

# Essay

## Early Childhood Education Investment: The Case for Nevada

According to 2000 Census data,<sup>1</sup> 35.1 percent of three- and four-year-olds in Nevada were enrolled in either nursery school or preschool.<sup>2</sup> Should Nevadans be concerned that their young children are at a disadvantage at start of kindergarten because so few were enrolled in prekindergarten programs? Are early childhood education programs (ECEP) the answer to ensuring that all children are ready for kindergarten? Some researchers would respond yes, and offer as evidence that ECEP also contribute to higher high school graduation rates, less grade retention (failing a grade), less special education enrollment, less juvenile delinquency, fewer teenage pregnancies, and higher life-time earnings. Barnett (2005), director of the National Institute for Early Education Research, believes it is “a concept whose time has come.” Lynch (2005), an economist, believes ECEP “will improve the academic performance and quality of life of millions of our children—including many who live in poverty—reduce crime, make the workforce of the future more productive, and strengthen our nation’s economy” (p. 9). This essay’s objectives are twofold: (1) to present research on ECEP,<sup>3</sup> which may shed some light on why it has become a hot topic for educators, economists, and policymakers, and (2) to construct a profile of three- and four-year-olds in Nevada attending school, with emphasis on preschool and nursery school.

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<sup>1</sup>CBER, using the Census 2000 5 percent Public Use Microdata Samples (PUMS).

<sup>2</sup>According to another data source, Census 2000 Summary File 3 (SF 3) - Sample Data, Nevada ranked 50th among the states and the District of Columbia on the percent of population ages three and four who were enrolled in school (includes all grade levels) with 36.3 percent (AECF, queried 11/4/05). The District of Columbia ranked number one with 67.2 percent of its same-age children enrolled in school, and North Dakota ranked last with 34.4 percent. Paradoxically, North Dakota, based on American Community Survey data, had the lowest high school dropout rate among the fifty states (AECF, queried 11/4/05).

<sup>3</sup>ECEP will be used in this essay, although many terms are used in the literature to denote school prior to kindergarten, including preschool, prekindergarten, 4-year-old kindergarten, Head Start, child care, day care, and nursery school (Barnett and Yarosz, 2004).

## *Kindergarten Readiness*

The American Federation of Teachers (2002) defines early childhood education as “programs that prepare children for schooling starting at age 3; have qualified staff; and have standards for preliteracy, prenumeracy,<sup>4</sup> social and emotional skills, and motor skills” (p. 5).

Proponents of ECEP claim that good-quality ECEP enable all children, disadvantaged children in particular, to start kindergarten at a higher level of preparedness. In other words, they close the kindergarten-readiness or preparation gap. Underlying this claim is the tenet that children from disadvantaged families are less likely to have a home environment conducive to kindergarten preparation.<sup>5</sup> Moreover, less variation in preparedness results in more effective classroom instruction and better student performance.

Research is abundant on the effectiveness of ECEP, albeit the findings are mixed. Gormley et al. (2005), in their study of Tulsa, Oklahoma’s universal prekindergarten program (excluding Head Start students), found that a diverse population of children—Hispanics, blacks, Native Americans, and whites—benefitted from the program. Based on the standardized and well-validated Woodcock-Johnson Achievement test, children improved on their prereading, prewriting, and prenumerical skills. Love’s et al. (2005) review of 17 Early Head Start programs concluded that the programs, overall, had positive impacts on three-year-olds’ cognitive and language functioning and a reduction in aggressive behavior. Perhaps the most comprehensive review of ECEP, although

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<sup>4</sup>“Prenumeracy skills are the abilities that a child develops in the early years that allow her/him to understand size, shape, amount, dimension, and the correspondence between objects and words associated with counting and measurement” (Evans et al., 2000, p. 399).

<sup>5</sup>In a working paper for the National Bureau of Economic Research, Magnuson et al. (2004) used reading books, singing songs, children’s participation in structured activities outside of the home, use of home computers, and the number of books in the home as a proxy for learning environment.

