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<th>Title</th>
<th>Improving Knowledge Building Discourse in Knowledge Forum</th>
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<tr>
<td>Author(s)</td>
<td>van Aalst, JCW</td>
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<tr>
<td>Citation</td>
<td>Knowledge Building Symposium 2013: Future-oriented Learning and Teaching, North Dunedin, New Zealand, 25-26 November 2013</td>
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<td>Issued Date</td>
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<td>Rights</td>
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</tbody>
</table>
IMPROVING KNOWLEDGE-BUILDING DISCOURSE IN KNOWLEDGE FORUM

DR. JAN VAN AALST, FACULTY OF EDUCATION, HKU
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

VAN AALST, OTAGO 2013
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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- Experimentation
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- Deciding short-term ways of proceeding
- Working on shared and personal ideas
- Evaluating new ideas
- Evaluating progress
- Setting long-range goals

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 patterns in KF
<table>
<thead>
<tr>
<th>Class</th>
<th>School band</th>
<th>Course</th>
<th>Inquiry topic</th>
<th>Students</th>
<th>Total notes</th>
<th>Notes written</th>
<th>Notes Read</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3</td>
<td>Gr. 9 Humanities</td>
<td>Sustainable development</td>
<td>43</td>
<td>495</td>
<td>11.5 (17.1)</td>
<td>159.5 (171.6)</td>
</tr>
<tr>
<td>B</td>
<td>3</td>
<td>Gr. 10 Humanities</td>
<td>Sustainable development</td>
<td>42</td>
<td>353</td>
<td>8.4 (8.4)</td>
<td>57.8 (84.1)</td>
</tr>
<tr>
<td>C</td>
<td>3</td>
<td>Gr. 10 Humanities</td>
<td>Community arts</td>
<td>19</td>
<td>292</td>
<td>15.4 (9.4)</td>
<td>247.6 (71.6)</td>
</tr>
<tr>
<td>D</td>
<td>1</td>
<td>Gr. 8 Chinese</td>
<td>Features of good novel</td>
<td>41</td>
<td>370</td>
<td>9.0 (5.0)</td>
<td>72.3 (44.2)</td>
</tr>
<tr>
<td>E</td>
<td>2</td>
<td>Gr. 10 Physics</td>
<td>Heat; mechanics</td>
<td>42</td>
<td>839</td>
<td>19.0 (8.6)</td>
<td>131.0 (63.9)</td>
</tr>
</tbody>
</table>
MEDIAN NOTES READ PER STUDENT

![Bar chart showing median notes read per student for five classes (A, B, C, D, E) across different quartiles (1st, 2nd, 3rd, 4th)]

1st quartile
2nd quartile
3rd quartile
4th quartile

VAN AALST, OTAGO 2013
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 Hong 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
I need to understand
My big learning

Does the roller coaster have uniform motion?
My question about roller coaster?

Question from Song Li

The answer is "remove" friction by group 4

Question for your question?

Group 3 question

The Abyss Group 2

Ocean Park learning

T. Ho

Question we need to look into

Group 6's result

Textbook really right?

"ung by AR DRA

Answer: 20

Group: 39

S. 18

Question: 4

S. 24

Question: 27

S. 25

Question: 26

S. 25

Answer: 19

S. 20

Question: 25

S. 25

Question: 24

S. 25

Question: 23

S. 25

Question: 22

S. 25

Question: 21

S. 25

Question: 20

S. 25

Question: 19

S. 25

Question: 18

S. 25

Question: 17

S. 25

Question: 16

S. 25

Question: 15

S. 25

Question: 14

S. 25

Question: 13

S. 25

Question: 12

S. 25

Question: 11

S. 25

Question: 10

S. 25

Question: 9

S. 25

Question: 8

S. 25

Question: 7

S. 25

Question: 6

S. 25

Question: 5

S. 25

Question: 4

S. 25

Question: 3

S. 25

Question: 2

S. 25

Question: 1

S. 25

Question: 0

S. 25

Question: 39

S. 25

Question: 38

S. 25

Question: 37

S. 25

Question: 36

S. 25

Question: 35

S. 25

Question: 34

S. 25

Question: 33

S. 25

Question: 32

S. 25

Question: 31

S. 25

Question: 30

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Question: 29

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Question: 28

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Question: 27

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Question: 26

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Question: 25

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Question: 24

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Question: 23

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Question: 22

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Question: 20

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Question: 3

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Question: 2

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Question: 1

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Question: 0

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Question: 39

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Question: 38

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Question: 37

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Question: 36

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Question: 35

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Question: 34

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Question: 33

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Question: 32

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Question: 31

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Question: 30

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Question: 28

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Question: 26

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Question: 17

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Question: 16

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Question: 7

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Question: 6

S. 25

Question: 5

S. 25

Question: 4

S. 25

Question: 3

S. 25

Question: 2

S. 25

Question: 1

S. 25

Question: 0

S. 25
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
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?**

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Analyzer version 1.1
% STUDENTS WITH AUDIENCES OF 5 STUDENTS

% Students

Class

A B C D E

0 20 40 60 80 100

Reading Build-on

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

Read 3 notes or built onto 1
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)
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.
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.

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.

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, \( F_{\text{net}} = 0 \). And by the Newton's first law, it moves at a constant velocity. When the bead is falling, friction and weight which is larger?

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, \( F_{\text{net}} = ma \Rightarrow R - W = ma \Rightarrow a = (R-W)/m \) ----> they decelerate very slowly and the deceleration on moon is smaller than that on the Earth. …

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
### WHAT'S HAPPENING TO MY OWN NOTES?

