Effective Teacher Instructional Behaviors to Decrease Challenging Student Behavior

Key Words: Academics, Applied Evaluation, Classroom

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If the children aren’t learning, we’re not teaching

Siegfried Engelmann

• It’s all about probability – some things work better than others -- **Practices Matter!**

• All behavior change is an instructional process -- **Instruction Matters!**

• Student behavior won’t change until adult behavior changes -- **Teachers Matter!**
What is an Effective Teacher?

• Anyone can tell students something or tell them what to do
• A teacher creates a set of circumstances that increase the probability of the student being successful now and in the future

<table>
<thead>
<tr>
<th>Instruction</th>
<th>Environment</th>
<th>Relationships</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher facilitated</td>
<td>Arranges physical space</td>
<td>Communicates often</td>
</tr>
<tr>
<td>Direct and explicit</td>
<td>Develops routines</td>
<td>Conveys genuine interest in students</td>
</tr>
<tr>
<td>Authentic examples</td>
<td>Develops Procedures</td>
<td>Maintains role of encouraging teacher</td>
</tr>
<tr>
<td>Multiple opportunities</td>
<td>Consistent across time and students</td>
<td></td>
</tr>
<tr>
<td>Engages students</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Probability
What Provides the Best Chances for Moving Snowballs to the Right?
What Works?

- Effective Classrooms Literature from 1970s
  (e.g., Brophy, Good, Rosenshine, Berliner, et al)

- Meta-Analyses from past 15 years
  (e.g., Hattie, Gottfredson, et al)
Logical Thinking: Probability Equation

A + B = C

Student Characteristics:
- skills, abilities, family/culture, functional desires, academic history, school history

Teacher/School Control:
- curriculum (modeling, explicit, etc), engagement, expectations, environment (routines, consistency, physical arrangement, etc), time, feedback

Desired State:
- measureable skills that predict favorable student outcomes (academic and social behaviors)
To What Degree do Teachers Use High Probability Strategies?

Classroom Observations Study

- Observe how teachers and students interact during typical classroom instructional periods
- 15 minute observations of individual student in context of classroom
- Duration and frequency measures
- Look at descriptive stats, correlations, conditional probabilities, and higher level analyses
**Interobserver Reliability**

**Teacher Behaviors**

<table>
<thead>
<tr>
<th>Time Tchg</th>
<th>OTR Grp</th>
<th>OTR Indiv</th>
<th>Pos Feedbk</th>
<th>Neg Feedbk</th>
</tr>
</thead>
<tbody>
<tr>
<td>.99</td>
<td>.93</td>
<td>.90</td>
<td>.88</td>
<td>.94</td>
</tr>
</tbody>
</table>

**Student Behaviors**

<table>
<thead>
<tr>
<th>Active Eng</th>
<th>Passive Eng</th>
<th>Off Task</th>
<th>Disruptive</th>
</tr>
</thead>
<tbody>
<tr>
<td>.97</td>
<td>.98</td>
<td>.97</td>
<td>.94</td>
</tr>
</tbody>
</table>

**TOTAL .98**

During 15% of 7000+ observations
Demographics – Grade Level

Number of Teacher-Student Observations

- Elementary: 3126
- MS: 1127
- HS: 1824
- Resource: 489
Demographics – Content

Number of Student-Student Observations

<table>
<thead>
<tr>
<th>Subject</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>3250</td>
</tr>
<tr>
<td>Math</td>
<td>1772</td>
</tr>
<tr>
<td>Science</td>
<td>547</td>
</tr>
<tr>
<td>Social Studies</td>
<td>685</td>
</tr>
</tbody>
</table>
Classroom Concept #1

CREATE AN ENVIRONMENT THAT PREDICTS SUCCESS
Schedule

- Consistency!!
- Expectations for arrival times
- Sequencing and length of activities
- Explaining changes
Advance Organizers

• Public display
• Consistency
• Prompts

9:00 - 9:30 spelling -page 23
9:30 - 9:40 restroom break
9:40 - 10:30 math -workbook p. 19
10:30 - 11:15 music -walk quietly
11:15 - 11:25 wash hands
11:25 walk to lunch
11:30 - 12:30 lunch and recess
Physical Arrangement

- Seating
  - Teacher’s desk
  - Students’ desks

- Sight lines
  - Teacher positions

- Traffic Flow
  - Associated activities
  - (e.g., pencil sharpening, getting water, using the bathroom, beginning and end of day)
Proximity

- Proactive Proximity
  - Movement about the room
  - 1-second rule
  - Assigned seating

- Reactive Proximity
  - Start with eye contact
  - Approach and eye contact
  - Hover and eye contact
  - Hover and question