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dated, was conducted by Barnett (1995). After reviewing 36 studies of model demonstration projects, such as the Carolina Abecedarian, and large-scale public programs, such as Head Start, he concluded that the programs “can produce large effects on IQ during the early childhood years and sizable persistent effects on achievement, grade retention, special education, high school graduation, and socialization” (p. 43). Magnuson et al. (2004), using data from the Early Childhood Longitudinal Study-Kindergarten Class of 1998-99, found that “For most children, the cognitive benefits of prekindergarten quickly fade.” . . . “However, there are more lasting cognitive gains for disadvantaged children and for those experiencing minimal levels of instruction in the early school years” (p. 5). Prekindergarten increased children’s math and reading performance, but also increased their aggression and decreased their self-control during kindergarten in the fall of 1998. The diminishing academic advantages of prekindergarten were also documented by Barnett (1995) who found that children who did not attend early childhood programs, caught up to those who did by second or third grade.

In evaluating the effectiveness of ECEP on kindergarten readiness, readers must keep in mind the many differences that exist among the studies. Gormley et al. (2005) assert that selection bias, prekindergarten teacher evaluations, and the use of nonvalidated tests are possible methodological shortcomings of previous research. Other factors to consider are size of the program, qualifications of the staff, length of the teaching day, student/teacher ratio, etcetera. As a result, research findings, while highly encouraging, remain in their infancy.

## *Societal Benefits of ECEP*

Nobel Laureate economist James Heckman has been promoting the economic benefits of ECEP for low-income families. He posits that “Early skills breed later skills because learning begets learning,” and that “Returns are highest for investments made at younger ages and

remedial investments are often prohibitively costly” (Heckman and Masterov, 2004, p. 23). Other economists, in particular Grunewald and Rolnick (2005) at the Federal Reserve Bank of Minneapolis, have used findings from cost/benefit analyses to make a case for ECEP as an economic-development strategy, claiming that investing in human capital contributes to successful economies. Why would economists, better known as prognosticators of economies who use esoteric graphs and hard numbers, be interested in the educational development of young children? Because based on longitudinal studies of children enrolled in ECEP, the economic benefits to society are significant. In one study the benefit-to-cost ratio was \$17.07 for every \$1 invested (Schweinhart, 2005)—a ratio businesses would envy.

“Benefit-cost analysis involves estimating the monetary values of streams of cost and benefits in order to measure the program’s net value as a social investment” (Masse and Barnett, 2002). Three landmark studies clearly document the benefits of ECEP: (1) the High/Scope Perry Preschool Project, (2) the Chicago Parent-Child Centers, and (3) the Abecedarian Project. Table 1 summarizes the projects, including age at follow-up; the ECEP effects on two examples of social benefits, crime and high school graduation completion; and the cost-benefit ratio (based on each study’s set of benefits) to society. As reported in columns three and four, children who were enrolled in the ECEP were less likely to commit crimes and were more likely to graduate from high school than the control groups. (Only two of the benefits are shown in the table. The studies also looked at ECEP effects on special education enrollment, IQ, income, grade repetition, delinquency, and test scores.) The last column shows that the benefit-cost ratios range from 1:3.78 to 1:17.07. The wide range in ratios may be attributed to differences in the three programs, such as the age at which follow-ups were conducted and the differences in variables that measured costs and benefits.

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**Table 1**  
**Effects of Early Childhood Education Programs**

<i>Program</i>	<i>Subjects</i>	<i>Follow-Up</i>	<i>Crime</i>		<i>Education</i>		<i>Cost-Benefit Ratio of Program to Society</i>
			<i>Program Group</i>	<i>Control Group</i>	<i>Program Group</i>	<i>Control Group</i>	
Ypsilanti High/Scope Perry Preschool (1962-1967)	123 low-income children (black/African American) (program group n=58 and control group n=65)	At age 40	Arrested 5 or more times by age 40 (36%)	Arrested 5 or more times by age 40 (55%)	Graduated regular high school (65%)	Graduated regular high school (45%)	\$1 to \$17.07 <sup>1</sup>
Chicago Parent-Child Centers (1985-1986)	1,539 low-income children (93% black/African American and 7% Hispanic) (program group n=989 and control group n=550)	At ages 18 and 20	Any arrest by age 18 (16.9%)	Any arrest by age 18 (25.1%)	High school completion by age 20 (49.7%)	High school completion by age 20 (38.5%)	\$1 to \$7.14 <sup>2</sup>
Chapel Hill Abecedarian Project (1972-1978)	111 children (mostly black/African American) (program group n=57 and control group n=54)	At age 21	No effect	No effect	Graduated by age 19 (67%)	Graduated by age 19 (51%)	\$1 to \$3.78 <sup>3</sup>

<sup>1</sup>In constant 2000 dollars discounted at 3%.

