

ZERO to 8

SHORT-TERM OUTCOMES
FOR KS PRESCHOOLERS:
School Years 2002–03 & 2003–04

PASE Study #2: [Zero to Eight Focus Reports](#)

Prepared by
Zijin Yang, PhD

January 2005

MAIN POINTS

- Since 2001–02, KS preschool enrollment has increased by 11 percent due to the addition of four new preschool classrooms.
- KS preschoolers, on average, came from five-member, two-parent families in which the mother or father was employed and had some college education.
- One-third of all families reported an annual income between \$20,000 and \$40,000.
- KS preschoolers markedly improved their receptive vocabulary skills.
- KS preschoolers' posttest performance on the Developing Skills Checklist (DSC) was, on average, just below the national norm.
- Overall, parents expressed overwhelming satisfaction with their preschool experience.
- PASE recommends a pilot study to follow the progress of KS preschoolers after they enter kindergarten.
- PASE also recommends collecting data on social/emotional behavior and health measures.

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Inquiries should be addressed to:
Policy Analysis & System Evaluation (PASE)
Kamehameha Schools
567 So. King Street, Suite 400
Honolulu, Hawai'i 96813

Short-term Outcomes for KS Preschoolers

School Years 2002–03 and 2003–04

EXECUTIVE SUMMARY

In recent years, early childhood education has been a top priority at Kamehameha Schools. This report summarizes the short-term outcomes of KS preschoolers for school years 2002–03 and 2003–04. The following are highlights of the report.

- A total of 1,356 children were enrolled in KS preschools.
- The 11 percent increase from the 2001–02 enrollment was due to the addition of four new preschool classrooms on Maui and Hawai‘i.
- KS preschoolers, on average, came from five-member, two-parent families in which the mother or father was employed and had some college education.
- One-third of all families reported an annual income between \$20,000 and \$40,000; 13 percent made less than \$20,000, while 24 percent made more than \$60,000.
- KS preschoolers markedly improved their receptive vocabulary skills with above average end-of-year scores. This means that children with low scores tend to make larger gains, thus narrowing the gap between the “high” and “low” performing groups. This tendency indicates positive outcomes that would be welcome news for any educational institution.
- On another standardized test (the Developing Skills Checklist, or DSC), KS preschoolers’ posttest performance was, on average, just below the national norm.
- Overall, parents expressed overwhelming satisfaction with their preschool experience and their opportunities for school involvement.

Next Steps

- PASE recommends a pilot study to follow the progress of KS preschoolers after they enter kindergarten to measure whether they sustain their relative gains.
- Preschool is an important time for social and emotional growth in children. Moving forward, PASE also recommends reporting data on social/emotional behavior and health to capture a more complete picture of preschoolers’ school readiness.

INTRODUCTION

In recent years, early childhood education has been a top priority at Kamehameha Schools. An understanding of the current KS preschool program provides valuable insights for designing new ECE programs. This report summarizes data from the KS preschool program for school years 2002–03 and 2003–04. The report expands on three questions that have been discussed in previous PASE reports:

- What do we know about the children and families served by the KS preschool program?
- What progress has been made in terms of standardized test scores?
- What do parents think about their child’s preschool experience?

We address these questions by comparing data from the eight KS preschool regions, which include Honolulu, Wai‘anae, Ko‘olau Loa, Ko‘olau Poko, East Hawai‘i, West Hawai‘i, Maui, and Kaua‘i.

DATA COLLECTION

This study uses data from the KS Family Information Sheet (FIS), student assessment tests, and parent surveys. All data for admitted students were entered into a database managed by the Early Childhood Education (ECE) division. Student assessment tests include the Peabody Picture Vocabulary Test–Third Edition (PPVT-III)—a norm-referenced standardized test of receptive vocabulary—and the Developing Skills Checklist (DSC). All preschoolers took the PPVT-III at the beginning and end of the school year; however, the DSC was administered to a random sample of about 25 percent of four-year-old preschoolers. The parent survey was completed by preschoolers’ families at the end of the school year.

FIS data for school year 2003–04 were migrated from CMDS, a database managed by the Admissions department, to SASI, a comprehensive school management information system.

