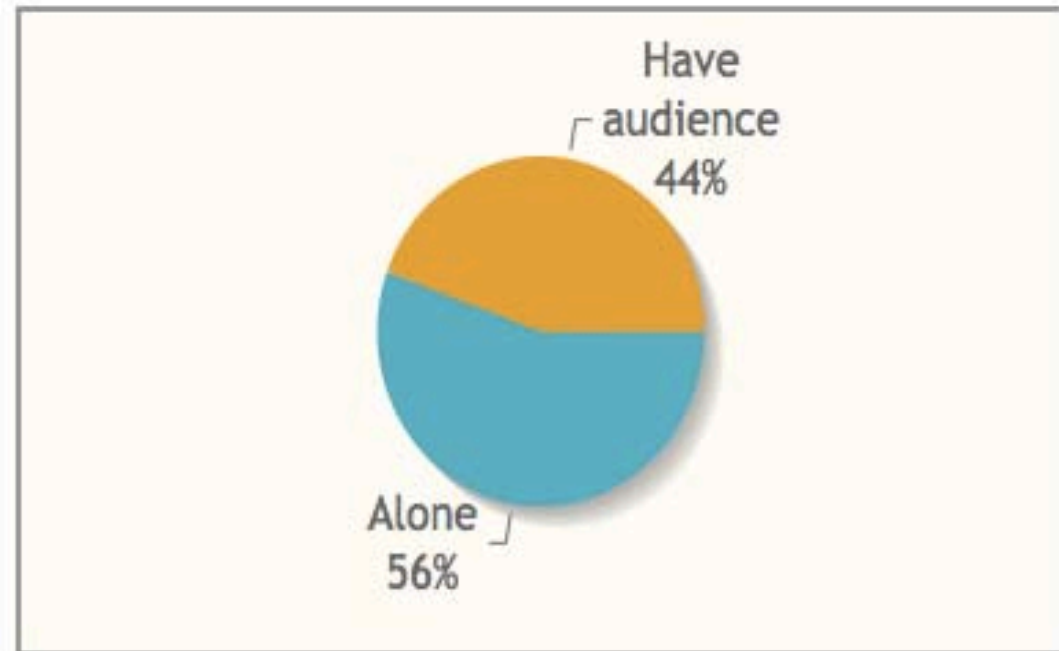
Please input analyze criteria

Analyze "Members who have receive/ give collaborative response to others"

- Number of collaborators at least: 6
- Type of interaction: read
- Number of notes involved at least: 3

Analyze

members who have collaborator(s) to
"students who have audience"

Have
audience
83%

Alone
17%

End date:

Analyzer main page -> Are we collaborating?

Please input analyze criteria

Analyze "Members who have receive/ give collaborative response to others"
- Number of collaborators at least: 3
- Type of interaction: build-on
- Number of notes involved at least: 1

Analyze

members who have collaborator(s) to
"students who have audience"

Have audience 89%

Alone 11%

Analyze "Members who have receive/ give collaborative response to others"

- Number of collaborators at least: 6
- Type of interaction: build-on
- Number of notes involved at least: 1

Analyze

members who have collaborator(s) to "students who have audience"

Have audience 44%

Alone 56%

End date:

Analyzer main page -> Are we putting our knowledge together?

- 17 notes include others' notes as references
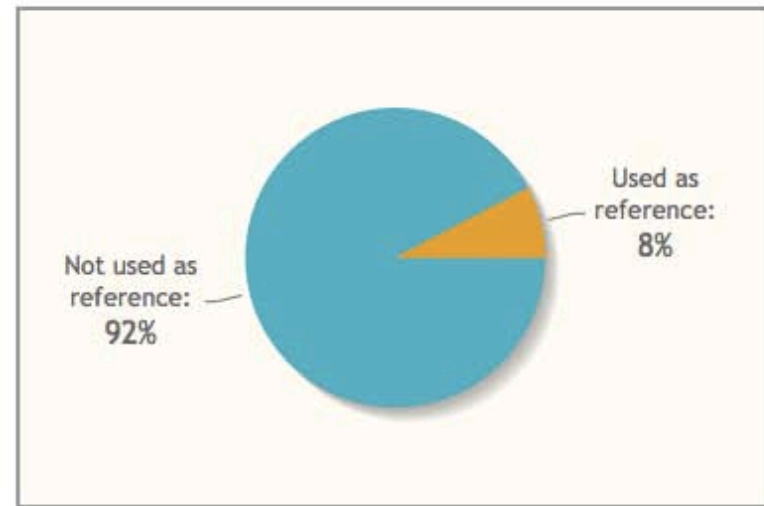- 19 notes are used by others as references