<sup>2</sup>Present value in 1998 dollars discounted at 3%.

<sup>3</sup>Present value in 2002 dollars discounted at 3%.

Source: Masse, Leonard N. and W. Steven Barnett, 2002, *A Benefit Cost Analysis of the Abecedarian Early Childhood Intervention*, National Institute for Early Education Research; Reynolds, Arthur J., Judy A. Temple, Dylan L. Robertson, and Emily A. Mann, February 2002, *Age 21 Cost-Benefit Analysis of the Title I Chicago Child-Parent Centers*, Institute for Research on Poverty discussion paper no. 1245-02, available online at: <<http://www.irp.wisc.edu/publications/dps/pdfs/dp124502.pdf>> as of 1/19/06; Schweinhart, Lawrence J., *The High/Scope Perry Preschool Study Through Age 40: Summary, Conclusions, and Frequently Asked Questions*, High/Scope Educational Research Foundation, available online at: <<http://www.highscope.org/Research/PerryProject/PerryAge40SumWeb.pdf>> as of 11/2/05.

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## Preschool in Nevada

Although Nevada has not implemented any ECEP modeled after the three programs featured in Table 1, the state appears to support ECEP based on the Nevada Early Childhood Education Comprehensive Plan expenditures data reported in *The State of Preschool: 2004 State Preschool Yearbook*, which is published by the National Institute for Early Education Research (NIEER) (Barnett et al., 2004). This reflects purchases of preschool services through private spending and publically provided programs. In 2002-2003, state spending for preschool was \$3,000,000, which provided services to 814 children ages birth to five.<sup>6</sup> Of note, Nevada was only one of five states that “funded each child in state preschool at a level that matched or surpassed the state share for a child in K-12” (Barnett et al., 2004, p. 48). For 2003-2004, state funding was decreased to \$2,595,683, which provided services to 1,054 children for an average of \$2,463 per child.

Below is a portrait of children ages three and four who were enrolled in school during 2000.<sup>7</sup>

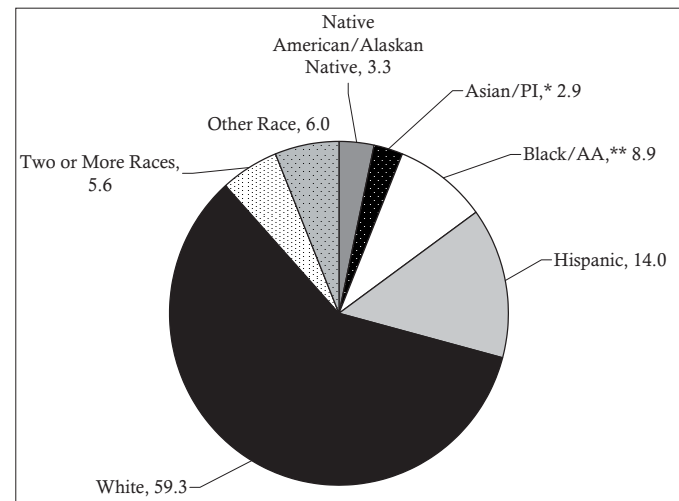
## School Enrollment

Approximately 35 percent (n=21,580) of Nevada’s three- and four-year-olds were enrolled in nursery school/preschool in 2000, 62.9 percent were not enrolled (n=38,680), and 2.0 percent (n=1,220) were enrolled in kindergarten.

<sup>6</sup>Includes state prekindergarten, Head Start, and preschool special education programs.  
<sup>7</sup>Two data sources were used to identify characteristics of children enrolled in school, the Public Use Microdata Samples (PUMS) 5 percent sample and the Census 2000 Summary File 3. The advantages of the PUMS data, which are taken from the 2000 Census data over the summary data, are that users can create their own variables and tabulations. For example, we can tabulate preschool enrollment by family income. The summary data offer preschool enrollment by counties, which is not available in the PUMS data. Together these sources provide a portrait of Nevada’s youngest children enrolled in school.

