The Consultative Model – Day 1
Context and Introduction

Ruben R. Puente, Ph.D.
AS WE MAY THINK
a research center for augmenting human intellect
A Personal Computer for Children of All Ages
TO POLY :ANGLE :STEP
1. FORWARD :STEP
2. RIGHT :ANGLE
3. POLY :ANGLE :STEP
END

ON MAKING A THEOREM FOR A CHILD

SQUARE
POLY 200 90

TRIANGLE
POLY 300 120

HEXAGON
POLY 125 60

POLY 275 156
Alone
With MKO

ZPD

ZCD

ZPD

ZCD
Enactive ➔ Iconic ➔ Symbolic
TABLE I

*Effect of selected alterable variables on student achievement (see Appendix)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Effect size</th>
<th>Percentile equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>D^a Tutorial instruction</td>
<td>2.00</td>
<td>98</td>
</tr>
<tr>
<td>D Reinforcement</td>
<td>1.20</td>
<td></td>
</tr>
<tr>
<td>A Feedback-corrective (ML)</td>
<td>1.00</td>
<td>84</td>
</tr>
<tr>
<td>D Cues and explanations</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>(A)D Student classroom participation</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>A Student time on task</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>A Improved reading/study skills</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>C Cooperative learning</td>
<td>.80</td>
<td>79</td>
</tr>
<tr>
<td>D Homework (graded)</td>
<td>.80</td>
<td></td>
</tr>
<tr>
<td>D Classroom morale</td>
<td>.60</td>
<td>73</td>
</tr>
<tr>
<td>A Initial cognitive prerequisites</td>
<td>.60</td>
<td></td>
</tr>
<tr>
<td>C Home environment intervention</td>
<td>.5^b</td>
<td>69</td>
</tr>
<tr>
<td>D Peer and cross-age remedial tutoring</td>
<td>.40</td>
<td>66</td>
</tr>
<tr>
<td>D Homework (assigned)</td>
<td>.30</td>
<td>62</td>
</tr>
<tr>
<td>D Higher order questions</td>
<td>.30</td>
<td></td>
</tr>
<tr>
<td>(D)B New science &amp; math curricula</td>
<td>.3^b</td>
<td></td>
</tr>
<tr>
<td>D Teacher expectancy</td>
<td>.30</td>
<td></td>
</tr>
<tr>
<td>C Peer group influence</td>
<td>.20</td>
<td>58</td>
</tr>
<tr>
<td>B Advance organizers</td>
<td>.20</td>
<td></td>
</tr>
<tr>
<td>Socio-economic status (for contrast)</td>
<td>.25</td>
<td>60</td>
</tr>
</tbody>
</table>

*Note.* This table was adapted from Walberg (1984) by Bloom.

^aObject of change process—A-Learner; B-Instructional Material; C-Home environment or peer group; D-Teacher.

^bAveraged or estimated from correlational data or from several effect sizes.
### Pre- and Post-Assessment Results

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-Assessment</th>
<th>Post-Assessment</th>
<th>Post-Assessment Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean of Student Scores</td>
<td>Standard Deviation</td>
<td>Mean of Student Scores</td>
</tr>
<tr>
<td>Group A</td>
<td>52.38%</td>
<td>20.52</td>
<td>81.25%</td>
</tr>
<tr>
<td>Group B</td>
<td>42.36%</td>
<td>19.93</td>
<td>90.97%</td>
</tr>
</tbody>
</table>

### Retention Assessment Results

<table>
<thead>
<tr>
<th>Group</th>
<th>Retention Assessment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>Group A</td>
<td>63.08%</td>
<td>17.02</td>
</tr>
<tr>
<td>Group B</td>
<td>87.27%</td>
<td>9.04</td>
</tr>
</tbody>
</table>
Pedagogy

Content

Technology

**PK**

**PCK**

**CK**

**TPK**

**TPCK**

**TCK**

**TK**

---

**Redefinition**
Tech allows for the creation of new tasks, previously inconceivable

**Modification**
Tech allows for significant task redesign

**Augmentation**
Tech acts as a direct tool substitute, with functional improvement

**Substitution**
Tech acts as a direct tool substitute, with no functional change
What's on Your MacBook? (podcasts)

Lenses (webinars/podcasts)

