# SENATE BILL 8

# NEVADA EARLY CHILDHOOD EDUCATION (ECE) PROGRAM

2004-05
Longitudinal Evaluation Report

NEVADA DEPARTMENT OF EDUCATION
Special Education, Elementary and Secondary Education, and School Improvement
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# Executive Summary

The 2003 Nevada State Legislature passed Senate Bill (SB) 8 that continued the funding of the Nevada Early Childhood Education (ECE) Program and appropriated $2,896,583 in each fiscal year of the 2003-2005 biennium for early childhood education. The purpose of the legislation is to initiate or expand pre-kindergarten education programs. Eight school districts and two community-based organizations, including the Classroom on Wheels Program, operated an early childhood education program.

The Nevada Department of Education (NDE) conducted an evaluation of the Nevada ECE program in 2003-04, see *Nevada Early Childhood Education 2003-04 Evaluation Report.* In addition to the annual evaluation conducted by NDE, Senate Bill 8 directed the NDE to conduct a longitudinal evaluation study of the effectiveness of the program on the developmental progress of children and parental involvement.

The purpose of this report is to present the findings and conclusions of the longitudinal evaluation study which follows the four-year old children who participated in the Nevada ECE program during 2003-04 into kindergarten in 2004-05. In general, many of the children in the longitudinal evaluation study can be described as 'at-risk.'

The longitudinal evaluation study focused on the one key children variable of student learning, two other children variables, and one parent variable. Student learning includes three separate measures: the Preschool Language Scale-4 (PLS-4), Phonological Awareness Literacy Screening—Kindergarten (PALS-K), and teacher ratings of student performance. The two other children variables were student attendance and participation in special education. Parental involvement was measured by parent participation in fall parent/teacher conferences.

## Findings

- The results on the Preschool Language Scale-4 show that Nevada ECE children made significant gains on auditory comprehension and expressive communication during their participation in the Nevada ECE program in 2003-04 and from the time they enrolled in the Nevada ECE program to their follow-up assessment in the middle of their kindergarten school year in 2004-05.

- The results on the Preschool Language Scale-4 show that non-English proficient students maintained their relative position compared to the norming population in auditory comprehension and made some additional gains in expressive communication from the time they exited the Nevada ECE program to their follow-up assessment in the middle of their kindergarten school year. English proficient students showed a significant loss on auditory comprehension and expressive communication during the same time period.
- The results on a kindergarten teacher survey in 2004-05 show that, on average, Nevada ECE children were better prepared to enter kindergarten than their classroom peers.
- The results on a kindergarten teacher survey in 2004-05 show that, on average, Nevada ECE children performed "about the same as their peers" to "a little better than their peers" in kindergarten.
- The parents of Nevada ECE children attended parent/teacher conferences in kindergarten at a rate higher than did the parents of other students at the schools.
- The results on the fall 2004 administration of the Phonological Awareness Literacy Screening—Kindergarten suggest that Nevada ECE children were better prepared to enter kindergarten than their classroom peers.
- Nevada ECE children had the same attendance rate in kindergarten as classmates.
- Nevada ECE children participated in kindergarten special education programs at a higher percent rate than their classroom peers primarily because some Nevada ECE projects targeted children with special needs or served as inclusive environments for them.

## Conclusions

The findings from the longitudinal study of the Nevada Comprehensive Early Childhood Education Program suggest several conclusions.

1. Overall, children who participated in the Nevada ECE program were better prepared to enter kindergarten than their classroom peers.
2. Overall, children who participated in the Nevada ECE program performed slightly better in kindergarten than their classroom peers, especially in terms of social-emotional skills.
3. Overall, Nevada ECE helped better prepare students to perform more successfully in kindergarten. In addition, Nevada ECE may have better prepared the non-English proficient students than the English proficient students to perform more successfully in kindergarten.
4. Overall, the parents of Nevada ECE children were slightly more involved in their children's education than were the parents of other students at the schools.

# Chapter I. Introduction

The 2003 Nevada State Legislature passed Senate Bill (SB) 8 that appropriated $2,896,583 in each fiscal year of the 2003-2005 biennium for early childhood education.[1] A total of $301,000 in each fiscal year must be used for the Classroom on Wheels Program. According to SB 8, the grants are "to initiate or expand pre-kindergarten education programs." The grants must also have a parenting component as specified in the original legislation for the Nevada Early Childhood Education (ECE) Program.

In July 2003, NDE announced a competitive process to select the school districts and community-based organizations to operate the early childhood education programs. To qualify for funding, applicants had to already operate a Nevada ECE program and provide a detailed description of the proposed early childhood education and parenting programs and how the money would be used to supplement and not supplant money that would otherwise be expended for early childhood education programs.

NDE received applications from the 10 school districts and community-based organizations that operated a Nevada ECE project in the 2001-03 biennium. A panel of peer reviewers judged the 10 applications using criteria developed for the program. Due to decreased funding, NDE awarded funds to nine of the 10 applications based on the recommendations of peer reviewers. Eight of the successful applications are school districts, including Carson City, Churchill County, Clark County, Douglas County, Humboldt County, Pershing County, Washoe County, and White Pine. The one remaining application was from Great Basin Community College in Elko.

NDE also received an application from the Classroom on Wheels Program. NDE reviewed the application to ensure it contained the criteria developed for the program and awarded the Classroom on Wheels Program the money set aside for the program in the legislation. Classroom on Wheels has received funding from the Nevada State Legislature since 1997.

[1] The 2001 Nevada State Legislature appropriated $3.5 million in each fiscal year of the 2001-2003 biennium for the Nevada Early Childhood Education program.

The Nevada Department of Education conducted an evaluation of the Nevada ECE program in 2003-04, see *Nevada Early Childhood Education 2003-04 Evaluation Report.* The overall conclusion of the report was:

> *Nevada ECE projects have improved the quality of their early childhood programs and Nevada ECE projects have positively impacted program participants in early childhood development and parenting skills.*

In addition to the annual report conducted by NDE, Senate Bill 8 directed the Nevada Department of Education to conduct a longitudinal study of the effectiveness of the program. According to Section 189.50 of Senate Bill 8:

*The indicators must include, without limitation:*

*(a) Longitudinal measures of the developmental progress of children before and after their completion of the program, and*
*(b) Longitudinal measures of parental involvement in the program before and after completion of the program.*

The purpose of this report is to present the findings of a longitudinal study, consistent with Senate Bill 8, which follows the four-year old children who participated in the Nevada ECE program during 2003-04 into kindergarten in 2004-05.

## Nevada ECE Population in 2003-04

The Nevada ECE program provided services to 1,027 families, including 1,054 children and 1,055 adults who participated in services from July 1, 2003 through June 30, 2004. Out of the 1,054 children in the program, the longitudinal study followed the 844 children who were four years old during 2003-04 and entered kindergarten in 2004-05. Below are some key characteristics of these children and families when they entered the Nevada EEC program in 2003-04.