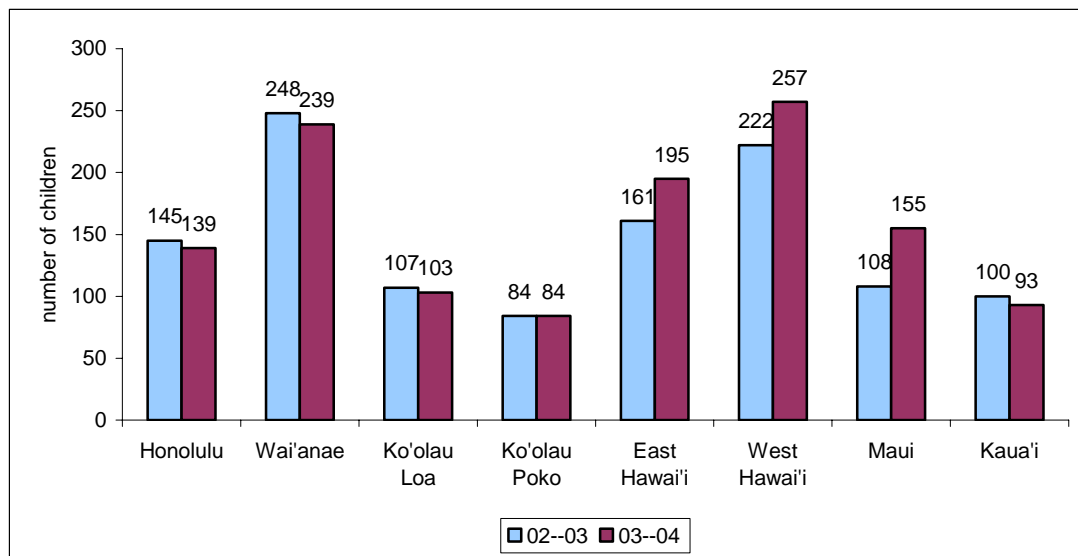
The normal curve equivalent (NCE) scale was used to analyze the PPVT-III and DSC data. The NCEs coincide with the national percentile scale at 1, 50, and 99 and have many of the same characteristics as percentile ranks. However, the NCE scale has the additional advantage of being based on an equal-interval scale, which allows meaningful comparisons between different tests.

STUDENT ENROLLMENT¹

ECE preschools enrolled 1,283 children at the beginning of school year 2002–03. By the end of the school year, enrollment increased to 1,356 due to the addition of four new classrooms on Maui and Hawai‘i. After consolidating the FIS and PPVT-III files, the study identified 1,175 children in the FIS database with PPVT-III test data at both data collection points (fall and spring). In school year 2003–04 student enrollment remained constant (1,356); however, the database contained complete information for more students than in the previous year (1,265).

Of the eight regions, West Hawai‘i had the largest enrollment in school year 2003–04, while Ko‘olau Poko enrolled the fewest students (see Figure 1).

¹ This section presents the findings from analyzing various data elements collected at different points by ECE.

Figure 1. KS preschool distribution by region

FAMILY DEMOGRAPHICS

Marital Status of Parents

Most children live in two-parent families. The Ko'olau Loa, Maui, Honolulu, and Wai'anae regions had the highest marriage rates at 70 percent or above. East Hawai'i and West Hawai'i reported lower marriage rates (60 and 67 percent, respectively), while Ko'olau Poko registered the lowest rate of all (54 percent). The recently published *Kids Count 2004 Data Book* reported that in Hawai'i, 28 percent of families with children (i.e., those under the age of 18) were headed by a single parent in 2001. This figure reflects the national level of single-parent households.

Age of Parents

On average, preschoolers' fathers were about two years older than mothers (33 vs. 31 years old). Overall, mothers on Maui were the oldest (33 years old), while the East Hawai'i region had the youngest mothers (30 years old). The average age of fathers was similar across all regions, ranging from 32 to 36 years old.

Parental Education

Consistent with findings from other data (e.g., Pauahi Keiki Scholars and ECE), mothers reported slightly higher educational attainment than that of fathers: 21 percent of the mothers had earned a bachelor's degree or higher, compared with 15 percent of fathers. As shown in Figure 2, educational attainment was higher in the Ko'olau Loa, Honolulu, and Kaua'i regions, compared with the Wai'anae and Ko'olau Poko regions.

Data for school year 2003–04 show the same pattern; however, compared with the previous year's data, the education level of parents is considerably higher for all groups. For example, Figure 3 shows that 35 percent of mothers had earned a bachelor's degree or higher.

