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Welfare Reform & Beyond Working Paper¹

THE ROLE OF PROFESSIONAL DEVELOPMENT IN CREATING HIGH QUALITY PRESCHOOL EDUCATION

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INSTITUTE

OCTOBER 2004

PAPER PREPARED FOR THE BROOKINGS INSTITUTION – UNIVERSITY OF
NORTH CAROLINA CONFERENCE ON “CREATING A NATIONAL PLAN FOR
THE EDUCATION OF 4-YEAR-OLDS.”

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Brookings Working Paper

**The Role of Professional Development
in Creating High Quality Preschool Education**

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available online at:

<http://www.brookings.edu/es/research/projects/wrb/200409conference.htm>

This paper focuses on professional development as a contributor to high quality preschool education. We look first at the research on the linkages between professional development and the quality of early childhood care and education environments. We turn then to an assessment of the challenges that states currently face or will face as they make the decision to substantially expand their preschool programs so that all low-income children, or all children irrespective of income, have access to a high quality preschool program for at least one year before kindergarten. We conclude by noting steps that can contribute to an expansion of a well-qualified early childhood workforce.

What Are We Seeking to Measure?

As Maxwell, Feild, and Clifford (in press) have recently summarized in their paper on defining and measuring professional development in the early childhood workforce, professional development is usually conceptualized in terms of (1) years or level of education completed, (2) whether that education had content focusing on early childhood development, (3) whether certification (such as the Child Development Associate credential or CDA) has been attained, and (4) the completion of training specific to early childhood development. A body of research relates these aspects of

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professional preparation to the quality of the early childhood environment, and sometimes, though less often, to children's development.

Maxwell and colleagues note that this body of research is “muddied” by a lack of basic agreement on definitions and measurement. It is difficult to summarize the patterns in the research because studies use varying terminology. One study will use the term “training” to pertain to college-level courses in child development, while another will use the term to refer to community-based workshops without specifying content or duration. Differing researchers will label an early childhood teacher as having coursework pertaining to young children if any courses with this focus had been taken, or only if this was a major. Certification, especially if it is state-specific or specific to a more limited locale, can be very difficult to equate across studies given that limited information is often offered in research on what a certificate entailed. Researchers also may fail to distinguish whether a certificate is being pursued or has been completed. Summarizing the research using the authors' own terminology (for example, the varying meanings of the term training), means that we will be summarizing highly disparate underlying constructs.

Maxwell and colleagues make specific suggestions for clarifying the measurement of early childhood professional development, proposing that the term education be used to refer to courses entirely within the formal educational system, the term training to courses or workshops taken entirely outside of formal education, and that researchers provide detail regarding the preparation required for a certificate. The focus on definitions and measurement goes well beyond the need to be able to accumulate the evidence from a research perspective. The distinctions suggested by Maxwell and

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colleagues are important if we are to gauge which approaches to professional development are important in supporting quality, for example, whether it is a worthwhile investment to develop non credit-bearing training approaches or whether limited resources should be allocated to coursework within the formal education system.

In addition to working to clarify the way in which professional development is defined and measured, this paper will argue that we need to go beyond consideration of levels of education and the inclusion of any content on early childhood in either educational or training contexts, to much more specific consideration of the content of the professional preparation, the processes used in the preparation, and the extent to which desired behaviors are specified and monitored for implementation in the classroom. Essentially we are arguing that attainment of a degree is a “status” variable (the early childhood professional has or has not completed a particular degree, certification, or course of training). In research on other issues, such as whether or not the family lives in poverty, or whether or not parents are divorced, the status variable (poor/not poor; divorced parents/married parents) has proven to be a rough marker of much more complex and immediate child experiences that vary substantially within a particular status. Thus, for example, family processes may or may not be acrimonious in the context of parental divorce and the father may or may not sustain high levels of involvement following divorce. These more proximal measures do a better job of explaining the child’s experiences and developmental outcomes than the more remote and approximate status variable.

In a similar manner, we will argue that the traditional measures of professional development are important starting points, but that in order to build a well qualified

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workforce we will need to “unpackage” the status variables to consider directly the content involved in coursework or training workshops, the specific ways in which professional development is implemented (for example, whether it involves on-site consultation or mentoring or rests entirely on classroom learning), and the degree to which desired classroom behaviors are specified and monitored for implementation. Our thinking is very much in accord with the recent work of Pianta (in press), who has argued that we need to go beyond distal markers of professional development and focus immediately on practice in the classroom.

In addition, while this paper focuses on the research regarding the linkages between professional development and the quality of early childhood care and education settings, it should be noted that there are other important bases for deciding upon the qualifications for teachers in pre-kindergarten programs. For example, if pre-kindergarten teachers are to be seen as full members of the professional staff at elementary schools, their qualifications need to be on a par with those of other teachers. Wages and benefits at the level of other teachers will also signal that pre-kindergarten teachers are full members of the professional staff. Wages and benefits also have the potential of affecting the stability of the pre-kindergarten teaching staff, which in turn can have implications for the extent to which children will benefit from these programs.

