# Teachers Empowering Teachers for Knowledge Building

專業同行
知識建構
共賦能

## Knowledge Building Teacher Network

**September 27, 2008**

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Faculty of Education, The University of Hong Kong

# Knowledge Building Teacher Network

*Learning* for 21st century 廿一世紀學習

持續創新

*Knowledge building communities* 知識建構社群

*Technology-enhanced learning* 科技創新

# Reflection and Goal Setting

- Why did you join this project?
- What are your experiences with learning something new? Or just another approach?
- What are your goals and expectations this year?
- Would it help if you work with others?
- What do you want to see changes in your students? your colleagues? Principal? yourself? Seconded teachers? Project Leaders?

# Why Knowledge Building? 知識建構

21st century learning…….3+3+4 Reform Goals

- Literacy
- Critical Thinking, Higher-Order, Inquiry
- Project Learning
- Information Technology
- Community Building…. Values
  - Creativity - Knowledge Creation for 21st Century

# What is Knowledge Building?知識建構

Members working together contribute and to add value to the community (Scardamalia & Bereiter, 2006)

1)Epistemic Agency (active)

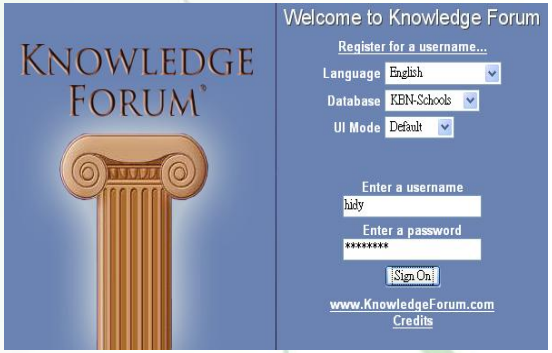
創建新知, 解決問題

2)Improvable Ideas (deepen)

深化討論

3) Community Knowledge 群雄獻技，

互補不足， 共享成果



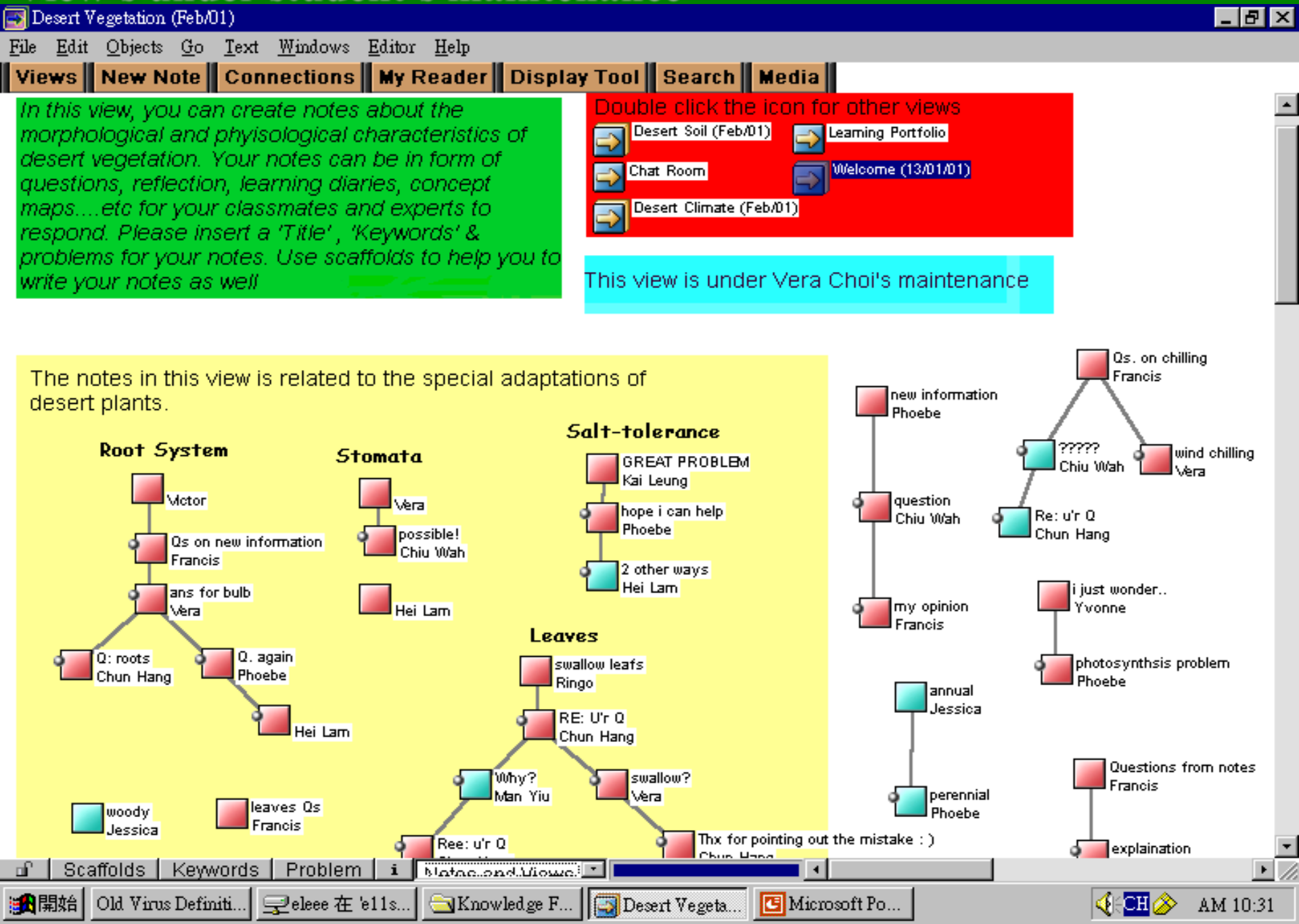
# What is Knowledge Building?

