

Let's Get Learning!

Using adult learning activities to increase teachers' knowledge of content, development & pedagogy in math

Presentation at NCTM Annual Meeting, Denver, CO, 19 April 2013

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Early Math Collaborative @ Erikson Institute, Chicago

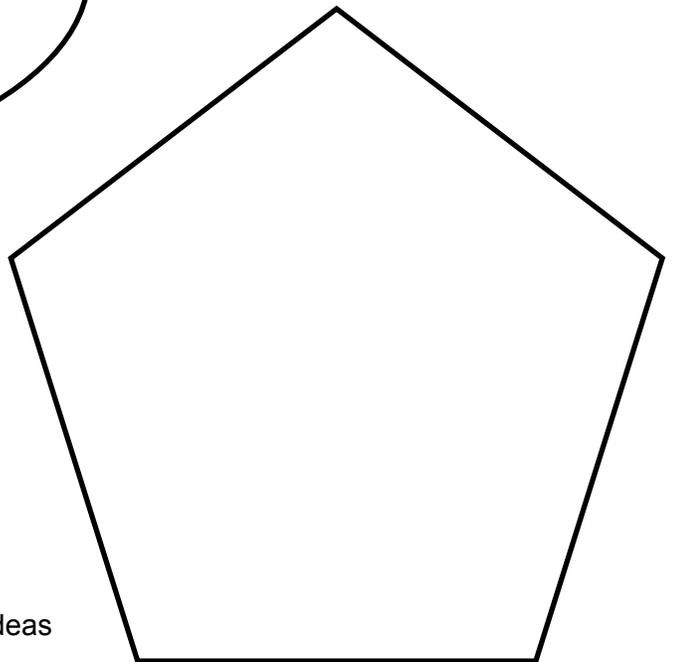
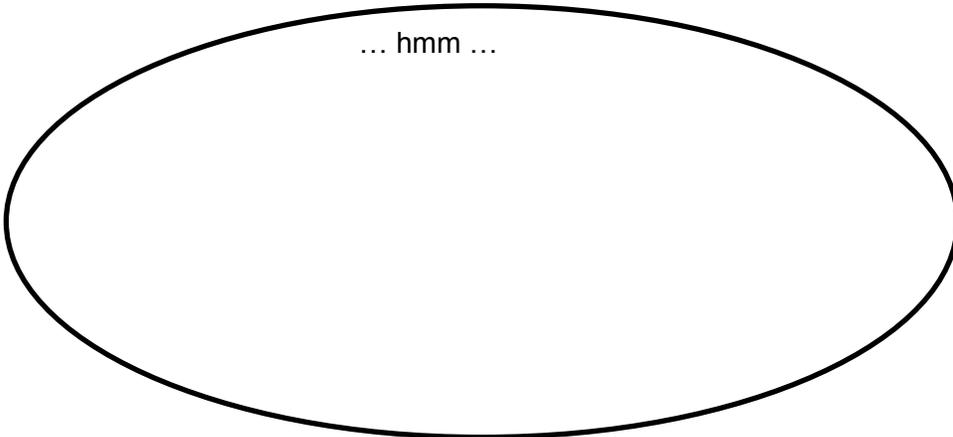
Why use adult learning activities in professional development sessions?

- Solving real problems activates discipline-related thinking.
- Discipline-related thinking helps one GET big ideas and their connections.
- Content provides framework for understanding development and pedagogy.

An effective adult learning activity ...

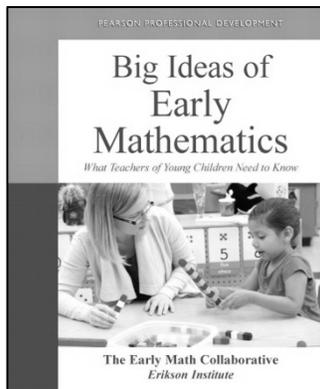
- is based on a central and coherent concept of the discipline being explored;
- poses a puzzle or problem;
- is interesting or complicated enough to capture and retain adult attention;
- clearly focuses thinking on the relevant content or ideas;
- is easy to implement in an adult PD setting;
- may have more than one solution or route to solution.

... hmm ...



Look for our book –
*Big Ideas of
Early Mathematics:
What Teachers of
Young Children
Need to Know.*

Available in June
from Pearson.

