Teacher–Child Relationship Quality

Key to Improving Child Outcomes

Amanda Williford, Ph.D.
Jessica Whittaker, Ph.D.

Center for Advanced Study of Teaching and Learning
University of Virginia

We acknowledge the children, teachers, and administrators who make our work possible.

We acknowledge our colleagues

The research reported here was supported by the Institute of Education Sciences, U.S. Department of Education, through Grants awarded to the University of Virginia.

- NCRECE
  - Grant # R305A060021
- MTP – Math/Science
  - Grant # R305A07068
- Banking Time
  - Grant # R324A100215
Overview

- Background on Teacher–Child Interactions
- Examples of Professional Development Supports
  - Course
  - Curriculum
  - Consultation
  - Targeted Intervention
- Promising State Practices
- Toward the Future
Background

- Poor children enter kindergarten far behind their peers in social competence and literacy and language development.

- This disparity exists despite high enrollments in child care, Head Start, and pre-k.

- The mediocre quality of teacher–child interactions are one reason for these gaps in children’s school readiness (e.g. Mashburn et al., 2008).

- Modest gains in teacher–child interactions can produce meaningful skill gains in children (Burchinal et al., 2009).
Teacher-child interactions are a key feature of effective early childhood programs

- Focus is on proximal processes—we don’t discount structural features
- Interactions are moment-to-moment exchanges that teachers have with children
- Supportive relationships develop as a result of repeated positive interactions
- Children learn through their interactions with adults in preschool classroom environments
  - Example
What we Know

• These interactions can be described using the CLASS framework

Classroom Interactions (CLASS)

Emotional Support
• Positive Climate
• Negative Climate
• Teacher Sensitivity
• Regard for Student Perspectives

Classroom Organization
• Behavior Management
• Productivity
• Instructional Learning Formats

Instructional Support
• Concept Development
• Quality of Feedback
• Language Modeling

• All interactions important for a high quality t-c relationship
• Broader than emotional support
Effective Emotional Support helps students develop:

- Warm, supportive relationships with teachers and peers
- Enjoyment of and excitement about learning
- Feelings of comfort in the classroom
- Appropriate levels of autonomy
Effective **Classroom Organization** helps students:

- Manage students behavior time and attention
  - Develop skills to help them regulate their own behavior
  - Get the most learning out of each school day
  - Maintain interest in learning activities

  For example, children function best when they are engaged in meaningful activities and when transitions are short
Effective **Instructional Support** helps students:

- focused on teacher implementation of lessons and activities
- Learn to solve problems and think creatively
- Get individualized feedback about their learning
- Develop more complex language abilities
Observers are trained to use the CLASS reliably.

Classrooms are observed and scored using the CLASS manual.

Each dimension is scored from 1 (low) to 7 (high).

Scores are compiled across several 20-min. observation cycles.
Creators of the CLASS have partnered with federal agencies, state departments of education and others to develop systems that use CLASS to measure and improve classroom practices.

- Teacher preparation and education
- Professional development
- Program monitoring
- Research and evaluation

  - For example:
    - The Office of Head Start
    - Virginia QRIS
National Center for Early Development and Learning (NCEDL)
  ◦ Multi-State Study of Pre-Kindergarten (multistate)
  ◦ State-Wide Early Education Programs Study (SWEEP)
  11 States
  700 Pre-K Classrooms
  2000 children from low income families
Combined these studies described states with large state-funded Pre-K programs
What's happening nationwide?

Average Ratings of Interactions in PreK – 3rd Classrooms

- Emotional Support
- Classroom Organization
- Instructional Support

Class Scores

<table>
<thead>
<tr>
<th>Low Quality</th>
<th>Moderate Quality</th>
<th>High Quality</th>
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Classroom Organization

Instructional Support

Emotional Support
What’s happening nationwide?