In the following section of the paper we begin with a brief overview of key findings from the existing research that looks at professional development with a status approach (e.g., degrees attained or level of education; exposure to any training). We focus especially on results most directly pertinent to high quality preschool settings, noting that there may be some limitations to generalizability from findings from other

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early childhood settings, such as child care. We turn then to an emerging body of work that goes beyond the rough markers of degree attainment or level of education or training to a more detailed focus on content of professional preparation, key issues in the implementation of professional preparation, and work pointing to the importance of specifying desired classroom behaviors and assuring their implementation.

Key Findings From the Research on Levels of Education,
Certification and Exposure to Training in Child Care

In a recent review of the research that has taken the more traditional “status variable” approach, Tout, Zaslow and Berry (in press) follow the recommendations of Maxwell and colleagues, imposing the definitional distinctions noted above on the existing research. They also follow the recommendations of Maxwell and colleagues in focusing separately on published peer-reviewed studies carried out in the United States and involving at least 50 different child care teachers or family child care providers, and other important studies (“studies of note”) which may not have had this number of classrooms or groups or which have not yet been published.

The published work to date focuses heavily on child care: both center care and family child care. There has been limited work to date on professional development and the quality of early childhood environments specifically in pre-kindergarten programs, and as Gilliam and Zigler (2001; 2004) note regarding the research on pre-kindergarten programs, this work has generally not yet been published. A further important characteristic of this research is that data analyses are structured most often to ask the question: “Is more education or training better?” That is, studies ask whether the quality of the early childhood environment improves as qualifications of the early childhood

teachers increases. Few studies have carried out analyses that are structured around the critical question of thresholds: is a certain level of education, certification or training necessary in achieving quality? In general, the research has focused much more consistently on education and the content of education, and there is limited consideration to date on certificates and training. Interestingly, studies of training have tended to be carried out in family child care, while studies of educational attainment and the content of education have been carried out across different early childhood settings.

Key conclusions from the review by Tout and colleagues, discussed in detail in their paper, are listed below. We note that two recent reviews examined the evidence pertaining specifically to center care and drew similar conclusions (Barnett, 2003a; Whitebook, 2003):

- Research asking the question “Is more better?” generally supports the conclusions that more formal education (considered apart from any content) is associated with higher quality in early childhood settings. The range of education considered in these studies usually extends from high school or GED completion to completion of a BA or BS, but some studies consider a wider range, starting with no high school or GED (e.g., Burchinal, Howes & Kontos, 2002; Kontos, Howes & Galinsky, 1996) and some go beyond college completion to a graduate degree (e.g., Norris, 2001; Phillips, Mekos, Scarr, McCartney & Abbott-Shim, 2000). The conclusion that more formal education is better pertains to the ranges of education considered in particular studies. This conclusion is supported both for the research on center-based child care (Blau, 2000; De Kruif, McWilliam, Ridley & Wakeley, 2000; Honig & Hirallal, 1998; Howes, Whitebook & Phillips, 1992;

- Phillipsen, Burchinal, Howes & Cryer, 1997), family child care (Clarke-Stewart, Vandell, Burchinal, O'Brien & McCartney, 2002; Weaver, 2002) and studies encompassing multiple types of child care (NICHD ECCRN, 2000 for quality at 24 and 36 months). There are, however, a few studies in which no linkage was found between quality of the environment and years or level of formal education (Phillips, Mekos, Scarr, McCartney & Abbott-Shim, 2000; NICHD ECCRN, 1998 for quality at 6 months; and Burchinal, Howes & Kontos, 2002).
- In an overlapping set of studies, the findings generally support the conclusion that more coursework specifically in early childhood education is linked with the provision of higher quality care. Some of these studies use scales that begin with “pure training” (such as community-based workshops) but progress up to degrees in early childhood. Studies on this aspect of professional development focus less often on family child care (Clarke-Stewart et al., 2002; Weaver) and are more often conducted in center care settings (Blau, 2000; Burchinal et al., 1997; Howes et al., 1992; Phillips et al., 2000) or in samples encompassing a range of settings (NICHD ECCRN 1998, 2000a, 2000b).
 - The evidence regarding training outside of the formal educational system is much less extensive and does not help to specify what type or amount of training is most clearly associated with higher quality. It has also been carried out almost entirely within family child care settings (Burchinal, Howes & Kontos, 2002; Kontos, Howes & Galinsky, 1996; Norris 2001 though see also Burchinal, Cryer, Clifford, & Howes, 2002 for a study of center care that includes measures of training outside of the formal educational system). The evidence that is available

suggests that having some training outside of the formal educational system is also associated with higher quality, with some studies pointing to the importance of recent training (Burchinal, Howes, & Kontos, 2002; Norris 2001). Burchinal and colleagues studied both pure training and education with early childhood content, using data from the Cost Quality and Outcomes study, and concluded that each is related to quality (even net of the other), but that a degree with early childhood focus is the more important factor in predicting quality.