  • What should we be doing?
Proximity
Down Time

<table>
<thead>
<tr>
<th></th>
<th>Rate per Minute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elem</td>
<td>0.03</td>
</tr>
<tr>
<td>MS</td>
<td>0.04</td>
</tr>
<tr>
<td>HS</td>
<td>0.06</td>
</tr>
<tr>
<td>Resource</td>
<td>0.06</td>
</tr>
</tbody>
</table>
Time Spent Teaching

Percent of Observed Time

<table>
<thead>
<tr>
<th></th>
<th>Percent of Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elem</td>
<td>0.93</td>
</tr>
<tr>
<td>MS</td>
<td>0.93</td>
</tr>
<tr>
<td>HS</td>
<td>0.72</td>
</tr>
<tr>
<td>Resource</td>
<td>0.68</td>
</tr>
</tbody>
</table>

.861
Small Deficits Add Up Over Time

15 minutes $\times 4 = 1$ hour

1 hour $\times 5 = 1$ day

1 day $\times 20 = 1$ month

1 month $\times 9 = 1$ school year
Extrapolating Across the School Year

**Teaching**

Assuming 5 hour school day, 20 day school month, and 180 day school year

<table>
<thead>
<tr>
<th>Not teaching = wasted instructional time</th>
<th>% of 15 min “Not Teaching”</th>
<th>Instruction Time Not Used (no teaching or monitoring)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Per Hour</td>
</tr>
<tr>
<td>Elementary</td>
<td>10%</td>
<td>6 min</td>
</tr>
<tr>
<td>Middle School</td>
<td>10%</td>
<td>6 min</td>
</tr>
<tr>
<td>High School</td>
<td>28%</td>
<td>16.8 min</td>
</tr>
</tbody>
</table>

**Definition of Not Teaching:**

*Teacher is not engaging students and is involved in independent task with no interactions with student.*
Classroom Concept #2

TEACH: BE DIRECT AND EXPLICIT WHEN PRESENTING INSTRUCTION – DON’T ASSUME
**Ineffective Instruction**

- Sets the occasion for student failure

Miss Bence liked to go over a few of her rules on the first day of school.
Direct Instruction involves: (1) teacher consideration of what is necessary to facilitate success with learning of the skills being taught, (2) teacher responsibility for delivery and control of lesson to maximize success, (3) high levels of engagement and feedback with the student getting multiple opportunities to practice success.
Be Physically and Verbally Explicit

• Tell the student exactly what the rule is
• Show them while talking about it
• Engage students
• Ask questions
Inquiry vs. Problem-Solving

Instruction wherein the students solve without teacher instruction to lead do not have effects as strong as teacher instruction of problem solving process.

**Inquiry-Based Teaching**
- Standard error: 0.092 (High)
- Rank: 86th
- Number of meta-analyses: 4
- Number of studies: 205
- Number of effects: 420
- Number of people: 7,437

**Problem-Based Learning**
- Standard error: 0.085 (High)
- Rank: 118th
- Number of meta-analyses: 8
- Number of studies: 285
- Number of effects: 546
- Number of people: 38,090
Instructional Concept #3
SHOW STUDENTS, ASK FOR ACTION, & GUIDE PRACTICE TO FACILITATE HIGH RATES OF SUCCESS
Modeling

Teacher modeling is an essential component of effective instruction -- show them how, then when and when not to
Model Behavior
Modeling & Prompting

• Modeling
  – Show how and describe why
  – Think aloud

• Verbal Prompts
  – Clear statements that act as reminders
  – Delivered in contexts where failure is predictable

• Pre-Correction
  – Student is required to respond
  – Teacher praises or corrects student response
    “What will you do if you need my help?”
    “Raise my hand.”
    “Exactly, good for you!”
Fluency Building

Strategies that build fluency through repetition have strong effects in terms of predicting student success.

**KEY**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td>Standard error</td>
<td>0.080 (High)</td>
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<tr>
<td>Rank</td>
<td>16th</td>
</tr>
<tr>
<td>Number of meta-analyses</td>
<td>2</td>
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<tr>
<td>Number of studies</td>
<td>54</td>
</tr>
<tr>
<td>Number of effects</td>
<td>156</td>
</tr>
<tr>
<td>Number of people (0)</td>
<td>na</td>
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</table>

**KEY**

<p>| | |</p>
<table>
<thead>
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<th></th>
<th></th>
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<tbody>
<tr>
<td>Standard error</td>
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</tr>
<tr>
<td>Rank</td>
<td>12th</td>
</tr>
<tr>
<td>Number of meta-analyses</td>
<td>2</td>
</tr>
<tr>
<td>Number of studies</td>
<td>63</td>
</tr>
<tr>
<td>Number of effects</td>
<td>112</td>
</tr>
<tr>
<td>Number of people (0)</td>
<td>na</td>
</tr>
</tbody>
</table>
Engagement