The majority of children enrolled in preschool/nursery school were 4-year-olds (61.3 percent). Of those enrolled in preschool/nursery school, the majority were white (59.3 percent), followed by Hispanic (14.0 percent), black/African American (8.9 percent), Native American/Alaskan Native (3.3 percent), and Asian/Pacific Islander (2.9 percent). See Figure 1.

**Figure 1**  
**Percent of Nevada Children Ages Three and Four Enrolled in Preschools and Nurseries by Race/Ethnicity: 2000**

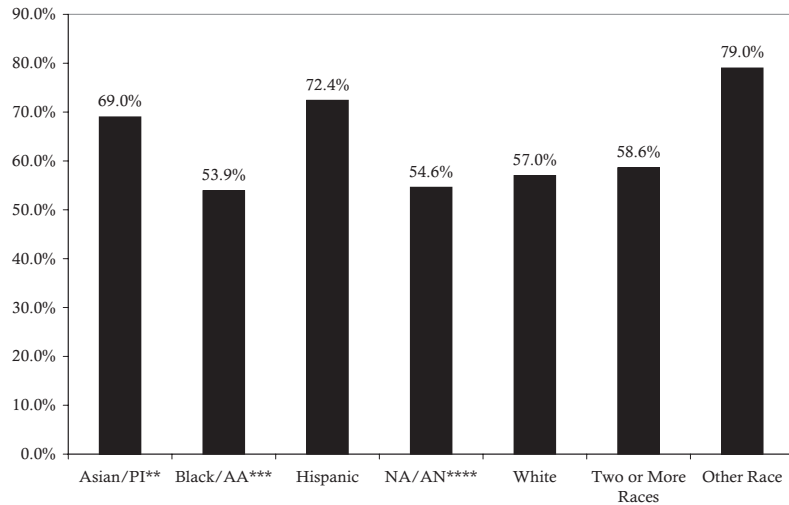


\*Pacific Islander.  
 \*\*African American.  
 Source: CBER, using the PUMS 5 percent sample.

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Looking at nonenrollment in school within racial/ethnic groups, other races (79.0 percent) and Hispanics (72.4 percent) had the highest rate of nonparticipation and blacks/African Americans (53.9 percent) the lowest. See Figure 2.

**Figure 2**  
**Percent of Nevada Children Ages Three and Four Not Enrolled in School\* by Race/Ethnicity: 2000**



\*Neither enrolled in preschool/nursery school nor kindergarten. Based on Census question: "At any time since February 1, 2000, has this person attended regular school or college? Include only nursery school, preschool, kindergarten, elementary school, and schooling which leads to a high school diploma or a college degree," Day, Jennifer Cheeseman and Amie Jamieson, August 2003, "School Enrollment: 2000," *Census 2000 Brief*, available online at: <<http://www.census.gov/prod/2003pubs/c2kbr-26.pdf>> as of 1/12/06.

\*\*Pacific Islander.

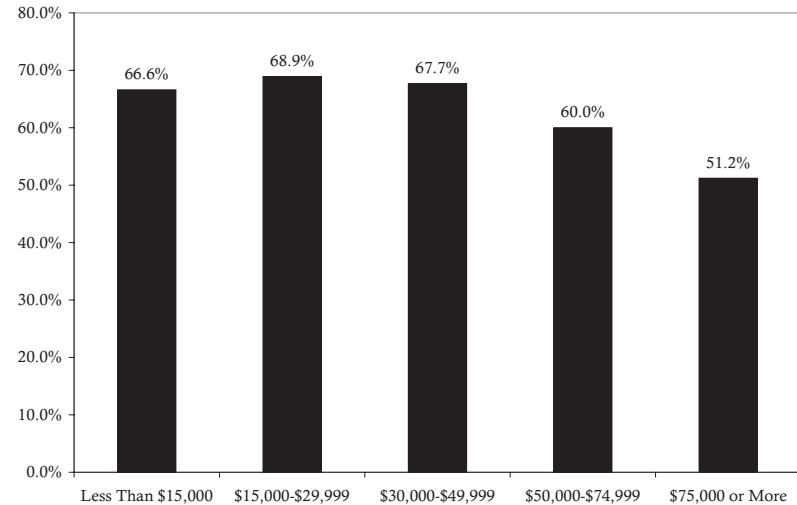
\*\*\*African American.