Average Ratings of Interactions in PreK – 3rd Classrooms

- Emotional Support
- Classroom Organization
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Class Scores

- Low Quality
- Moderate Quality
- High Quality
# CLASS and Pre-K Child Development

Changes in children’s development from beginning to end of preschool

<table>
<thead>
<tr>
<th></th>
<th>Emotional Support</th>
<th>Instructional Support</th>
<th>ECERS-R Total</th>
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<tbody>
<tr>
<td>Receptive Language</td>
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<tr>
<td>Expressive Language</td>
<td>✓</td>
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<td>Letter Naming</td>
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<td>Math Skills</td>
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<tr>
<td>Social Competence</td>
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<tr>
<td>Behavior Problems</td>
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Source: Mashburn, et al. 2008
Effective Teacher Child Interactions

- Video Example
- We likely all agree that this teacher is skilled – but how did she learn to teach like this?
What we Know

- Teachers need more support to improve the effectiveness of their interactions
- The CLASS can be used as a tool to measure teacher–child interactions in the classroom and provide feedback to teachers on their practices
- Intensive, targeted PD can improve interactions
Professional Development Approaches Conceptual Model

- **Professional Development**
  - **Consultancy**
    - **Curriculum**
      - **Course**
        - **Individual Child Supports**
          - **Effective Teacher-Child Interactions**
            - Emotional Support
            - Classroom Organization
            - Instructional Support
          - **Children’s Development**
            - Social Emotional
            - Language & Literacy
            - Math & Science
  - **Classroom Practice**
  - **Child Outcomes**
National Center for Research on Early Childhood Education
  ◦ Pianta, Howes, Burchinal, Hamre, & others
IES funded center focused on effective teaching in early childhood programs
Large randomized control trial of two forms of professional development targeting effective interactions:
  ◦ In service course
  ◦ MyTeachingPartner Consultation
Can a college course change skills, beliefs, knowledge, and t\-c interactions?

- Results from Course phase of the PD study
- Over 300 teachers in 9 sites across the country randomized into course or control condition
- Range of settings, education levels
Course Objectives

- Describe how teacher–child interactions in early education settings promote academic and social development and learning
- Identify the importance of being intentional (having a goal) when interacting with children
- Describe elements of effective teaching as described by the Classroom Assessment Scoring System (CLASS)
Course Objectives

- Observe own and others instructional and social interactions with children using the CLASS as a guide
- Describe how to implement language and literacy curricula through effective teacher–child interactions
- Identify & implement methods to build supportive teacher–child relationships
Course Delivery

- Course developed by NCRECE (PowerPoint, instructor manual, videos, etc)

- Course provided to in–service teachers in:
  - New York (NY), Chicago (IL), Stockton (CA), Dayton (OH), Hartford (CT), Charlotte (NC), Memphis (TN), Providence (RI), Columbus (OH)

- Instructors all trained by UVA staff to deliver NCRECE course

- Weekly support provided to instructors to ensure the course was as similar as possible across sites
Course Details

- 14-weeks in most sites (3 hours a week)
- Teachers in most locations received college credit
- Offered through partnerships with other colleges or universities
Course Effects

- Teachers in the course were more likely to endorse intentional teaching practices
  - Effect Size = .40

- Teachers in the course condition scored higher on multiple choice items about effective interactions.
  - Effect Size = .77

- Teachers in the course demonstrated better skills in detecting effective interactions in video
  - Effect Size = .57
Emotional Support

![Bar Chart]

- **Positive Climate**: ES = .35
- **Negative Climate (reversed)**: ES = .18
- **Teacher Sensitivity**: ES = .29
- **Regard for Student Perspectives**: ES = .48**

CLASS Rating

- 7
- 6
- 5
- 4
- 3
Classroom Organization

- Behavior Management: ES = .14
- Productivity: ES = .21
- Instructional Learning Formats: ES = .40*
Instructional Support

ES = .63***

ES = .51***

ES = .56***

ES = .16
Future Directions

- Linking course effects to student outcomes

- Unpacking types of coursework that lead to sustained changes in belief, knowledge, AND practice

- Bridget Hamre just awarded a new grant from IES to create an online version of this course
MTP–Math Science--Curriculum

Design & testing of curricula and teacher supports
pre–k math & science
What is My Teaching Partner – Math/Science?
Overview

- Curricular Design
- Design of Teacher Supports
- Years 2 & 3: Pilot Test and Field Trial
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<th>Learning Domains</th>
<th>MATHEMATICS</th>
<th>NCTM Focal Points (2006)</th>
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<tr>
<td>Number Sense</td>
<td>Oral Counting</td>
<td>Object Counting</td>
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<tr>
<td>Operations</td>
<td>Equal Partitioning</td>
<td>Adding to/Taking Away</td>
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<td>Geometry</td>
<td>Shapes</td>
<td>Patterns</td>
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<tr>
<td>Measurement</td>
<td>Length</td>
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# Learning Domains

## SCIENCE
**Life Science**
- Humans
- Animals
- Plants

## Earth Science
- Weather
- Day/Night
- Earth Materials

## Physical Science
- Properties of Materials
- Movement
- Physical Change

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AAAS (1993)
National Research Council (1996)
Activity Design: Structured Inquiry

- Teachers pose worthwhile, challenging tasks. Students actively engage as they are guided, to:
  - Math: Construct understandings of the *Big Ideas* of mathematics, and develop & use math skills.
  - Science: Develop concept knowledge and process skills as they engage in Inquiry:
    - Make predictions, Conduct observations, Draw conclusions, and Communicate findings.

