Managing Collaborative Teacher Inquiry: Cognitive Lessons From Implementation In A Computerized Network Setting

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What troubled us?

Research:

Shows traditional teaching $\Rightarrow$ weak problem solving skills

Explores Learning difficulties

Assists developing instruction & materials

Shows improvement in problem-solving skills

Practice:

Fostering problem solving is accepted goal for teachers

Yet, Research-based Instruction
is not implemented

What we hoped would help

Analysis:

Research based instruction requires teachers to:

- Transfer responsibilities to students

- Change concepts and habits

- Coordinate new and traditional agenda

Leads to:

- Fear from trying out new practice

- Give up what does not work on first shot

Yet,

For change to occur teachers must face their fears

Solution:

Collaborative Physics Teacher Inquiry

Teachers reflect on the very process of applying a new classroom practice

Feldman, Hammer, Eylon & Bagno show:

Teacher inquiry

- Enriches teachers' interpretations of class events
- Supports teachers in a process of change

Implementation:

Workshop: collaborative teacher inquiry

on promoting problem solving skills

Important elements:

Introductory constructivist workshop:

Introduce research, Induce concern

Yearlong meetings:

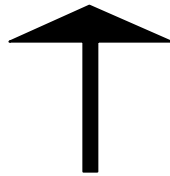Leader imports Research + Curriculum

Teachers Autonomous to implement

Discussion: external + internal innovations

Formative evaluation

2 workshops, ~ 7 Motivated, experienced teachers

Diverse schools, ~ 30 students per teacher

Matriculation exam

Results:

Teachers' → Short time accountability

concerns ↘ Students problem solving

Teachers: ↕ Fear of trying out new instruction

Give up what does not work on first shot

What we concluded

Research Based Instruction +

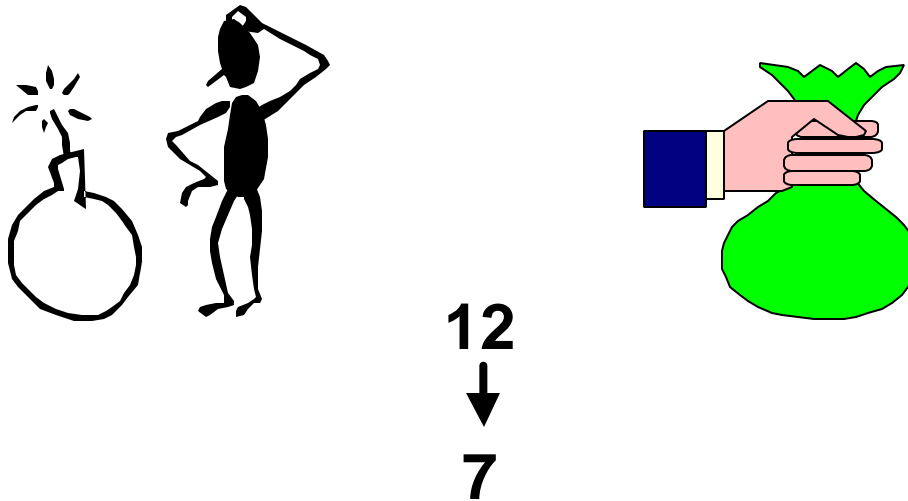**Concerned and Experienced teachers +**

Collaborative Inquiry

Did Not Help!

<u>What helped?</u>

3rd workshop:

