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# The Academic and Occupational Outcomes of Private Residential High School Student Instruction

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# **The Academic and Occupational Outcomes of Private Residential High School Student Instruction**

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*Kamehameha Schools*

*Using a population of graduates from a large high school with both residential and commuter students serving specifically students with Native Hawaiian ancestry, the study compares outcomes such as high school graduation, college attendance, college graduation, occupational status, and overall life happiness to determine the effects of residential status. Results indicated that the strongest variable that separated the college completers from the non-completers was receipt of college financial aid. Other important variables included Hawaiian culture, locus of control, family predominance of standard English, and beginning college at a community college.*

A retrospective look at the boarding education of specifically indigenous people of America has uncovered injustices, misguided judgment, and in many unfortunate cases, severe cruelty. Indeed, the White conquest of North America used boarding education to separate children from their familial customs and to acculturate them into a Christian society (Cooper, 1999). The literature is replete with negative examples of forced assimilation occurring throughout American History (Ellis, 1996; Trennert, 1988) as well as the consequence of these practices that disrupted family customs and the passing of legacies from one generation to another (Apple, 1996; Greenfield & Smith, 1999; Henderson, Kunitz, & Levy, 1999; Ing, 1991; Shaughnessy, Branum, & Everett-Jones, 2001).

In the more enlightened Twenty-First-Century, there has been a resurgence of interest in residential education, but for different purposes and outcomes than the early American Indian Schools. Many contemporary residential schools attract and serve students from diverse ethnic, racial, socioeconomic, and cultural backgrounds. According to the National Association of Independent Schools (NAIS), during the 2000-2001 academic year, 16 percent of residential school students were of a racial group other than White (NAIS, 2001). There are many reasons why parents seek boarding schools for their child(ren). While some parents desire to send a child to a residential school as an escape from neighborhoods influenced by drugs, violence, or other negative factors, others see them as a solution to inadequate public schooling, problem families, or to provide a more highly structured environment for a child with difficulties (Hawkins, 1997; Smith, 2001). On the other hand, some parents seek residential schools for their child(ren) for the sole purpose of finding a quality educational experience. Regardless of the specific goal, parents expect that residential schools will provide environments with caring faculty and others whose sole interest is to provide their child(ren) with an academically and socially positive experience, smaller class sizes, diverse curricula, excellent facilities, a wide-range of co-curricular activities, and close interaction with teachers and counselors (McCoskey, 2002; The Association of Boarding Schools, 2002).

Today, there are over 42,500 students enrolled in more than 300 boarding schools across the country (The Association of Boarding Schools, 2002).

Boarding schools are divided into three categories:

- True (24 hour) Boarding Schools: Schools where all students are expected to reside on campus for the entire academic year.
- Boarding Schools: Schools that combine a majority of boarding students (at least 51%) with commuting students.

- Day Schools: Schools that combine a majority of commuting students (at least 51%) with boarding students.

Many schools have specific admission criteria, sometimes based on ability, religion, or ethnicity. Others are military-based or provide a specialized training program (The Association of Boarding Schools, 2002). It is virtually impossible to describe boarding schools in the aggregate as each maintains a unique personality and purpose. Despite this nonuniformity, NAIS (2001) does report general trends and tendencies:

- On average boarding schools are small with the average enrollment being 275 students.
- Tuition is generally high, averaging approximately \$25,000 per year.
- Slightly less than one-third of students receive financial assistance.
- Class sizes tend to be small, averaging eight students per faculty member.

This study uses the population of graduates from a large high school with both residential and commuter students serving specifically students with Native Hawaiian ancestry. Using a sample of both residential and commuting students from the graduating classes of 1993, 1994, and 1995, the study compares outcomes such as high school graduation, college attendance, college graduation, occupational status, and overall life happiness to determine the effects of residential status.

## **History of Residential/Boarding Schools**

Residential/boarding education can be traced back to the earliest days of America. These schools were typically established by the clergy and catered mainly to privileged, wealthy, and white male students. Families sent their sons to boarding schools to make them “Christian gentlemen” and to prepare them to become members of the social and economic elite (Kashti, 1998). Over the last 350 years, this type of residential education has undergone many changes. Beginning as schools for families of high socioeconomic status, residential schools focused on preparing children for college (Coalition for Residential Education, 2002).

The purpose and function of boarding education became bifurcated in the 19th century, when schools specific for Native American students were introduced to “civilize,” acculturate, and assimilate youth (Greenfeld, 2001; Riney, 1998; Sanchez & Stuckey, 1999). Students were forcibly separated from their families, language, and spirituality, resulting frequently in an inability to later assimilate back or be fully accepted into the tribal culture (Sanchez & Stuckey, 1999). Children were sent to schools all around the country teaching them “American” dress, manners, and job skills removing any resemblance of

native culture (The Library of Congress, 2002). Thousands of Native American children suffered from loneliness and some lost their lives to the rampant spread of influenza and measles. The Carlisle Indian Industrial School in Pennsylvania, the most famous of the Indian boarding schools, was founded by Richard Pratt in 1879. In the Carlisle schools, children were given new names, forced to convert to Christianity, and speak only English (Labriola Center, 2001; Adams, 1995). In 1905, the Indian Commissioner Francis Ellington believed that Native American assimilation should be a more gradual process and thus placed greater emphasis on day schools. Moreover, the Meriam Report of 1926 recommended that only older Native American children attend nonreservation boarding schools. As a result, after 1926 boarding education enrolled predominantly White, upper socioeconomic class students. Few boarding schools provided education to Native Americans or other ethnic minority groups.