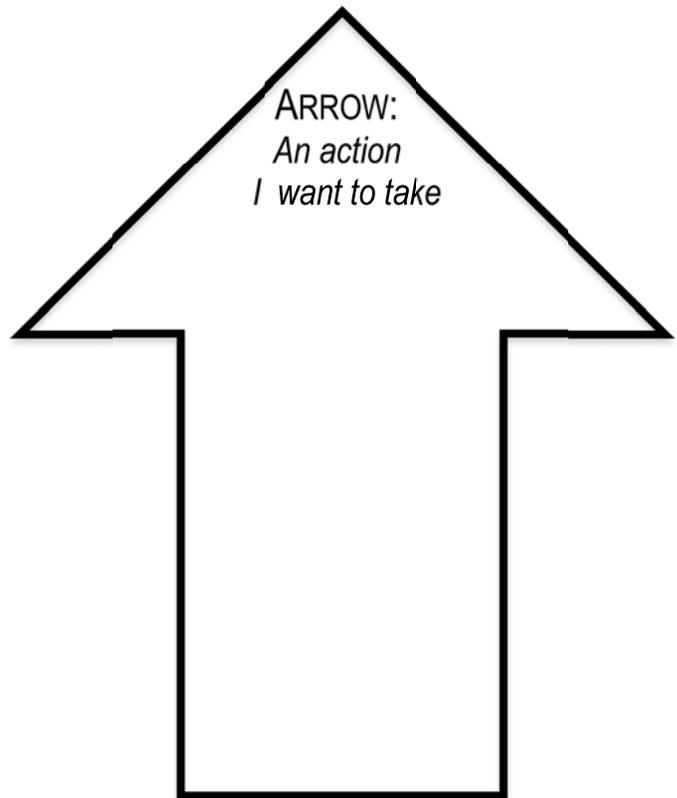
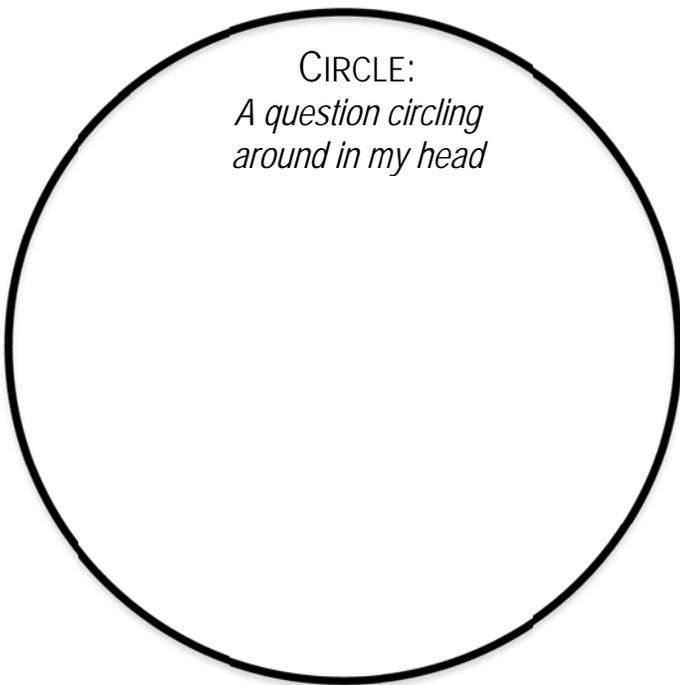
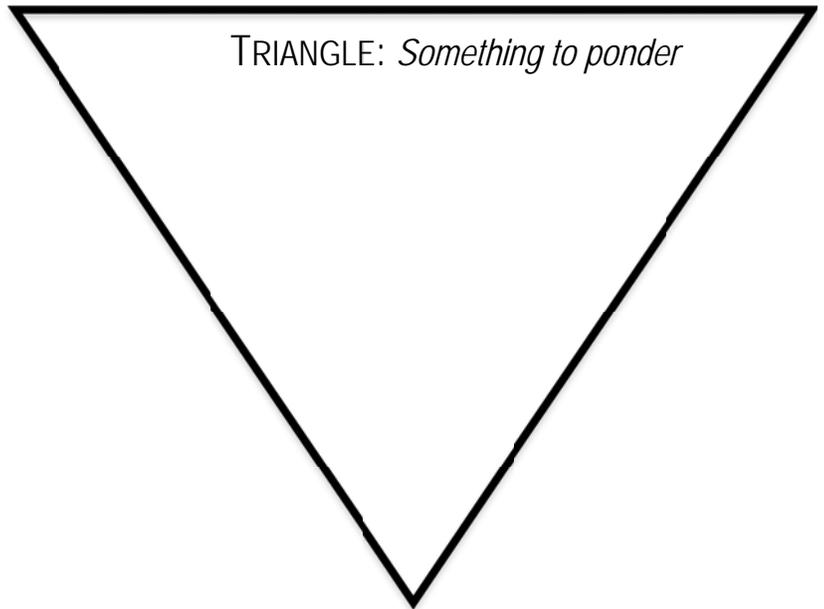
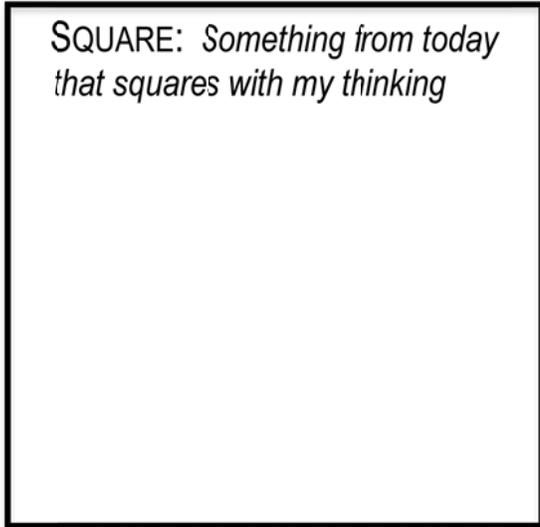