Figure 2. Degree attainment of mothers, school year 2002–03

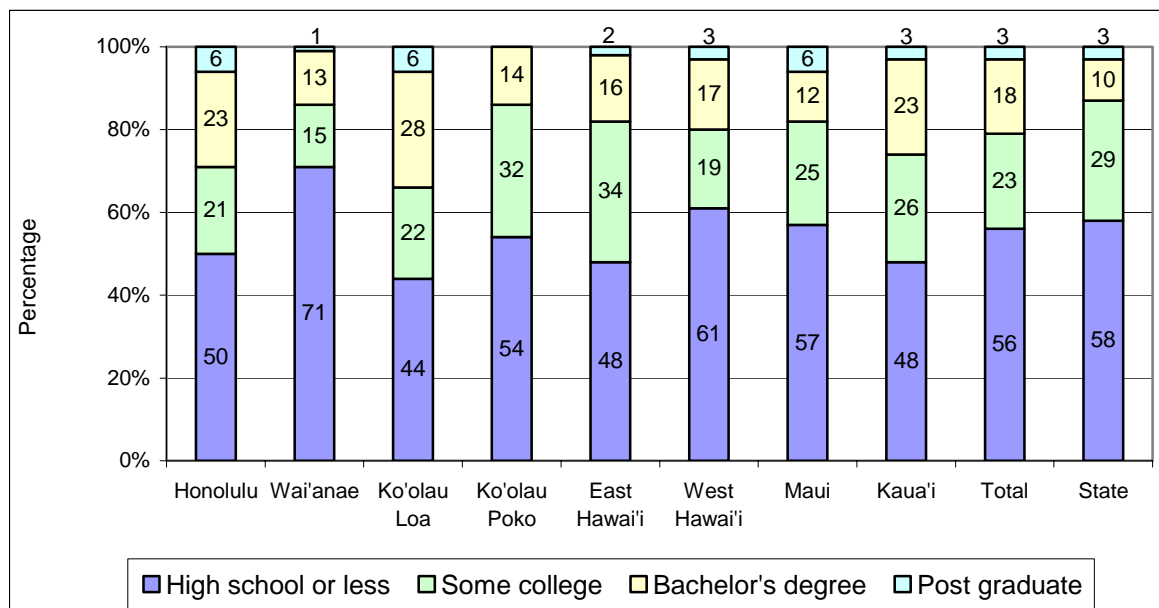
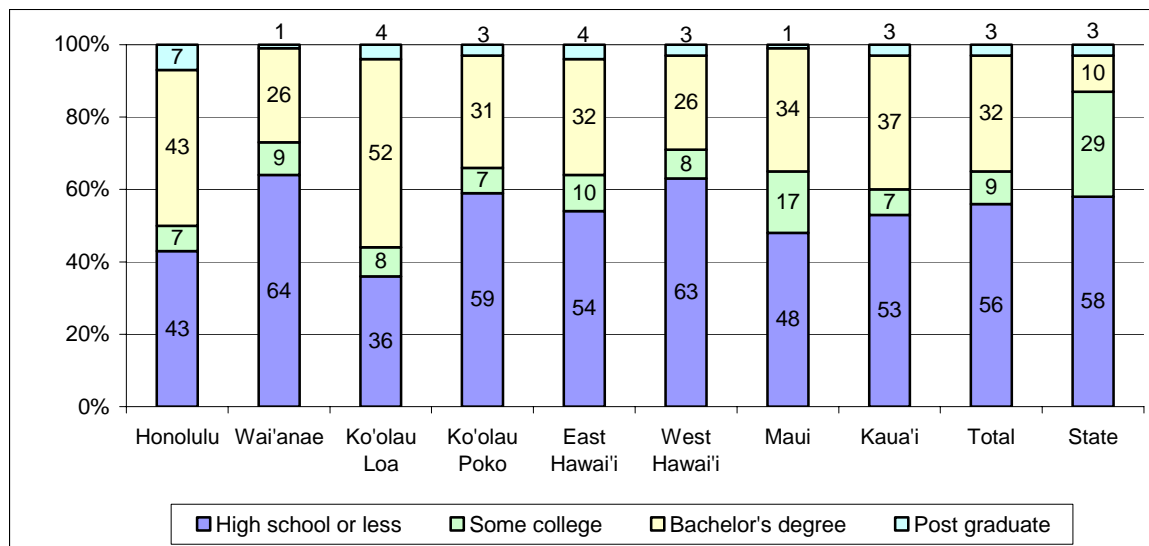


Figure 3. Degree attainment of mothers, school year 2003–04

Employment

In school year 2002–03, 81 percent of fathers and 69 percent of mothers were employed. In 58 percent of families both parents were employed, whereas in 23 percent of families only the father worked, and in 11 percent of families only the mother worked. In 8 percent of families, neither parent worked.