### **Research on Residential/Boarding Schools**

Empirical studies of the effects of boarding education are scant to nonexistent. Most of the literature is anecdotal or limited to only one specific school. For example, Smith (2001) and McCoskey (2002) reported that students in boarding schools learned independence, self-discipline, and self-confidence while they learned to work with and to lead others. Others reported that these students demonstrated a strong work ethic, excellent social skills, and positive attitudes (Hershey School, 2002). Although the empirical data are absent, what we do know about factors pertaining to boarding students indicates that placing students in small groups fosters a close working relationship between teachers and students, thus enhancing learning (Lee & Smith, 1997). Additional research indicates that small dorm groups and access to an extensive support network, individual advisors, dorm staff, the school chaplain and school psychologist creates a sense of community and support among boarding students and reduces the stress that might be associated with being away from home (Ainslie, 1996).

Although not empirically based, Smith (2001) and McCoskey (2002) reported that students in boarding schools learned independence, self-discipline, self-confidence, and the ability to work with and lead other students. Others believe that boarding students are more likely to demonstrate a strong work ethic, excellent social skills, and positive attitudes (Hershey, 2002).

## **Education in Hawai‘i**

The introduction of Western education to Hawai‘i can be traced to American Protestant missionaries who arrived from New England in 1820 with the mission to convert the Hawaiian people to the Christian faith and establish churches. In concert with their mission was the establishment of schools throughout the islands. Following in the traditions of the prevalent New England boarding schools, the education offered on the islands was to provide a good basic educational foundation heavily peppered with sound moral training.

The missionaries established boarding schools with diverse missions. Boarding schools like The Chief’s Children School was created at the request of the Hawaiian ruling elite to prepare their children to assume their positions in society. Other boarding schools like Lahainaluna Mission Seminary on the Island of Maui were designed to train young males to assume the roles of teachers and religious leaders among the Hawaiian people (Daws, 1968).

### **Historical Look at Kamehameha School**

On November 4, 1887, the Kamehameha School for Boys opened with 35 students and four teachers. It was established through the will of Princess Bernice Pauahi Bishop as the sole beneficiary of her estate “to provide first and chiefly a good education in the common English branches, and also instruction in morals and in such useful knowledge as may tend to make good and industrious men and women” (Kamehameha Schools, 2002, Will of Bernice Pauahi Bishop).

The first curriculum emphasized industrial training that was considered necessary to achieve personal and social success. Other subjects included English and penmanship; arithmetic, algebra, and geometry; business and bookkeeping; mechanical drawing; geography and health (Chun & Agard, 1987). Funds offered by Charles Reed Bishop in 1888 were used to establish a Preparatory Department to educate and house primarily, homeless or orphaned young Hawaiian boys, aged 6 to 12. Daily lessons included English, arithmetic, drawing, penmanship, and singing (Black & Mellen, 1965). Unlike the affluent boarding schools on the east coast of the continental U.S., Kamehameha opened its doors to those who would most benefit including many poor. And, unlike the misguided American Indian Schools, Kamehameha was not designed for acculturation but for education.

In 1891, the first graduation ceremony for the School for Boys was held with 14 graduates. In keeping with Mrs. Pauahi Bishop’s wish that there be a school for boys and girls, the Kamehameha School for Girls opened on December 19,

1894, with 27 girls aged 13 and above.

From those early beginnings, Kamehameha has grown to serve a population of over 3,800 students enrolled in Kindergarten through high school plus 1,200 students in prekindergarten classes statewide. By the year 2005, total kindergarten through high school enrollment at the Kapālama, Hawai'i, and Maui campuses will exceed 5,000 students (Kamehameha Schools, 2002).

Children of Hawaiian ancestry continue to receive admission preference at Kamehameha. As part of the admissions process, students must fill out an application for enrollment, pass a written examination and personal interview, and demonstrate their Hawaiian ancestry by submitting their own birth certificates along with the birth certificates of their parents and Hawaiian grandparents. According to Kamehameha's current statement of purpose (Kamehameha Schools, 2002):

Kamehameha School admits children who show potential for excellence and who are able, in a timely and satisfactory manner, to meet all academic, physical and religious activities requirements which together comprise the fundamental nature of a Kamehameha education: Comprehensive development of the mind, body and spirit. Kamehameha admits children on the premise that they have the intent and ability to ultimately graduate from Kamehameha.

Kamehameha is currently a college-preparatory residential and day school. At the oldest campus, the Kapalama campus located on the island of O'ahu, the majority of students commute from their homes. In addition, over 500 seventh through twelfth grade students live on campus. These are students whose primary residence is from one of the other Hawaiian Islands.

## **Methodology**

In December 2001, Kamehameha Schools of Hawai'i contracted the Rossier School of Education at the University of Southern California (USC) to perform a comprehensive study of the achievement, success, and academic outcomes of former students and financial aid recipients who were influenced by the Kamehameha experience. This study is part of a comprehensive project entitled Completion, Persistence, Transfer and Success of Kamehameha Schools Students (acronym CP-TASKS). The project includes several cohorts of Kamehameha High School alumni as well as individuals who graduated from high schools other than Kamehameha but were beneficiaries of college financial aid from the Schools.

The project began with the Kamehameha graduates of 1993, 1994, and 1995 plus a set of students who graduated from other high schools during those

same years but who received financial aid from Kamehameha for postsecondary study. Although not included in this specific study, the project also includes the graduating classes of 2001, 2002, and 2003.

The specific goals of CP-TASKS are to explore the relationships between college preparation programs, financial-aid, and subsequent success in college attendance, retention, degree acquisition, and occupational success. In early February 2002, the project sponsored a series of focus groups with alumni, faculty, and administrators in order to gain an awareness of the unique features of the environment of the school and to hear alumni perspectives about the influence of Kamehameha Schools or subsequent financial aid or both. The resulting data were used to create and hone a final survey instrument designed specifically for Kamehameha alumni and former financial aid recipients.

