



17 th International Conference on

Computers in Education

30 November to 4 December 2009 The Hong Kong Institute of Education, HK SAR

Gerry Stahl

how I view learning and thinking in CSCL groups

**我对CSCL小组学习和思考
的看法**



Confucius said:

**“Learning without thought is
labor lost; thought without
learning is perilous”**

**“学而不思罔，
思而不学则殆”**





Views of Learning and Thinking

一些对学习和思考的不同看法



An Example of Learning and Thinking

关于学习和思考的一个例子

The event: Team B in VMT Spring Fest 2006



(1) 4 sticks, 1 square



(2) 10 sticks, 3 squares



(3) 18 sticks, 6 squares

N	Sticks	Squares
1	4	1
2	10	3
3	18	6
4	?	?
5	?	?
6	?	?
...
N	?	?

The session: Session 3, May 16

Whiteboard:

top/bottom: $2n(n+1)$

Derived from $\left(\frac{(1+N) \cdot N}{2} + N\right) \cdot 2$

3rd step

2nd step

$$2n(n+1) + (n+1)$$

Current users:
Aznx
Cerry
Quicksilver
bwang8

Chat (6)

bwang8 5/16/06 7:33:06 PM EDT: ok
 bwang8 5/16/06 7:33:16 PM EDT: lets think about the equatin
 bwang8 5/16/06 7:33:22 PM EDT: equation
 Quicksilver 5/16/06 7:33:23 PM EDT: yes
 bwang8 5/16/06 7:33:30 PM EDT: how did they derive it
 Aznx 5/16/06 7:33:50 PM EDT: There's the formula
 bwang8 5/16/06 7:33:57 PM EDT: $(n^2 + (n-1)^2) \cdot 2 + n^3 - 2$
 bwang8 5/16/06 7:34:08 PM EDT: $n^2 + (n-1)^2$
 Aznx 5/16/06 7:34:18 PM EDT: The 3n has to do with the growing outer layer of the pattern I think.
 Quicksilver 5/16/06 7:34:23 PM EDT: the sides and squares
 Aznx 5/16/06 7:34:55 PM EDT: Right.
 Aznx 5/16/06 7:35:09 PM EDT: There.
 Aznx 5/16/06 7:35:36 PM EDT: I have an interesting way to look at this problem.
 Quicksilver 5/16/06 7:35:42 PM EDT: Tell us
 Aznx 5/16/06 7:35:45 PM EDT: Can you see how it fits inside a square?
 bwang8 5/16/06 7:35:45 PM EDT: yes
 Quicksilver 5/16/06 7:35:52 PM EDT: Yes
 bwang8 5/16/06 7:35:53 PM EDT: oh
 bwang8 5/16/06 7:35:55 PM EDT: yes
 Quicksilver 5/16/06 7:36:01 PM EDT: You are saying the extra spaces...
 Aznx 5/16/06 7:36:05 PM EDT: Also, do you see if you add up the missing areas
 Quicksilver 5/16/06 7:36:11 PM EDT: Yes...
 Quicksilver 5/16/06 7:36:18 PM EDT: they look similar to the original figures
 Quicksilver 5/16/06 7:36:21 PM EDT: figure
 Aznx 5/16/06 7:36:21 PM EDT: It is equivalent in size to the small circle in the pattern
 Quicksilver 5/16/06 7:36:33 PM EDT: Small circle?
 Aznx 5/16/06 7:36:39 PM EDT: The only part you would be missing out are the four squares
 Aznx 5/16/06 7:36:49 PM EDT: on the outer areas of this square
 Aznx 5/16/06 7:37:00 PM EDT: Doi you guys get what I mean?
 bwang8 5/16/06 7:37:07 PM EDT: yes
 Quicksilver 5/16/06 7:37:08 PM EDT: Show what u mean on the whiteboard
 Quicksilver 5/16/06 7:37:11 PM EDT: i dont get it
 Aznx 5/16/06 7:37:14 PM EDT: bwang you show him
 Aznx 5/16/06 7:37:17 PM EDT: since you get it