Family Size

The typical household of a KS preschooler had five members. Actual household sizes ranged from two to sixteen. One-half of the households consisted of four or five members, and a quarter of them had six to seven members. The average family size in the Ko'olau Poko region was six; in other regions the typical family had five members.

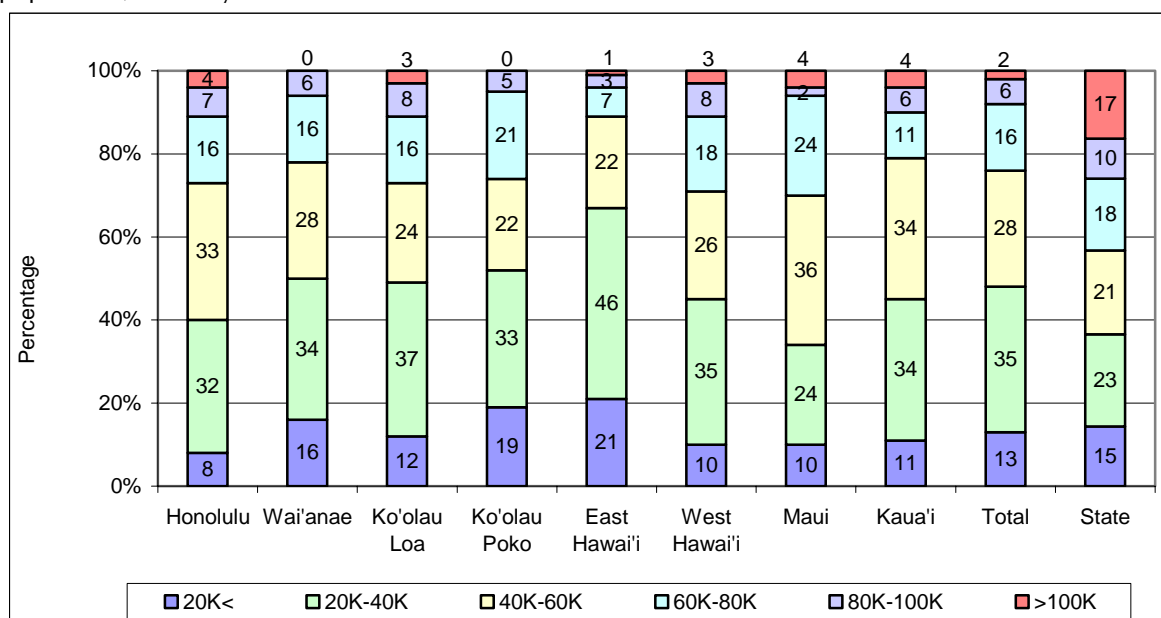
Family Economic Conditions

As shown in Figure 4 and Figure 5, about one-third of all families reported an annual income between \$20,000 and \$40,000. In school year 2002–03, 13 percent of families made less than \$20,000; that percentage doubled to 26 percent in school year 2003–04. In school year 2002–03, 24 percent reported an annual income of more than \$60,000, compared with 19 percent in school year 2003–04. This distribution may be explained by several facts, which are all related to higher income: 1) in more than half of the families

(58 percent) both parents worked, 2) the average parent was over thirty years old, and 3) some of the parents had a college degree. Note that the inclusion of new classes on Hawai‘i and Maui in school year 2003–04—which added nearly eighty students—may have contributed to the fluctuation of percentages in each income category.