- Thirty-nine percent of the families had incomes under $20,000.
- Most of the 844 children are minority students: 57 percent were Hispanic, 30 percent were White, 5 percent were Black, 4 percent were Asian, 2 percent were categorized as “Other,” and 1 percent was American Indian.

- Forty-nine percent of the children spoke English at home while 48 percent spoke Spanish. Three percent of the children were reported as speaking "Other."
- Sixty-five percent of the children did not participate in any other educational program prior to Nevada ECE, and 80 percent did not participate in any other educational program while in Nevada ECE.
- Almost 70 percent of the children would not have attended any structured or semi-structured early childhood education program prior to entering kindergarten without Nevada ECE.
- Almost nine percent of the children participated in special education services while in Nevada ECE.

The profile of the children and families who are the focus of the longitudinal study is that many of these Nevada ECE families provided their children with limited formal educational experiences prior to the program, are from minority ethnic backgrounds, are English language learners, and a sizeable number of families are poor. In many ways, Nevada ECE children represent an at-risk population.

## Organization of this Report

Following this chapter, *Chapter II: Longitudinal Evaluation Design* describes the components of the longitudinal evaluation of the Nevada ECE program. *Chapter III: Results* presents data on the educational progress of Nevada ECE participants in kindergarten and on parent involvement. Finally, *Chapter XI: Summary of Findings and Conclusions* presents the findings and conclusions of Nevada ECE implementation.

# Chapter II. Longitudinal Evaluation Design

Senate Bill 8, Section 189.50 identifies specific longitudinal evaluation requirements for early childhood education programs funded under the legislation. (See Appendix A.) Essentially, the longitudinal evaluation must include indicators that measure:

- the developmental progress of children after their completion of the program, and
- parental involvement in the program after completion of the program.

This report presents the results to the data collected on these two indicators.

The Nevada Department of Education established an Early Childhood Education Evaluation Design Team in summer 2003 to develop an evaluation design consistent with the evaluation requirements outlined in SB 8. The Evaluation Design Team developed a follow-up study that would track the performance of four-year olds who participated in the Nevada ECE program during 2003-04 into kindergarten in 2004-05.

The follow-up study focused on three children variables (student learning, student attendance, and participation in special education) and one parent variable (parent/teacher conference attendance). Student learning includes three separate measures: the Preschool Language Scale-4 (PLS-4), Phonological Awareness Literacy Screening—Kindergarten (PALS-K), and teacher ratings of student performance.

## Methodology

The Evaluation Design Team elected to implement two separate research designs to complete the follow-up study: a *one group pretest/posttest design* and a *comparison group posttest only design*.

***One group pretest/posttest.*** The one-group pretest/posttest design includes a random sample of 300 of the 844 four-year olds who participated in the 2003-04 Nevada ECE program. The follow-up study used the same early childhood education assessment instrument used in the annual evaluation of Nevada ECE program, the Preschool Language Scale-4. The PLS-4 was administered initially when children entered the Nevada ECE

program in 2003-04 and again at the end of the school year or when they exited the program. For the follow-up study, the PLS-4 was administered again in winter 2005 when the Nevada ECE children were in kindergarten. The use of the PLS-4 as the follow-up measure in kindergarten facilitates more valid comparisons of children performance during their participation in Nevada ECE program with their performance in kindergarten.

The evaluator trained nine test administrators on the administration of the PLS-4. All nine test administrators had previously administered early childhood assessments and seven of the nine had previous experience with the Preschool Language Scale. The nine test administers tested a random sample of 300 four-year old children who participated in the Nevada ECE program in 2003-04 and entered kindergarten in 2004-05. The children were tested from January 18 through February 18, 2005.

In addition to the administration of the PLS-4, the test administrators collected data on three other data elements from the kindergarten teachers of the Nevada ECE children using a survey developed for the longitudinal evaluation. The teacher survey asked teachers to rate the ECE children, compared to other children in the classroom, on their readiness skills when entering kindergarten and on their current level of performance in kindergarten. The teacher survey also asked teachers to report whether the parents of the ECE children participated in the fall parent/teacher conference, if any, at the school.

***Comparison group posttest only design.*** In the comparison group posttest only design, the performance of Nevada ECE students in kindergarten is evaluated against a comparison group, i.e., the kindergarten classmates of the Nevada ECE students.

The comparison group posttest only design involves two separate analyses of different groups of Nevada ECE students. The first analysis includes only a sample of the Nevada ECE students who were enrolled in kindergarten for the 2004-05. Specifically, the sample includes only those kindergarten students who attended schools which administered the PALS-K assessment in fall 2004, i.e., schools that previously participated in the Nevada Reading Excellence Act program and schools currently participating in the Nevada Reading First program. In this analysis, the evaluator compared the performance of Nevada

ECE students who took the PALS-K with their classmates. [2]

The second analysis includes all the four-year old children who participated in the Nevada ECE program in 2003-04 and enrolled in kindergarten for 2004-05. This analysis examined student attendance (days enrolled and days attended) and student participation in special education. In this analysis, the evaluator compared the performance of students who participated in the Nevada ECE program with the performance of students in the same kindergarten classrooms.

## Data Collection Instruments

The longitudinal evaluation used three data collection instruments described below. In addition, the evaluation collected some information from the student information systems of participating school districts.

***Preschool Language Scale-4 (PLS-4).*** The PLS-4 is an individually administered norm-referenced language assessment for children from birth to six years old. The test produces scores for auditory comprehension and expressive communication. The Auditory Comprehension Subscale is used to evaluate how much language a child understands. For example, the test items for five- and six-year olds measure the ability to understand complex sentences and make comparisons and inferences. The Expressive Comprehension subscale is used to determine how well a child communicates with others. For example, the test items for five- and six-year olds examine preliteracy skills such as phonological awareness tasks, ability to tell a short story in sequence, and use of language to define words.

The PLS-4 data are expressed in standard score units. Standard scores express the extent to which a child's score exceeds or falls below the mean score of children the same age upon which the test was normed. PLS-4 scores have a standard score mean of 100 and a standard deviation of 15. For example, one-year-old children in the PLS-4 norm group have an average raw score of 11 in expressive communication which equates to a standard score of 100; two-year-olds have a average raw score of 20, which is also assigned a

2 All schools administered the PALS-K within six to eight weeks after the start of school in 2004-05.

standard score of 100; three-year-olds have an average raw score of 29 which equates to a standard score of 100, and so on.

The analysis of data on the PLS is done with standard scores, and because of the way a standard score scale is constructed (as explained above), the expectation is that the PLS-4 standard scores should not change in the absence of a "treatment." That is, assuming children develop at about the same rate, a child's relative position with respect to children's skills their own age should not change without a treatment or intervention. There is no "maturation effect" for the PLS-4, because the standard scores are age-linked. A one-year-old who scores at the mean for all one-year-olds will have the same standard score as a three-year old who scores at the mean for all three-year-olds. Hence, there is no particular reason a child's standard score in relation to the PLS-4 norm group should change over time unless that child is receiving special services. An increase in standard score during the time that a child is participating in Nevada ECE is, therefore, taken as an indication that Nevada ECE helped increase the child's auditory comprehension and expressive communication.