- While the research supports the conclusion that “more is better,” it does not provide a detailed picture of thresholds. That is, few studies seek to ask which specific levels of educational attainment differ from which other levels. In these studies, while having a BA degree is always associated with higher quality, it is sometimes the case that the BA degree groups together with other levels of educational attainment in being associated with higher quality (for example with having an AA degree in Howes, 1997; with having some college in Blau, 2000 and Phillipsen et al., 1997; with having some college with early childhood content in Howes et al., 1992).
- There has been little published research focusing specifically on the role of certification, though two studies provide evidence regarding associations of the CDA with overall quality in family child care (Weaver, 2002) and specific aspects of quality in center care (Howes, 1997).
- The body of research available to date is associational. We have no recent published studies that address selection factors through experimental designs, though such work is now in progress for certain approaches to training in the

Quality Interventions for Early Care and Education evaluation being carried out by the FPG Child Development Institute with funding by the Child Care Bureau of the U.S Department of Health and Human Services. Selection issues would appear to be particularly important given evidence that knowledge and attitudes may help to mediate the relationship between education and training and quality of the environment. We need to know if the attitudes and knowledge antedate and help to explain completion of the professional preparation or are outcomes of the preparation. Barnett (2003b) has also raised the question of selection in the presence of low wages for the early childhood workforce especially in child care settings. He notes that such selection processes within the specific context of low wage employment in child care could have implications for the findings on the associations of professional development and quality of the early childhood environment.

A Focus on the Research on Pre-kindergarten and Head Start

The present meeting focuses especially on high quality pre-kindergarten programs. There are indications that the range of qualifications as well as the wages of those working in state sponsored pre-kindergarten programs, particularly in public school settings, differ from those in child care settings. This may mean that the kind of selection processes noted above may differ in such settings, and the patterns of association of professional development and quality may also differ. It would seem particularly important to consider the evidence on professional development and quality specifically for the types of early care and education settings most pertinent to our discussions about high quality preschool environments.

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Looking at the evidence on qualifications in pre-kindergarten programs, findings suggest that the range of qualifications held by the pre-kindergarten workforce overlaps but is significantly higher than the range of qualifications of the general early care and education workforce. Furthermore, qualifications of the pre-kindergarten workforce vary by auspice, with teachers in publicly-operated pre-kindergarten programs holding higher qualifications than teachers in privately-operated pre-kindergarten programs (Bellm, Burton, Whitebook, Broatch, & Young, 2002). While 50% of teachers in center-based programs serving 3- to 4-year-olds have obtained a BA degree (a generous estimate due to a low response rate and an overrepresentation of staff with higher qualifications in the survey; Saluja, Early, & Clifford, 2002), close to 70% of pre-kindergarten teachers in six states (with half of the programs in public schools) had obtained at least a BA degree, primarily with specialization in early childhood education or a related field (Bryant et al., 2004; Clifford et al., 2003;). In contrast, close to 90% of pre-kindergarten teachers in public schools have obtained a BA degree (Saluja et al., 2002; U.S. Department of Education, 2003). Bellm and colleagues (2002) report that, despite pre-service requirements for pre-kindergarten (pre-K) teachers that may be identical across publicly and privately operated pre-K settings, the actual qualifications obtained by teachers are typically higher in public settings. Few states have policies in place to address these discrepancies other than the issuance of waivers that allow staff to continue working even though they don't meet program requirements (Bellm et al., 2002). The difference in range of qualifications for pre-kindergarten teachers and other early childhood professionals, even given this difference in auspice, suggests that we may need to look at the implications of professional development for quality specifically within this range.

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We also have indications in recent state-level research of a need for some caution in generalizing from research on the implications of professional development in child care to professional development in pre-kindergarten. Massachusetts has carried out a state-level cost and quality study, drawing separate state representative samples of community-based child care centers (called preschools in the report; Marshall et al., 2001), licensed family child care homes (Marshall et al., 2003) and publicly administered prekindergarten classrooms in public schools (Marshall et al., 2002). In both family and center child care, years of education was predictive of overall quality (as measured by either the Family Day Care Rating Scale, FDCRS, or the Early Childhood Environment Rating Scale-Revised, ECERS-R) as well as of specific aspects of quality (summary scores for stimulation and warmth and sensitivity in family child care; stimulation, engagement, an index of process quality, and marginally, warmth and sensitivity in center child care). However, in public school preschool classrooms, in which all teachers were required to have a BA degree and there was much less of a range in the educational background of lead teachers, education did not predict quality of the environment. Instead, those teachers who had received additional training in early childhood beyond their formal education were in higher quality settings in terms of the language and reasoning stimulation in the classroom.

Two studies shed light on the associations of professional preparation and the quality of the early childhood environment in programs analogous to those under consideration here: the National Center for Early Development and Learning (NCEDL) Multi-Site Study of Pre-Kindergarten (Bryant, Barbarin, Clifford, Early and Pianta, 2004), and the Head Start Family and Child Experiences Surveys (FACES) from Fall of

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1997 and Spring of 1998 (ACYF, 2001) and the more recently released report based on data from Fall of 2000 (ACF, 2003).

