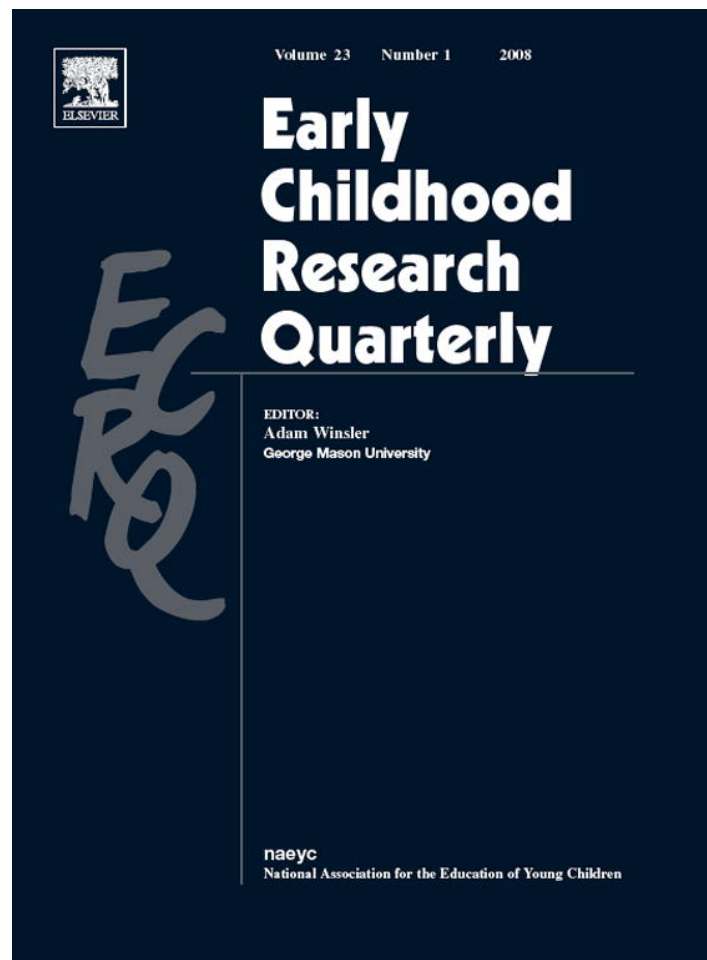


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Teacher education and PK outcomes: Are we asking the right questions?☆

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Abstract

Recent studies do not find consistent relationships between teacher degree, major, and certification, and PK outcomes (Early, D. M., Bryant, D. M., Pianta, R. C., Clifford, R. M., Burchinal, M. R., Ritchie, S., et al. (2006). Are teachers' education, major, and credentials related to classroom quality and children's academic gains in pre-kindergarten? *Early Childhood Research Quarterly*, 21, 174–195; Early, D. M., Maxwell, K. L., Burchinal, M., Bender, R. H., Ebanks, C., Henry, G. T., et al. (2007). Teachers' education, classroom quality, and young children's academic skills: Results from seven studies of preschool programs. *Child Development*, 78, 558–580), raising questions about the impact of the degrees and certifications of PK teachers on children's learning. The researchers note that these findings do not support the conclusion that teacher education does not matter for children's learning. However, they do not provide specific directions for policymakers who decide on the minimum requirements for teacher qualifications in PK programs. This commentary raises issues for researchers and policymakers about whether PK is part of a K-12 educational continuum, how teachers are prepared to teach, how research is designed to inform policy, and the importance of developmental science in policy-relevant education research. As part of a future PK-16 education system, we propose that the BA be the entry requirement for PK as it is for K-12 teachers, followed by professional education combined with extensive classroom experiences. © 2007 Elsevier Inc. All rights reserved.

Keywords: PK; K-12; P-16; PK-3; Pre-kindergarten; Teacher preparation; Teacher education; Academic outcomes; Classroom quality; Policy; Education

As the number of publicly funded state pre-kindergarten (PK) programs increases, policy debates will continue to focus on teacher degree and qualifications in determining the level of investment in early childhood education efforts. Teacher degree and qualifications are also hot topics in the re-authorization of Head Start (e.g., H.R. 1429, 2007). This debate persists because, as with K-12 education, personnel constitutes up to 85% of program costs, and the BA as a uniform entry-level requirement promises to increase the price tag on these programs.