Message:

Aznx is typing

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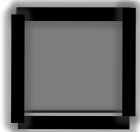
Speed: 1

Time to previous: -0:02 (Awareness info)
 Current action at: 7:37:17 PM (Message by: Aznx)
 Time to next: 0:00 (Awareness info)

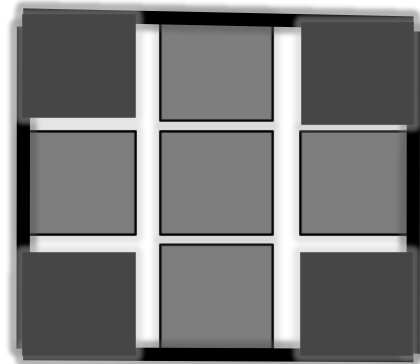
The move: Showing how to view the problem

line	date	start	post	delay		
919	5/16/06	19:35:26	19:35:36	0:00:06	Aznx	I have an interesting way to look at this problem.
920	5/16/06	19:35:41	19:35:42	0:00:03	Quicksilver	Tell us
921	5/16/06	19:35:38	19:35:45	0:00:00	Aznx	Can you see how it fits inside a quare?
922	5/16/06	19:35:45	19:35:45	0:00:07	Bwang	yes
	5/16/06	19:35:49	19:35:52	0:00:00	Bwang	[user erased message]
923	5/16/06	19:35:51	19:35:52	0:00:01	Quicksilver	Yes
924	5/16/06	19:35:52	19:35:53	0:00:02	Bwang	oh
925	5/16/06	19:35:55	19:35:55	0:00:06	Bwang	yes
926	5/16/06	19:35:53	19:36:01	0:00:04	Quicksilver	You are sayingthe extra spaces...
927	5/16/06	19:35:58	19:36:05	0:00:06	Aznx	Also, do you see if you add up the missing areas

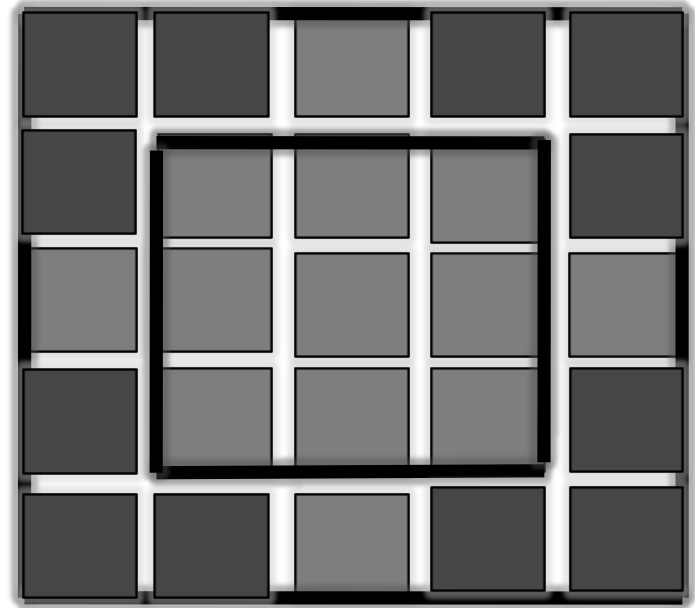
The question: "Can you see how it fits inside a square?"



N=1 diamond



N=2 diamond



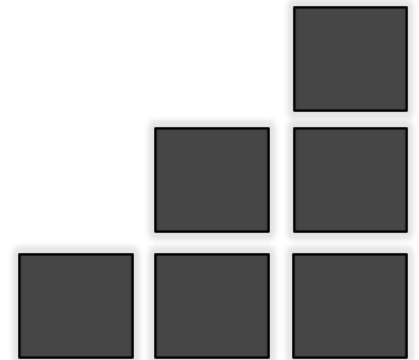
N=3 diamond



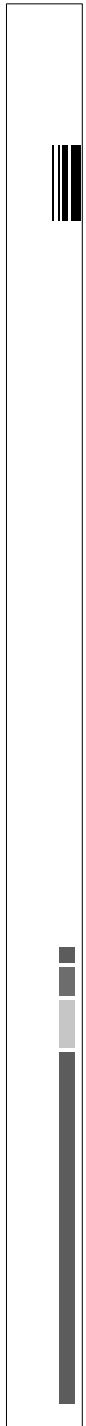
N=1 stair-step



N=2 stair-step



N=3 stair-step



The reference: "it"