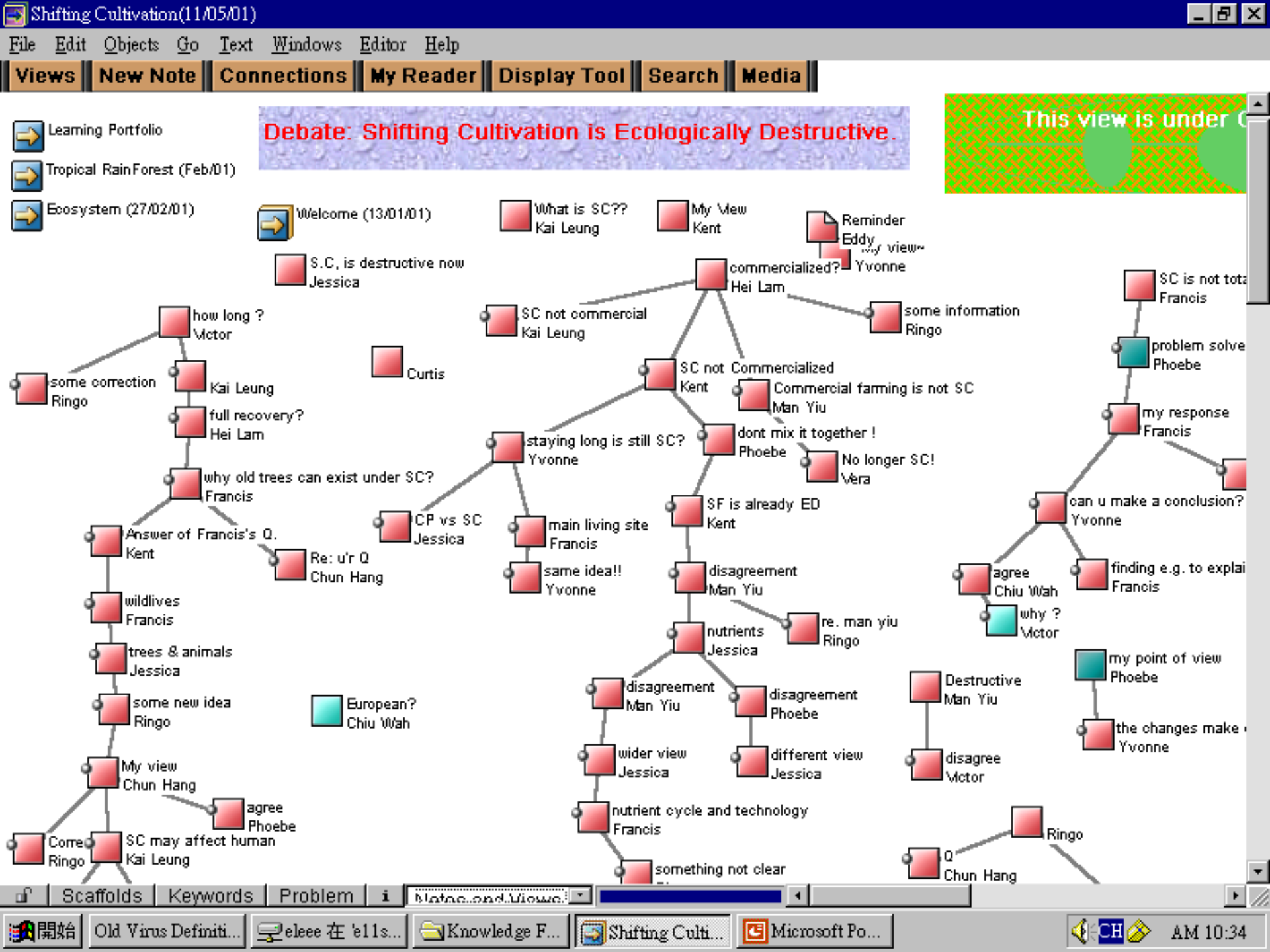
Knowledge Building includes but goes beyond