***Phonological Awareness Literacy Screening—Kindergarten (PALS-K).*** The PALS-K is a measure of young children's knowledge of fundamental components of the learning-to-read process. The PALS-K provides a direct means of matching early literacy instruction to specific literacy needs. The test includes six subtests that are summed to produce a Total Score on the PALS-K. The subtests and the areas they measure are:

- *Rhyme Awareness* measures the child's ability to recognize rhyming words and identify orally words that rhyme,
- *Beginning Sound Awareness* measures the child's ability to identify beginning consonants in single syllable words,
- *Alphabet Recognition* measures the child's ability to identify lower case letters,
- *Knowledge of Letter Sounds* measures the child's ability to sort words orally according to shared beginning and ending sounds, understand that words represent sounds, and identify beginning consonants in single-syllable words,
- *Spelling* measures the child's ability to apply phonological awareness in writing phonetically, and

- *Concept of Word* measures the child's ability to follow words from left to right and top to bottom on a printed page and match voice with print, associating oral phonemes, syllables, words, and phrases on their written forms.

The PALS-K data are expressed in raw scores that show the number of items answered correctly. Although not a norm-referenced test, the PALS-K provides benchmark ranges for kindergarten students based on when the test was administered, either in fall or in spring. The benchmarks or expectations for kindergarten performance were established based on data from four statewide administrations of the PALS-K. The benchmarks provide a frame of reference for expectations. Students who score below the benchmarks, especially for the Total Score, could benefit from additional instruction. The evaluation reports average raw scores as well as the percent of students who score above the benchmarks for each subtest and the Total Score.

***Kindergarten Teacher Survey.*** The evaluator developed a survey for the kindergarten teachers of the sample of Nevada ECE children in the one group pretest/posttest design to collect information on three variables: kindergarten readiness, kindergarten performance, and parent involvement. Teachers completed the survey at the same time when the ECE children in their classroom were tested on the PLS-4, in January and February 2005. (See Appendix B for a copy of the Kindergarten Teacher Survey.)

- *Kindergarten Readiness*. The survey asked teachers to rate the ECE child in their classrooms, compared to other children in the classroom, on how prepared they were to enter kindergarten: substantially better, a little better, about the same, a little less, and substantially less prepared.
- *Kindergarten Performance*. The survey also asked teachers to rate the ECE children in their classrooms, compared to other children in the classroom, on the student's current level of performance in kindergarten on a list of skills based on the Nevada Kindergarten Content Standards: less than their peers, a little less than their peers, about the same as their peers, a little more than their peers, and more than their peers.
- *Parent Involvement.* The survey asked teachers whether the parents of the ECE children participated in the fall parent/teacher conference at the school. It provides a measure of parental involvement.

# Chapter III. Results

This chapter presents the results on the two research designs for the longitudinal study of the Nevada ECE program. Data are presented on the *one group pretest/posttest design* first, followed by the results on the *comparison group posttest only design*.

### One group pretest/posttest design.

As mentioned previously, the *one group pretest/posttest design* examines the performance of a sample of 300 four-year old children who participated in the Nevada ECE program in 2003-04 and attended kindergarten in 2004-05. In this research design, the sample of Nevada ECE children received three administrations of the PLS-4—in fall 2003 and spring 2004 when they participated in the Nevada ECE program and again in winter 2005 when they were in kindergarten as a follow-up measure.

In addition to the PLS-4, the kindergarten teachers of the tested Nevada ECE students were asked to complete a survey on three variables: kindergarten readiness, kindergarten performance, and parent involvement. Teachers completed the survey at the same time when the ECE children in their classroom were tested on the PLS-4, in January and February 2005.

The evaluation initially selected a stratified random sample of 300 of the 844 four-year old children who participated in the Nevada ECE children in 2003-04 and went on to kindergarten in 2004-05 across the 10 projects. With the help of Nevada ECE project staff, the evaluation team located 274 of these 300 students in kindergarten. The status of the 26 students who were not found was unknown. Most likely, these children had moved out of the school district or chose to attend a private school. The evaluation team replaced these students with a random sample of remaining students at the appropriate project sites.

Out of the 300 students selected in the Nevada ECE sample, the evaluation tested 263 students, or 88 percent. Thirty-seven students were not tested: 22 students were not tested because they attended a year-round school and were on track break when they were

scheduled for testing, five students moved, two students were out of the country temporarily, and the parents of the two remaining students did not return the required written consent form for their children to participate in the longitudinal study.

The 263 students selected for the one group pretest/posttest design are representative of the larger group of 844 four-year olds who participated in the Nevada ECE program in 2003-04 and entered kindergarten for 2004-05 for gender and ethnicity. Table 1 shows the percent of students from the four-year old Nevada ECE population and the random sample of these students on gender and ethnicity. The results show only slight variations between the two populations.

**Table 1.** Percent of Nevada ECE children and the random sample of these students

| Programs | All Nevada ECE Children (n=844) | Sample of Nevada ECE Children (n=263) |
|---|---|---|
| Gender | | |
| ▪ Male | 49.9 | 51.0 |
| ▪ Female | 50.1 | 49.0 |
| Ethnicity | | |
| ▪ Asian/Pacific Islander | 3.9 | 3.8 |
| ▪ American Indian | 1.1 | 2.3 |
| ▪ Hispanic | 57.2 | 56.7 |
| ▪ African American | 5.3 | 4.2 |
| ▪ White | 30.4 | 31.2 |
| ▪ Other | 2.1 | 1.9 |

***Preschool Language Score—4.***

Figures 1 and 2 show the mean standard scores of the 263 students for the three test administrations of the PLS-4: the pretest and posttest means for school year 2003-04 when the children participated in the Nevada ECE program and the follow-up posttest mean when students were tested in kindergarten during January/February 2005.