## **Instrument**

The final seven-part instrument consisted of 54 multi-part items covering demographics, Hawaiian culture, questions pertaining to junior and senior high school experiences, college questions, college satisfaction, self-efficacy, locus of control, and others. The Hawaiian Culture Exploration Scale, consisting of 5 items, was based on the Multigroup Ethnic Identity Measure (MEIM) designed to assess ethnic identity. MEIM was confirmed by researchers (Roberts, Phinney, Masse, Chen, Roberts, & Romero, 1999) as a global composite scale across ethnicity (European American, African American, and Mexican American). Ethnic identity was found to be positively associated with psychological well-being such as optimism and self-esteem. Since virtually all Kamehameha students have multiple ethnicities, the original scale items were modified to ensure that when survey participants responded to the items it was in reference to their Hawaiian ancestry.

We created the self-perceived discrimination scale to assess students' perceptions of discrimination based on ethnicity or gender or both. The three items composing this scale indicated a high reliability ( $\alpha = .80$ ; see Table 1). Problems with everyday living can also influence college students' success. We created a student life problem scale comprised of student reports of homesickness and problems with roommates, food, and transportation.

Knowledge about financial aid and its processes can be highly effective in assisting students to complete their college degree. Two survey items were used to assess student knowledge on financial aid. The self-efficacy scale (four items), locus of control scale (two items), and peer influence scale (two items) were used to investigate if social-cognitive factors influence student success. Self-efficacy, defined as beliefs regarding one's ability to successfully

accomplish or perform tasks (Bandura, 1993), has previously been found to be positively related with academic performance (Multon et al., 1991; Pajares, 1996; Zimmerman, Bandura, & Martinez-Pons, 1992; Kim & Dembo, 2000). The self-efficacy scale used in the present study was derived from Factors Influencing Pursuit of Higher Education (FIPHE) Questionnaire (Harris, 1998; Harris, 2001; Harris & Halpin, 2002). Locus of control pertains to an individual's perception of control over the environment. Our scale consisted of two items from the FIPHE Questionnaire. The peer influence scale measured the influence of peers on students' decision to go to college and consisted of two items.

College completion can be affected by the student's satisfaction with the college. We created the college satisfaction scale consisting of two items that assess students' ratings of their colleges. Because job or family related responsibilities such as child care can be a factor influencing the student college completion rate, we included the job/family responsibility scale that was comprised of two items.

Life satisfaction of alumni is a very important outcome of interest to Kamehameha. The CP-TASKS questionnaire included the Diener's Satisfaction with Life scale (Diener, et al, 1985) that provides a reliable measure of general life satisfaction. The five items as shown in Table 1 were used with a seven-part Likert measure (*strongly agree* to *strongly disagree*). In our study, the five items produced an alpha coefficient measure of .91.

Nineteen variables were employed to identify the characteristics of the students who earned bachelor degrees. Ten measures were composed of multiple items while the other nine were single item measures. Sixteen out of nineteen

**Table 1. Psychometric Properties of Scales**

Measures	Mean	Alpha Reliability
<b>Hawaiian Culture Exploration:</b> - I have spent time trying to find out more about Hawaiian history, traditions, and customs - I am active in organizations or social groups that include mostly Hawaiians - I think a lot about how my life will be affected by my Hawaiian ethnicity - In order to learn more about my Hawaiian heritage, I have often talked to other people about my Hawaiian ethnicity - I participate in Hawaiian cultural practices such as special food, music, or customs	3.6106	.7879

Table 1. Continued		
<b>Self-Perceived Discrimination:</b> - My skin-color does not limit my ability to succeed in life - My gender does not limit my ability to succeed in life - Society does not limit my ability to succeed in life.	4.3401	.7975
<b>Student Life Problems:</b> - Homesickness - Living with roommate(s) - College food - Transportation (access to public transportation, sharing cars, etc.)	1.7694	.6197
<b>Financial Aid Knowledge:</b> - I was knowledgeable about the types of financial aid available to me - I knew where to find information about financial aid	2.9345	.9059
<b>High School Peer Influence:</b> - I was not able to talk to my high school friends about college - My high school friends did not understand the demands of college	3.2916	.7965
<b>Self-Efficacy:</b> - I chose my college major because I was good at it - I chose my college major because I found the work challenging - I believed I would be successful at my college major - I considered myself a good college student	2.9393	.7197
<b>Locus of Control:</b> - I had the power to achieve my educational goals - I felt that each person had control of his/her own fate	3.3317	.5341
<b>College Satisfaction:</b> - How well did you like college when you were an undergraduate - If you could do it over again, would you attend the same undergraduate college?	3.7994	.5691
<b>Life Satisfaction:</b> - In most ways my life is close to my ideal. - The conditions of my life are excellent. - I am satisfied with life. - So far, I have gotten the more important things I want in life. - If I could live my life over, I would change almost nothing.	4.9771	.9104
<b>Family/Job Responsibility</b> - Job related responsibilities - Family responsibilities (e.g. child care, parent care)	1.7261	.4932

**Table 2. Single Item Measures**

<b>Boarding Status</b>	Boarded (r) or commuted (o) while in high school
<b>Parent Education Level</b>	Composite score of mother's and father's education level
<b>Social Welfare Benefits</b>	Family received social welfare benefits while student was growing up
<b>Standard English Speaker</b>	Primary language spoken in the home
<b>High School GPA</b>	Self reported high School grades
<b>Number of people that the students supported</b>	Number of people the student was supporting at the time of high school graduation
<b>Financial Aid from Kamehameha</b>	Number of years received college financial aid from Kamehameha Schools
<b>Number of closest Hawaiian friends in college</b>	Number of closest personal friends in college from Hawaii
<b>Community College Starter</b>	Begin postsecondary education at a community college

variables were found to be significantly related with college completion in the analysis. All independent variables are provided in Tables 1 and 2.