Analyze

Percentage of notes that include others' notes as references

Notes with references: 7%

Notes without references: 93%
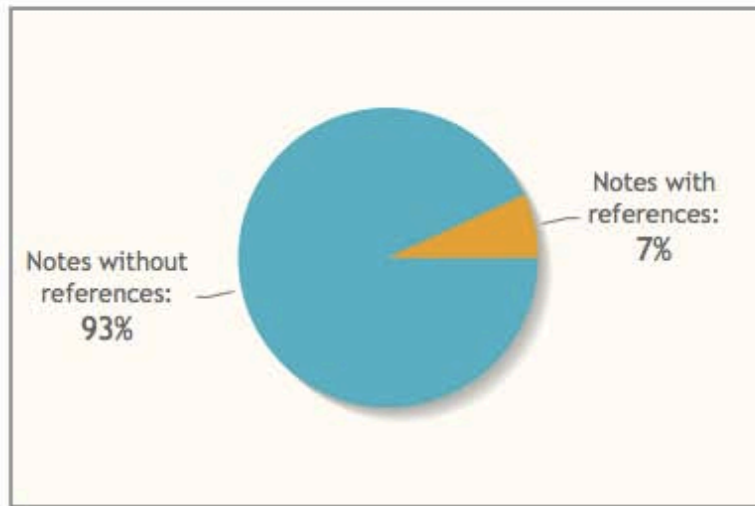
Percentage of notes that are used by others as references

Used as reference: 8%

Not used as reference: 92%

Show/hide table   Save table

Show/hide table   Save table

End date:

Analyzer main page -> What is happening to my stuff?

Please input analyze criteria
Analyze "My notes that have been interacted with."

14 notes met criterion

- Type of interaction: [read ⬍]
- Number of members involved: [at least ⬍] [6]

Annotation

- "viewed" means visited and counted as n times if the notes has been visited by the same member for n times;
- "read" means number of members who have read the notes and multiple times of reading by the same member counted only as once.

[Analyze] [Save table]

id ⬍	# of read ⬍	Title ⬍	Content ⬍
1	14	Build-on Detail Problem statement - comparing professional development paradigms	In preparing children for the 21st century educators are required to be well... more
2	12	Build-on Detail Contextualizing and breaking down learning	Students are not able to contextualize, apply and retain the material they have... more
3	12	Build-on Detail experimentation in context	Maybe the problem is that scientific experiments are not made meaningful to students.... more
4	11	Build-on Detail Reading strategies	Strategies for Reading 1. I read the title, check who the author is and when... more
5	9	Build-on Detail making history interesting	I think that learning history might be more

Please input analyze criteria

Analyze "My notes that have been interacted with."

- Type of interaction: [built-on ⬍]
- Number of members involved: [at least ⬍] [1]

Annotation

- "viewed" means visited and counted as n times if the notes has been visited by the same member for n times;
- "read" means number of members who have read the notes and multiple times of reading by the same member counted only as once.

[Analyze] [Save table]

4 notes met criterion

id	# of read	Title	Content
1	2	Build-on Detail Reading strategies	Strategies for Reading 1. I read the title, check who the author is and when... more
2	2	Build-on Detail Problem statement - comparing professional development paradigms	In preparing children for the 21st century educators are required to be well... more
3	2	Build-on Detail making history interesting	I think that learning history might be more interesting if students were exposed... more
4	1	Build-on Detail How do teacher's know how to teach PBL?	I would be interested to know how the teachers were trained to perform PBL. I think... more