Introductory workshop:
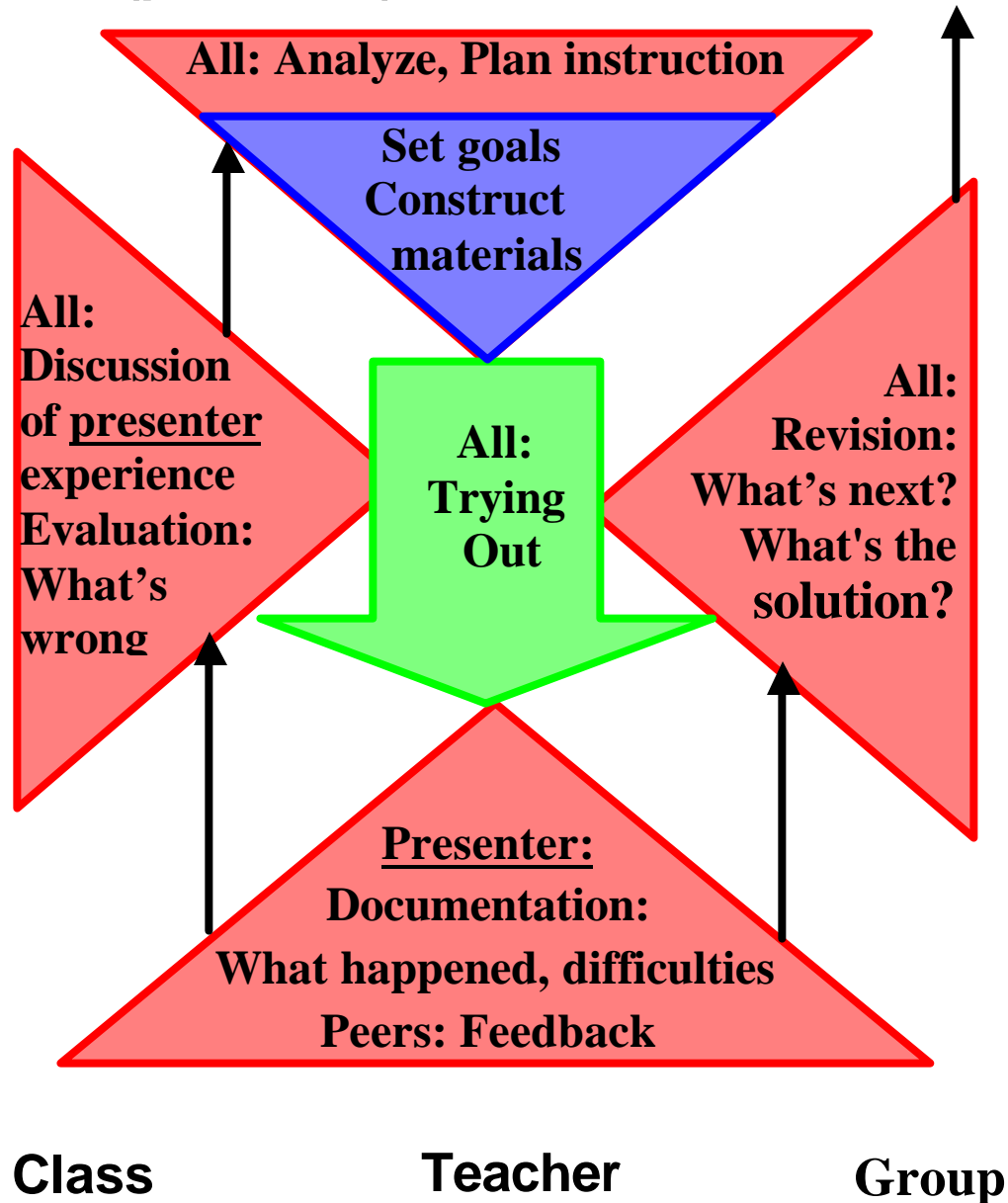
Beyond concern $\Rightarrow$ Ownership

12

7

Yearlong meetings:

Management framework where teachers

follow action research steps:

- Analyze existing practice
- Suggest new practice
- Try
- Evaluate and Refine

Flag man (presenter) method:

All: Analyze, Plan instruction

Set goals
Construct
materials

All:
Discussion
of presenter
experience
Evaluation:
What's
wrong

All:
Trying
Out

All:
Revision:
What's next?
What's the
solution?

Presenter:
Documentation:
What happened, difficulties
Peers: Feedback

Class　　　　　**Teacher**　　　　**Group**

Management framework implementation:

9 learning cycles, interwoven with other activities, in

person and computerized setting (accessibility)

Results:

Teachers implemented and refined new practices

Teachers' feedback: "computerized implementation

Is better. Helps learn the lessons, gain from peers"

Following teachers' request $\Rightarrow$ 7 computerized cycles

What we concluded

1) Research Based Instruction +

   Teachers with Ownership and Experience +

   Management Framework for Collaborative Inquiry

   Helped

2) Setting is important in making

   management framework effective

<u>Why is setting important?</u>

Setting $\Rightarrow$ Implementation of management framework

Management features $\Rightarrow$ Teachers' performance

<u>What we hope to learn:</u>

Identification of important management features

<u>What is the research plan?</u>

Comparison of computerized vs. in person setting

Trial session first third of a yearlong workshop

2 in person, 4 computerized cycles

Data: Paper + electronic documents

Video of meetings, Protocol e-conferences

How does setting shape implementation?

Media: visual (text and figures) vs. spoken

Need to transfer most of the interaction to e-forums

Accessibility: connection from home vs. commuting

Possibility for several updating

Verification: Actual participation vs. attendance

Possibility to change norms, to require participation

Management framework implemented differently:

In person setting:

Reporting documentation, peer feedback, discussion in 3 hour afternoon meeting at the Weizmann

In computerized setting:

Friday: Editing

Presenter e-talks to workshop leader

Monday: Distribution

Presenter sends documentation to e-forum

Monday-Wednesday: Reading, writing

Peers read documentation and write feedback at home

Wednesday: Distribution

Peers send feedback to e-forum

Thursday 18^{00}: Distribution

Presenters send questions to e-forum

Thursday 22^{00}-23^{00}: Discussion

All participate in e-conference

Management features

Distinct vs. combined steps of learning cycle

Distribution of documents and textual chat vs. spoken conversation

Extended vs. confined timetable

Obligatory vs. optional participation

Are these management features important for promoting teacher inquiry?