**Figure 1.** PLS-4 auditory comprehension standard score means of Nevada ECE children in preschool and kindergarten

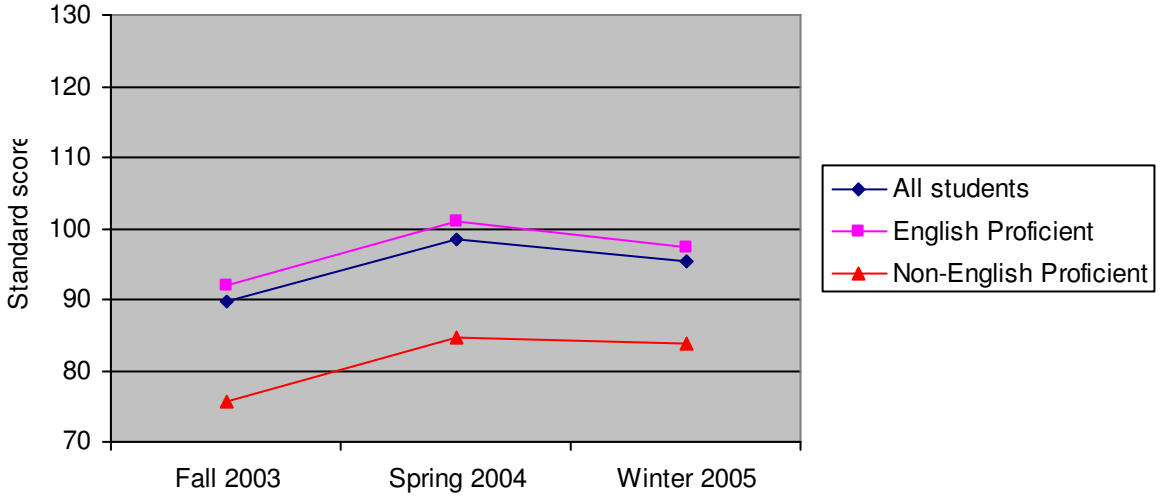



**Figure 2.** PLS-4 expressive communication standard score means of Nevada ECE children in preschool and kindergarten

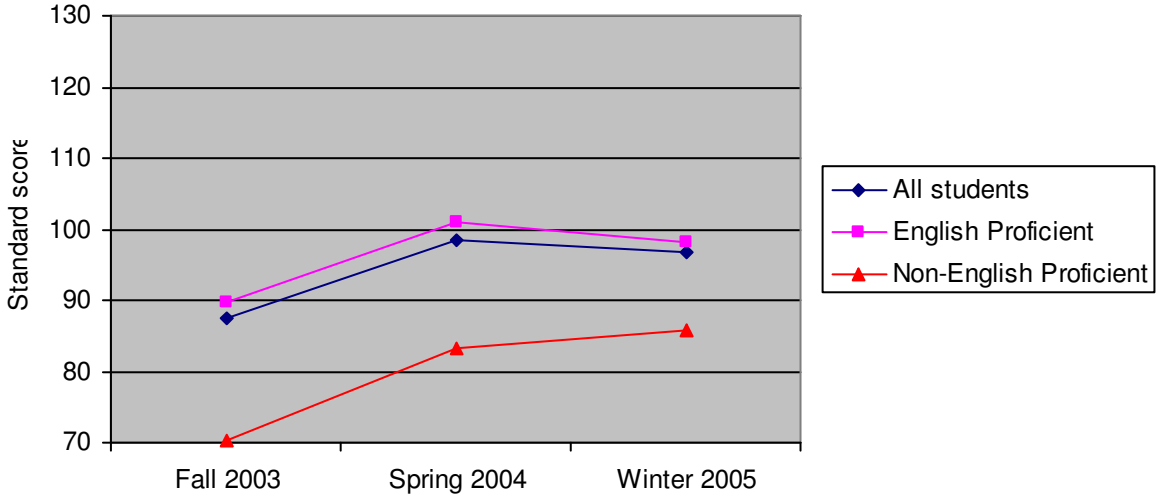



Table 2 presents the same mean standard scores in Figures 1 and 2. The table also shows the mean gains for three time periods: from the time they enrolled into the Nevada ECE program until the end of the program year in 2003-04, from the time they enrolled into the Nevada ECE program until the follow-up test during kindergarten in winter 2005, and from the end of the Nevada ECE program in spring 2004 until the follow-up test during kindergarten in winter 2005.

**Table 2.** PLS-4 standard score means and gains of Nevada ECE children in preschool and kindergarten

| Group (n)/Subtest | Mean Standard Scores | | | Mean Gains | | |
|---|---|---|---|---|---|---|
| | Pretest 2003 Mean | Posttest 2004 Mean | Follow-up 2005 Mean | Pretest 2003 to Posttest 2004 Mean Gain | Pretest 2003 to follow-up 2005 Mean Gain | Posttest 2004 to follow-up 2005 Mean Gain |
| **All students (n=263)** | | | | | | |
| ▪ Auditory Comprehension | 89.7 | 98.4 | 95.3 | 8.7* | 5.6* | -3.1* |
| ▪ Expressive Communication | 87.4 | 98.4 | 96.7 | 11.0* | 9.3* | -1.7* |
| **English Proficient Students (n=215)** | | | | | | |
| ▪ Auditory Comprehension | 92.1 | 101 | 97.3 | 8.9* | 5.2* | -3.7* |
| ▪ Expressive Communication | 89.8 | 100.9 | 98.2 | 11.1* | 8.4* | -2.7* |
| **Non-English Proficient Students (n=48)** | | | | | | |
| ▪ Auditory Comprehension | 75.6 | 84.6 | 83.8 | 9.0* | 8.2* | -0.8 |
| ▪ Expressive Communication | 70.3 | 83.3 | 85.9 | 13.0* | 15.6* | 2.6 |

* Significant at $p \leq .01$

*PLS-4 Means.* Overall, the PLS-4 means show that Nevada ECE children scored substantially below the mean before they entered the ECE program in fall 2003, between the 21st and 31st percentiles. In other words, these students scored substantially below the national norming group for the test. By the end of the program in spring 2004, students scored near the average score, between the 47th and 53rd percentiles, consistent with norming group. Finally, by the middle of their kindergarten school year, students scored slightly below the average score, between the 41st and 45th percentiles. While these students showed a decrease in the mean scale score and corresponding percentiles from the end of the preschool program to winter 2005, they were still above their own mean standard scores when they entered the ECE program in fall 2003.

*Pretest 2003—Posttest 2004.* The results show that the Nevada ECE children in the sample made significant gains during the time they participated in the preschool program: 8.7 standard score points in auditory comprehension and 11.0 standard score points in expressive communication, $p \leq .01$. In other words, these children made gains significantly above the norming group. In addition, the gains are similar to the gains that all Nevada ECE children made in 2003-04. Nevada ECE children made a gain of 9.7 standard score points in auditory comprehension and 12.2 standard score points in expressive communication.

> The results on the Preschool Language Scale-4 show that Nevada ECE children made significant gains on auditory comprehension and expressive communication during their participation in the Nevada ECE program and from the time they enrolled in the Nevada ECE program to their follow-up assessment in the middle of their kindergarten school year in 2004-05.

*Pretest 2003 – Follow-up 2005.* The results show that the Nevada ECE children in the sample made significant gains from the time they enrolled into the preschool program to the time they were administered a follow-up test during kindergarten in January/February 2005, $p \leq .01$. That is, the sample of Nevada ECE children showed a gain of 5.6 standard score points in auditory comprehension and 9.3 standard score points in expressive communication.

*Posttest 2004 – Follow-up 2005.* The results show that the Nevada ECE children in the sample did not make gains from the time they exited the preschool program to the time

they were administered a follow-up test during kindergarten in January/February 2005. In fact, the sample of Nevada ECE children showed a decrease of -3.1 standard score points in auditory comprehension and a decrease of -1.7 standard score points in expressive communication. Both of the differences are significant, $p < .05$.

The evaluator conducted several analyses to identify possible explanations of the decrease in standard score points from the time children exited the preschool program to the time they were administered a follow-up test in kindergarten, including analyses on the age of the students and possible test administrator bias. These analyses showed only one variable that may have contributed to the decrease in standard scores—test administrator bias.