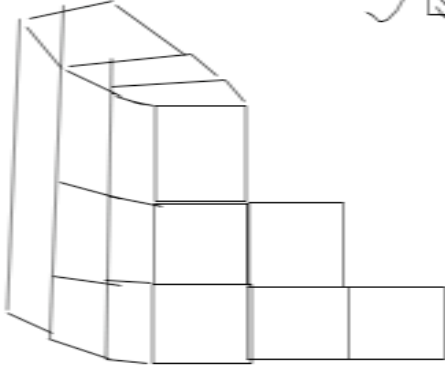
Whiteboard:

Derived from

$((1+N)*N/2 + N) * 2$

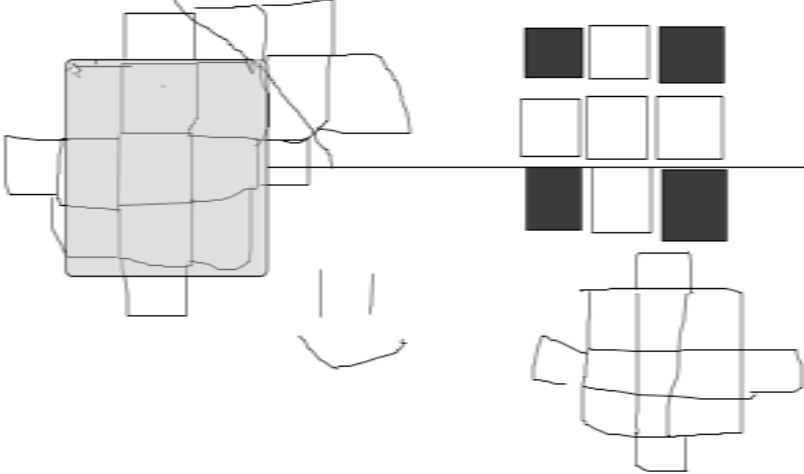
3rd step

step



$$\sum_{i=1}^n 4i = 4n(n+1) + (n+1)$$

$(n^2 + (n-1)^2 + n) * 2 + n$



Current users:

Aznx
Gerry
Quicksilver
bwang8

Chat: (0)

Quicksilver 5/16/06 7:37:08 PM EDT: Show what u mean on the witeboard

Quicksilver 5/16/06 7:37:11 PM EDT: i dont get it

Aznx 5/16/06 7:37:14 PM EDT: bwang you show him

Aznx 5/16/06 7:37:17 PM EDT: since you get it

bwang8 5/16/06 7:38:18 PM EDT: we just have to find the whole square and minus the four corners

Aznx 5/16/06 7:38:19 PM EDT: The red areas

Quicksilver 5/16/06 7:38:27 PM EDT: no

Aznx 5/16/06 7:38:30 PM EDT: are equivalent of the middle square

Quicksilver 5/16/06 7:38:39 PM EDT:

Aznx 5/16/06 7:38:39 PM EDT: Does that make sense?

Quicksilver 5/16/06 7:38:45 PM EDT: no

Quicksilver 5/16/06 7:38:53 PM EDT: Because what about these

Aznx 5/16/06 7:38:55 PM EDT: Ok

Aznx 5/16/06 7:38:58 PM EDT: lemme show you

Aznx 5/16/06 7:39:24 PM EDT: There's this original sqare in the pattern first

Aznx 5/16/06 7:39:28 PM EDT: Plus....