### **Sample**

This analysis included respondents from the Kamehameha High School graduating classes of 1993, 1994, and 1995. To correct for response bias, a weighting algorithm was created using the variables of high school (Kamehameha or other), gender, year of graduation, and boarding status. Because our outcome of interest was receipt of a bachelor's degree, we limited our analyses to only those students who attended college, whether or not a college degree was earned. The unweighted sample size was 376, consisting of 260 college graduates and 116 who have not earned a bachelor's degree. After applying the weighting algorithm, the weighted sample size was 1,588 consisting of 1,047 college graduates and 541 nongraduates.

### **Data Collection**

Beginning in late April 2002, printed letters were sent to the last known address of each of the graduates<sup>1</sup> and financial aid recipients asking them to

respond to an Internet questionnaire. Follow-up hardcopies were sent to those not responding to the online request. To enhance the response rate, follow-up included email, printed letters, and telephone inquiries. Slightly more than one-third of the submitted responses (36.2%) were received online while the majority was submitted via hardcopy. The response rate calculated as the proportion of returned surveys (either online or via hardcopy) to those that were successfully delivered is somewhere between 30% and 60%.

In October of 2002, the CP-TASKS research team administered a short survey to 35 private schools in the state of Hawai'i to collect data on educational outcomes such as high school graduation rate, college attendance rate, and college graduation rate. This information was necessary to place Kamehameha within the context of other private schools in Hawai'i. The original research was the only way to gather this type of information due to the paucity of research and available statistics on private schools in the state.

## **Analyses**

We report three levels of analyses. First, we provide comparisons of Kamehameha with other institutions on a national and statewide basis. Secondly, we provide a discriminant function equation to test for factors separating those who graduated from college from those who have not using boarder status as one of the test variables. After finding a significant relationship, we compare those who boarded at Kamehameha with those who did not through a one-way analysis of variance and Kruskal-Wallis nonparametric Test. We test for differences across the following outcomes:

1. Earned bachelor's degree
2. Level of reported parent education
3. Life satisfaction
4. Reported level of Hawaiian ancestry (blood quantum)
5. Hawaiian culture scale scores
6. Receipt of social welfare benefits
7. Level of standard English spoken in the home
8. High School GPA

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1 The last known address of the sample was the residence during their senior year in high school. Since the sample was the graduating classes of 1993, 1994, and 1995, the addresses were more than 7 years old. Further, these addresses were typically those of the alumni's parents or other relatives. In most cases, the alumnus no longer lived at the address but the parents or other relatives forwarded the survey. Attempts to contact a subsample of 100 randomly chosen names indicated that only 40% of the available contact information was current. If considering only those students who likely received the survey, the actual response rate may be close to 60%.

## **Results**

Kamehameha is one of more than 300 boarding schools across the country and one of three boarding school members of the Hawai'i and National Association of Independent Schools, the national advocate for independent pre-collegiate education (NAIS, 2002). Table 3 provides a comparison of these three schools and averages reported by the National Association of Independent Schools (NAIS). NAIS collects data on each of the 1,032 member schools, including Kamehameha Schools.

The two other boarding schools located in Hawai'i are Mid Pacific Institute located on the island of O'ahu and Hawai'i Preparatory Academy located on the island of Hawai'i. Table 3 shows that although all three schools share similarities, Kamehameha has several unique characteristics. Besides being the oldest and largest boarding school in the group, Kamehameha is most distinctive due to its low tuition. In addition, whereas the majority of Kamehameha students receive financial aid (within a reduced tuition institution) only a minimal proportion of students from other schools (with much higher tuition rates) are similarly receiving aid. Clearly, Kamehameha serves a different group of students than do the other boarding schools.

Table 4 compares Kamehameha against the self-reported results of selected institutions from the data collected as part of the CP-TASKS project. We also provide NAIS averages for purposes of comparison. A common thread among the day schools is the promise of success, especially in the areas of high graduation and college attendance figures.

We stress that Kamehameha is unique. In comparison to other day schools and the NAIS national averages, the tuition is minimal and the proportion of students receiving financial aid is far higher than any other school. In many respects, the students who attended Kamehameha are more comparable to public school students than those who attended other private schools. However in terms of successful outcomes, the Kamehameha students resemble their counterparts in the more exclusive private schools.

A study by Kamehameha Schools (2002) investigated Hawai'i public school graduation rates by the dominant ethnicity of the student. Making allowances for transfers to other school systems, private schools, or other educational opportunities, this study counted students who graduated within 4 years or made such transfers as "successes." The finding was that 90% of Japanese students, 83% of White students, and 82% of Filipino students graduated within 4 years or left for another school system. However, only 72% of Hawaiian students fell into these two categories.

**Table 3. A Comparison of the Hawai‘i and National Association of Independent Schools’ Boarding Schools**

	Kamehameha	Mid Pacific Institute	Hawai‘i Preparatory Academy	NAIS Averages
Year established	1887	1908	1949	N/A
# Boarders	Grades 7-12 528	Grades 6-12 80	Grades 6-12 195	All grades 120
# Day (Grades K-12)	1,913	1030	395	97
Average tuition				
Boarders	\$2,824	\$18,787	\$23,925	\$26,975
Day	\$1,441	\$11,190	\$10,917	\$14,150
Percentage of students receiving financial assistance	62%	15%	20%	20%
Average student-to-teacher ratio	14:1	8:1	10:1	8.7:1
Graduation rates	99%	100%	100%	N/A
Reported college attendance rate	98%	98%	100%	N/A

NAIS, HAIS, PASE, AND PETERSON’S GUIDE TO PRIVATE SCHOOLS 2000-2001 DATA

A broad comparison against national and state averages clearly shows the commendable success rates of Kamehameha Schools. Only 71% of the nation’s high school students graduate from high school while the state of Hawai‘i reports a 69% rate. Kamehameha records an approximate 99% rate.