- Authentic Events provide context (situated cognition) (e.g. plant life cycle through the year)

- Multiple modalities depending on desired knowledge/skill (Willingham, 2005).
Overview

- Curricular Design
- Design of Teacher Supports
- Years 2 & 3: Pilot Test and Field Trial
Even with validated curricula, instruction is often not of high quality or fidelity (Pianta et al., 2005).

Teachers Lack Adequate Preparation (National Research Council, 2006)
- Conceptual understanding
- Pedagogical content knowledge
- Confidence

Professional Development must be scale-able.
Promotes
The quality of classroom interactions that Pre-K students experience

Improves
Young Children’s Math and Science Knowledge & Skill

Teacher professional development targeting:
• Teachers’ interactions with students, and
• Pedagogical Concept Knowledge, employing
• Situated Cognition as a Theoretical basis

Large-scale observational studies show clear linkages between the quality of teacher-student interactions and student learning outcomes (NCEDL and SWEEP, see Early et al., 2005).
Our Focus on Classroom Quality

- Application of Classroom Assessment Scoring System (CLASS)

- Instructional and Emotional support are directly related to improved achievement and social behavior ratings for students.
Embedded, Just-in-Time Supports

Activity Extras
- Make It Work adaptations
- Extensions
- Center-time options

On-line Supports
- Demo Videos
- Teaching Tips
- Quality Challenges
- Quality Teaching Video Library
Online Supports: Demonstration Videos

• Field videotapes:
  – Helped us evaluate the curricula
  – Provide observational data for assessing quality & fidelity
  – AND offer video of authentic practice, for on-line demonstrations

• In-house videos, to emphasize specific pedagogy
  – Specific concept knowledge (e.g., magnetism); tool use (e.g. hand lens)
Online Supports: Teaching Tips

One Teaching Tip Per Activity:

- **How Kids Think** (common ways of understanding; frequent misconceptions),

  *or*

- **Be The Best** (a suggested teaching strategy particularly important for this week)

  *or*

- **The Big Idea** (an underlying important concept, fact, application)
Online Supports: Quality Teaching Challenges

- Anchored to a Math or Science activity of the week
- Embodies a CLASS Dimension
Online Supports: Quality Teaching Video Library

- Main menu: Monthly Quality Teaching Dimension
  - Video Clip
  - Brief Explanation
  - Links to Video Library containing over 150 video clips
On–site Professional Development

- 8 on–site Teacher Workshops (~3 hours)
- Encouraging teachers’ reflection about curriculum and web–based supports:
  - Review and Discussion of Video Demonstrations
  - Teaching Challenge → Self–Observation → Peer–debrief
  - Teaching Tip “Big Ideas” → Error Analysis Activities
Overview

- Curricular Design
- Design of Teacher Supports
- Years 2 & 3: Pilot Test and Field Trial
1. Is there evidence of an effect of the MTP–MS curricula on children’s math & science skills?
2. What effects do MTP Teacher Supports have?
3. What is the relationship between curricular quality, fidelity, and dosage, and child outcomes?
Year 2 Pilot Test & Year 3 Field Trial: Participants

Classrooms from the Virginia Preschool Initiative (VPI):
- Children who may be at-risk for difficulty in school
- 39% African American; 50% below poverty line

Pilot Test: 8 MTP–M/S classrooms; 2 control
Field Trial: 35 classrooms randomly assigned to MTP curricula, MTP curricula plus supports, and control.
Pre–Post Comparison (Math)

- **TEMA–3:** Number Sense and Operations
  - Students in both groups made significant growth across the year ($p < .001$).
  - Some evidence that the treatment group made greater gains compared to the control group ($p = .080$).

- **EMA–G Derivative:** Geometry & Measurement
  - The treatment group ($p < .001$), but not the control group, made significant gains across the year.
  - The treatment group made greater gains across the year, compared to the control group ($p = .027$).