Performance of inquiry in computerized setting

Documentation

	In person	Computerized
Continuity	Fragmented, cut by peers questions	Complete unit

Peer feedback

	In person	Computerized setting
Extent	Clarification questions and remarks	Suggestions for improving Instruction and materials, clarification questions

Formulating questions

Only in computerized setting

Discussion

	In person	Computerized
Structure	Minutes to 1 hour, Divergent, not focused on initial question, interrupted by clarifications of documentation	Three ~ 20 minutes sessions, focused on presenter questions

Management features

- Distinct steps of learning cycle

- Distribution of documents

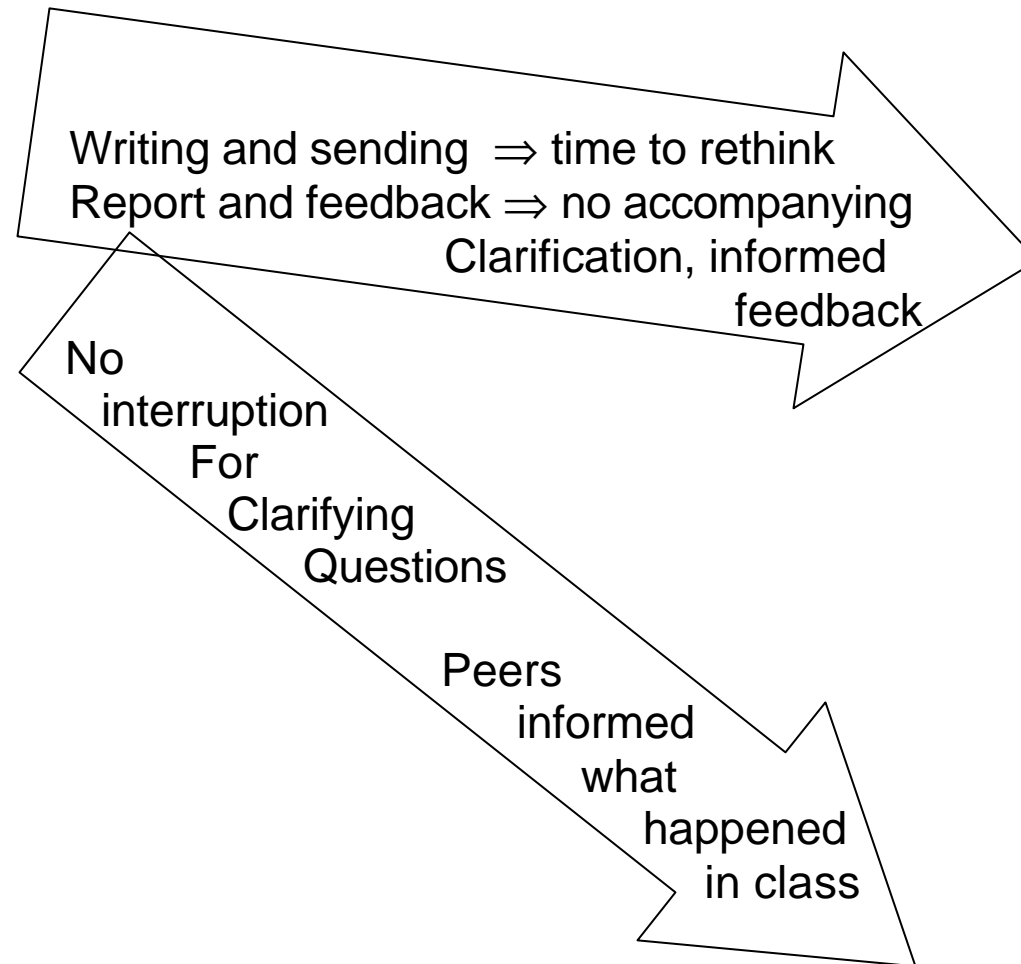- Extended timetable

- Obligatory participation

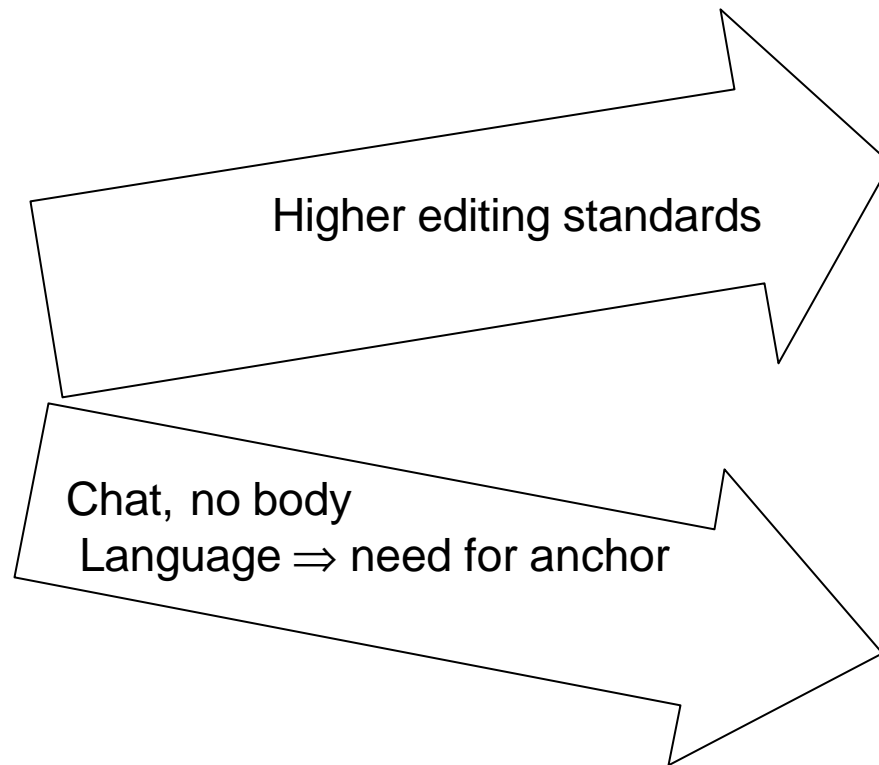## Performance of teacher inquiry

- Comprehensive, clear and concise documentation

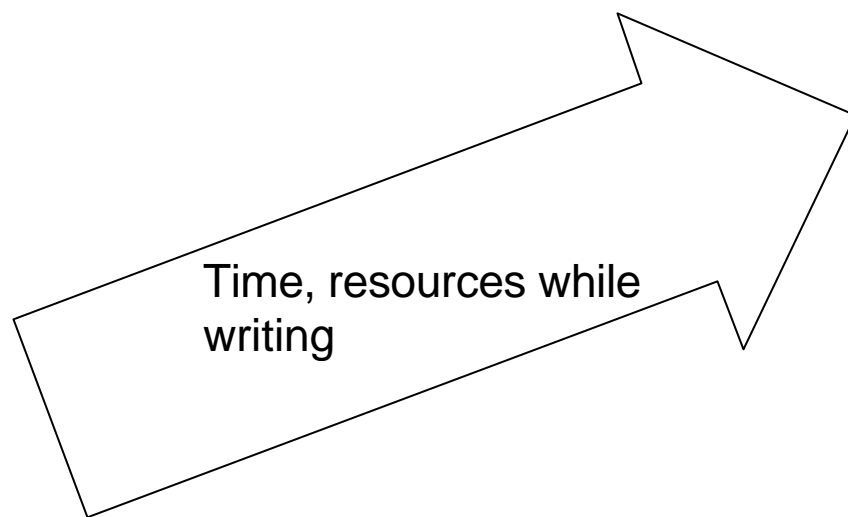- Suggestive Feedback that refer to class materials