The national figure for the proportion of high school graduates who attend college varies by ethnicity. According to the High School and Beyond Study, the national rate for Whites was about 64% (High School and Beyond, 1992). The national studies do not report outcomes by Hawaiian ancestry. Our weighted data indicated that 92.6% of Kamehameha students attended college (irrespective of graduation), while to date 64.5% of the classes of 1993, 1994, and 1995 earned at least a bachelor’s degree. In the most recent national longitudinal study of beginning postsecondary students (entering college in 1995), 53.3% of students with a bachelor’s degree goal had earned those degrees within 6 years (Beginning Postsecondary Students, 2002).

**Discriminant Function: How do graduates and non-graduates differ?**

We created a discriminant function equation to identify the factors that

Table 4. A Comparison of the Private Day Schools in Hawai'i

	Kamehameha	St Andrews Priory School for Girls	Iolani School	Academy of the Pacific	Punahou School	Hawai'i Baptist Academy	Saint Louis School	Maryknoll School	Island School	NAIS Averages
Established	1887	1867	1863	1961	1814	1949	1846	1927	1977	N/A
Average tuition	\$1,441	\$8,750	\$10,300	\$10,700	\$10,700	\$7,590	\$7,475	\$8,300	\$7,230	\$14,150
Percentage of students receiving financial as- sistance	62%	%32	12%	30%	14%	8%	NA	17%	N/A	20%
Average student-to- teacher ratio	14:1	7:1	11:1	8:1	15:1	13:1	13:1	13:1	8:1	8.7: 1
Graduation rates – all students	99%	100%	100%	100%	100%	100%	96%	99%	85%	N/A
College attendance rate	98%	100%	100%	100%	100%	100%	96%	99%	85%	N/A

best separate those students who completed their bachelor’s degrees from those who have not. We identified 19 independent variables and entered them into a stepwise discriminant analysis equation to determine those items and scales that significantly affected degree attainment. Of the 19 variables entered, 16 were significant predictors of college degree attainment. The classification procedure generated a discriminant function consisting of a linear combination of sixteen independent variables best predicting group membership. The canonical correlation was .63 (Table 5) while Wilks’ Lambda was .59 ( $p < .05$ ). Standardized Canonical Discriminant Function Coefficients and Canonical Discriminant Function Coefficients were provided in Table 6. Note that the table is in descending order by standardized coefficient and includes only those variables that were significant predictors in the equation.

One of our main variables of interest was boarding status. The function coefficient for boarder status was negative indicating that students who boarded at Kamehameha were less likely to complete their bachelor’s degree than

**Table 5. Multivariate Statistics for the Discriminant Function Analyses**

Function	Canonical Correlation	Canonical Correlation	Wilks’ Lambda	Chi-square	df	Sig.
1	.638	1	.593	675.872	16	.00

**Table 6. Standardized Canonical Discriminant Function Coefficients and Canonical Discriminant Function Coefficients for Significantly Contributing Variables to Discriminating Process presented in descending order by standardized coefficients (alpha=.05)**

	Standardized Canonical Discriminant Function Coefficients	Canonical Discriminant Function Coefficients (Unstandardized coefficients)
Financial Aid from Kamehameha	0.53	0.317
High School GPA	0.285	0.191
Locus of Control	0.216	0.218
College Satisfaction	0.211	0.112
Self Efficacy	0.135	0.063
Standard English Speaker	0.131	0.28
Financial Aid Information	0.13	0.092
Hawaiian Culture Exploration	0.095	0.022
Number of Closest Hawaiian Friends in College	0.088	0.056

Parent Education Level	0.059	0.028
Number of People Supported	-0.081	-0.146
Boarding Status	-0.19	-0.447
Family/Job Responsibility	-0.204	-0.139
High School Peer Influence	-0.235	-0.179
Community College Starter	-0.285	-0.887
Social Welfare Benefits	-0.313	-0.927

were non-boarders. This finding, however, must be carefully interpreted with others to fully understand the interplay of boarders and other factors playing prominent roles in the equation. Further, the absolute value of the coefficient for boarder status was one of the weaker predictors (ranked 12 of 16). 'Financial Aid from Kamehameha' was found to be strongest factor differentiating group membership (college completion vs. non-completion). The longer financial aid was provided (financial aid was measured in units of number of years of support and not dollars), the more likely students were to acquire a college degree. The strongest of the negative predictors was Social Welfare Benefits. Students from families who received Social Welfare Benefits, were less likely to finish their bachelor's degree. Also, when students reported financial responsibility for others they were also less likely to complete college degrees. Financial Aid Information also significantly predicted college completion. The more knowledgeable students were more likely to finish college.

Parent Education Level was a positive predictor of college completion. High parent education level positively predicted high college completion rates. Meanwhile, beginning one's postsecondary education at a community college was negatively related to college degree attainment.

High School GPA and Standard English as the predominant spoken language at home were positively related to college completion. We also note interesting cultural relationships to college completion. For this sample, Hawaiian Culture Exploration and the number of closest friends in College who were Hawaiian positively predicted students' college completion. College satisfaction and the tested social-cognitive factors such as self-efficacy, locus of control, and peer influence were significant predictor variables of college completion. Life satisfaction, self-perceived discrimination, and student life problems were not significant predictors.