TPCK/SAMR (podcasts)

Other Podcasts

Substitution
Tech acts as a direct tool substitute, with no functional change

Augmentation
Tech acts as a direct tool substitute, with functional improvement

Modification
Tech allows for significant task redesign

Redefinition
Tech allows for the creation of new tasks, previously inconceivable

Enhancement
Transformation
Curricular Development and Assessment

• Curricular Development
  • The Connected Approach to Learning
    • Connections between subject areas
    • Connections within subject areas
  • Asking how we know what we know
    • Ways of knowing in the humanities, arts, sciences, and mathematics
    • Nonsense detection filters
  • Integrating theoretical domains with applied practice
    • Micro theory into macro observation
    • Macro theories into micro observation

• Assessment
  • Assessment for Learning
  • Assessment of Learning
  • Assessment of Technology in Learning
Mindful Infotention

A combination of learned attention skills and online information tools

Requires

Attention literacies

Are necessary to create and use

Are read and controlled through

Intelligence dashboards

Are viewed through

Make use of

Smart RSS readers

News radars

Info filters

Are one kind of

Tool for thought

Which includes

Cognitive

Social

Technological

Create dynamic

Yahoo pipes

Use

Further filtered, sorted with

Feeds from Postrank, other services

Are built from

Filtered for quality through

RSS feeds

From

News searches

Persistent searches

Blogs

Delicious tags

Flickr, Youtube tags
Input interpretation:
tides Bangor, Maine

Result:

<table>
<thead>
<tr>
<th>Time</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>low tide</td>
<td>8:26 am EDT</td>
</tr>
<tr>
<td></td>
<td>(5 hr 23 min ago)</td>
</tr>
<tr>
<td>high tide</td>
<td>2:15 pm EDT</td>
</tr>
<tr>
<td></td>
<td>(26 min from now)</td>
</tr>
<tr>
<td>low tide</td>
<td>8:41 pm EDT</td>
</tr>
<tr>
<td></td>
<td>(6 hr 52 min from now)</td>
</tr>
</tbody>
</table>

(Computed using historical data, not taking into account weather, etc. heights relative to all-time average lowest daily tide)
Brief Lecture or Group Discussion (~10 minutes)

ConcepTest (~1-2 minutes)

- Fewer than 30% of students answer correctly: The instructor revisits and explains the concept
- Between 30-75% of students answer correctly: Peer Discussion: students try to convince each other (~2-3 minutes)
- More than 75% of students answer correctly: The instructor explains remaining misconceptions

ConcepTest (~1-2 minutes)
Which of these scenarios does not describe an acceleration?

A. A car going round a circular racetrack at constant speed.

B. A car traveling on a straight racetrack at constant speed.

C. A stone falling from the top of a building.

D. A simple pendulum.
Which of these would best be described as the “Crossing of the First Threshold” in *The Matrix*?

A. Neo goes to the club.
B. Neo takes the red pill.
C. Neo meets the Oracle.
D. Neo returns to the Matrix to save Morpheus.
<table>
<thead>
<tr>
<th>Higher Order Thinking Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create</td>
</tr>
<tr>
<td>Evaluate</td>
</tr>
<tr>
<td>Analyze</td>
</tr>
<tr>
<td>Apply</td>
</tr>
<tr>
<td>Understand</td>
</tr>
<tr>
<td>Remember</td>
</tr>
<tr>
<td>Lower Order Thinking Skills</td>
</tr>
</tbody>
</table>

- Higher Order Thinking Skills: Create, Evaluate, Analyze, Apply, Understand, Remember
- Lower Order Thinking Skills: Not specified in the image.
Large Effect Size

$\text{Frequency}$

$\text{Scores}$

$d=0.8$
Three Additional Key Elements

• Triage Approach

• 80/20 Rule

• Shift from "school + homework" to "continuum of learning environments"
Resources – Part 1

Resources – Part 2


Resources – Part 3

Hippasus

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