A TAXONOMY OF ONLINE DISCOURSE PATTERNS

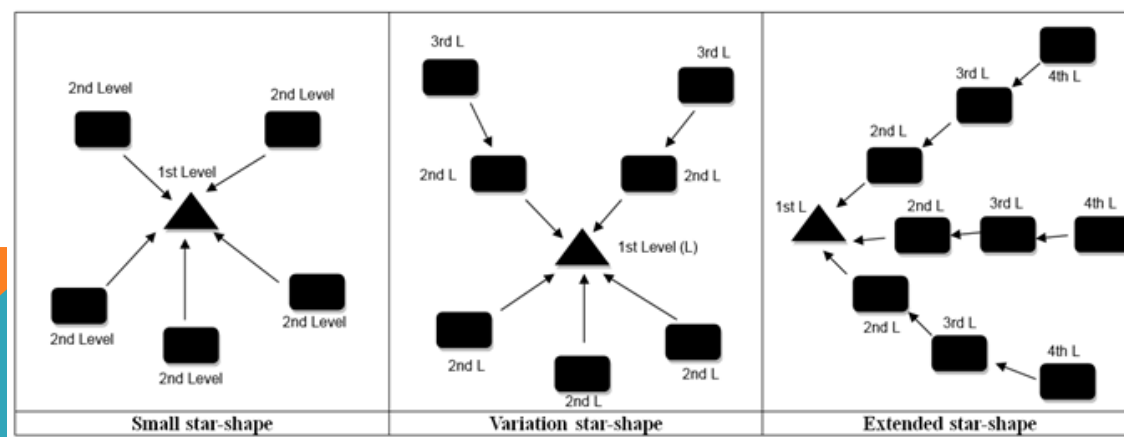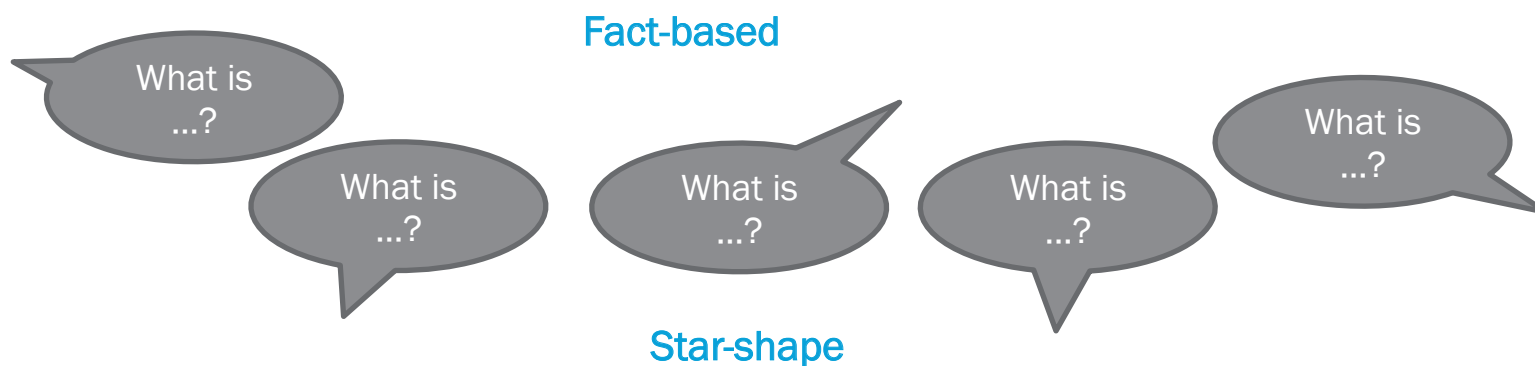| Meta-type	Discourse Pattern
Social	Social
Information sharing	Fact-based
	Star-shape
	Disputational Talk
	Cumulative Talk
	First-level Argumentation
Explanatory	Problem-centered Inquiry
	Second-level Argumentation
Knowledge building	Emerging Progressive Inquiry
	Authentic Problems and Emergent Understanding
	Theory-oriented

Ella Fu

SOCIAL DISCOURSE (1)

- Socio-emotional aspects of interaction
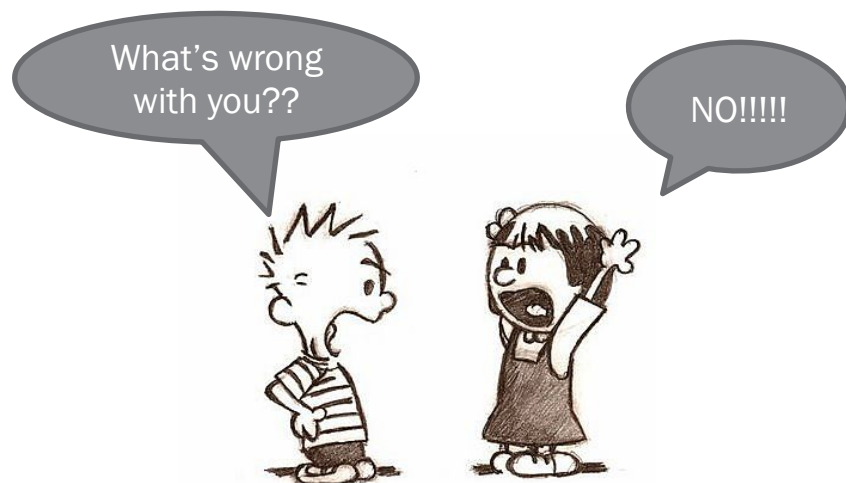- Establishing a sense of community