The test administrator may have influenced the size of the decrease in standard scores from the posttest in spring 2004 to the follow-up measure in winter 2005. Students tested by four administrators showed an average loss of -8.2 points on auditory comprehension and -6.6 points on expressive communication as compared to the students tested by the other five administrators who showed an average gain of 2.0 points on auditory comprehension and 1.9 points on expressive communication. Part of the difference in the scores of these two groups of test administrators can be explained by the fact that students tested by the four test administrators who showed a decrease had higher scores on the posttest in spring 2004 than students tested by the other five test administrators. In other words, the students who showed an average loss from their exit in the Nevada ECE program until their follow-up test in kindergarten performed at a higher level when they exited the Nevada ECE program than the other children and are more likely to show a loss.

Another possible explanation for the decrease in standard score points is that the Nevada ECE program is a much more intensive early childhood experience than the early childhood experiences of children in the PLS-4 norming population, resulting in very large gains for Nevada ECE children. The kindergarten experiences of the Nevada ECE children and the PLS-4 norming population, on the other hand, may be very similar. As a result, kindergarten children in the norming population actually made up some of the ground they lost initially to the kindergarten Nevada ECE children because their kindergarten program is a more intensive early childhood experience than they had previously.

***English Proficient and non-English Proficient***. The evaluation conducted an analysis to determine the gains of children in the Nevada ECE program who did not have sufficient English to take the PLS-4 at the time of their enrollment into the program.[3] Out of the 263 students in the sample of tested Nevada ECE children, 48 students did not have sufficient English to take the PLS-4 at the time of their enrollment: 215 students had sufficient English at enrollment to take the PLS-4. Table 2 shows the mean standard scores and gains for these two groups of students.

The results show that the Nevada ECE children in the sample who were non-English speaking at the time of enrollment into the preschool program made significant gains during the preschool program year when compared to the norming population: 9.0 standard score points in auditory comprehension and 13.0 standard score points in expressive communication, $p \leq .01$.

The results also show that the Nevada ECE children in the sample who were non-English proficient at the time of enrollment made significant gains from the time that they entered the preschool program to the time they were administered a follow-up test in kindergarten, $p \leq .01$. That is, the sample of Nevada ECE children made a gain of 8.2 standard score points in auditory comprehension and 15.6 standard score points in expressive communication. Not only are these gains substantially above the norming group of the test, but the gains are also larger than the gains of the English proficient students for the same time period.

> The results on the Preschool Language Scale-4 show that non-English proficient students maintained their relative position compared to the norming population in auditory comprehension and made some additional gains in expressive communication from the time they exited the Nevada ECE program to their follow-up assessment in the middle of their kindergarten school year. English proficient students showed a significant loss on auditory comprehension and expressive communication during the same time period.

Perhaps more importantly, while the English proficient sample of students showed a significant decrease in test scores from the time

3 The annual evaluation of the Nevada ECE program in 2003-04 determined that 234 of the 1,054 Nevada ECE students (22 percent) did not have sufficient English language proficiency at enrollment into the program to take the Preschool Language Scale-4. In these cases, project staff waited to test these children until project staff determined the child had sufficient English skills to take the PLS-4.

that they exited the preschool program in spring 2004 to the time they were administered the follow-up test in winter 2005, the
non-English proficient sample scored about the same on auditory comprehension during the same time period and showed an increase in expressive communication. Neither of these two differences were significant, $p \leq .01$. Nevertheless, while the English proficient students lost some ground to the norming sample after they exited the Nevada ECE program in spring 2004 to the follow-up measure in kindergarten, non-English proficient students did not. These results suggest Nevada ECE may have better prepared the non-English proficient students than the English proficient students to perform more successfully in kindergarten had they not participated in the program.

***Teacher Survey.***

The teacher survey collected information from the kindergarten teachers for the of Nevada ECE children on three variables: kindergarten readiness, kindergarten performance, and parent involvement. The results are presented below.

> The results on a kindergarten teacher survey in 2004-05 show that, on average, Nevada ECE children were better prepared to enter school than their classroom peers.

*Kindergarten Readiness*. The survey asked teachers to rate the Nevada ECE children in their classroom, compared to other children in the classroom, on how prepared they were to enter kindergarten: substantially better, a little better, about the same, a little less, and substantially less prepared. Out of the 263 children who were tested, 256 kindergarten teachers completed the survey and 237 teachers completed this item on the survey.

The results in Table 3 show that 151 children (64 percent) of the children who participated in the Nevada ECE program were perceived as better prepared to start school in kindergarten than classroom peers. Only 17 percent of the Nevada ECE children were perceived as less prepared to start school than other children.

**Table 3.** Kindergarten teacher ratings of Nevada ECE children on kindergarten readiness

| **Number of teachers (percent)** | **Among children in your class this year, would you say that CHILD'S NAME was—** (n=237) |
|---|---|
| 88 (37%) | Substantially better prepared to start school ready to succeed |
| 63 (27%) | A little better prepared |
| 47 (20%) | Equally well prepared |
| 25 (11%) | A little less prepared |
| 14 (6%) | Substantially less prepared to start school ready to succeed |

*Kindergarten Performance*. The survey also asked teachers to rate the Nevada ECE children in their classroom, compared to other classroom children, on the students' current level of performance in kindergarten: less than peers, a little less than peers, about the same as peers, a little better than peers, and better than peers. The kindergarten skills were based on the Nevada Kindergarten Content Standards. The number of teachers who completed each item of this question differed slightly, ranging from 249 to 256.

> The results on a kindergarten teacher survey in 2004-05 show that, on average, Nevada ECE children performed "about the same as their peers" to "a little better than their peers" in kindergarten.

The results in Table 4 show that, on average, children who participated in the Nevada ECE program were perceived as performing from "about the same as their peers" to "a little better than their peers" on all eight items in the survey, with mean scores ranging from a 3.3 to a 3.7 on a five-point scale where "3" is "about the same as their peers." The Nevada ECE children scored highest on the items related to social-emotional development ("Is well behaved in the classroom" and "Gets along with other children").

**Table 4.** Kindergarten teacher ratings of Nevada ECE children on kindergarten skills

| Kindergarten Skills | Number of Teachers Who Marked | | | | | Average Rating |
|---|---|---|---|---|---|---|
| | Less than peers | A little less than peers | About the same as peers | A little better than peers | Better than peers | |
| a. Identify and use letter/sound relationships to identify some words | 33 | 38 | 59 | 57 | 69 | 3.4 |
| b. Draw or write, with teacher assistance, stories about familiar experiences and events | 20 | 30 | 98 | 62 | 39 | 3.3 |
| c. Listen to and follow oral directions | 14 | 29 | 83 | 61 | 66 | 3.5 |
| d. Count to 20 | 23 | 25 | 68 | 62 | 73 | 3.5 |
| e. Pays attention in class | 20 | 30 | 83 | 62 | 58 | 3.4 |
| f. Is well-behaved in the class | 8 | 19 | 87 | 59 | 81 | 3.7 |
| g. Gets along with other children | 4 | 17 | 99 | 59 | 76 | 3.7 |
| h. Has problem-solving skills | 15 | 44 | 86 | 53 | 54 | 3.3 |

*Parent Involvement.* The survey also asked teachers whether the parents of the Nevada ECE children participated in the fall parent/teacher conference, if any. Out of 254 surveys, 206 teachers responded to the parents' participation: 25 teachers did not complete the item and 26 teachers indicated they did not conduct a parent/teacher conference yet. Out of the 206 teachers who held a parent/teacher conference, 197 teachers (95.6 percent) reported that the parents of the Nevada ECE children attended the parent/teacher conference.