- **ARS – Math:** Teacher Rating of Math Skills (Treatment group only)
  - Children in the treatment group made significant gains across the year ($p < .001$).
Post-Only Comparison (Science)

- **Earth & Physical Science**
  - Children in the treatment group scored higher than the control group \((p = .038)\).

- **Life Science**
  - Group differences approached significance \((p = .061)\) with the treatment group scoring higher than the control group.

Impact of Fidelity & Dosage

- Fidelity predicted significant gains on the TEMA \((p = .009)\).
- Dosage approached significance in predicting gains on EMA–G derivative \((p = .054)\).
MTP–Consultancy
240 participating PreK teachers split into groups based on three conditions:

- Materials (traditional)
- Website access, Materials
- Website access, Materials, MTP

Support high-quality teacher–child interactions using the CLASS as a frame.
The MTP Consultation Cycle

Step 1: Teacher records classroom video

Step 2: Coach reviews and selects video and writes prompts

Step 3: Teacher reviews video and responds to prompts

Step 4: Teacher and coach discuss prompts and practice

Step 5: Summary and action plan inform next cycle

Summary and action plan inform next cycle
Changes in sensitivity for teachers in the MTP consultation and web-only study conditions

Teacher Sensitivity

Consultancy
Web Only

- September
- October
- November
- December
- January
- February
- March
- April
- May
- June
MTP Consultation is even more important in high-poverty classrooms.
Findings: Effects of MTP Support

- Teachers with MTP coaches
  - Grew more sensitive in interactions with students
  - Increased students’ engagement in instruction
  - Improved language stimulation techniques

- Children with MTP teachers
  - Made greater gains in tests of early literacy
  - Experienced lower levels of problem behavior and showed improved social skills

- Currently examining the effects of MTP Consultation in the NCRECE PD Study
Children who Exhibit Disruptive Behaviors

- Aggression, non-compliance & impulsivity can be challenging in the classroom
- 20 to 30% of 3- and 4- year old children display these behaviors at high levels.
- Put children at-risk for:
  - Preschool expulsion
  - Entering kindergarten without critical school readiness skills
  - Later school failure
Children who Exhibit Disruptive Behaviors

- A high quality teacher-child relationship is linked to children’s ability to develop important school readiness skills
  - Academic-language, literacy, math, science
  - Social-emotional—behavioral, social, self-regulatory
- Teachers are less likely to develop a sensitive, warm, and supportive relationship with them.
  - Interactions characterized by negativity and conflict
Banking Time

What is Banking Time?

- Techniques designed to build positive, supportive teacher-child relationships
- Regularly scheduled, child-directed play sessions between teacher and child
Banking Time Goals

- Create a safe, protected space in which teacher and child can build more positive relationships
- Help the teacher see the child in a different light
- “Bank” time to rely on in more difficult times
- Help the child see teacher as a source of support
Banking Time Basics

- Teacher engages in a 10-15 minute 1:1 play session with the child
- Sessions should occur 2 to 3 times a week
- Teacher follows child’s lead throughout the session
Teacher’s Role in Banking Time

- Play the role of follower.
- Place emphasis on the child’s interests, motivations, and points of view.
- Encourage the child’s autonomy and freedom.

*Teaching is NOT one of the teachers role in Banking Time*
Banking Time Sessions

- Observing
  - Note the child’s words, behavior and feelings

- Narrating
  - Describe out loud what the child is doing

- Labeling
  - Reading and understanding the child’s emotional state
Banking Time Sessions

- Developing relational themes
  - Relational themes help the child understand the roles that adults can play in his or her life.
  - Helps the teacher and child define their relationship
  - Helps the child see how this relationship can be a resource
    - Sample themes
      - “I can be a helper.”
      - “I am interested in you.”
      - “I am consistent.”
      - “I am safe.”
      - “You do things well”
Banking Time Preliminary Results

- Teachers’ voluntary implementation of Banking Time
  - 24% (out of 252) of teachers used Banking Time
  - Teachers reported closer relationships with the students that they worked with.