Quicksilver 5/16/06 7:39:37 PM EDT: Are those nine squares these

Aznx 5/16/06 7:39:42 PM EDT: Yeah

Quicksilver 5/16/06 7:39:59 PM EDT: Ok keep going

bwang8 5/16/06 7:40:00 PM EDT: no

Quicksilver 5/16/06 7:40:05 PM EDT: ?

bwang8 5/16/06 7:40:11 PM EDT: It's a shrink down version

bwang8 5/16/06 7:40:16 PM EDT: of the pattern

Aznx 5/16/06 7:40:16 PM EDT: bwang's right

Aznx 5/16/06 7:40:27 PM EDT: this is only looking at a specific size

Quicksilver 5/16/06 7:40:32 PM EDT: yes

Quicksilver 5/16/06 7:40:35 PM EDT: I know

Aznx 5/16/06 7:40:41 PM EDT: So do you understand

Aznx 5/16/06 7:40:44 PM EDT: it now?

Quicksilver 5/16/06 7:40:48 PM EDT: I think so

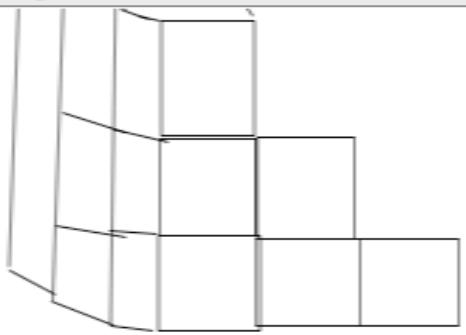
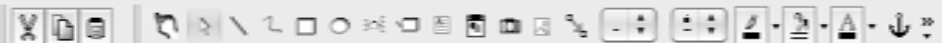
Message:

Hold on

bwang8, Aznx are typing

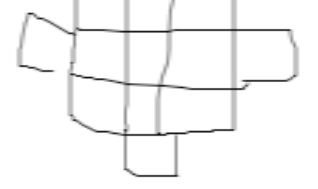
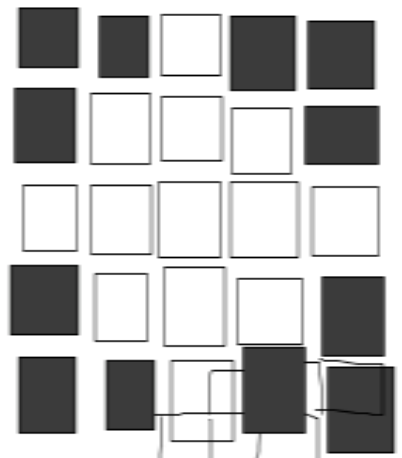
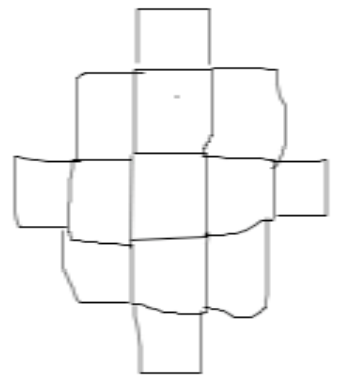
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Whiteboard:



$$\sum_{i=1}^n 4i = 4n(n+1) + (n)$$

$$(n^2 + (n-1)^2) * 2 + n * 3 - 2$$



Current users:

Azrx
Gerry
Quicksilver
bwang8

Chat: (0)