Both studies showed statistically significant but modest associations of teacher qualifications and the quality of the environment. While a substantial proportion, about 2/3, of the lead teachers in the NCEDL study had four year college degrees or higher, the overall quality of the environment was unexpectedly low, below the good range on the ECERS-R. In a mirror image set of findings, while only about a third of the lead teachers in the Fall 1997 round of FACES data collection, and 39% in the FACES 2000 data collection had a BA degree or higher, average quality in Head Start classrooms in both rounds of data collection closely approached the “good” benchmark according to the ECERS-R, with average ratings of 4.93 in 1997 and of 4.84 in 2000. Taken together, the findings suggest loose linkages in pre-kindergarten classrooms between teacher level of education and the quality of the environment, and underscore the need to more closely examine factors that help to assure that qualifications will translate into quality.

The NCEDL study of pre-kindergarten was carried out in six states varying as to geographical location, location of the pre-kindergarten programs in schools or child care centers, whether the program was full day and full year, funding per child, as well as qualifications of teachers. The sample of forty schools or centers in each state was stratified by whether or not the teacher had a BA degree, whether the program was in or out of a school setting and whether the program was full or part day. Observations were carried out in one randomly selected classroom in each site, four randomly selected four-year-old children were assessed in each of the selected classrooms, and parents as well as

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teachers and administrators completed questionnaires. More than half of the sample families had total annual family incomes of below \$30,000 per year.

As noted above, more than 2/3 of the teachers in the sample had a four-year degree or more, with 22% holding a BA degree, 16% some education beyond the Bachelor's degree and 31% a Master's degree or beyond. At the lower end, a small percentage (2%) had only a high school education, 14% had some college and 15% had a two-year degree. Despite the generally high level of education in the sample, the mean score on the Early Childhood Environment Rating Scale-Revised (ECERS-R) was 3.9, below the good range. Separate factor scores reflecting a teaching and interacting component of the ECERS (e.g., teacher-child interaction, discipline, supervision, encouragement to use language) and provisions for learning (e.g., furnishings, room arrangement, equipment for gross motor activities and for different kinds of play) showed a mean score closer to, though still below, good for teaching and interactions (4.52) but lower for provisions for learning (3.74). The authors note that, "process quality is lower than would be predicted given the high level of structural quality in these pre-k programs" (p.6 of presentation handout). On another measure of classroom quality, the CLASS, that focuses specifically on the emotional and instructional climate of the classroom, while there was a wide range in quality, the observations indicated relatively low scores on average on the measure of instructional climate, and "mediocre" scores on emotional climate.

Teacher characteristics (including education, experiences with four-year-olds, depression, adult-centered attitudes, and wages) as well as program characteristics (including location in a school, ratio, short or long day, and demographic characteristics of the class) showed modest effects in predicting classroom quality: the proportion of

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variance explained was between 13 and 34 percent in models that were statistically significant. Teachers having a BA degree with early childhood content had higher CLASS emotional quality scores and higher ECERS provision scores. However teacher education was not significantly related to the two quality scores most closely related to children's academic experiences: ECERS teaching and interaction and CLASS instructional climate. The authors conclude that, "current models of professional development may need revision to attend more to proximal (e.g., attitude and practices) rather than distal (e.g., degrees) factors" (presentation handout p. 11).

The 1997-8 and 2000 waves of data collection for FACES each involved a representative sample of Head Start programs and classrooms. Children were followed longitudinally to study development over time in light of experiences in the program and variations in program characteristics. Spring 1998 data indicated that 8.5 percent of teachers in the sample had a high school degree or GED as their highest educational level, 34% had attended some college, 28% had an AA degree, 26% a BA degree, and 3% a graduate degree. Over three-quarters had a CDA or related certificate.

Simple bivariate correlations indicated positive correlations between teachers' educational attainment and subscale as well as total scores on the ECERS-R as well as the Arnett measure of teacher sensitivity, detachment and harshness with children. The correlations, while significant, ranged in magnitude from .10 to .20, suggesting again that relations were modest. Multiple regressions were carried out looking at teacher characteristics while controlling for region of the county and whether the program was rural or urban. Irrespective of race and experience teaching Head Start, teachers with higher levels of educational attainment were found to be in classrooms with better

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language activities according to the language subscale of the ECERS-R and were found also to be more sensitive and responsive. In this study, teacher education was found to go together with more optimal ratios, suggesting that qualifications may not operate in isolation, but may combine with other quality factors in classrooms with better resources.

In FACES 2000, 11% of teachers had a graduate or professional degree, 28% had a BA degree, 19% an AA degree and 32% some college. Again, approximately three-quarters (74%) had a CDA. In keeping with the legislative mandate to increase the educational levels of Head Start teachers, the proportion of teachers with a BA degree or higher increased from Fall 1997 to Fall 2000 from 28.1% to 38.7%, the increase primarily reflecting those with graduate degrees. It was primarily new teachers who were entering Head Start classrooms with advanced degrees. There were also increases in the proportion of teachers reporting having studied early childhood or child development for their highest degree (from 62% to 78%), and in the proportion of teachers who had memberships in early childhood professional associations (from 53 to 62%). Closely paralleling the findings from FACES 1997-8, teachers with higher levels of education tended to be in classrooms rated higher on the language subscale of the ECERS-R as well as on sensitivity as measured by the Arnett scale. Those with BA or AA degrees also tended to be in classrooms with better adult:child ratios, again suggesting that “good things go together.”