Parents of Nevada ECE children attended parent/teacher conferences in kindergarten at a rate higher than did the parents of other students at the schools.

For comparison, the evaluation calculated the average percent of parents who attended parent/teacher conferences at the same schools that the sample of

Nevada ECE children attended.[4] The Nevada ECE children attended 89 elementary schools; however, many schools enrolled just one or two Nevada ECE children. Instead of gathering data on all 89 schools, the evaluator elected to collect data on only schools that enrolled at least four students from the Nevada ECE sample. The evaluation found that 26 schools enrolled at least four Nevada ECE students in kindergarten in 2004-05. In fact, the 26 schools enrolled a total of 189 of the 263 students tested, or 72 percent. The rates of attendance at parent/teacher conferences for the 26 elementary schools ranged from 51 percent to 100 percent, with a weighted average of 93.2 percent. In other words, the parents of Nevada ECE children attended parent/teacher conferences in kindergarten at a rate higher than did the parents of other students at the school.

[4] The evaluation used the parent/teacher conference attendance rates from 2003-04 since data from 2004-05 were not yet available. The school parent/teacher conference rate is based on data from all grade levels at the schools rather than just kindergarten. Individual grade level data are not available.

## Comparison group posttest only design

As mentioned previously, the *comparison group posttest only design* includes two separate analyses with different samples of ECE students. In the first analysis, the evaluator compares the performance of kindergarten students who participated in the Nevada ECE program with students in the same kindergarten classrooms and completed the PALS-K as part of the Nevada Reading Excellence Act or Nevada Reading First programs.

The second analysis examines the performance of all kindergarten students who participated in the Nevada ECE program with the performance of students in the same kindergarten classrooms on student attendance (days enrolled vs. days attended) and participation in special education.

***Phonological Awareness Literacy Screening—Kindergarten (PALS-K).***

As mentioned previously, the 2003-04 Nevada ECE program served 1,054 students: 844 of these students were four-years old in 2003-04 and went on to kindergarten in 2004-05. Out of these 844 students, 274 students (32 percent) attended schools that participated in the Nevada Reading Excellence Act or Nevada Reading First programs and had test scores on the PALS-K for fall 2004. The comparison group includes 2,312 students who were in the same kindergarten classes as the 274 Nevada ECE children.

Table 5 shows the age and ethnicity of the two populations, for comparison. The results

**Table 5.** Characteristics of Nevada ECE children and comparison group

| Age and Ethnicity | Nevada ECE Children (n=274) | Classmates of Nevada ECE Children (n=2312) |
|---|---|---|
| **Age** | 66.9 months | 67.2 months |
| **Ethnicity** | | |
| ▪ Asian/Pacific Islander | 3.1 % | 3.1 % |
| ▪ American Indian | 2.8 % | 2.1 % |
| ▪ Hispanic | 55.0 % | 40.1 % |
| ▪ African American | 4.3 % | 4.4 % |
| ▪ White | 28.4 % | 41.8 % |
| ▪ Other | 6.4 % | 7.8 % |

show that the two populations are slightly different, i.e., the Nevada ECE population includes a larger percent of minority students than their classmates, 72 percent vs. 58 percent.

Table 6 presents the average scores for the two groups of students on each subtest of the PALS-K as well as the Total Score. The results show that children who participated in the Nevada ECE program had higher mean scores than their classmates on all the subtests and on the Total Score. More importantly, the differences between the means of the Nevada ECE children and their classmates are significant for the Total Score and the two subtests of Alphabet Recognition and Concept of Word, $p \leq .05$.

**Table 6.** Mean scores on the subtests and total score of the PALS-K

| Subtest | Nevada ECE Children | Classmates |
|---|---|---|
| Rhyme | 6.9 | 6.7 |
| Beginning Sounds | 6.6 | 6.3 |
| Alphabet Recognition | 14.5* | 13.1 |
| Letter Sounds | 8.3 | 7.8 |
| Spelling | 4.4 | 4.2 |
| Concept of Word | 5.0* | 4.3 |
| **Total Score** | **45.7*** | **42.4** |

* = $p \leq .05$

In other words, Nevada ECE children scored higher on the PALS-K than their classroom peers when entering kindergarten. The results suggest that Nevada ECE children were better prepared to enter school than their classroom peers.

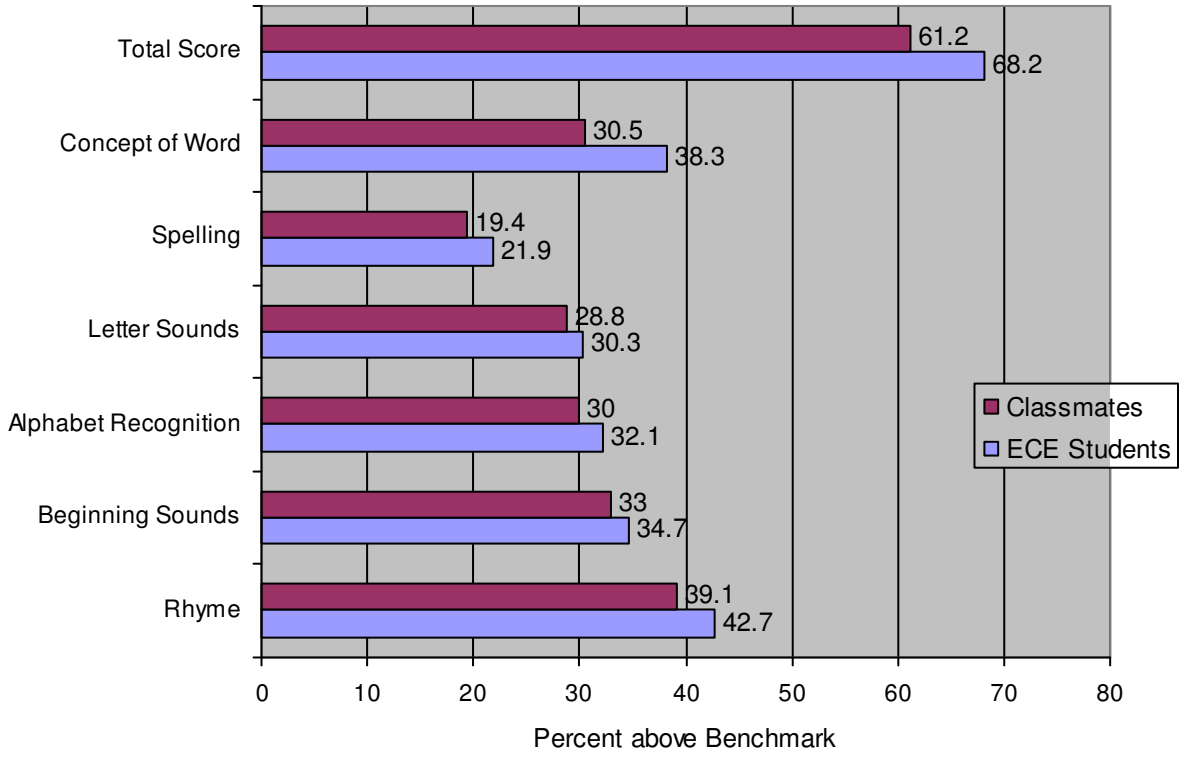
> The results on the fall 2004 administration of the PALS-K suggest that Nevada ECE children were better prepared to enter school than their classroom peers.