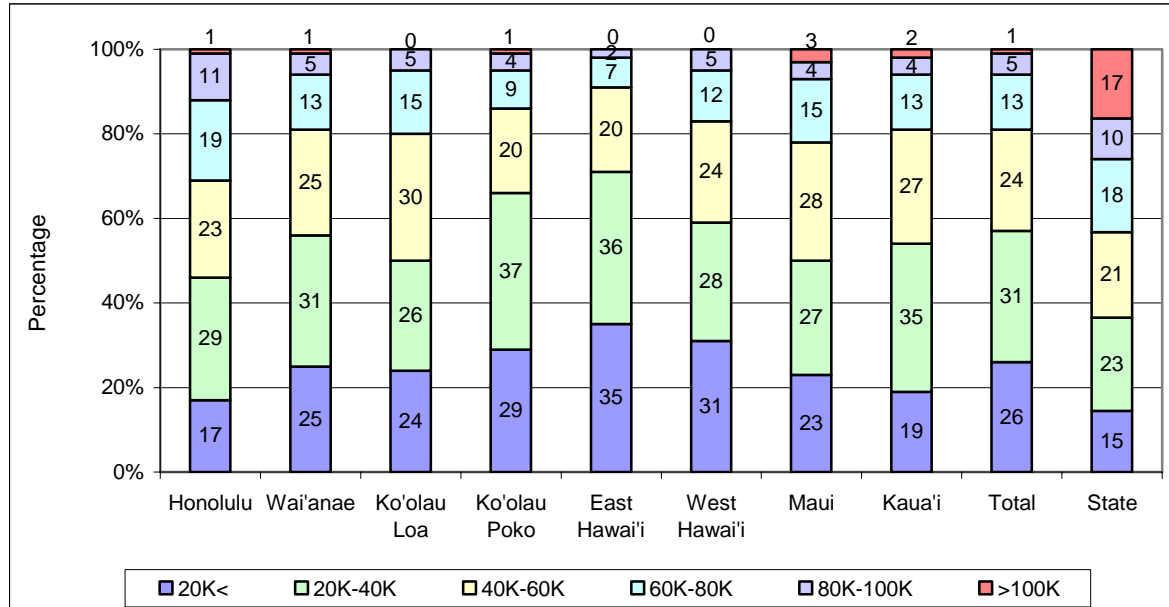
East Hawai‘i had the largest proportion of families making \$40,000 or less (68 percent in school year 2003–04 and 71 percent in school year 2002–03). On the other hand, more than 25 percent of the families in Honolulu, Ko‘olau Loa, Ko‘olau Poko, West Hawai‘i (in school year 2003–04 only), and Maui made more than \$60,000 a year. *Aloha Counts* (Kamehameha Schools 2003) shows that compared with income levels among the state’s Native Hawaiian population, KS preschools served a higher proportion of seemingly middle-income families (see Figure 4). According to *Kids Count 2004*, the 2001 median income of families with children was \$57,000; the percentage of children in Hawai‘i living in poverty in 2000 was 28 percent. Six percent of children live in extreme poverty (income below 50 percent of the poverty level).²

Figure 4. Family income: KS preschool families compared with the state’s Native Hawaiian population, school year 2002–03



² In Hawai‘i the 2001 poverty threshold for a family of four was \$20,300; for a family of five it was \$23,700.

Figure 5. Family income: KS preschool families compared with the state's Native Hawaiian population, school year 2003–04