- generic skills and project learning
- critical thinking and making argument
- online learning and technology

| Critical thinking | Knowledge Building |
| --- | --- |
| I agree because<br>I disagree because<br>My claim…reason..<br>Evidence.. .. | How does it work?<br>How to explain this?<br>How is it possible?<br>How could this be better? |
| To reason and to persuade | To build knowledge & to improve collectively .. |

# View's under student's maintenance




Shifting Cultivation(11/05/01)
File Edit Objects Go Text Windows Editor Help
Views New Note Connections My Reader Display Tool Search Media
Debate: Shifting Cultivation is Ecologically Destructive.
This view is under C
Learning Portfolio
Tropical RainForest (Feb/01)
Ecosystem (27/02/01)
Welcome (13/01/01)
S.C, is destructive now
Jessica
What is SC??
Kai Leung
My View
Kent
Reminder
Eddy
My view~
Yvonne
commercialized?
Hei Lam
SC not commercial
Kai Leung
some information
Ringo
SC not Commercialized
Kent
Commercial farming is not SC
Man Yiu
staying long is still SC?
Yvonne
dont mix it together !
Phoebe
No longer SC!
Vera
CP vs SC
Jessica
main living site
Francis
same idea!!
Yvonne
SF is already ED
Kent
disagreement
Man Yiu
re. man yiu
Ringo
nutrients
Jessica
disagreement
Man Yiu
disagreement
Phoebe
wider view
Jessica
different view
Jessica
nutrient cycle and technology
Francis
something not clear
how long ?
Victor
some correction
Ringo
Kai Leung
Curtis
full recovery?
Hei Lam
why old trees can exist under SC?
Francis
Answer of Francis's Q.
Kent
Re: u'r Q
Chun Hang
wildlives
Francis
trees & animals
Jessica
some new idea
Ringo
European?
Chiu Wah
My view
Chun Hang
agree
Phoebe
Corre
Ringo
SC may affect human
Kai Leung
SC is not tota
Francis
problem solve
Phoebe
my response
Francis
can u make a conclusion?
Yvonne
agree
Chiu Wah
finding e.g. to explai
Francis
why ?
Victor
my point of view
Phoebe
the changes make
Yvonne
Destructive
Man Yiu
disagree
Victor
Ringo
Q
Chun Hang
Scaffolds Keywords Problem i
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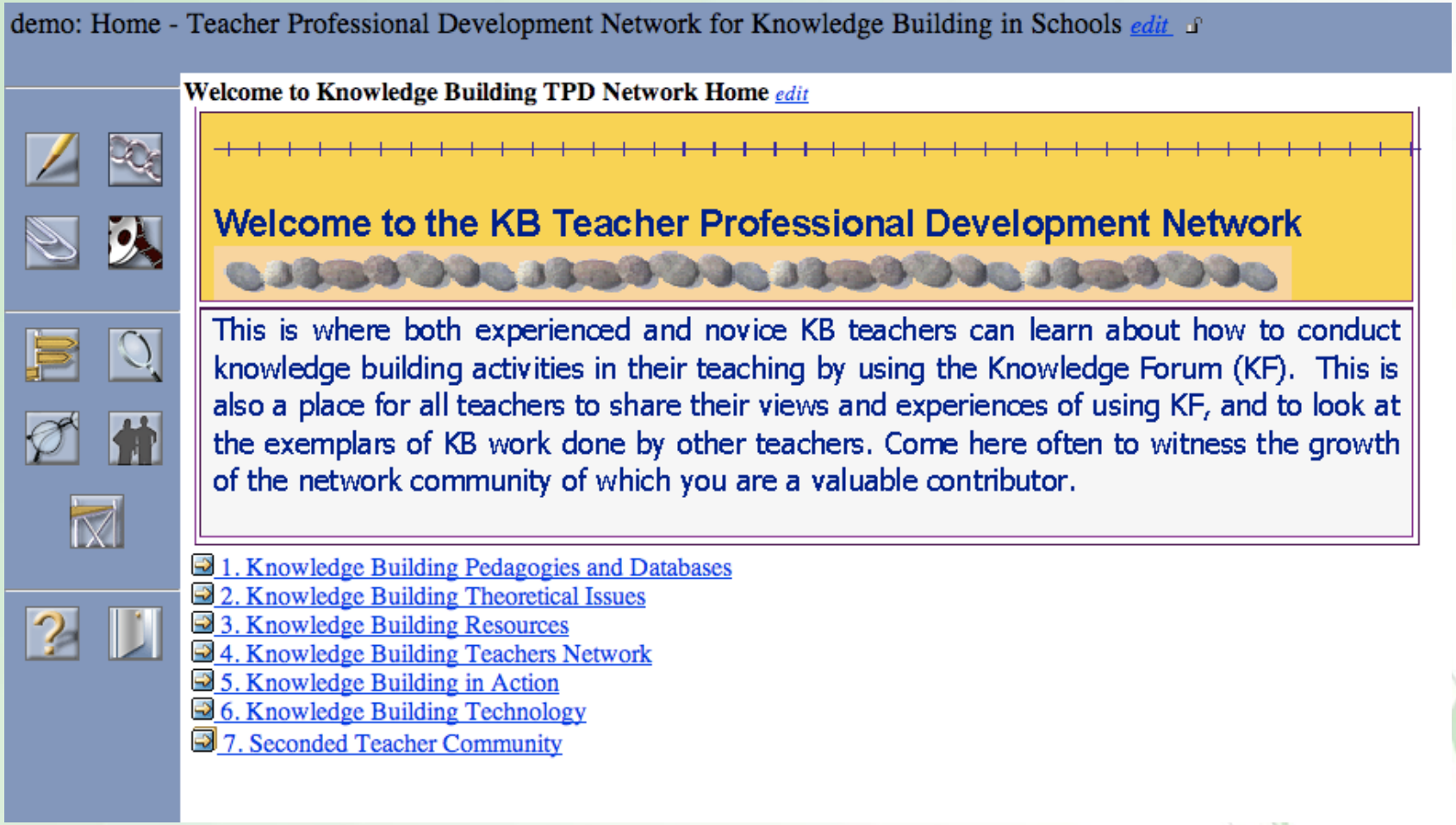
# What is the teacher network?