Research on the connections between education and qualifications of early childhood workers and the quality of children's experiences in those settings indicate that staff with more formal education provide higher-quality care than those with less formal education (Howes, 1997; NICHD Early Child Care Research Network, 1996; Phillips, Mekos, Scarr, McCartney, & Abbott-Shim, 2000; Phillipsen, Burchinal, Howes, & Cryer, 1997). In contrast to this earlier body

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of work, Early et al. (2006) found that teacher education and certification were not consistently related to higher-quality classrooms or better pre-academic skills at the end of PK in a sample of six state-funded PK programs.

These findings were reinforced by an analysis of seven longitudinal datasets resulting in similar conclusions (Early et al., 2007). Although the authors of both studies clearly state that the findings should not be interpreted to mean that teacher education and certification do not matter for PK quality, policymakers are likely to use this research to advocate for lower cost staffing options for PK programs due to current budgetary constraints. While Early et al. (2006, 2007) note that similar research findings are obtained in research on K-12 education, they fail to point out one important difference, namely that all K-12 teachers have BA degrees, whereas not all PK teachers do. The percentage of PK teachers, with a BA degree or higher, in state-funded PK programs ranges from 14.6% in Alaska to 98.9% in New York (Gilliam & Marchesseault, 2005).

Reaching beyond the status quo: PK and K-12 education in transition

The current status of two systems of education for young children – PK and K-3 – is the backdrop for this commentary. Research studies designed to examine pre- and post-test scores of 4-year-olds in publicly funded programs and their relationships to policy-relevant variables such as teacher education fall short in informing education initiatives that aim to support young children's learning and development, as Early et al. (2006, 2007) clearly show. This commentary challenges the notion that PK is separate from K-12 education, and poses three broad research questions to direct future research on teacher education for young children.

Both researchers and policymakers must consider the sizable costs and implications of maintaining a two-tiered teacher education and certification system of teachers for PK and for the early elementary grades. As more PK programs become part of or connected with public schools, programs are faced with the prospect of “teachers,” who oftentimes share the same building, having widely varying credentials: less than a high school education, a high school diploma, a CDA, a bachelor's degree, or a master's degree. This variation in the educational qualifications of the teaching force may reinforce the quality and discontinuity in programs (and thus learning experiences) serving young children 3–8 years old, and may guarantee continuing high rates of staff turnover. High turnover rates themselves add costs to the operation of programs, and render most in-service training programs wasteful and ineffective for program improvement. In addition, it is doubtful that minimally educated teachers (less than a bachelor's degree) will be prepared to connect new scientific research about early education with their teaching practice (Goffin & Washington, 2007). A line of research that considers the sole function of degree attainment to be its impact on child academic outcomes is likely to underestimate the institutional effects of two separate sets of regulations for PK and for K-3 teachers.

The research questions presented are consistent with a broader conception of teacher preparation and its connection to child outcomes. Specifically, we raise questions that: (1) address the implication of the variation in teacher education programs and state certification requirements; (2) center on the complex relationships between measures of teacher education and actual practice in educational settings, both of which are subject to a wide range of policy and practice influences; and (3) consider child development research as outlined in a summary of two roundtable meetings co-sponsored by the National Institute of Child Health and Human Development (NICHD), National Institutes of Health (NIH), Department of Health and Human Services (DHHS), and National Association for the Accreditation of Teacher Education (NCATE) (2007), including research that suggests what and when child outcomes are measured. Early et al. (2006, 2007) touch on some of these points in their discussions, but the idea of framing research questions to address salient policy choices is not well developed in either article. Thus, this commentary picks up where Early et al. (2006, 2007) leave off.

Question 1: How valid is the construct of teacher education?

The Early et al. (2006) study measures teacher education in three different ways: by degree, major, and certification. Variation in classroom quality and child outcomes is examined as a result of variation in these three variables. Early et al. (2006, 2007) note that a fundamental problem with associating teacher education and certification with classroom quality and child outcomes is that teacher education programs and certification requirements vary greatly. All teacher education degrees are not created equal, including early childhood education programs (Levine, 2006). Student teaching experiences are also as variable as the requirements for certification, and the quality of a teacher's preparation is often related to the risk status of the students being served (Darling-Hammond, 2006). Children at highest risk of educational

underachievement are typically taught by teachers who are poorly prepared (Peske & Haycock, 2006), poorly inducted, and poorly mentored into the profession. Taking these critiques seriously means questioning whether, how, or under what conditions to use teacher education and certification as predictors of classroom quality and child outcomes.