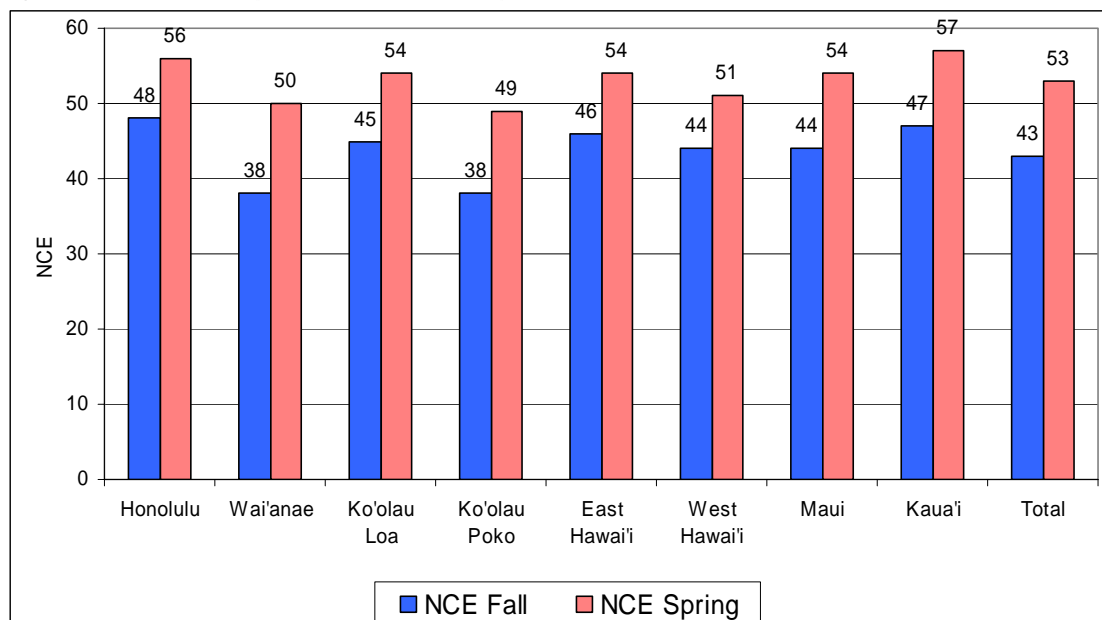
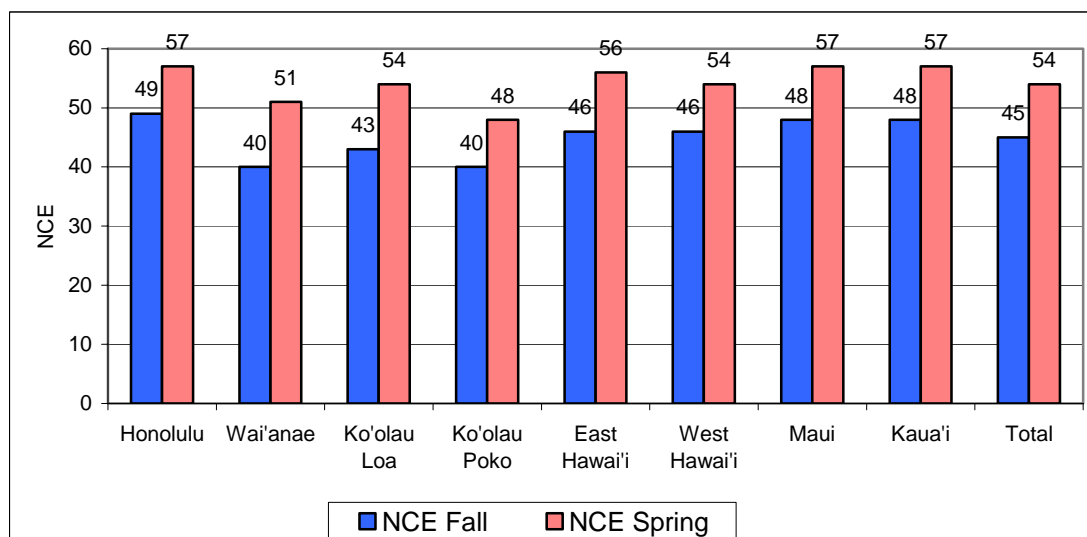


PPVT-III ASSESSMENT AND RESULTS

Data analysis shows that KS preschoolers significantly improved their performance on the PPVT-III in terms of the NCE scale (converted from age-adjusted standard scores). As a whole, NCEs at the beginning of the year averaged 43 and increased to 53 by the end of the year, raising the group to the above-average level. The increase of 10 NCEs is both statistically significant and educationally meaningful compared to national test norms.

As shown in Figure 6, performance levels and gains on the PPVT-III vary markedly across the eight regions. Test data from the beginning of the year indicate that children from the Wai'anae and Ko'olau Poko regions had a low NCE (38), while children in the other six regions had an NCE of around 46. Data from the end of the year reveal a comparable pattern. Similar to the findings reported in previous preschool studies,³ regions with low beginning-of-the-year scores gained the most by the end of the year, with the greatest gains being 11 and 12 NCEs. Even the smallest gains in other regions were notable, ranging from 7 to 8 NCEs. Figure 7 reports similar findings for school year 2003–04.

³ See, for example, Yang (2003), "The Impact of Preschool for Three-year-old Hawaiian Children," http://ksonline.ksbe.edu/pase/PASE_Internal_Reports/Early_Childhood/03_04_16.pdf; Kamehameha Schools Preschool Program Summary, SY 2000-01, 2002.

Figure 6. PPVT-III test performance, school year 2002–03**Figure 7.** PPVT-III test performance, school year 2003–04