# Developing Knowledge Building in your Classroom

1) Collaborative Culture. From teacher talk to student talk…. How to develop a collaborative culture in classroom?
2) Inquiry on Knowledge Forum & Classroom. From teacher questions to student questions… continuing classroom talk to forum…How to start collaborative inquiry Using Knowledge Forum?
3) Deepening Discussion. From you are right.. I am right… to rise above… How to deepen discussion and rise above?
4) Asssment. From summative to formative and reflective assessment….How to Assess student's understanding?

# Principles & Curriculum Design for KB (1)

## Component 1 – How to develop collaborative culture in classroom

Student Agency…..Community Knowledge

- Students working with each other in classroom.. Student ideas & questions
- Putting out ideas to public for improvement- group work, idea charts…KWL, inquiry-based learning, jig-saw, knowledge-building ‘walls’etc

# Setting the Stage for Success – Building a Classroom Culture

Why discussion? Inquiry? Why important to have students working together?

# From Cooperative to Collaborative learning

You may know many advantages of cooperative learning…

More benefits of collaborative learning? Crook (1994)

1) Articulation of ideas
2) Co-construction of knowledge – negotiation of ideas, extend and elaborate
3) Cognitive conflict - Different perspectives would lead to disequilibrium and spark changes

## Vygotsky's socio-cognitive theory

- Social interactions form the scaffolds for children's learning and development
- Zone of proximal development…….
  Multiple zones of proximal development

Brown….. – Communities of Learners

# Setting the stage for success…

Can we have knowledge building without classroom discussion.. Inquiry.. and just Knowledge Forum?

Can we have knowledge building without knowledge Forum just classroom discussion and inquiry?

What do you think?

I don’t have enough time…. I think I like the forum so students can do their assignments there….I just want to have Knowledge Forum but no time to do class discussion…

I don’t like computers.. I do group work and discussion already…….. I think I can just have class discussion without Knowledge Forum….

## Knowledge Forum without classroom discussion/inquiry …..shifts of culture.. .mindset

--When students do not talk or discuss well in classroom, do you expect they can discuss well on the forum? Or……

--Knowledge Forum as a big assignment box (role of teacher… role of student)

--Not the Form but the Spirit…..