All certified teachers are not necessarily similarly qualified, even within the same certification category, because of differences in state certification requirements. Findings on the extent to which certification predicts child outcomes are mixed. Whereas Darling-Hammond, Holtzman, Gatlin, and Helig (2005) found that students of certified teachers outperformed students of uncertified teachers in a Texas sample, other studies do not find that teacher certification is positively related to student outcomes (e.g., Kane, Rockoff, & Staiger, 2006). One plausible reason for the inconsistent findings is that certification requirements differ from state to state. For example, in a study on programs that develop teachers' cultural competencies, only a handful were model programs which infused coursework and practical experiences throughout their program to provide teachers with the knowledge and skills they needed to work with diverse students (Lim & Able-Boone, 2006). Moreover, in a nationally representative sample of teacher education programs, Early and Winton (2001) found that only 43% require at least one course in working with culturally and ethnically diverse children.

Therefore, research using the construct of teacher education must take into account wide variation in pre-service experiences including coursework, student teaching, and state certification requirements *prior to* examining relationships among teacher degree, major, certification, classroom quality, and student outcomes. In addition, as Early et al. (2007) state, "Teachers do not work in a vacuum but instead are part of a larger educational system (p. 577)." School organization and climate influence teacher behavior and their relationships to student outcomes (Brand, Felner, Shim, Seitsinger, & Dumas, 2003; Sebring, Allensworth, Bryk, Easton, & Luppescu, 2006; Spillane & Diamond, 2007; Wang, Haertel, & Walberg, 1990). In particular, school or district resources and administrative leadership can influence how teachers interact and relate to their students (Bogard, 2006).

Question 2: How should we measure the influence of teachers on student learning?

Early et al. (2006) test the hypothesis that degree, major, and certification are related to classroom quality and to child outcomes, and find no consistent relationships. While these statistically non-significant results may lead some to believe that teacher preparation does not matter for child outcomes in PK, the authors do point out that studies that examine elementary school teacher preparation have similar findings (e.g., Hoffman et al., 2005). This, then, points to important limitations in examining the relationships between these teacher characteristics and student learning from PK to Grade 12. Given these findings, how do we seek to understand the connection between teacher education and desired outcomes?

In determining the impact of teacher education on classroom quality and on student outcomes, we need a detailed description of the training received, particularly if teacher education is being partially defined by pre-service preparation experiences (Early et al., 2007). Given the variation in teacher preparation programs, simply defining teacher preparation as earning a diploma, achieving certification, and enrollment in a major is not sufficient. Characterizing teachers' training experiences prior to entering the classroom is vital. Even when teacher education is clearly described, Cochran-Smith (2005) articulates the complex linkages between teacher education and student learning:

"To get from teacher education to impact on pupils' learning requires a chain of evidence with several critical links: empirical evidence demonstrating the link between teacher preparation programs and teacher candidates' learning, empirical evidence demonstrating the link between teacher candidates' learning and their practices in actual classrooms, and empirical evidence demonstrating the link between graduates' practices and what and how much their pupils learn. Individually, each of these links is complex and challenging to estimate. When they are combined, the challenges are multiplied: There are often substantial time lags between the teacher preparation period and the eventual measures of pupils' achievement or other outcomes; there are many confounding and intervening variables (which themselves are difficult to measure) that influence what teachers are able to do and what their pupils learn; and the sites where candidates complete fieldwork and eventually teach are quite different from one another in context, school culture, resources, students, and communities (Cochran-Smith, 2005, p. 303)."

Research that documents what teachers do in their classrooms via observation (i.e., instruction and interactions with students) is a step closer to student outcomes than a distal and not well-validated construct such as teacher education

and certification (Hamre & Pianta, 2005). Unless common standards that clearly state what early childhood educators should know and be able to do are consistently implemented across all teacher education programs, the possibility of teacher education and certification translating into positive learning experiences for all young children will be minimal (Horowitz et al., 2005). As Early et al. (2006, 2007) indicate, we are not there yet.