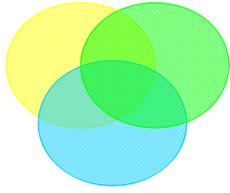
notes & ideas

Questions or comments? Feel free to contact us: lginet@erikson.edu or djohnson@erikson.edu
Check out our web-site: <http://earlymath.erikson.edu>

Let's Get Learning!

THOUGHTS & NOTES





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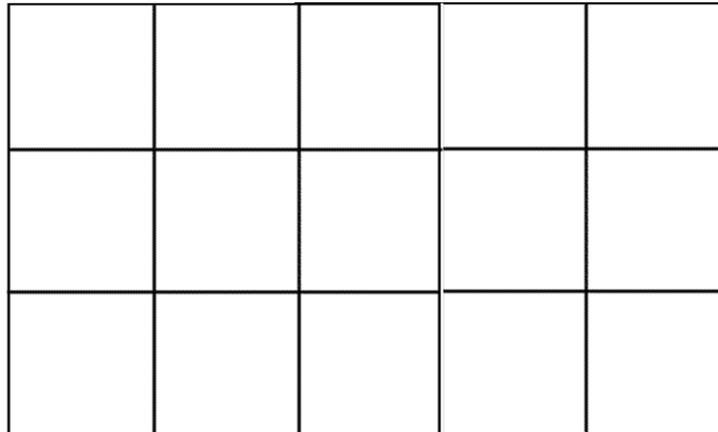
Using adult learning activities
to increase teachers' knowledge of
content, development & pedagogy in math
& other disciplines

Lisa Ginet & Donna Johnson

April 19, 2013

NCTM Annual Meeting – Denver

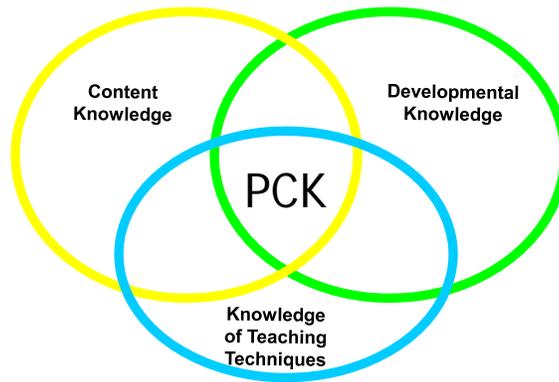
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*How many squares can you find
in this picture?*

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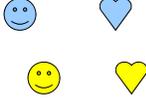
Pedagogical Content Knowledge



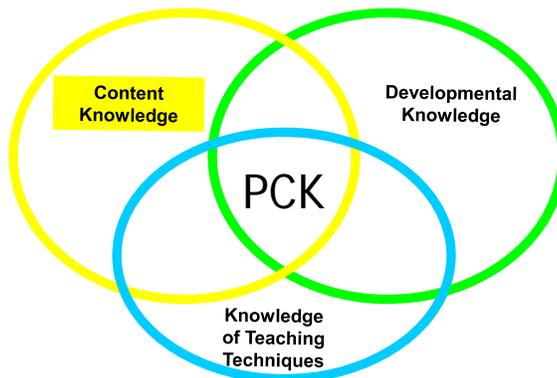
Example Adult Learning Activity

SORT & RE-SORT

Big Ideas of Sets

Topic	Big Ideas	Examples
Sets & Sorting 	<ul style="list-style-type: none"> •Attributes can be used to sort collections into sets. •The same collection can be sorted in different ways. •Sets can be compared and ordered. 	<ul style="list-style-type: none"> •Color, size, shape, type of object, etc. •Red bears vs. blue bears; big bears vs. little bears •<i>There are more red bears than blue bears. (compare); small bears, medium bears, large bears (order)</i>