In addition to examining the mean scores of the two groups on the PALS-K, the evaluation also examined the percent of students who were above the expected benchmarks for kindergarten children. For example, the benchmark range for the Beginning Sounds subtest is 5 to 8 raw score points. The evaluation calculated the number and percent of students who were above the

benchmark range for each subtest and for the Total Score for the two groups of students as presented in Figure 3.

The results show that a larger percent of Nevada ECE children than their classmates were above the benchmark for every subtest and for the Total Score on the PALS-K.

**Figure 3.** Percent of ECE students and classmates above benchmarks on PALS-K




### *Student Attendance and Participation in Special Education*

The second analysis examines the performance of all kindergarten students who participated in the Nevada ECE program with the performance of students in the same kindergarten classrooms on student attendance (days enrolled vs. days attended) and participation in special education. Data are available for 692 Nevada ECE children and 5,563 of their classmates. Table 7 shows the characteristics of the two populations on free and reduced launch, English as a Second Language, and ethnicity, for comparison.

The results show that the two populations are slightly different. Overall, the Nevada ECE population is poorer and includes a larger percent of minority and English as a Second Language students than their classmates.

**Table 7.** Characteristics of Nevada ECE children and classmates

| Children Characteristics | Nevada ECE Children (n=692) | Classmates (n=5563) |
|---|---|---|
| **Free and Reduced Lunch** | 47.5% | 38.4% |
| **English as a Second Language** | 43.6% | 32.8% |
| **Ethnicity** | | |
| ▪ Asian/Pacific Islander | 4.7% | 5.3% |
| ▪ American Indian | 1.6% | 1.8% |
| ▪ Hispanic | 58.2% | 43.4% |
| ▪ African American | 5.3% | 8.4% |
| ▪ White | 30.3% | 41.1% |

*Student Attendance (days enrolled vs. days attended).* An important target of any school is to have high student attendance at school so students have the opportunity to learn. In fact, student average daily attendance (ADA) is one criterion Nevada uses for school accountability. While the longitudinal study of the ECE program did not collect data on student ADA as it is defined in Nevada State Statute, the study did collect data on the percent of days that Nevada ECE children and their classmates attended school compared to the days they were enrolled in school. Table 8 shows the percent of "days attended" to "days enrolled" for Nevada ECE children and their classmates. The results indicate that Nevada ECE children attended school in kindergarten at essentially the same rate as their classmates.

Nevada ECE children had the same attendance rate in kindergarten as their class-mates.

**Table 8.** Percent of days enrolled/days attended for Nevada ECE children and classmates

| Nevada ECE Children (n=692) | Classmates (n=5563) |
|---|---|
| 93.5 | 93.4 |

*Participation in Special Education.* The evaluation also examined the percent of the Nevada ECE children and their classmates enrolled in special education as presented in Table 9. The results indicate that Nevada ECE children participated in special education programs at a higher rate than their classroom peers and kindergarten students statewide, but at a lower rate than all Nevada students.

**Table 9.** Percent of Nevada ECE children, their classmates, and kindergarten students statewide in special education

| All Nevada students (n=385,414) | All kindergarten students (n=29,918) | Nevada ECE Children (n=692) | Classmates (n=5563) |
|---|---|---|---|
| 11.7% | 7.5 %[5] | 10.5 % | 6.5 % |

The primary reason why Nevada ECE children participated in special education at a higher rate than their classmates and kindergarten students statewide is that several Nevada ECE projects operated sites specifically for children with special needs. In other cases, children with special needs were placed into Nevada ECE project sites so they could be with "typically developing peers."

Another reason why there is a larger percent of Nevada ECE children in kindergarten is that Nevada ECE projects, after identifying students with disabilities, often encouraged parents to keep the children at the Nevada ECE program in a least restrictive environment rather than referring the child to an early childhood special education program.

Given these explanations, it is reasonable that the percent of Nevada ECE students in special education is higher than their classroom peers.

Nevada ECE children participated in kindergarten special education programs at a higher percent rate than their classroom peers primarily because some Nevada ECE projects targeted children with disabilities or served as inclusive environments for them.

5 This percent is an estimate since Nevada tracks the number of children in special education by age and tracks student enrolment by grade. In this case, we divided the number of five-year old children in special education as of December 2004 by the total kindergarten enrollment as of October 2004.

# Chapter IV. Summary of Findings and Conclusions

The longitudinal study of the Nevada Comprehensive Early Childhood Education Program focused on two indicators, as required in Section 189.50 of Senate Bill 8, for the four-year old children who participated in the Nevada ECE program in 2003-04 and who entered kindergarten in 2004-05:

- the developmental progress of children after their completion of the program, and
- parental involvement after completion of the program.

The longitudinal study examined three children variables (student learning, student attendance, and participation in special education) and one parent variable (parent/teacher conference attendance). Student learning included three separate measures: the Preschool Language Scale-4 (PLS-4), Phonological Awareness Literacy Screening—Kindergarten (PALS-K), and teacher ratings of student performance. Parental involvement was measured by parent participation in the scheduled fall parent/teacher conference, if any, in 2004-05.

A summary of the findings from the longitudinal study are presented below followed by several conclusions.

## Findings

- The results on the Preschool Language Scale-4 show that Nevada ECE children made significant gains on auditory comprehension and expressive communication during their participation in the Nevada ECE program in 2003-04 and from the time they enrolled in the Nevada ECE program to their follow-up assessment in the middle of their kindergarten school year in 2004-05.
- The results on the Preschool Language Scale-4 show that non-English proficient students maintained their relative position compared to the norming population in auditory comprehension and made some additional gains in expressive communication from the time they exited the Nevada ECE program to their follow-up assessment in the middle of their kindergarten school year. English proficient students showed a significant loss on auditory comprehension and expressive communication during the same time period.