The full discriminant function equation used to classify group membership predicting college completion follows:

$$D (\text{Group Membership}) = (-4.34) + (-.44) \times \text{Boarding Status} + (.02) \times \text{Parent Education Level} + (-.92) \times \text{Social Welfare Benefits} + (.28) \times \text{Standard English Speaker} + (.02) \times \text{Hawaiian Culture Exploration} + (.19) \times \text{High School GPA} + (-.14) \times \text{Number of People Supported} + (.31) \times \text{Financial Aid from Kamehameha} + (-.13) \times \text{Family/Job Responsibility} + (.05) \times \text{Number of Closest Hawaiian Friends in College} + (.09) \times \text{Financial Aid Information} + (-.17) \times \text{High School Peer Influence} + (.06) \times \text{Self Efficacy} + (.21) \times \text{Locus of Control} + (.11) \times \text{College Satisfaction} + (-.88) \times \text{Community College Starter}.$$

A correlation matrix of college completion plus the sixteen significant independent variables is provided as Table 7. Table 8 provides details on the goodness of fit of the equation (81.2% of all cases correctly classified).

### **Pairwise Comparisons**

Finding that boarders at the school had lower acquisitions of bachelor degrees, we performed pairwise comparisons across eight variables of interest. Table 9 provides the results of the analyses. We found that boarders in the sample had significantly lower high school grades, were less likely to have been raised in homes where standard English was the predominant language, were more likely to have received some form of social welfare assistance, had higher levels of Hawaiian ancestry, expressed lower levels of life satisfaction, and were less likely to have earned a bachelor's degree. In addition, we provide Figures 1a through 1e to graphically display these differences.

### **Discussion and Policy Implications**

We provide this study as evidence that not only does Kamehameha serve a unique population; but does so in a distinctive fashion. Unlike other boarding schools in the state, Kamehameha serves many students with financial aid needs. But despite the lower socioeconomic status of its students, Kamehameha has the same admirably high graduation and college attendance rates as other schools. Recognizing the lower financial abilities of many of the families served, Kamehameha charges the lowest tuition rates of all private day schools in the state. For many reasons, the types of students who attend Kamehameha are more comparable to those attending public schools in the state. However, when

Table 7. Correlation Matrix

	College Completion	Boarder Status	Parent Education Level	Social Welfare Benefits	Standard English Speaker	Hawaiian Cultural Exploration	High School GPA	Number of people supported	EA form Kamehameha
College Completion	1	**-.163	**-.155	**-.176	.103	**-.159	**-.437	**-.104	**-.440
BOARDER	**-.163	1	.045	*.052	**-.228	.018	**-.190	-.004	.038
Parent Education Level	**-.155	.045	1	**-.177	**-.266	.047	**-.177	-.012	.031
Social Welfare Benefits	**-.176	*.052	**-.177	1	**-.149	**-.184	**-.074	**-.144	.034
Standard English Speaker	**-.103	**-.228	**-.266	**-.149	1	**-.076	.046	**-.141	**-.080
Hawaiian Cultural Exploration	**-.159	.018	.047	**-.184	**-.076	1	**-.224	.013	**-.101
High School GPA	**-.437	**-.190	**-.177	**-.074	.046	**-.224	1	**-.094	**-.238
Number of people supported	**-.104	-.004	-.012	**-.144	**-.141	.013	**-.094	1	-.006
EA from Kamehameha	**-.440	**-.228	.031	.034	**-.080	**-.101	**-.238	-.006	1
Family/Job Responsibility	**-.181	**-.228	**-.106	**-.235	**-.165	**-.143	**-.132	**-.300	**-.085
Number of closest Hawaiian friends	.023	**-.228	**-.074	.005	*.052	**-.245	-.016	**-.068	-.004
Financial Aid information	**-.297	**-.228	**-.123	*.060	-.006	*.243	**-.172	.033	**-.311
High School Peer Influence	**-.116	**-.228	.035	**-.144	*.050	*.050	-.029	-.040	-.048
Self-Efficacy	**-.277	**-.228	.000	*.066	*.057	**-.263	**-.322	**-.099	**-.104
Locus of Control	**-.230	**-.228	*.056	-.038	*.051	**-.116	**-.194	.033	**-.136
College Satisfaction	**-.264	**-.228	**-.164	-.031	-.014	**-.098	**-.200	**-.071	**-.185
Community College Starter	**-.333	**-.228	**-.138	.026	*.054	-.021	**-.294	**-.112	**-.289

Table 7. Continued

	Family/ Job Responsibility	Number of Closest Hawaiian friends	Financial Aid Information	High School Peer Influence	Self-Efficacy	Locus of Control	College Satisfaction	Community College Starter
College Completion	**-.181	.023	**-.297	**-.116	**-.277	**-.230	**-.264	**-.333
BOARDER	*.063	.044	**-.065	**-.171	**-.065	.063	.045	**-.073
Parent Education Level	*.106	***-.074	**-.123	.035	.000	*.056	**-.164	**-.138
Social Welfare Benefits	**-.235	-.005	*.060	**-.144	*.066	-.038	-.031	.026
Standard English Speaker	**-.165	*.052	-.006	*.050	*.057	*.051	-.014	*.054
Hawaiian Cultural Exploration	**-.143	**-.245	**-.243	*.050	**-.263	**-.116	**-.098	-.021
High School GPA	**-.132	-.016	**-.172	-.029	**-.322	**-.194	**-.200	**-.294
Number of people supported	**-.300	**-.068	.033	-.040	**-.099	.033	**-.071	**-.112
FA from Kamehameha	**-.085	-.004	**-.311	-.048	**-.104	**-.136	**-.185	**-.289
Family/Job Responsibility	1	-.008	*.061	**-.175	**-.087	-.045	**-.149	**-.099
Number of closest Hawaiian friends	-.008	1	**-.176	**-.177	.032	**-.153	*.058	.034
Financial Aid information	*.061	**-.176	1	**-.068	**-.258	**-.363	**-.253	-.030
High School Peer Influence	**-.175	**-.177	**-.068	1	-.040	**-.145	.035	**-.082
Self-Efficacy	**-.087	.032	**-.258	-.040	1	**-.450	**-.307	**-.116
Locus of Control	-.045	**-.153	**-.363	**-.145	**-.450	1	**-.253	-.034
College Satisfaction	*.149	*.058	**-.253	.035	**-.307	**-.253	1	**-.087
Community College Starter	**-.099	.034	-.030	**-.082	**-.116	-.034	**-.087	1