# Why Build a classroom culture?

## Classroom Discussion/Inquiry without Knowledge Forum?

How classroom discussion can be improved with Knowledge Building and Knowledge Forum?

- Continuation of classroom work… extends time-space
- Encourages student diversity… literacy…..
- Making ideas public for improvement
- Records of ideas and discussion can be kept

Ah… Now I can see… I now really see what my students can do now…

# Principles and Classroom Strategies

Agency….Improvable Ideas…. Community

Some Examples

--positive classroom culture….

-- Think… Pair…. Share

… Jigsaw Learning

-- concept mapping

… Reciprocal teaching (student as teacher)

-- KWL (Know… What I want to Know…..Learn)

… My Ideas…. My Questions

….Posters…. Knowledge-Building Walls

# Scaffolds

(What did I learn? )
(What did we do that worked? )
(What didn't work and why? )
(What could we change next time? )
(It will be better if )

| My theory |
| --- |
| I need to understand |
| New information |
| This theory cannot explain |
| A better theory |
| Putting our knowledge together |
| Source of Information |
| Examples |

(我的立場/我同意/我不同意)
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# Scaffolds (thinking prompts)

## Theory Building

I need to understand

My theory

New Information

A better theory

This theory cannot explain

Putting our knowledge together

## Critical Thinking

My claim…standpoint

Reason

Elaboration

Evidence

Examples

Interpretation

Rebuttal

Synthesis

# How to assess discussion? KB?

Principles - What is good discussion? What is good knowledge building?

-Active Student Involvement …agency (on-task)
-Problem focused…..
-Different views...diversity of ideas
-Build on and improves others' ideas
-Deepen and Rise above
-Use new information constructively.....
-Everyone participate…….
-Work collectively to help group improve….
-Both Individual and collective knowledge grow

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# Principles & Curriculum Design for KB (2)

## Component 2 – How to Start collaborative Inquiry Using Knowledge Forum

## Epistemic Agency….Community Knowledge

- Design and integrate curriculum with knowledge-building
  - Big ideas…Key problems…Inquiry-based…information search…what students know and want to know
- Scaffolds for ‘inquiry’ and ‘critical thinking’.. both
- Design of views; Student grouping
- Other questions
  - Should I set a question; how to encourage students to contribute…? No notes or how to read so many notes?

# Scaffolds (thinking prompts)

## Theory Building

I need to understand

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## Critical Thinking

My claim…standpoint

Reason

Elaboration

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Examples

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Synthesis

Bleach

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Views | New Note | Connections | My Reader | Display Tool | Search | Media

***What is bleach? How can bleach be made chemically ? You may know the term '1 to 99 diluted bleach' from the media nowadays. What does it mean?.....***

**'Bleach' is one of the chapter to be studied in F.4 (after the holiday) and you may find it in Book 2 Unit 33. You can have some discussions about this popular chemical in the SARS period.**

Resumption of classes on 28 Apr
Ivan

Welcome
Acids and bases
Mole calculations
Group project
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Preparation of salt
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Vivian
Fiona
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Kammy
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Prudence
warm??!!
Anna
NeuTraLiZaTion
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Alison
re
Perrin
to enhance health?
Karen
Anna
Enhance hea
Jocelyn
Pegg
what if b
Alison
Katherir
Helena
other ways!!!!
Katherine
Colour of furniture
Leanne
strength of colour
April
floor cleaner
Queenie
Perrin
no mixing they say...^^
Carol
Peggy
Anna
Joyce
Bleach Alternative
Leanne
chlorine bleach
Joyce
poisonous gas...
April
Bleach + anti-acids??
Corinne
QQ
Helena
Cindy
New info
Helena
--.--??
April
Acid+acid?
Gloria
Dilution of household bleach
Crystal
bleaching teeth!!!
Katherine
dilution of house hold bleach
Crystal
help!!!
Crystal
Re: whitening teeth...
Jocelyn
harmfull??
Youde
>_<~!
Candy
><"
Agnes
bleach ratio
Crystal
hydrogen peroxide
Vivian
it's safe!!
Jocelyn
Peggy
Peggy
spilt?
Alison
using bleach without gloves
Virginia
yes gwa~
Kammy
absorb moisture???
April
ho "la" ga!!
Kammy
damaging
Alison
Hair bleaching
Helena
How to dissolve gold
Crystal
HeLp~!! ^^
gold dissolves in bleach~!! ^_<"
Carol
sth more...^^
ExPlOsIoN!!! @_@
Carol
Dehydrating agent??
whitening gel
Virginia
whitening teeth?!
Katherine
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Virginia
No!
Kammy
whitening gel~ & fluoride?
Esther
El????
Heidi
fluoride
Vivian
toothpaste
Clara
for smokers