- Early Efficacy in Head Start Classrooms
  - 97% of teachers continued their participation for the full year
  - Teachers conducted sessions 80% of the time
  - Teachers reported:
    - greater teacher–child closeness
    - Gains in children’s frustration tolerance, competence, and task orientation. Decreases in behavior problems.
IES is funding an efficacy trial of Banking Time

184 classrooms & 522 children

Randomly assigned to 3 groups:
  ◦ Banking Time
  ◦ Child Individual Time
  ◦ Business as Usual

Does Banking Time:
  ◦ Improve children’s behavioral, emotional, and social outcomes?
    • Improve the quality of the teacher–child relationship?
    • Improve teachers’ emotionally supportive practices within the classroom?
Summary

- There are many methods for improving the quality of children’s ECE experience through teacher-child interactions.
- Teachers need **targeted** and **effective** professional development opportunities.
- Recent RCT’s of professional development programs have demonstrated effects on teacher-child interactions and child outcomes. (Bierman et al., 2008; Pianta et al., 2008; Raver et al., 2008)
- Most of these interventions involve curricula and/or intensive coaching.
Less evidence regarding coursework (see Dickinson & Caswell, 2007 and Neuman & Cunningham, 2009 for exceptions)

Coursework may be easier to replicate and integrate into existing systems of in-service and pre-service training and is less expensive than coaching.

Certain students need more than what they are getting at the classroom level.
Components of EC PD Systems
- 1. Core knowledge/standards
- 2. Access
- 3. Recognition
- 4. Quality Assurance
- 5. Governance and Financing
- 6. Evaluation
Examples of Promising State PD Practices

- State early childhood leaders have recently made strategic decisions about critical aspects of their professional development system.
- We offer a few examples of recent strategic decisions that reflect new, innovative directions in:
  - Core knowledge/standards
  - Quality Assurance
  - Evaluation
Kentucky

- Recent key decisions about where to focus training and technical assistance efforts
- Attention to developing qualifications and standards for trainers and TA providers
  - Establishing and Maintaining a Relationship with the Client, Content Knowledge, and Implementing Effective Technical Assistance Practices
- Detailed evaluation plan to measure the effectiveness of TA and related supports including responsive interactions with TA recipients and TA’s self-reflection
Pennsylvania Pathways
- PA Core Body of Knowledge
- Professional Development Record – caregivers track their own growth and development
- Trainer Quality Assurance System – certifies individuals who wish to train or provide TA
- Online Training Calendar

Creation of Office of Child Development and Early Learning
- Clear professional requirements articulated
- PA Early Learning Keys to Quality
Delaware

- Foundation of Delaware Institute for Excellence in Early Childhood housed in an institute of higher education
  - Linking ECPD and ECE systems while tapping into higher education’s strengths
  - Increased involvement of higher ed in planning, implementation, and evaluation of state pd efforts
Research is emerging on the impact of various kinds and dosages of professional development upon practitioners’ behavior and related child outcomes.

Researchers must communicate this information with practitioners and policy-makers in a way that is clear and accessible.

States have the responsibility to be consumers of this research and use it to inform their practices.
Toward the Future – Fidelity of Implementation

- Access does not = engagement
  - Just because we provide access to PD support does not mean that programs or teachers will engage in it.

- We need to provide high level training, supervision and support to those individuals who are responsible for providing PD to teachers and programs
  - Coaches
  - Mentor teachers
  - Program directors & Principals
Toward the Future – Bang for your Buck

- All education is not created equal
  - The content of the courses teachers take matter

- Not every teacher or program needs every PD
  - Provide all teachers access to high quality curriculum
  - Provide some teachers:
    - In depth consultancy
      - Based upon their skills as a teacher
      - Based upon their classroom needs
States have tried in many ways to involve the higher education system in ECPD. However, a divide often separates the “higher ed folks” and those who work on ECPD outside of the higher education system.

Partnering with higher ed can lead to:
- Development of evidence-based standards
- Crafting articulation agreements
- Contributions to the ECPD research base
The state profiles include examples of how data is being used to inform ECPD plans, and many other states are also working to improve their data-gathering systems.

Tools and support for coordination are likely to emerge from the new early childhood emphasis within the Data Quality Campaign (DQC), a national collaborative effort aimed at helping state policymakers use education data to improve student achievement.
High quality t–c interactions are critical to children’s development
Research is emerging on pd approaches that support and facilitate high quality t–c interactions
States are engaging in promising practices related to their ecpd systems
States can continue to strengthen their ecpd systems by incorporating supports for high quality t–c interactions and evaluating their impact
Questions?

Amanda Williford: apw2c@virginia.edu

Jessica Whittaker: jwhittaker@virginia.edu
How much focus is their in your state around teacher-child relationships?
Is there anything that you have learned today that you think might be helpful to your state?