Teachers create engagement through teaching

• **Opportunities to Respond**
  – Group (choral) or individual responses
  – Closed or open ended questions
  – Raise hand to indicate agreement
  – Create and share
  – Demonstrate

• **Active Attention Recruitment**
  – Connect to student lives
  – Personal storied
  – Genuine interest and encouragement
Variable Modes of OTR
Rural Poverty Schools and Effective Instruction

22 Elementary Schools
All Rural
All Title One Eligible

11 Highest State Achievement 11 Lowest State Achievement

<table>
<thead>
<tr>
<th></th>
<th>(\tau_{00}) Between-school variance</th>
<th>(\sigma^2) Within-school variance</th>
<th>(\tau_{00}/(\tau_{00} + \sigma^2)) ICC</th>
<th>Reliability estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group OTR</td>
<td>0.033***</td>
<td>0.603</td>
<td>0.051</td>
<td>.557</td>
</tr>
<tr>
<td>Individual OTR</td>
<td>0.001</td>
<td>0.134</td>
<td>0.009</td>
<td>.182</td>
</tr>
<tr>
<td>Positive feedback</td>
<td>0.000</td>
<td>0.028</td>
<td>0.008</td>
<td>.16</td>
</tr>
<tr>
<td>Negative feedback</td>
<td>0.000**</td>
<td>0.004</td>
<td>0.033</td>
<td>.443</td>
</tr>
</tbody>
</table>

*Note. ICC = Intraclass Correlation Coefficient.
*\(p < .05\). **\(p < .01\). ***\(p < .001\).

- Group OTR predictive of academic achievement
- Negative Feedback predictive of school suspension
- Differences across schools are at the teacher level

(Hirn, Hollo, & Scott, in review)
Recommended Practice: OTR

• CEC (1987)
  Acquisition 4-6 per min @ 80%
  Drill 8-12 per min @ 90%

See positive effects on student engagement at 3 per minute

If student responds (Haydon, Mancil, & Van Loan, 2009; Partin, Robertson, Maggin, Oliver & Wehby, 2010; Sutherland, Alder & Gunter, 2003)

For Effective Instruction:
Working With Mildly Handicapped Students
Design and Delivery of Academic Lessons

General guidelines for determining whether a sufficient number of responses have been elicited:
- initial or new learning: 4 - 6 responses in a minute with 80% accuracy
- drill: 8 - 12 responses in a minute with 90% accuracy
- distribution should be equal across students.
Opportunities to Respond

- **Elem**: 0.82
- **MS**: 0.62
- **HS**: 0.48
- **Resource**: 0.6

Rate per minute

- **Group**
  - Elem: 0.15
  - MS: 0.067
  - HS: 0.054
  - Resource: 0.027

- **Individual**
  - Elem: 0.02
  - MS: 0.001
  - HS: 0.0002
  - Resource: 0.00001
OTR – Zero Rates

Percent of Observations with Zero Observations

- Elem: 0.12 Group, 0.45 Individual
- MS: 0.12 Group, 0.61 Individual
- HS: 0.21 Group, 0.64 Individual
- Resource: 0.26 Group, 0.33 Individual

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Comparison: Typical & DI

Opportunities to Respond

Rate Per Minute

- Typical Small Group with Teacher: 1.29 Group, .357 Individual
- DI Small Group with Teacher: 9.86 Group, .93 Individual
- All Elem Reading: 0.71 Group, 0.1 Individual

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Extrapolating Across the School Year

**OTR**

Assuming 5 hour school day, 20 day school month, and 180 day school year

<table>
<thead>
<tr>
<th>Minimum Recommended Rate = 3 per min</th>
<th>OTR Rate per min</th>
<th>Number of OTRs Below Minimum Recommended Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Per min</td>
<td>Per Hour</td>
</tr>
<tr>
<td>Grp.</td>
<td>Ind.</td>
<td>Total</td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
<td>-------</td>
</tr>
<tr>
<td>Elementary</td>
<td>. 82</td>
<td>. 15</td>
</tr>
<tr>
<td>Middle School</td>
<td>. 62</td>
<td>. 06</td>
</tr>
<tr>
<td>High School</td>
<td>. 48</td>
<td>. 05</td>
</tr>
</tbody>
</table>

**Definition of OTR (group and individual):**

*Teacher provides a curriculum relevant opportunity to respond that is directed to the individual or to the whole class or small group that includes the target student. Must be instruction related and not a social question, a question within the context of negative feedback, or a direction to perform a task.*
Recommended Practice: Feedback

- The field at large recommends somewhere between 3 and 6 positive to every 1 negative
  
  (Gable, Hester, Rock, & Hughes, 2009; Kerr & Nelson, 2006; Nafpaktitis, Mayer, & Butterworth, 1985; Scott, Anderson, & Alter, 2011; Stichter et al., 2009; Walker, Ramsey, & Gresham, 2004)

- Mental health (Fredrickson & Losada, 2005)
  - 2.5 : 1 predicts normal functioning
  - 4.3 : 1 predicts optimal functioning
  - Tipping point seems to be 2.9 : 1

- Marriage (Gottman, 1994)
  - Flourishing marriage 4.7:1 actions; 5.1:1 speech
  - Poor marriage .7:1 actions; .9:1 speech

4:1?
What About Frequency?