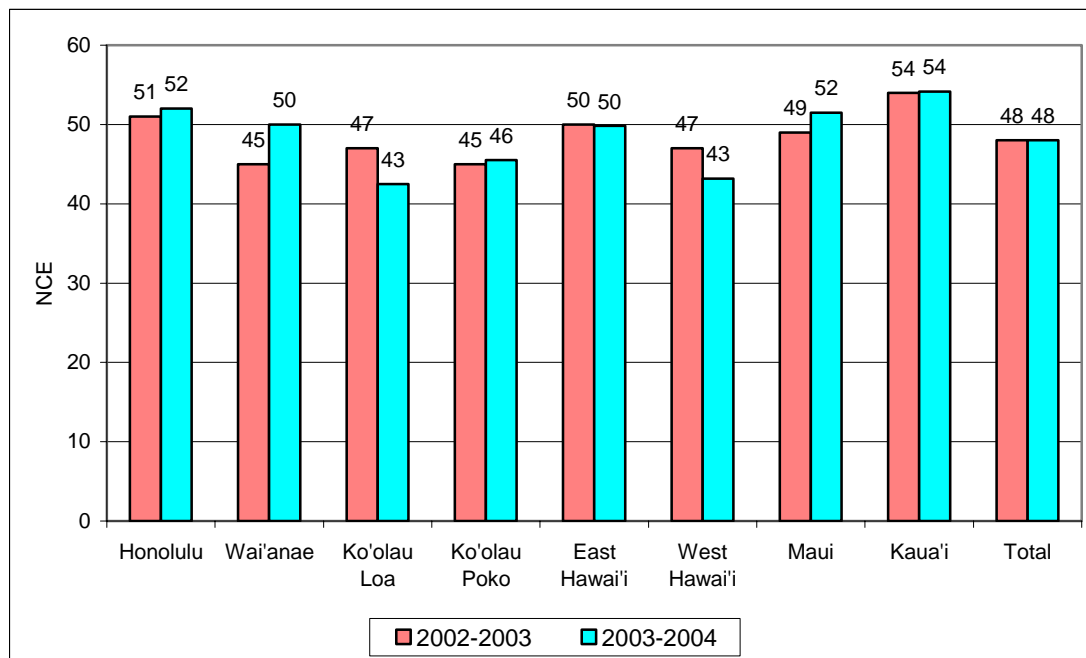
Consistent with previous PASE reports on ECE programs, data analysis indicates that a child's test scores at the beginning and end of the year are moderately related. In other words, a child who scores high on the pretest will score higher on the posttest. However, students' gain score (i.e., progress achieved during the year) is inversely related to pretest scores. This means that children with low scores tend to make larger

gains, thus narrowing the gap between the “high” and “low” performing groups. This tendency indicates positive outcomes that would be welcome news for any educational institution.

DSC ASSESSMENT AND RESULTS

The DSC is an individually administered, standardized assessment that measures comprehensive skills and behaviors typically developed between pre-kindergarten and the end of kindergarten. The ECE division uses the DSC primarily to inform teachers, at the end of the semester, about student progress in six major domains of learning: mathematical concepts and operations, language, memory, auditory, print concepts, and prereading. Empirical data from the DSC helps teachers to improve the following year’s instructional programs and meet the needs of individual children. The DSC norm differs from that of other tests (e.g., PPVT-III) due to different sampling methodologies.

The composite score of the DSC is derived from the six domains. The NCE of the average composite score for all KS preschools was 48 for both school years. Figure 8 shows that four regions scored higher than the group average, including Honolulu, East Hawai‘i, Maui, and Kaua‘i (Kaua‘i and Honolulu were above 50). On the other end, Wai‘anae, Ko‘olau Loa, Ko‘olau Poko, and West Hawai‘i reported the lowest scores, with an NCE of 45 or 43. Kaua‘i was the only region that scored at or above 50 NCEs on all domains. East Hawai‘i and Honolulu had one and two domains, respectively, with NCEs slightly lower than 50 (not shown). In school year 2003–04, the Wai‘anae region scored 5 points higher than in 2002–03.

Figure 8. DSC performance (average composite scores) for KS preschoolers

Among all KS preschools, average NCEs of the six domains ranged from 43 (slightly below average) to 54, which is above average for the test norm. Of the six domains, preschoolers scored lowest (NCE = 45) on language and qualitative concepts and operations. Children performed better (NCE = 50) on memory, print concepts, and prereading. The NCE for auditory comprehension was 49.

PARENT SURVEY

The annual parent survey focused on three areas: 1) communication between KS preschools and parents about teaching philosophy, program goals, assessment methods, and students' progress at school; 2) parent involvement in school activities; and 3) family satisfaction with the child's preschool experience. More than 95 percent of the families reported they were satisfied with the preschool's communication efforts, their opportunities for school involvement, and their overall experience with preschool. A high percentage (more than 90 percent) also reported they understood the Work Sampling System (WSS), which ECE uses to frame its curriculum, to guide instruction, and to

assess children's progress at school.⁴ A composite index was developed by adding the values for each response level (4, strongly agree; 3, agree; 2, disagree; and 1 strongly disagree) and dividing by 17 (the number of items). Data analysis showed that the satisfaction indices did not differ markedly across the regions with a narrow range of 3.6 and 3.8.