Further analyses asked whether program-level as well as classroom-level factors helped to explain quality in classrooms. Teacher education was among the classroom-level factors considered (which included also experience, salary as a deviation from the sample mean, and ethnicity), while at the program level, variables considered included

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characteristics of families (proportion minority, proportion with some college education, and earnings), use of a widely recognized curriculum, and average salary. Teacher attitudes and knowledge were examined as mediating variables. “The results suggest that Head Start programs that provide for a common integrative curriculum across classrooms and that pay their teachers well have sufficient resources available to positively influence classroom quality, through the quality of the teachers hired and their experience and attitudes and knowledge” (ACF, 2003; p. 57). Teacher attitude and knowledge were found to be important mediators between teacher qualifications and classroom quality. Teacher qualifications were no longer significant predictors of classroom quality measures with attitude and knowledge taken into account. Children’s gains on specific cognitive assessments during the Head Start year were linked with use of an integrated curriculum, higher teacher salaries, and teacher educational credentials (with the outcome related to educational credentials being scores on a measure of early writing skills). The FACES findings raise the possibility that program infrastructure, through such factors as choice of an integrated curriculum and teacher wages, may help to determine whether teacher qualifications are manifested in higher classroom quality. Raikes and colleagues (in press) document a “culture of quality” or set of characteristics that combine to predict quality in child care settings in four Midwestern states. It is the co-occurrence rather than the occurrence of individual factors that is highly predictive of quality. Teacher qualifications are part of a set of program characteristics that may need to be considered together as contributors to quality.

In sum, the multi-site studies of pre-kindergarten and Head Start contribute to evidence that teachers’ educational credentials matter to the quality of the environment,

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and for Head Start also the gains that children make on specific academic outcomes. However, the linkages between level of formal education and quality of the environment are loose rather than tight. An emerging body of research can be described as considering how to tighten the linkages between professional preparation and quality of the early childhood environment. We turn now to a brief discussion of some of the issues raised in this emerging body of work.

Emerging Work on Tightening the Linkages

Tightening the linkages between professional preparation, quality of the early childhood environment, and child outcomes requires detailed articulation of the *content* of professional preparation rather than simply the level, specification of the *behaviors and practices* that are desired, and *processes* for professional preparation that link learning and practice. The new National Association for the Education of Young Children (NAEYC) Standards for Early Childhood Professional Preparation (see research background and overview of standards in Hyson and Biggar, in press) provide a framework that is serving as a touchstone for new work in this area. The NAEYC standards encompass all three components noted above: content standards for professional preparation that are research-based, articulation of standards that involve mastery of knowledge but also the application of the knowledge in practice, and a process for implementation of the standards through National Council for the Accreditation of Teacher Education (NCATE) review of early childhood programs at four-year colleges and universities.

The five standards emphasize (1) creation of supportive and challenging environments for children based on knowledge of early childhood development, (2)

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understanding and valuing characteristics of families and communities and using this knowledge to create relationships, (3) knowledge about and ability to use assessments in teaching, (4) use of knowledge about children, families and assessment to design, implement and evaluate experiences that promote development and learning, and (5) continuing growth as a professional. As noted by Hyson and Biggar, the standards map closely onto the content areas required for the CDA. The specific wording in NAEYC's Standard 4 illustrates the balance between knowledge and application that is emphasized: "Candidates integrate their understanding of and relationships with children and families; their understanding of developmentally effective approaches to teaching and learning; and their knowledge of academic disciplines, to design, implement, and evaluate experiences that promote positive development and learning for all children." The core standards and specific elements noted for each are constant across professional levels (AA, BA and advanced degrees) but with more demanding specifications with advancing levels.

By 2010, all institutions of higher education reviewed by NCATE for accreditation of early childhood programs will be reviewed using the new standards. Hyson and Biggar note that of 575 NCATE accredited institutions of higher learning, about 150 have NAEYC approved four-year and/or advanced degree programs in early childhood. However, there are approximately 1,400 such institutions. On the one hand, these figures suggest that the NAEYC standards influence only a small proportion of the institutions of higher learning involved in professional preparation. On the other hand, the influence of the standards goes well beyond these particular institutions, in that the standards are frequently turned to for guidance and referenced in other contexts (as will

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be seen below) and in that non-NCATE accredited institutions have been requesting training on the standards. Hyson and Biggar note the need for research on how the standards are actually applied in professional preparation programs, and confirming and documenting that graduates of accredited programs show differences in their professional practices.

One of the important specific components of the new NAEYC standards is its affirmation that early childhood professionals should understand specific content areas in young children's learning, including specific academic subjects. This component of the new standards has encouraged a more detailed focus on the adequacy of preparation of early childhood teachers in such specific content areas as early literacy and mathematical skills, and the development of new courses focusing on these areas to be incorporated into professional preparation. The researchers whose work is summarized below each reference the NAEYC standards and position papers as a basis for their work.