Question 3: What and when are child outcome measures appropriate to examine?

Research on the role of social and emotional development in learning is growing rapidly and applies throughout the PK-12 continuum (NICHD/NIH/DHHS, & NCATE, 2007). Miles and Stipek (2006) found that social and emotional skills are important for creating a foundation for future learning. Others suggest that these developmental skills should not be overlooked at the expense of a narrow focus on cognitive skills (Raver & Zigler, 1997). Child outcome measures should match the goals, objectives, and content of the PK program, and should include development in physical, social, emotional, and cognitive domains (Shepard et al., 2005). Early et al. (2006, 2007) examine only pre-academic skills as outcomes in their studies.

Whereas pre-literacy and math skills are important to support children's future learning, they are not the only skills young children need to succeed in school. Studies that focus solely on these skills may not be assessing important predictors of future academic achievement. Blair and Razza (2007) report significant relationships between preschoolers' self-regulation and early math and reading skills in kindergarten. In similar work, the importance of impulse inhibition and sustained attention in PK for predicting academic and social outcomes in kindergarten are highlighted (NICHD Early Child Care Research Network, 2003).

Early et al. (2006, 2007) do not address the issue of when to assess young children to inform policy decisions on PK programs. Early et al. (2006) assessed children in the fall and spring of the PK year to determine growth in pre-academic skills. The time between assessments ranged from 3 to 8 months for individual children. Young children should be assessed at multiple time points due to the unreliability in testing young children and variations in their development (Meisels, 1994). It is not clear whether a 3–8-month time period between assessments is adequate for determining the impact of staffing characteristics, such as teacher education, on learning. Whether or not assessment results at the end of PK predict future outcomes remains unclear. More research should be focused on K-3 school and classroom variables from grades PK through at least third grade, which may moderate the impact of PK experiences on future outcomes. A developmental approach to assessing young children for accountability purposes is to chart individual growth in key developmental areas over time. The core operating principle of this approach to accountability is that PK experiences alone should not shoulder the responsibility of future learning, because subsequent contexts such as elementary school environments are also important for sustaining and enhancing gains made across the PK year (Currie & Thomas, 2000; NICHD Early Child Care Research Network, 2006).

Question 4: What can we conclude from research that finds few significant relationships between teacher preparation variables and cognitive outcomes of PK children?

- Given the highly variable state of teacher education programs, examining relationships between teacher preparation variables such as degree or certification is not adequate for determining relationships among teacher degree, classroom quality, and child outcomes across the PK-12 grades.
- What children experience in their classrooms, including interactions with their teachers, is more predictive of outcomes than teacher degree, major, or certification. Pianta calls this 'classroom accountability' and notes its importance in predicting future academic performance and child well being (Pianta, 2006).
- Policymakers who only examine data on pre-literacy and math outcomes at age four to determine program or teacher effectiveness are not taking into account the impact of children's social, emotional, and behavioral skills on future academic outcomes. Researchers have an ethical responsibility to point out the scientific shortcomings of such an approach.
- A new direction for policy-relevant research is to examine how programs can prepare teachers to construct high quality learning experiences for children. The challenge for schools of education is to construct a teacher education program with clear standards, or a "signature pedagogy" (Shulman, 2005), to support the production of effective teachers.

Summary

Although Early et al. (2006, 2007) did not find consistent relationships between teacher education and student outcomes in PK programs, they state that their findings do not mean teacher education does not matter for children's learning. However, they do not provide specific directions for policymakers who decide on minimum requirements for teacher qualifications in PK programs. We propose the BA as the starting point for PK teacher requirements as part of a PK-3 certification. Certification that encompasses PK through third grade and focuses on child development and academic content would constitute the entry-level requirements of PK-3 teachers. Several states, including New Jersey and Pennsylvania, have PK-3 teacher certification requirements for their early childhood teachers. We support Shulman's (2005) idea of a signature pedagogy for the teaching profession, which would standardize teacher preparation, similar to recognized professions such as medicine and law. Signature pedagogies are rigorous, post-BA programs, with extensive classroom teaching combined with mentoring.

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