Scaffolds | Keywords | Problem | i | Notes and Views

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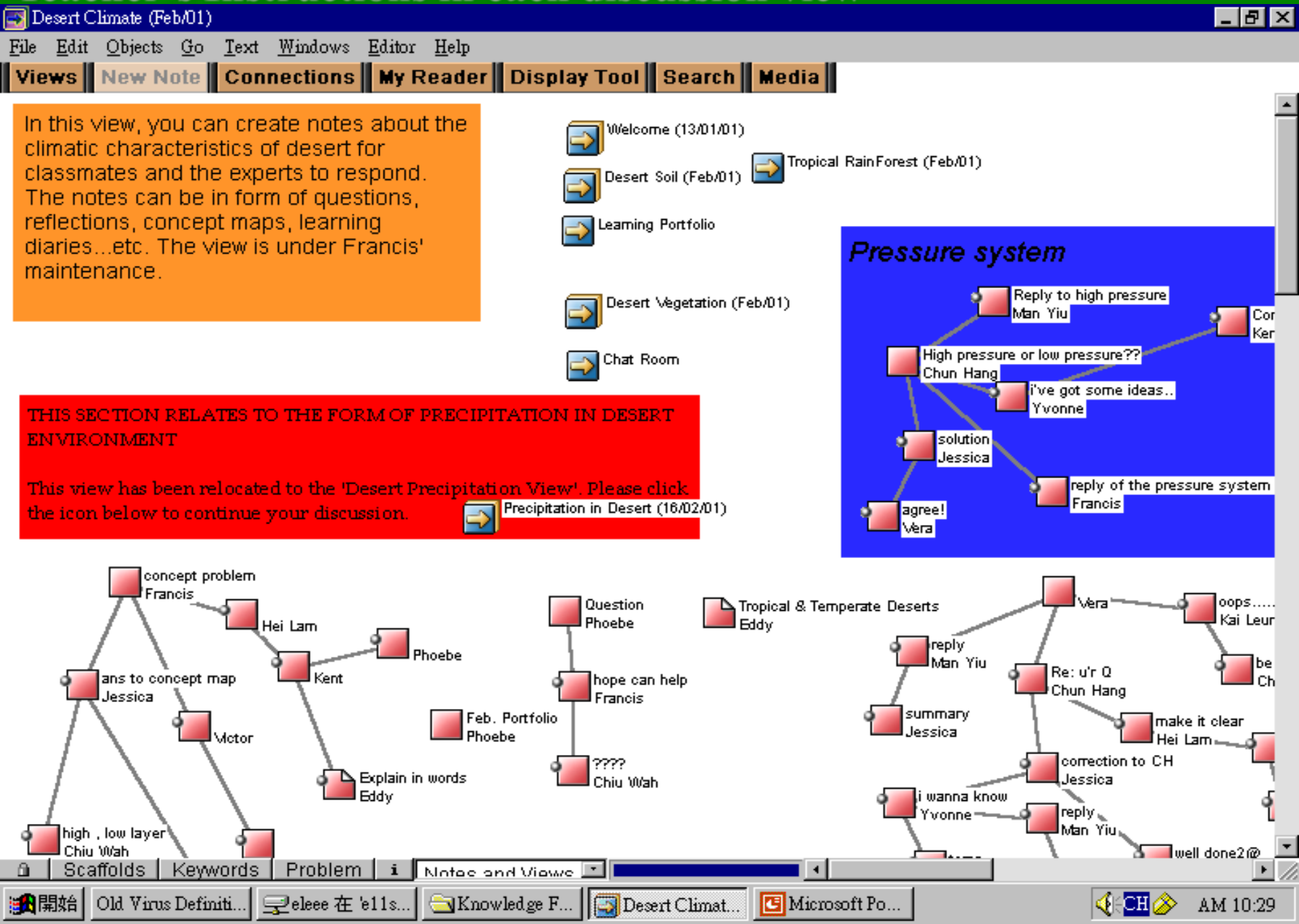
# Teacher's Instructions in each discussion view