- The results on a kindergarten teacher survey in 2004-05 show that, on average, Nevada ECE children were better prepared to enter kindergarten than their classroom peers.
- The results on a kindergarten teacher survey in 2004-05 show that, on average, Nevada ECE children performed "about the same as their peers" to "a little better than their peers" in kindergarten.
- The parents of Nevada ECE children attended parent/teacher conferences in kindergarten at a rate higher than did the parents of other students at the schools.
- The results on the fall 2004 administration of the Phonological Awareness Literacy Screening—Kindergarten suggest that Nevada ECE children were better prepared to enter kindergarten than their classroom peers.
- Nevada ECE children had the same attendance rate in kindergarten as classmates.
- Nevada ECE children participated in kindergarten special education programs at a higher percent rate than their classroom peers primarily because some Nevada ECE projects targeted children with special needs or served as inclusive environments for them.

## Conclusions

The findings from the longitudinal study of the Nevada Comprehensive Early Childhood Education Program suggest several conclusions.

1. Overall, children who participated in the Nevada ECE program were better prepared to enter kindergarten than their classroom peers.
2. Overall, children who participated in the Nevada ECE program performed slightly better in kindergarten than their classroom peers, especially in terms of social-emotional skills.
3. Overall, Nevada ECE helped better prepare students to perform more successfully in kindergarten. In addition, Nevada ECE may have better prepared the non-English proficient students than the English proficient students to perform more successfully in kindergarten.
4. Overall, the parents of Nevada ECE children were slightly more involved in their children's education than were the parents of other students at the schools.

# APPENDIX A

## Senate Bill 8, Section 189.50—
## Nevada
## Early Childhood Education

**Sec. 189.50.**

1. The Department of Education shall transfer from the State Distributive School Account the following sums for early childhood education:

   For the Fiscal Year 2003-2004. $2,896,583
   For the Fiscal Year 2004-2005. $2,896,583

2. Of the sums transferred pursuant to subsection 1, $301,000 in each fiscal year of the 2003-2005 biennium must be used for the Classroom on Wheels Program.

3. The remaining money transferred by subsection 1 must be used by the Department of Education for competitive state grants to school districts and community-based organizations for early childhood education programs.

4. To receive a grant of money pursuant to subsections 2 and 3, school districts, community-based organizations and the Classroom on Wheels Program must submit a comprehensive plan to the Department of Education that includes, without limitation:

   (a) A detailed description of the proposed early childhood program;
   (b) A description of the manner in which the money will be used, which must supplement and not replace the money that would otherwise be expended for early childhood education programs; and
   (c) A plan for the longitudinal evaluation of the program to determine the effectiveness of the program on the academic achievement of children who participate in the program.

5. A school district, community-based organization or Classroom on Wheels Program that receives a grant of money shall:

   (a) Use the money to initiate or expand prekindergarten education programs that meet the criteria set forth in the publication of the Department of Education, entitled "August 2000 Public Support for Prekindergarten Education For School Readiness in Nevada."
   (b) Use the money to supplement and not replace the money that the school district, community-based organization or Classroom on Wheels Program would otherwise expend for early childhood education programs, as described in this section.
   (c) Use the money to pay for the salaries and other items directly related to the instruction of pupils in the classroom.
   (d) Submit a longitudinal evaluation of the program in accordance with the plan submitted pursuant to paragraph (c) of subsection 4. The money must not be used to remodel classrooms or facilities or for playground equipment.

6. The Department of Education shall develop statewide performance and outcome indicators to measure the effectiveness of the early childhood education programs for

which grants of money were awarded pursuant to this section. The indicators must include, without limitation:

(a) Longitudinal measures of the developmental progress of children before and after their completion of the program;
(b) Longitudinal measures of parental involvement in the program before and after completion of the program; and
(c) The percentage of participants who drop out of the program before completion.

7. The Department of Education shall review the evaluations of the early childhood education programs submitted by each school district, community-based organization and the Classroom on Wheels Program pursuant to paragraph (d) of subsection 5 and prepare a compilation of the evaluations for inclusion in the report submitted pursuant to subsection 8.

8. The Department of Education shall, on an annual basis, provide a written report to the Governor, Legislative Committee on Education and the Legislative Bureau of Educational Accountability and Program Evaluation regarding the effectiveness of the early childhood programs for which grants of money were received. The report must include, without limitation:

(a) The number of grants awarded;
(b) An identification of each school district, community-based organization and the Classroom on Wheels Program that received a grant of money and the amount of each grant awarded;
(c) For each school district, community based-organization and the Classroom on Wheels Program that received a grant of money:
    (1) The number of children who received services through a program funded by the grant for each year that the program received funding from the State for early childhood programs; and
    (2) The average per child expenditure for the program for each year the program received funding from the State for early childhood programs;
(d) A compilation of the evaluations reviewed pursuant to subsection 7 that includes, without limitation:
    (1) A longitudinal comparison of the data showing the effectiveness of the different programs; and
    (2) A description of the programs in this state that are the most effective; and
(e) Any recommendations for legislation.

9. Any balance of the sums transferred pursuant to subsection 1 remaining at the end of the respective fiscal years must not be committed for expenditure after June 30 of the respective fiscal years and reverts to the State Distributive School Account as soon as all payments of money committed have been made.

# APPENDIX B

## Kindergarten Teacher Survey

## Dear Classroom Teacher—

The Nevada Department of Education (NDE) needs your help in conducting a study of the effects of student participation in pre-kindergarten programs. NDE is collecting some comparative information on both students who have participated in pre-kindergarten programs and those who have not. One or more children in your classroom have been selected for the study. Please answer the following questions about {NAME} in terms of his/her readiness to enter kindergarten and his/her performance in kindergarten as well as his/her parent's participation in parent/teacher conferences. Thank you for your help in this very important study.

### Kindergarten Readiness

1. Among children in your class this year, would you say that _____ was—
   - ☐ Substantially better prepared to start school ready to succeed
   - ☐ A little better prepared
   - ☐ Equally well prepared
   - ☐ A little less prepared
   - ☐ Substantially less prepared to start school ready to succeed

### Kindergarten Performance

2. Please compare _____ current performance with the rest of the children in his/her class on the characteristics that children may need to be successful in kindergarten. For each characteristic, please indicate with a "✓" whether _____ performed less than peers, a little less than peers, about the same as peers, a little better than peers, or better than peers.

| Characteristics | Less than peers | A little less than peers | About the same as peers | A little better than peers | Better than peers |
|---|---|---|---|---|---|
| i. Identify and use letter/sound relationships to identify some words | | | | | |
| j. Draw or write, with teacher assistance, stories about familiar experiences and events | | | | | |
| k. Listen to and follow oral directions | | | | | |
| l. Count to 20 | | | | | |
| m. Pays attention in class | | | | | |
| n. Is well-behaved in the class | | | | | |
| o. Gets along with other children | | | | | |
| p. Has problem-solving skills | | | | | |

### Parent/Teacher Conference

3. Did the parents(s) of _____ attend the parent/teacher conference in fall 2004?

   ☐ Yes ☐ No