Pedagogical Content Knowledge

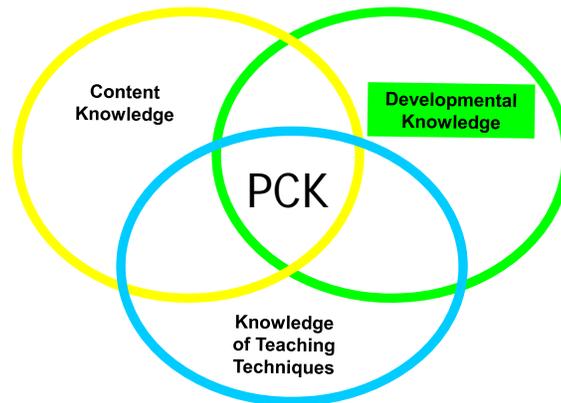


Video Clip: *Focus on the Child* “Sorting Rocks”

Learning Path

- At all ages, children classify intuitively.
- By 2 weeks of age, infants distinguish between objects they suck and those they do not.
- By 2 years, toddlers form sets with objects that are similar.
- At age 3, most children follow verbal rules for sorting.
- In preschool, children can sort objects according to a given attribute and form categories (although they may switch attributes during the sorting).
- Not until age 5 or 6 do children sort consistently by a single attribute and re-classify by different attributes.

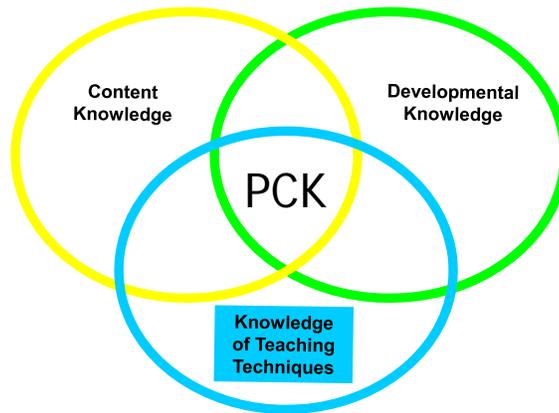
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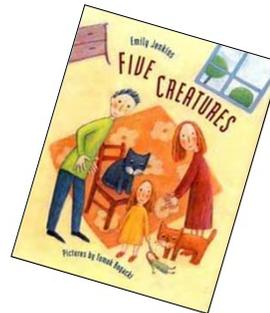
Teaching Implications

- **Attribute** recognition precedes organization (match...sort...pattern).
- Number of **attributes** is a difficulty factor.
- **Attribute** is key concept in all of math.
 - What kind of shape is it?
 - Geometric thinking: definition & classification
 - What kind of big is it?
 - What & how do we measure?
 - What kind of thing are we counting?
 - What is the unit?
 - What is the set?

Pedagogical Content Knowledge

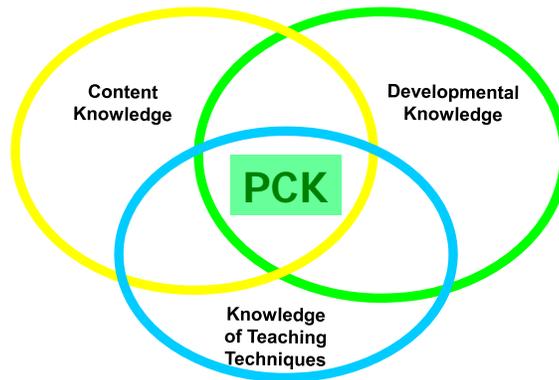


Activity for Children: “People Sort”



Video Clip: Research Lesson

Pedagogical Content Knowledge



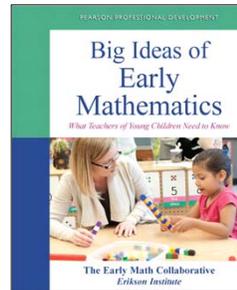
Good Adult Learning Activities....

- are based on a central and coherent concept of the discipline being explored;
- pose a puzzle or problem;
- are interesting/complicated enough to capture and retain adult attention;
- clearly focus thinking on the relevant content/ideas;
- are easy to implement in an adult PD setting;
- & may have more than one solution or route to solution.

Take-Away Messages
Content is complicated.
Teachers need to be learners.

THANK YOU!

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