\*\*\*\*Native American/Alaskan Native.

Source: CBER, using the PUMS 5 percent sample.

Figure 3 illustrates that children who live in families with incomes between \$15,000 and \$49,999 were the least likely to be enrolled in school, followed by children who lived in families with incomes below \$15,000.

**Figure 3**  
**Percent of Nevada Children Ages Three and Four Not Enrolled in School\* by Family Income: 2000**



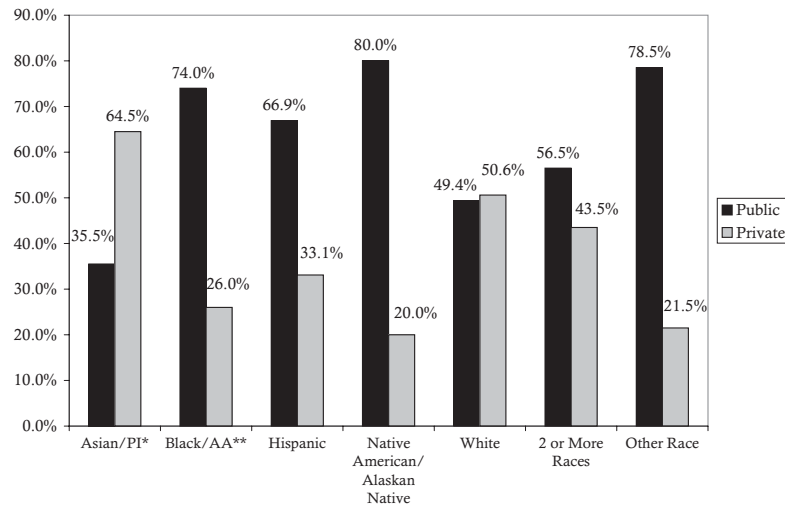
\*Includes preschool/nursery school and kindergarten.

Source: CBER, using the PUMS 5 percent sample.

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A greater percentage of children were enrolled in public preschools/nursery schools than in private ones (56.5 versus 43.5). Figure 4 shows the distribution of students enrolled in public and private schools by race/ethnicity. Hispanics, blacks/African Americans, Native Americans/Alaskan Natives, and children of two or more races and of other races were more likely to be enrolled in public than private schools. On the other hand, Asian/Pacific Islander children were almost twice as likely to have enrolled in private school than public, and white children were only slightly more likely to have been enrolled in private than public schools.

**Figure 4**  
**Percent of Nevada Children Ages Three and Four Enrolled in Public and Private Preschools and Nurseries by Race/Ethnicity: 2000**



\*Pacific Islander.

\*\*African American.

Source: CBER, using the PUMS 5 percent sample.

Table 2 illustrates that there is a relationship between family income and enrollment in type of school, which is not unexpected given fee requirements at private facilities. As income increases, the percentage of children enrolled in private schools also increases.

**Table 2**  
**Percent of Nevada Children Ages Three and Four Enrolled in Public and Private Preschools and Nurseries by Family Income: 2000**

Type of School	Family-Income Level				
	Less than \$15,000	\$15,000-\$29,999	\$30,000-\$49,999	\$50,000-\$74,999	\$75,000 or more
	Percent	Percent	Percent	Percent	Percent
Public	78.1	72.5	61.1	51.5	37.2
Private	21.9	27.5	38.9	48.5	62.8

Source: CBER, using the PUMS 5 percent sample.

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Table 3 shows the percent of children not enrolled in school by household type. Children in family households were less likely to be enrolled in school than children in nonfamily households. Children living in a household headed by a male with no female present were slightly less likely to be enrolled in school than children living in a household headed by a female with no male present (64.2 versus 60.3 percent).