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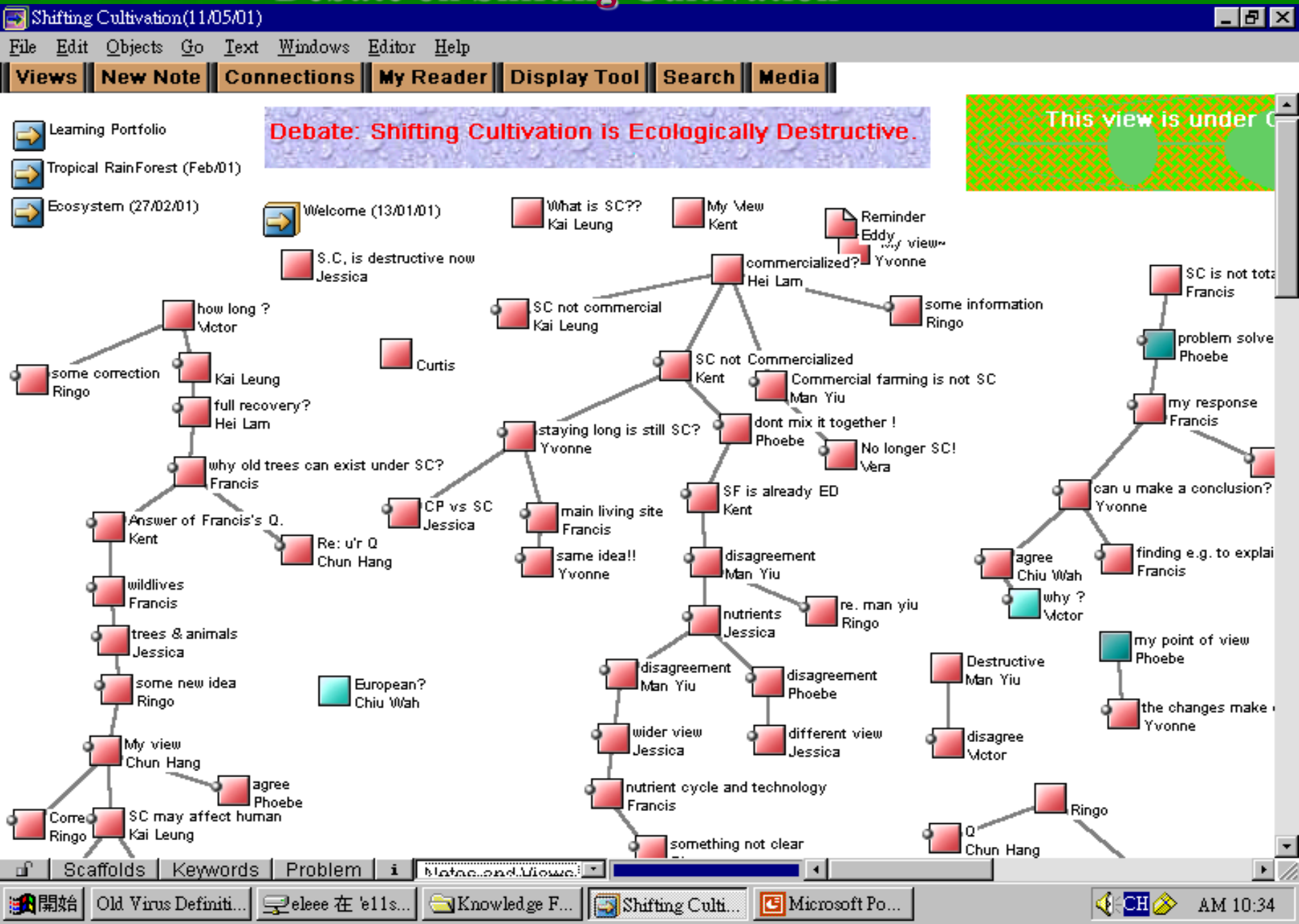
# Design for Knowledge Building (3)

## Component Three – How to deepen discussion?
## Rise Above

- KB Talk - Integrate knowledge building with class activity (e.g., discuss KF work in class; class activity in KF)
- Knowledge Management
  - View maintenance
  - Students as experts
  - Rise above…. Summary notes.. New views etc.
- Focus on progress and idea improvement