As one illustration of an approach to evaluate the adequacy of content coverage in early childhood professional preparation, Roskos and colleagues (Roskos, Rosemary & Varner, in press) developed a method for reviewing the degree of correspondence or alignment of early literacy content in professional preparation programs at differing levels (CDA, AA and BA) in relation to a content standard. They examined program and course descriptions as well as syllabi for a sample of three CDA, AA and BA programs in the state of Ohio against the standard of content covered in agreed upon preschool and elementary school early literacy curricula for the state. They found strong evidence of "external alignment" or correspondence of course elements with the content of the curricula used as standards. However they found evidence of weakness in "horizontal

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alignment” or the degree to which the programs were comprehensive in the sense of balancing knowledge with practice. There were indications of overrepresentation in some instances of theoretical topics and in other instances of practical techniques. Even the sampled BA programs had only moderate integration of knowledge and practice. There was evidence of “vertical alignment” or developmental progression both within courses of study and across them. However there was a steep increase across levels, suggesting that making the transition from CDA to AA to BA would be challenging. The review also indicated variation within any one level of professional preparation, and further that none of the sampled cases reached the goal standard of 100% correspondence with the external standard. This work not only provides a method that could be used elsewhere to assess the content of early childhood coursework in relation to a standard, but also indicates that tightening of the linkages may need to involve closer adherence to standards of content in professional preparation courses at differing levels and/or better balance of theory and practice components.

Research and applied work by Dickinson and Brady (Dickinson & Brady, in press) and Ginsburg (Ginsburg et al., in press) has focused on developing content for early childhood professional preparation focusing specifically on early language and literacy development and early mathematical skills, respectively. There are some interesting commonalities in the work in these two very different substantive areas. Both research groups emphasize the need to begin with introduction of specific concepts and knowledge that early childhood professionals may not know in each content area. It is not appropriate to assume mastery of certain fundamental concepts in early literacy development and early mathematical skills. Both bodies of work emphasize the need to

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alternate opportunities for learning with opportunities for observation and application in the classroom. Over time, these research groups have considered such issues in the implementation of professional development as the time between course meetings and time needed for practice, where courses are given, and whether Internet approaches are effective. Interestingly, both emphasize the importance of including supervisors as well as teachers in instruction in order to assure full implementation. Dickinson and Brady are able to present evidence of the efficacy of their evolving approach on both the early literacy environment and children's development. Ginsburg and colleagues are at an earlier stage of evaluation but further data are anticipated.

Pianta (in press) proposes a different approach that can also be seen as intending to tighten the linkages between professional preparation and quality of the early childhood environment. His work focuses on teacher-child interaction as the process that is central to children's experiences in the classroom. He urges that professional preparation focus immediately and directly on teacher-child interaction and classroom processes, through observation and the provision of feedback organized around well-validated observational tools. Pianta is carrying out a planned variation study in which observation and feedback are provided either directly or through Internet linkages. The use of Internet technology, if effective, could be instrumental in the expansion of professional preparation to larger numbers overall and especially to rural areas, as states increasingly implement pre-kindergarten programs.

It is clear that some of the emerging work emphasizes the content of early childhood professional development, or what teachers should know; some emphasizes practice, or what teachers should do in the classroom; and some emphasizes the balance

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between knowledge and practice or how best to assure that knowledge is reflected in practice. Research completed and in progress on these emerging approaches will provide information about strategies that are helpful in tightening the linkages between professional preparation, the quality of early childhood environments, and children's development.

State Challenges and Approaches in Building a Well Qualified Workforce

States with pre-kindergarten programs as well as those considering the development of a pre-kindergarten program face multiple challenges in building a workforce that is both well qualified and meets standards for high quality classroom practices. Our review of the research on professional development and quality of the environment suggests that states should think through both the overall level of education of early childhood professionals as a rough marker of how best to ensure quality, but then also give careful consideration to the content of early childhood degrees and how best to assure that classroom learning results in practice. We discuss state efforts to increase the numbers of early childhood professionals with college degrees and highlight in particular those efforts that attempt to go beyond the status variable of degree attainment or certification to focus on content and actual practice.

One of the most pressing issue facing states is the inadequate supply of qualified teachers to staff pre-kindergarten programs, particularly if pre-K programs require teachers to hold a college degree. Maxwell and Clifford (in press) estimate that the national supply of teachers holding BA degrees with specialization in early childhood education would need to sustain a three-fold increase to staff a fully implemented universal pre-K program serving 4-year-olds. Their estimate of the shortfall would be

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smaller if the calculations were based on different assumptions (for example, if the program was available only for poor or low-income children, or if classrooms could be staffed by teachers with AA degrees).