Which rate per/min ratio would you rather have in a Classroom?

4 : 1

2 : 1

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Classroom Concept #4

PROVIDE STUDENTS WITH REGULAR FEEDBACK ON THEIR PERFORMANCE
Simple feedback on performance – formative and summative – is one of the most effective components of instruction.
Acknowledgement!

Big Idea: Students need feedback to know whether they are right or wrong – teachers must provide it.
Acknowledge Success

• Level 1: Verbal Praise
  – Age appropriate
    • “thanks” “I appreciate” “I’m impressed” etc.
  – Delivered with specificity “you did XX correctly”
  – Mix up use of superlatives
    • Exactly, super, awesome, perfect, thank you, etc
Assessment and Goal Setting

Frequent formative assessment based on instruction (CBA) with attention to student goal-setting has strong effects.
Acknowledge Errors with Correction

1. Feedback that behavior is inappropriate
   • “is that the right way?”
   • “is there a better way?”
   • “are you being respectful – why not?”

2. Re-teach appropriate behavior
   • “what is a better way?”
   • “what would it look like if it was done better?”
   • “what is a more respectful behavior?”

3. Facilitate success with positive feedback
   • “Show me that --- thanks – remember to do that.”
Feedback

Rate per Minute

- Elem: 0.14 (3.5:1)
- MS: 0.06 (2:1)
- HS: 0.05 (1:0.66)
- Resource: 0.068 (1.9:1)

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Positive Feedback – Zero Rates

<table>
<thead>
<tr>
<th>Subject</th>
<th>Percent of Observations with Zero Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>0.35</td>
</tr>
<tr>
<td>Math</td>
<td>0.54</td>
</tr>
<tr>
<td>Science</td>
<td>0.71</td>
</tr>
<tr>
<td>Social Studies</td>
<td>0.47</td>
</tr>
</tbody>
</table>
Comparison: Typical & DI

- Typical Small Group with Teacher: .498
- DI Small Group with Teacher: 4.53
- All Elem Reading: .7

Rate Per Minute

Positive Feedback

Negative Feedback
Comparison: Typical & DI

Feedback: Ratio

- Typical Small Group with Teacher: 6 : 1
- DI Small Group with Teacher: 64.7 : 1
- All Elem Reading: .2 : 1
Effects are Real

Students with teachers using the least amount of OTR and Feedback in the classroom are more than $27\%$ more likely to be off task and more than $67\%$ more likely to be disruptive.
Extrapolating Across the School Year

**Feedback**

Assuming 5 hour school day, 20 day school month, and 180 day school year

| Minimum recommended positive to negative ratio of 3:1 | Feedback Rate per min | Positive Feedback Deficit compared to Recommended 3:1 Ratio (.05 neg/min) |  |
|---|---|---|---|---|---|---|---|
|  | Pos. | Neg. | Per Min | Per Hour | Per Day | Per Month | Per Year |
| Elementary | .14 | .04 | -.02 | -1.2 | -6 | -120 | -1080 |
| Middle School | .06 | .03 | -.03 | -1.8 | -9 | -180 | -1,620 |
| High School | .03 | .05 | -.12 | -7.2 | -36 | -720 | -6,480 |

Definition of Feedback (positive and negative):
*Teacher gives the class or individual student specific feedback on an academic or social behavior that indicates the behavior/response is correct or incorrect. Does not include correction (negative feedback with re-teaching)*
SCOA iPad Application
School/Classroom Observation & Evaluation

- Includes all effective instruction codes for teachers and students
- New codes may be added
- Duration and frequency data
- Includes walk-through assessment component
- Generates graphs (export)
- Facilitates repeated observations of same teacher/context/student
- Data can be dumped into Excel or SPSS for reliability calculations and complex analyses
- Continuing updates

Developed and sold by John Anderson – Vernal Middle School, Vernal, Utah

Full User Manual Available Free Online
www.louisville.edu/education/abri/assessment
Change in Teaching

“M” Elementary, KY

Percent of Observed Time

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Change in Feedback

“M” Elementary, KY

Rate per Minute

Positive Feedback

Negative Feedback

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Center for Instructional and Behavioral Research in Schools

Access to Video links, Training materials, and Resources
The University of Louisville
Doctoral Program In Learning & Behavior Disorders

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