COST PER STUDENT

The cost per student was \$10,236 in school year 2002–03,⁵ based on a total budget of about \$13.9 million (Controller Division 2003).⁶ By comparison, a national study reports the total cost per child for high-quality programs designed for at-risk children is \$12,120 (Evaluation Center 2003).⁷

CONCLUSIONS

In school years 2002–03 and 2003–04, a total of 1,356 children were served in 76 classrooms on 32 sites, representing an 11 percent increase from the 1,221 children enrolled in school year 2001–02.

Although the classrooms are located in communities with a relatively high proportion of Native Hawaiian children and needs—and despite the random-selection admission process—data showed that KS preschoolers, on average, came from two-parent families in which the mother or father was employed and had some college education. From the data, it is likely that KS preschoolers come from a select group of Hawaiian families who are informed, motivated, and prepared for their child's preschool education. The question

⁴ WSS data were primarily intended for classroom teachers to assess and track children's learning during the year and to communicate with parents three times a year.

⁵ The cost per student for school year 2003–04 is not available due to limited resources in the ECE division. However, we would expect the amount to be similar to that of 2002–03 since no major structural changes have occurred in the past two years.

⁶ This figure includes services/costs unique to Kamehameha Schools that may not apply to other preschools (e.g., local travel, temp-hire testers, outreach counseling, community program support, medical consultants, resources teachers, assessment coordination, etc). KS preschools provide these services at a cost of \$1.2 million, averaging \$876 per child. If we deduct this portion from the gross cost, the cost per child is \$9,361.

⁷ The national literature review assesses cost per student for preschool programs of varying quality.

of how to provide quality preschool opportunities to children with greater needs so they have a better chance for future success remains a challenge for many educational programs. The KS preschool program will want to continue to explore ways to address this issue.

Overall, preschoolers made impressive progress on the PPVT-III, which measures readiness for kindergarten. In nine months, the program helped a large percentage of children move from below national average to above average. DSC test data indicated that at the end of the year, children's test performance levels were close to the average of the test norm. Furthermore, parents were overwhelmingly satisfied with the schools' communication efforts and gave overall high ratings to the KS preschool program.

IMPLICATIONS

Follow-up of Preschoolers

The results of this study convincingly indicate that KS preschoolers made satisfactory academic progress and were well positioned for formal classroom learning. These findings are consistent with various ECE reports from previous years. Given the positive outcomes, the next logical question is what kind of impact (short- and long-term) the KS preschool program has on students as they continue through school. Can the impact be sustained? If so, how, and under what conditions? And how do these results compare with results from other preschool settings? PASE and ECE have begun to discuss a pilot study to follow the progress of preschool children into kindergarten. The study will include parent and teacher interviews to learn how children who previously attended a KS preschool are faring in relation to other children. The study also intends to identify the challenges children face as they make the transition to a new learning environment. Findings from these studies will shed light on future program planning for the community, Kamehameha Schools, and DOE schools.

School Readiness Measurement

The KS preschool program has consistently collected data on family information and the PPVT-III and DSC over the last twenty years. The cognitive aspects of the PPVT-III and the DSC are necessary—but not sufficient—elements of the concept of school readiness.

School readiness, in general, consists of three domains: cognition, social/emotional behavior, and health. Research indicates that the development of social and emotional intelligence enhances young children's capacities to learn and live in cooperative ways (Rodd 1996). It is crucial for parents and teachers to help young children learn—and display—standards of behavior that are socially and culturally appropriate. The ECE division may therefore want to consider collecting additional data on social/emotional behavior and health measures. For example, teachers could gather data on social/emotional behavior from the existing WSS, for which they have been extensively trained and which they have used at teacher parent meetings. The preschool program could also gather data on child health from class records such as attendance and other health incidents.

Parent Survey

The parent survey provides a family perspective on various aspects of the KS preschool program. The anonymous survey included region and classroom codes up to school year 2002–03. The existing codes are helpful for group-level summaries but limited in use for analysis requiring student-level data. PASE suggested—and ECE implemented—a confidential pilot parent survey for school year 2003–04 that can be linked to individual records and may provide more useful feedback. A confidential survey would yield enhanced data as well as the potential to link available data for future analysis. To fully utilize the parent survey, PASE recommends that the form be revised to include a group of “anchor” items (for benchmarking purposes) as well as “rotating” items to address specific issues. This approach would provide timely, valuable information for program planning.

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