The dearth of early childhood teachers holding college degrees is not surprising given the current context for the early care and education (ECE) workforce. First, the existing pre-service requirements for the workforce do not create a large demand for highly qualified teachers. About half of the 38 states that sponsor pre-kindergarten programs require that teachers hold a BA degree (Barnett, Robin, Hustedt, & Schulman, 2003), while only 14 states require that teachers in private center-based settings complete any ECE pre-service training at all (LeMoine, 2004). Second, the capacity for training new early care and education teachers is low. Across the nation, fewer than 30% of the Institutions of Higher Education (IHEs) that offer AA degrees and BA degrees have early childhood programs (that is, 1,244 IHEs, with only about 300 offering BA degrees) (Early & Winton, 2001). Maxwell and Clifford (in press) report that the current capacity of IHE's offering degrees in early childhood is not sufficient to produce the large number of teachers required to staff a universal pre-kindergarten program. Finally, the wages and benefits for ECE teachers are extremely low and are linked to high rates of teacher turnover (Whitebook, Sakai, Gerber, & Howes, 2001). The median hourly wages for child care workers and preschool teachers are \$8.37 and \$10.67 respectively, compared to \$20.38 per hour for kindergarten teachers (CCW/AFTEF, 2004).

States must confront additional barriers to producing a highly qualified ECE workforce. For example, while the connection between staff qualifications and the quality of early childhood programs is relatively established among ECE professionals, it

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is not established with the public. Indeed, the perception exists that parental or childrearing knowledge is sufficient background for teachers and other staff in the ECE workforce. Changing this perception is necessary for garnering public support of pre-kindergarten programs. It is also important that states recognize the demographic characteristics of the existing ECE workforce and the challenges they face in raising their qualifications. The average ECE teacher is almost 40 years old and likely juggling multiple responsibilities that make it difficult to enroll in and complete degree programs (Ackerman, 2004). In addition, given the growing diversity of the early childhood population, it is important that the ECE workforce not only acquire the skills necessary for working with children from a variety of cultural backgrounds and with a range of abilities but also that the workforce itself – and the faculty that educates the ECE workforce – more closely reflects the diversity of the children and families served (Maxwell & Clifford, in press).

What strategies are states currently using to improve the qualifications of the ECE workforce and assure practice? What are the most effective or promising approaches? Below, we describe state efforts and what is known about how successful various strategies have been.

Increase regulation. One step that states might take to increase qualifications and credentials of the ECE workforce is simply to raise the minimum ECE pre-service requirements for teachers in center-based programs (Ackerman, 2004). Since 1999, entry-level requirements and yearly training requirements for teachers in child care centers have been increased in a number of states (Ackerman, 2004, based on licensing data tracked by Azer, 1999, and LeMoine, 2004b; note that licensing regulations for

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directors and family child providers are also tracked by LeMoine, 2004a,c,d). Yet, Ackerman (2004) points out that most of the states that increased ongoing training requirements have no minimum ECE pre-service requirements, and the average number of ongoing training hours required across the U.S. is minimal. As noted above, requirements for teachers in center-based care are still low when compared to requirements for state-sponsored pre-kindergarten programs, and the contrast is even starker when compared to requirements for kindergarten teachers where all 50 states require BA degrees. Regulation as a strategy for improving qualifications will likely benefit from research findings that can specify the education and training thresholds necessary to ensure program quality.

Provide scholarships and other financial incentives. Barnett (2003b) classifies strategies that reduce the costs of obtaining better qualifications as supply-side approaches while strategies that increase the benefits of higher qualifications and of remaining in the field as demand-side strategies. Almost half of the states offer financial incentives that reduce the cost of improving educational qualifications, particularly in the form of scholarships such as the Teacher Education and Compensation Helps (T.E.A.C.H.) program (Ackerman, 2004; Child Care Services Association, 2003). T.E.A.C.H. recipients typically receive a scholarship to cover partial costs of tuition and books and paid release time to attend classes. Recipients make a commitment to remain in their sponsoring program or in the field for a specified period of time. Upon completion of their education, recipients receive a bonus or a raise. An initial evaluation of T.E.A.C.H. shows that the program participants who had taken community college

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courses made gains in classroom quality compared to a group of teachers that had not participated in T.E.A.C.H. (Cassidy, Buell, Pugh-Hoese, & Russell, 1995).

Other financial incentive initiatives include loan repayment programs such as the federal Child Care Provider Loan Forgiveness Demonstration Program which forgives loans for child care workers in low-income communities who obtain AA and BA degrees in early childhood education. Up to 100% of the loan can be forgiven after five years of service (Barnett, 2003b). Another federal program is the Early Childhood Educator Professional Development Program funded through Title II of the No Child Left Behind Legislation (U.S. Department of Education, 2004). The goal of the grants program is to increase the knowledge and skills of ECE professionals working with children in poor communities by providing funding for partnerships. Abstracts of funded partnerships indicate a wide range of approaches to improving professional development including intensive training, coaching and mentoring, training for early childhood faculty, and increased accessibility of resources.

Demand-side approaches include initiatives to link compensation and qualifications. For example, Child Care WAGES® is a wage supplement program that provides increasing supplements as recipients increase their education. The U.S. Army also linked competency to compensation by guaranteeing salary increases to those teachers meeting certain training milestones (Campbell, Applebaum, Martinson, & Martin, 2000).