INFORMATION-SHARING DISCOURSE (5)

- Sharing factual information, prior knowledge, existing views

- Ideas are not likely improved because students take surface-centered discourse moves (Chan, 2001) to respond to their peers
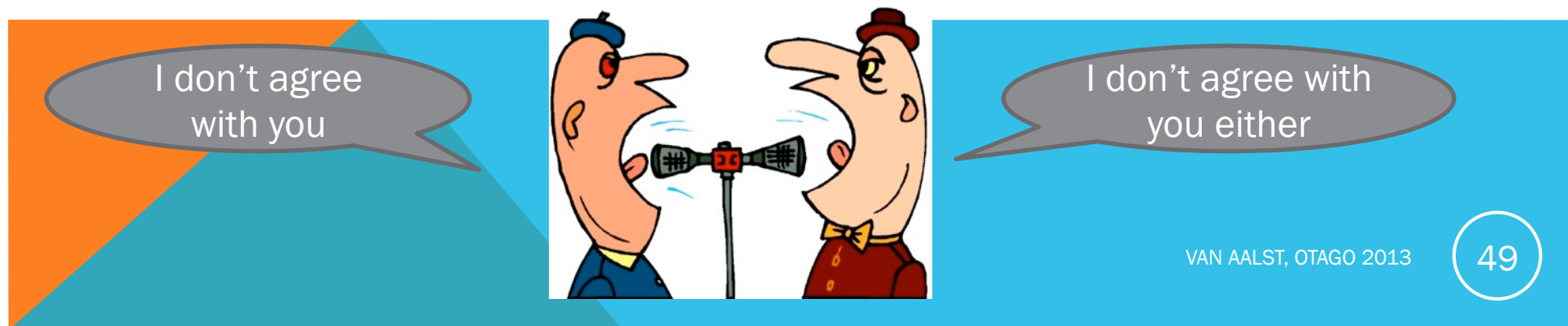
INFORMATION-SHARING DISCOURSE

Disputational Talk

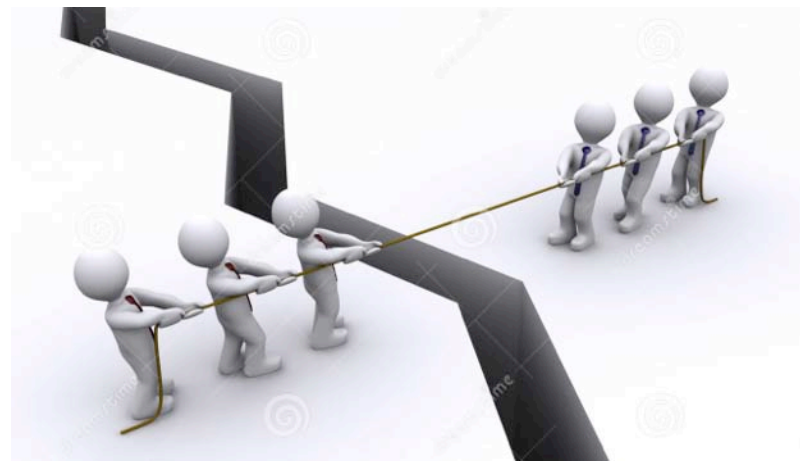**Cumulative Talk**

First-level Argumentation

EXPLANATORY DISCOURSE THREAD (2)

- Developing explanations through problem formulation and solving

- Some chance for idea improvement because students take problem-centered discourse moves (Chan, 2001) to respond to their peers

Problem-centered Inquiry

Second-level Argumentation

KNOWLEDGE-BUILDING DISCOURSE (3)

- Cycles of explanatory and emergent inquiry in which ideas are conceptualized at high-level explanation

- Ideas are likely to improve because of sustained problem-centered inquiry

Emerging Progressive Inquiry

Authentic Problems and Emerging Understanding

Theory-oriented

SUMMARY

- **Need to move away from focus on individual to shared aspects of the discourse**
- Interactivity as a property of a community
- Putting our knowledge together focusing on the state of knowledge in the community—what the community knows, and the coherence of ideas
- How our ideas develop focuses on specific (sets of) ideas that are improved collaboratively over time
- What's happening to my own notes focuses on improving one's own contributions

- **Qualitatively need to move from fragmented discourse focusing on facts and knowledge sharing to more complex discourse**
- Star-like discourse very common—need to do better
- Introduced 11 discourse patterns, many are not very likely to lead to idea improvement

- **Discussed an example of a KB environment that integrates KF with the classroom environment in a M. ED. Specialism**

THANKS!!