**Table 3**  
**Percent of Nevada Children Ages Three and Four Not Enrolled in School\* by Household Type: 2000**

<i>Household Type</i>	<i>Ages 3-4 Not Enrolled</i>
	<i>Percent</i>
Married couple (family household**)	63.6
Male householder, no wife present (family household**)	64.2
Female householder, no husband present (family household**)	60.3
Male householder, not living alone (nonfamily household***)	53.3
Female householder, not living alone (nonfamily household***)	50.0

\*Includes preschool, nursery school, and kindergarten.

\*\*“Family householder and all other people in the living quarters who are related to the householder by birth, marriage, or adoption.”

\*\*\*“A nonfamily household consists of a householder living alone (a one-person household) or where the householder shares the home exclusively with people to whom he/she is not related.” *Source:* U.S. Census Bureau, “Current Population Survey (CPS) - Definitions and Explanations,” available online at: <<http://www.census.gov/population/www/cps/cpsdef.html>> as of 1/11/06.

*Source:* CBER, using the PUMS 5 percent sample.

In Clark and Washoe, the state’s two largest counties, 35.1 and 40.5 percent, respectively, of the children were enrolled in school. See Table 4 below.

**Table 4**  
**Percent of Children Ages Three and Four Enrolled in School\* in Nevada by County: 2000**

<i>County</i>	<i>Ages 3-4 Enrolled</i>
	<i>Percent</i>
Carson City	46.7
Churchill	32.7
Clark	35.1
Douglas	56.6
Elko	22.3
Esmeralda**	60.0
Eureka	44.4
Humboldt	44.3
Lander	27.9
Lincoln	37.3
Lyon	40.1
Mineral	35.8
Nye	30.7
Pershing	31.3
Storey**	25.0
Washoe	40.5
White Pine	38.0

\*Enrolled regardless of grade level.

\*\*Less than 10 children enrolled.

*Source:* Annie. E. Casey Foundation, Kids Count Census Data Online, Census 2000 Summary File 3 (SF 3), data query at: <<http://www.aecf.org/cgi-aecensus.cgi?>> as of 11/4/05.

# Essay Continued

## *Implementing High-Quality ECEP in Nevada*

The features of a high-quality preschool program, according to NIEER, “focus on what is critical for the child, family, teacher, curriculum, and classroom” (Espinosa, 2002). NIEER recommends that:

- ❖ “Teachers have at least a four-year college degree and specific training in early childhood education and are paid accordingly.
- ❖ Teachers have frequent, meaningful interaction with children. Important concepts such as mathematics and early literacy are taught through projects, everyday experiences, collaborative activities, and active curriculum.
- ❖ Each child’s progress is assessed and necessary adjustments made on a regular basis.
- ❖ The curriculum incorporates specified goals, expected outcomes, and assessment procedures” (Espinosa, 2002, p. 3).

NIEER rates state-funded ECEP. When it comes to quality, Nevada met only four of the ten quality benchmarks developed by NIEER. Refer to Table 5. Only one state, Arkansas, met all 10 quality benchmarks (Barnett et al., 2004). Nevada was one of 13 state prekindergarten initiatives that required teachers to have both a bachelor’s degree and specialized training in early childhood education.

Implementing a program similar to the Perry Preschool Program for three- and four-year-olds in Nevada would require hiring certified teachers in elementary, early childhood, or special education; implementing an average child-teacher ratio of 5:7; teaching children for 2½ hours on weekday mornings for a 30-week school year; and involving parents by having the teacher visit parents at home weekly for 90 minutes. According to Heckman and Masterov (2004), if administered in 2004, the cost of the program would have been \$9,785 per participant using national information.

**Table 5**  
**Benchmarks Met for High-Quality Preschool Programs\***  
**in Nevada: 2002-2003**

<i>Benchmark</i>	<i>Met</i>
Comprehensive curriculum	
Teacher holds at least a B.A.	x
Lead teachers have specialized training in prekindergarten	x
Assistant teachers hold a Child Development Associate certificate or equivalent training	
Teachers required to attend at least 15 clock hours of professional development	x
Class sizes 20 or fewer children	
1:10 staff member to children or better	
At least 1 support service for families of participants or the participants	x
Participants offered at least one meal per day	
Screening and referral services covering at least vision, hearing, and health	

\*Includes state prekindergarten, Head Start, and preschool special education programs.  
Source: Barnett, W. Steven, Jason T. Hustedt, Kenneth B. Robin, and Karen L. Schulman, 2004, *The State of Preschool: 2004 State Preschool Yearbook*, The National Institute for Early Education Research, available online at: <<http://nieer.org/yearbook/>> as of 11/4/05.