**Table 8. Classification Results**

Actual Group	Predicted Group Membership		Total Number of Cases
	Category 0	Category 1	
Category 0 – Not Attained Bachelor’s Degree	328 (82%)	74 (18%)	402
Category 1 – Attained Bachelor’s Degree	171 (19%)	729 (81%)	900

**Table 9. Results of Pairwise Analyses (ANOVA and Kruskal-Wallis Test)**

Outcome	Day Student Mean (s.d.)	Boarder Mean (s.d.)	F-Test
High School GPA <sup>2</sup>	6.36 (1.62)	5.62 (1.78)	59.199***
Level of Parent Education	6.84 (2.188)	7.08 (2.11)	2.99
Hawaiian Cultural Exploration scale	18.01 (4.36)	18.19 (5.20)	0.501
Level of Hawaiian Ancestry (reported blood quantum)	.284 (.183)	.376 (.227)	61.429***
Life Satisfaction	25.434 (6.46)	23.246 (8.199)	29.661***
Nonparametric Test for dichotomous outcomes			
	Day Student Mean Rank	Boarder Mean Rank	Kruskal-Wallis Test
Spoke Predominantly Standard English while in High School (0=no; 1=yes)	849.34	670.88	81.40 ***
Received Social Welfare Benefits while in High School (0=no; 1=yes)	715.31	744.95	4.00 *
Earned Bachelor Degree (0=no; 1=yes)	841.37	698.42	42.52 ***

<sup>2</sup>9=A or A+; 8= A-; 7=B+; 6=B; 5=B-; 4=C+; 3=C; 2=C-; 1=D or lower

comparing Kamehameha’s student success rate with public school outcomes, the difference is clearly in Kamehameha’s favor.

With the favorable outcomes clearly stated, it is important to extend the field of inquiry beyond college attendance and study the college graduation outcome. Our discriminant function analysis clearly revealed that the strongest variable that separated the college completers from the non-completers was receipt of college financial aid from Kamehameha. This function was almost twice as strong as the effect of a high grade point average in high school. This finding underscores the importance of financial aid for this group of students. The need for financial aid is also seen by the negative coefficient for receipt of

social welfare benefits while in high school as well as the negative coefficient for the financial support of others. Other important variables included Hawaiian culture, locus of control, and family predominance of standard English. The negative nature of beginning college at a community college must be noted. While students attend community colleges for many reasons, it is important to note that beginning in a four-year college is more likely to predict college completion.

One of our important inquiries for this study was the relationship between boarding status and college graduation. In our multivariate discriminant analysis we found that boarding status was a negative predictor. To better understand group differences we performed comparisons (ANOVA and Kruskal-Wallis U test) between boarders and day students to provide insights as to why boarders were less likely to complete college. First, we found that boarders tended to have lower high school grades, be more likely to have received social welfare benefits, and less likely to come from families that spoke predominantly standard English. While the coefficient for boarders remained negative despite controls for these variables, it remains important and instructive to isolate how boarding status is also a proxy for other variables that were found to be negatively related to the outcomes of interest. It may also be that boarding acts as a mediating variable for low SES and therefore found to be a negative predictor. We see all of these factors to work together and in conjunction to predict lower college completion rates. Since life satisfaction levels were also lower for boarders, we hypothesize that the relationship likely includes but goes beyond the lack of college completion.

We see many avenues for policy arising from these analyses. First, to assist students of Native Hawaiian ancestry, the continued provision of financial aid appears key. Boarding students may face additional obstacles when the outcome is focused on achieving a college degree. It is important to note that the reason most students board at Kamehameha is because they live on islands other than Oahu. Thus, boarding status may also function as a proxy for a more rural upbringing. Further, the economy on different islands is such that there may be a different link between desirable occupation and education. Many attractive jobs in tourism do not require a college degree. Agriculture, another prominent occupation on some islands also lacks a strong and direct link with college attainment.

## **Conclusions**

This study is not an evaluation or a political comment on the efficacy of private boarding education. Further, it is not the intent of this paper to claim

the acquisition of a bachelor's degree as the ultimate goal of all people. Rather, the intent of these analyses was to provide a comparison of actual outcomes between former boarding and commuting students who attended the SAME school, the same kinds of classes, and interacted with the same faculty. Although all significant findings cannot be attributed solely to residential status, the design of this analyses with the entrance of appropriate controls, presents an empirical analysis that can inform not only Kamehameha Schools but also other private residential high schools on the factors most likely to promote success long after the caps and gowns are returned and the senior yearbook is put on the shelf.