Integrate ECE training and formal education. Maxwell and colleagues point to the creation of a linkage between training and the formal education system as an important strategy for improving professional development. They argue that little is

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known about the effectiveness of various types and content of training. Therefore, large increases in resources for training initiatives are not warranted unless training and formal education can be integrated, for example by offering credit for in-service and community training that is connected to the early childhood education system. One state example of this linkage is the Tennessee Early Childhood Training Alliance (TECTA) which offers 30 free hours of “orientation” training and subsequent subsidized tuition for training that counts toward both a CDA and provides credits toward an AA degree in the state’s technical colleges. TECTA also has a career ladder – as do other states – that outlines criteria, in increasing order of intensity, that need to be achieved to increase professional development qualifications. The TECTA lattice clearly specifies the number of training hours and academic credits that can be earned at different levels. Career ladders or lattices may take important steps toward integration of training and formal education by specifying how and where training can fit in with education. Indeed, the National Research Council (2001) recommends that states develop career ladders that include differentiated pay levels. The ladders typically begin with very basic training and work up to Master’s and Doctorate’s degrees, with multiple levels in-between. The ladders may also encompass other facets of a state’s professional development system such as state standards for teacher competencies (Core Knowledge and Standards in Colorado, Common Core Content in New Mexico), completion of state training program components (modules of the Training Program in Child Development in Connecticut) or state-specific credentials or certificates (South Carolina) (Ackerman, 2004).

Encourage community college-university partnerships. Maxwell and Clifford (in press) argue that articulation agreements are needed between two-year and four-year

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institutions of higher education, so that students who start or complete an AA degree can apply the credits earned toward completion of a BA degree program. Legislation in New Mexico, for example, mandates that articulation agreements be completed between early childhood programs in two- and four-year institutions. As an example of the implementation of this mandate, one challenging task currently being completed by the Higher Education Articulation Task Force is the development of common course titles and content across all two- and four-year institutions that reflect the Common Core Content, New Mexico's specifications for early childhood professional competencies (Turner, 2002). This is an example of a state practice with the potential to link professional development and practice more tightly through greater specification of the content expected in early childhood professional development.

Mentorship and apprentice programs. A critical component for assuring that improved qualifications result in high quality practice are programs that provide on-site mentoring, consultation, technical assistance and apprenticeships. Maxwell and Clifford cite the importance of connecting teachers with, for example, curriculum specialists such as those used by the U.S. Army (Campbell et al., 2000), or teacher mentors as a way to support quality, enhance professional development, and reduce turnover. Likewise, the U.S. Department of Labor offers a grant program through the Quality Child Care Initiative that funds state child care apprenticeship initiatives (Ackerman, 2004). These initiatives are nicely aligned with recommendations from the National Research Council (2001) specifying that all pre-service preparation should include a supervised, relevant student teaching or internship experience so that new teachers receive guidance and feedback on their practice. In addition, they recommend that all ECE programs have

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access to qualified supervisors of early childhood education so that teachers can reflect on their practice. Finally, they recommend the development of demonstration schools (in collaboration with universities) that can show “what an early childhood program should look like, what should be taught, or the kind of pedagogical strategies that are most effective” (p. 314).

Accessibility. Increasing the accessibility of higher education and professional development initiatives is a necessary component of a professional development infrastructure (Maxwell & Clifford, in press). Ackerman (2004) describes programs such as the Professional Growth Advisors in California, career counselors in Massachusetts, and a guidebook of coursework and contacts in Maine that can help nontraditional learners deal with “the higher-education maze of finding and registering for appropriate coursework” (p. 327) by providing guidance and a sense of security.

Evaluation and monitoring. A final necessary component of professional development systems is a focus on evaluation and monitoring of process and outcomes (National Prekindergarten Center, 2004). Monitoring allows programs to gather basic information, validate information, and correct course if necessary through technical assistance to programs. This technical assistance can be delivered through on-site consultation, training seminars, mentors, and by making resources readily available to programs (National Prekindergarten Center, 2004). Some states emphasize the importance of on-site monitoring as a key component in assuring the quality of their pre-kindergarten program (for example, Georgia; Henry et al., 2003).

Program evaluation goes beyond monitoring and technical assistance to ask whether programs are implemented as intended, whether they are having the desired

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outcomes, and the impact of programs on broader systems (National Prekindergarten Center, 2004). Evaluation can be expensive, but are nevertheless a critical component of a professional development system. Ultimately, evaluation provides information about accountability for professional development initiatives, that is, whether efforts are improving outcomes for children, families, and the public (Maxwell & Clifford, in press).

Summary and Conclusion

This paper summarizes evidence that professional preparation of early childhood educators and the quality of early childhood environments are linked; that more education, more education with content specific to early childhood development, and more training are associated with better quality environments. However the evidence indicates that the linkages are loose. We suggest that tightening the linkages will involve moving from a focus on professional development as a status variable to direct and detailed consideration of the content of professional development and practices to assure that desired behaviors are actually implemented in the early childhood classroom, as well as an appropriate balance between learning and practice in professional preparation. We note state efforts that have the potential to expand the number of well-qualified early childhood educators, including state efforts focusing directly on content of early childhood preparation and assuring practice in the classroom. We urge continued work to assure that “well qualified early childhood professional” is a status that is well grounded in terms of both content and practice.

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