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## *Financing High-Quality ECEP*

Although research shows that investing in human capital at an early age results in economic benefits to society, governments, in general, have not poured monies into ECEP. A report by Voices for America's Children and the Child and Family Policy Center (2005) reveals that early childhood education has been underfunded, and that an investment gap exists in the funding of education for children/youth at different educational levels with the lowest levels getting the smaller portion of the monies. Based on data from nine states<sup>7</sup> and the District of Columbia "for every \$1.00 invested in a school-aged child, 52.1¢ is invested in a college-aged youth, but only 21.3¢ is invested in a pre-school aged child and 8.9¢ in an infant or toddler" (Voices, 2005, p. 1). The biggest supporter of infant and toddler and preschool education for the nine states had been the federal government through its funding of Head Start, Parts B and C of the Individuals with Disabilities Education Act, Temporary Assistance to Needy Families, and the Child Care and Development Block Grant (Voices, 2005).

How to pay for high-quality ECEP is a topic of discussion in the literature. Grunewald and Rolnick (2004) support shifting monies from economic-development schemes to endowments for ECEP. They propose that a foundation, Minnesota Foundation for Early Childhood Development, with a \$1.5 billion outlay be established in Minnesota to provide high-quality ECEP to low-income children. Donations from public and private sectors (who would receive tax breaks) and investments of the funds would provide annual earnings of \$105 million to cover the costs of the ECEP. The earnings would be used for tuition plus scholarships for all at-risk children that provide tuition to qualified ECEP plus the expense for high-quality parent mentoring and home visits. Nevada, though economic development ranks high on lists of state concerns, uses less monies, relatively speaking, than other states. As such, Nevada's efforts

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<sup>7</sup>Illinois, Kentucky, Mississippi, New Jersey, New Mexico, Ohio, Oklahoma, Texas, and Virginia.

to further ECEP would not be likely with shifts in spending. Scrivner and Wolfe (2002) recommend a combination of parents' contribution and an expansion of existing sources of revenue for subsidizing child care, including Head Start Child Care Development Fund, tax credits, and state funds. Parents would "pay according to ability to pay as measured by their average federal tax rate over a 10-year period" (p. 37). Given the likely broad benefit to society, financing strategies will need to be formulated to encompass a larger population that is currently not served. For a comprehensive review of economic-development strategies to promote quality ECEP see Scrivner and Wolfe (2002) and Warner et al. (2004).

## *Conclusion*

Research on the effectiveness of ECEP to close the kindergarten gap among students remains in its infancy, yielding results which remain debated. Still, high-quality ECEP have, however, been found to have high benefit-to-cost ratios for society and to be a greater benefit to disadvantaged students than to advantaged students. Universal ECEP, as suggested by the economic literature, require extensive policy reformulation. So the question is, given limited funding sources for public funding, when does the \$1 investment of public funds give society the best returns? With limited funding overall, the allocation of funding necessarily raises the question of who receives ECEP services. As such, the long- and short-term returns on investment must be considered, and, without universal ECEP, policy alternatives involve equity issues.

Preschool enrollment in Nevada is low, only 35.1 percent. Analysis of 2000 Census PUMS 5 percent sample data reveal that Hispanics had the lowest school enrollment rates and African Americans had the highest; Asians/Pacific Islanders and whites were more likely to be enrolled in private schools than other racial/ethnic groups; and children in lower-to middle-income families were the least likely to be enrolled in school, as were children in family households. The Nevada race/ethnicity and

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income findings parallel national data on preschool enrollment. Middle incomers have the lowest enrollment rates, which could be explained by the availability of Head Start and other free programs available to the lowest-income children. Higher incomes can afford private schools. Thus, current Nevada policies limit ECEP, and therefore, the issue is whether these policies are effective and equitable compared with alternative programs of access to high-quality ECEP. The questions warrant further discussion and consideration today for future well-being.

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