- Commitment of teachers to formulate questions

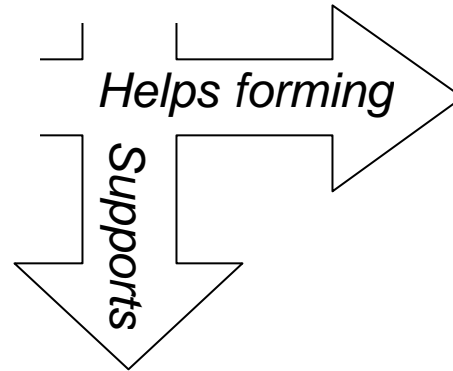- Focused, informed and tolerant discussion

Writing and sending $\Rightarrow$ time to rethink
Report and feedback $\Rightarrow$ no accompanying
Clarification, informed
feedback

No
interruption
For
Clarifying
Questions

Peers
informed
what
happened
in class

Higher editing standards

Chat, no body
 Language $\Rightarrow$ need for anchor

Time, resources while writing

Management features

Helps forming

Supports

Collaborative teacher inquiry

Distinct steps of learning cycle

Distribution of documents

Extended timetable

Obligatory participation

Teachers
In tailoring existing research based instruction, while changing perceptions and practice

Comprehensive, clear and concise documentation

Suggestive Feedback that refer to class materials

Commitment of teachers to formulate questions

Focused, informed and tolerant discussion