bwang8 5/16/06 7:52:31 PM EDT: i think they first calculate how many sides there are in the big square
 bwang8 5/16/06 7:52:38 PM EDT: and minus the extra ones
 Quicksilver 5/16/06 7:52:51 PM EDT: that could be it
 bwang8 5/16/06 7:53:50 PM EDT: let's first figure out the equation they used to find the number of squares
 Quicksilver 5/16/06 7:54:01 PM EDT: ok
 bwang8 5/16/06 7:54:04 PM EDT: this is the big square
 bwang8 5/16/06 7:54:22 PM EDT: - all the extra
 bwang8 5/16/06 7:54:48 PM EDT: there is 0 extra in stage 1
 bwang8 5/16/06 7:54:59 PM EDT: 1 extra in stage 2
 Quicksilver 5/16/06 7:54:59 PM EDT: Yeah
 bwang8 5/16/06 7:55:08 PM EDT: 2 extra in stage 3
 bwang8 5/16/06 7:55:17 PM EDT: i mean 3 extra in stage 3
 bwang8 5/16/06 7:55:29 PM EDT: is there a pattern
 Quicksilver 5/16/06 7:55:34 PM EDT: Not yet
 bwang8 5/16/06 7:55:53 PM EDT: 6 extra in stage 4
 Quicksilver 5/16/06 7:56:12 PM EDT: Trinagular numbers
 bwang8 5/16/06 7:56:16 PM EDT: yeah
 Quicksilver 5/16/06 7:56:32 PM EDT: Azrx was right earlier...
 bwang8 5/16/06 7:56:34 PM EDT: use it times 4 and you can get the extra squares
 Quicksilver 5/16/06 7:56:41 PM EDT: Yes
 Quicksilver 5/16/06 7:56:49 PM EDT: and just subtract that from the total squares
 Quicksilver 5/16/06 7:56:57 PM EDT: to get the number of squares for each level
 bwang8 5/16/06 7:57:11 PM EDT: oh no!
 bwang8 5/16/06 7:57:16 PM EDT: i have to go now

Message:

I never said

Azrx is typing



Viewing the Learning and Thinking

如何看待学习和思考

- Event:** VMT Spring Fest '06, Team B
- Session:** Session 3, May 16, 7 pm
- Theme:** “I have an interesting way to look at this problem”
- Move:** Show how to view
- Pair:** “Can you see how it fits inside a square” “Yes”
- Utterance:** “Can you see how it fits inside a square”
- Reference:** “it” → diamond pattern



Unpacking the Group Learning and Thinking

对小组学习和思考的探索

Reference: network of meaning, indexical ground,
joint problem space

Utterance: recipient design for reading's work

Pair: projection and uptake

Move: getting the problem-solving work done

Theme: coherent interactional sequence

Session: temporal structuring and re-membering

Event: forming groups and co-constructing
knowledge artifacts

Move: Getting the problem-solving work done

line	date	start	post	delay		
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921	5/16/06	19:35:38	19:35:45	0:00:00	Azrx	Can you see how it fits inside a square?
922	5/16/06	19:35:45	19:35:45	0:00:07	Bwang	yes
	5/16/06	19:35:49	19:35:52	0:00:00	Bwang	[user erased message]
923	5/16/06	19:35:51	19:35:52	0:00:01	Quicksilver	Yes
924	5/16/06	19:35:52	19:35:53	0:00:02	Bwang	oh
925	5/16/06	19:35:55	19:35:55	0:00:06	Bwang	yes
926	5/16/06	19:35:53	19:36:01	0:00:04	Quicksilver	You are saying the extra spaces...
927	5/16/06	19:35:58	19:36:05	0:00:06	Azrx	Also, do you see if you add up the missing areas

Reference: network of meaning, indexical ground,
joint problem space

Utterance: recipient design for reading's work

Pair: projection and uptake

Move: getting the problem-solving work done

Theme: coherent interactional sequence


Session: temporal structuring and re-membering

Event: forming groups and co-constructing
knowledge artifacts



A New Approach to Computers & Education

对计算机与教育的新探索



Chairman Mao said (1936):
“Reading is learning,
but applying is also learning
and the more important
kind of learning at that
It is often not a matter of
first learning and then doing,
but of doing and then learning,
for doing is itself learning.”

||| For Further Information

- Talk: <http://GerryStahl.net/pub/icce2009keynote.pdf>
- Slides: <http://GerryStahl.net/pub/icce2009.ppt.pdf>
- Website: <http://GerryStahl.net>
- Email: Gerry.Stahl@drexel.edu
- *Group Cognition* 小组认知 (2006, MIT Press)
- *Studying Virtual Math Teams* (2009, Springer)