# Debate on Shifting Cultivation



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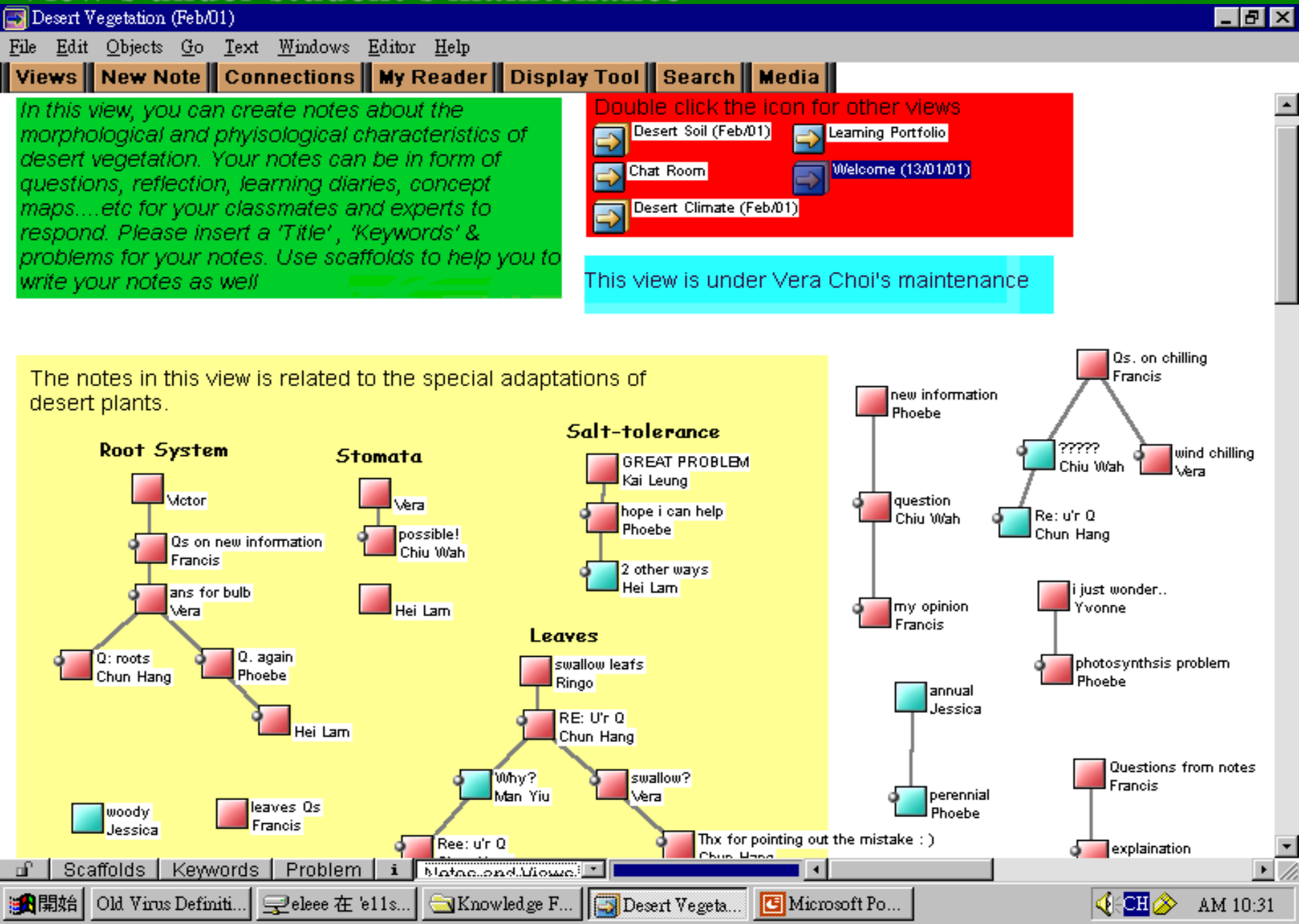

# Design for knowledge building (4)

Component Four – How to Assess Student's Understanding?

Reflective Assessment

- Using Assessment to scaffold and foster knowledge building
- Tools (Applets, journals, rubrics, portfolio etc.)

Individual to Collective

How to teach well without teaching?

How to assess well without over-assessing?

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Esther
El????
Heidi
fluoride
Vivian
toothpaste
Clara
for smokers
Colour of furniture
Leanne
strength of colour
April
floor cleaner
Queenie
Perrin
no mixing they say...^^
Carol
Peggy
Anna
Joyce
Bleach Alternative
Leanne
chlorine bleach
Joyce
poisonous gas...
April
Bleach + anti-acids??
Corrinne
QQ
Helena
-.-..??
April
Cindy
New info
Helena
Acid+acid?
Gloria
Dilution of household bleach
Crystal
bleaching teeth!!!
Katherine
dilution of house hold bleach
Crystal
help!!!
Crystal
Re: whitening teeth...
Jocelyn
harmfull??
Youde
>_<~!
Candy
>^<"
Agnes
bleach ratio
Crystal
hydrogen peroxide
Vivian
it's safe!!
Jocelyn
Peggy
Peggy
spilt?
Alison
yes gwa~
Kammy
using bleach without gloves
Virginia
ho "la" ga!!
Kammy
absorb moisture???
April
damaging
Alison
Hair bleaching
Helena
How to dissolve gold
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