<table>
<thead>
<tr>
<th>Id</th>
<th># of read</th>
<th>Title</th>
<th>Content</th>
</tr>
</thead>
</table>
| 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 water temp in 2°C, room temp in 23°C and 40°C, respectively. 
3) Report, powder.  
4) Put the 5) After a salt better.  
**precautions** less |
| 2  | 1         | **Build-on Detail** The lemon will become bad?? | I would like the generation less |

<table>
<thead>
<tr>
<th>Title</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Build-on Detail</strong> Improvements - temperature</td>
<td>For step 2, I think you can omit the two set-ups which are at 0°C &amp; 100°C. As the... more</td>
</tr>
<tr>
<td><strong>Build-on Detail</strong> Good design</td>
<td>The experiment is easy to carry out and steps are clearly written. more</td>
</tr>
<tr>
<td><strong>Build-on Detail</strong> suggestion</td>
<td>Good design. By the way, I think you should have some actions after putting the... more</td>
</tr>
<tr>
<td><strong>Build-on Detail</strong> good design</td>
<td>The steps are clear and easy to understand. more</td>
</tr>
<tr>
<td><strong>Build-on Detail</strong> suggestions</td>
<td>Would it be better if you give the size of the cloth? more</td>
</tr>
<tr>
<td><strong>Build-on Detail</strong> good design</td>
<td>The procedures are easy to understand. more</td>
</tr>
<tr>
<td><strong>Build-on Detail</strong> Improvement</td>
<td>The steps can be written in detail. more</td>
</tr>
<tr>
<td><strong>Build-on Detail</strong> POSSIBLE IMPROVEMENTS</td>
<td>1. As you said, you will prepare 4 beakers with water of temperatures 0°C room temp, 23°C, 40°C... more</td>
</tr>
<tr>
<td><strong>Build-on Detail</strong> good design</td>
<td>Your design is understandable and meaningful. It can show the main ideas of this experiment... more</td>
</tr>
<tr>
<td><strong>Build-on Detail</strong> Comments/Suggestion</td>
<td>I think the steps are too rough. You should add more detail in it. For example,... more</td>
</tr>
<tr>
<td><strong>Build-on Detail</strong> Good Design</td>
<td>All the steps are clear and can be easily understood. more</td>
</tr>
<tr>
<td><strong>Build-on Detail</strong> Something wrong</td>
<td>Are you sure that the clothes should be put into the washing powder only, without... more</td>
</tr>
</tbody>
</table>
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 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

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!!!! ^_^
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...

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
Problem Exploration View

- **PROBLEM STATEMENT:** What makes learning difficult?
- **INSTRUCTIONS:** Share your ideas about the problem. Try to make your idea clear by providing an example or raising a question about it. Also comment on notes (use the build-on function) to clarify ideas. The three students assigned to manage the view try to summarize the key points in the sidebar when they have 20 to 25 notes.

**SUMMARY**

1. Motivating students and kindling their interests in the subjects.

2. Building-on or overcoming student’s pre-existing knowledge and informal learning experiences.

3. Putting lessons in context, demonstrating how students can apply lessons to real-life.

4. Different levels of experience, motivation, and professionalism among teachers.

5. Difficulties with collaboration. It’s important but not easy to make it effective.

6. I would raise technology as a problem. What kind of help can technology offer? What technical development would be useful?

7. Two students mentioned the coherence or relations between facts (periodic table, organic chemistry). The NRC also mentioned the organization of facts.

8. For higher education, how do students put what they learn in courses into practice?
### Top 30 Influences on Learning (Hattie, 2009)

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

### 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 methodologies 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.
GOAL: To understand the main features of inquiry-based learning, project-based learning, PBL, and knowledge building
We'll be in this view about 3 weeks. Read and discuss questions that help you to understand the differences. Explore ideas together for implementation in your own subject and classroom.
Reading, d = 96%
5 notes

Building-on, d = 46%
1 note
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: 
- Type of interaction: 
- Number of notes involved at least: 

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

Have audience 83%
Alone 17%
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

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

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

- Have audience: 44%
- Alone: 56%
Analyzer main page -> Are we putting our knowledge together?

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

Percentage of notes that include others' notes as references:
- Notes without references: 93%
- Notes with references: 7%

Percentage of notes that are used by others as references:
- Not used as reference: 92%
- Used as reference: 8%
Please input analyze criteria
Analyze "My notes that have been interacted with."
- Type of interaction: read
- Number of members involved: at least
  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.

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

4 notes met criterion

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

<table>
<thead>
<tr>
<th>Meta-type</th>
<th>Discourse Pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social</td>
<td>Social</td>
</tr>
<tr>
<td>Information sharing</td>
<td>Fact-based</td>
</tr>
<tr>
<td></td>
<td>Star-shape</td>
</tr>
<tr>
<td></td>
<td>Disputational Talk</td>
</tr>
<tr>
<td></td>
<td>Cumulative Talk</td>
</tr>
<tr>
<td></td>
<td>First-level Argumentation</td>
</tr>
<tr>
<td>Explanatory</td>
<td>Problem-centered Inquiry</td>
</tr>
<tr>
<td></td>
<td>Second-level Argumentation</td>
</tr>
<tr>
<td>Knowledge building</td>
<td>Emerging Progressive Inquiry</td>
</tr>
<tr>
<td></td>
<td>Authentic Problems and Emergent Understanding</td>
</tr>
<tr>
<td></td>
<td>Theory-oriented</td>
</tr>
</tbody>
</table>
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

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INFORMATION-SHARING DISCOURSE

Disputational Talk

What’s wrong with you??

NO!!!!!

Cumulative Talk

I agree; Yes me too 😊

First-level Argumentation

I don’t agree with you

I don’t agree with you either

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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
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

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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!!