## References

- Adams, D. W. (1995). *Education for extinction: American Indians and the boarding school experience, 1875-1928*. Lawrence: University Press of Kansas.
- Ainslie, R. (1996). Mediators of adolescents' stress in a college preparatory environment. *Child and Youth Service, 31*(1), 913-924.
- Apple, M. W. (1996). *Cultural politics and education*. New York: Teachers College Press.
- Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist, 28*(2), 117-148.
- Beginning Postsecondary Students Longitudinal Study – Sample of college students 2<sup>nd</sup> follow-up: 2002 -- Longitudinal study of postsecondary students* (BPS:1996/2001) [Data File]. Washington DC: U.S. Department of Education, National Center for Education Statistics.
- Black, C. & Mellen, K. D. (1965). *Princess Pauahi Bishop and her legacy*. Honolulu: Kamehameha Schools Press.
- Chun-Lum, S. & Agard, L. (1987). *Legacy: A portrait of the young men and women of Kamehameha schools 1887-1987*. Honolulu: Kamehameha Schools Press.
- Coalition for Residential Education (2002). *History of residential education in the United States*. Retrieved December 2, 2002, from <http://www.icre.org/whatis/ushistory.asp>
- Daws, G. (1968). *Shoal of time: A history of the Hawaiian islands*. New York: The Macmillan Company.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*(7), 1-75.
- Ellis, C. (1996). *To change them forever: Indian education at the rainy mountain*

*The Academic and Occupational Outcomes of Private Residential High School Student Instruction boarding school, 1893-1920.* Norman, OK: University of Oklahoma Press.

- Greenfield, L. A. & Smith, S. K. (1999). *American Indians and crime.* Washington, DC: U.S. Department of Justice, Bureau of Justice Statistics.
- Greenfield, P. (2001). Escape from Albuquerque: An Apache memorate. *American Indian Culture and Research Journal*, 25(3), 47-71.
- Harris, S. M. & Halpin, G. (2002). Development and validation of the factors influencing pursuit of higher education questionnaire. *Educational and Psychological Measurement*. 62, 70-96.
- Harris, S. M. (2001). *Pursuing higher education: Are there gender differences in the factors that influence individuals to pursue higher education?* Washington, DC: ERIC Clearinghouse on Higher Education (ERIC Document Reproduction Service No. ED 444 444).
- Harris, S. M. (1998). *Factors influencing pursuit of higher education: Validating a questionnaire.* Washington, DC: ERIC Clearinghouse on Higher Education (ERIC Document Reproduction Service No. ED 425 689).
- Hawkins, B. D. (1997). Bloom and board. *Black Issues In Higher Education*, 14, 18-20.
- Henderson, E., Kunitz, S. J., & Levy, J. E. (1999). The origins of Navajo youth gangs. *American Indian Culture and Research Journal*, 23(3), 243 – 64.
- Hershey School (2002). *Milton Hershey school.* Retrieved July 10, 2002, from <http://www.mhs-pa.org/historical/history/html>
- High School and Beyond Longitudinal Study of 1980 Sophomores – Sample of high school graduates 12 years after grade 10: 1992 -- Longitudinal study of high school students* (Version HS&B-So:80/92) [Data File]. Washington DC: U.S. Department of Education, National Center for Education Statistics.
- Ing, N. R. (1991). The effects of residential schools on Native child-rearing practices. *Canadian Journal of Native Education*, 18(Suppl.), 65 – 118.
- Kamehameha Schools (2002). *Kamehameha Schools bishop estate.*
- Kim, C. W. & Dembo, M. (2000). Social-Cognitive factors influencing success on college entrance exams in South Korea. *Social Psychology of Education*, 4(2), 95 –115.
- Labriola Center (2001). *Bibliography of Indian boarding schools: Approximately 1875 to 1940.* Retrieved December, 2002, from <http://www.asu.edu/lib/archives/boardingschools.htm>

Hagedorn, Moon, Kana'iaupuni, Tibbetts

- Lee, V. E. & Smith, J. B. (1997). High school size: Which works best and for whom? *Educational Evaluation and Policy Analysis*, 19(3), 205-227.
- The Library of Congress (2002). *Indian boarding schools: Civilizing the native spirit*. Retrieved December 10, 2002, from <http://memory.loc.gov/ammem/ndlpedu/lessons/01/indian/overview.html>
- McCoskey, P. (2002). Boarding schools move to the front of the class. *Family Fun*.
- Multon, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to academic outcomes: A meta-analytic investigation. *Journal of Counseling Psychology*, 38(1), 30-38.
- National Association of Independent Schools (2001). *NAIS independent school facts at a glance, 2000-2001*. Retrieved July 13, 2002, from <http://www.nais-schools.org/rsrscs/facts.cfm>
- Pajares, F. (1996). *Assessing self-efficacy beliefs and academic outcomes: The case for specificity and correspondence*. Paper presented at the annual meeting of the American Educational Research Association, New York.
- Petersons, T. (2002). *Private secondary schools 2003, 23<sup>rd</sup> Edition*. New Jersey: Thomson Petersons.
- Riney, S. (1998). "I like the school so I want to come back:" The enrollment of American Indian students at the Rapid City Indian school. *American Indian Culture and Research Journal*, 22(2), 171-192.
- Roberts, R. E., Phinney, J. S., Masse, L. C., Chen, Y. R., Roberts, C. R., & Romero, C. R. (1999). The structure of ethnic identity of young adolescents from diverse ethnocultural groups. *The Journal of Early Adolescence*, 19(3), 301-322.
- Sanchez, J. & Stuckey, M. E. (1999). From boarding schools to the multicultural classroom; the intercultural politics of education, assimilation and American Indians. *Teacher Education Quarterly*, 26(3), 83-96.
- Shaughnessy, L., Branum, C., & Everett-Jones, S. (2001). *2001 youth risk behavior survey of high school students attending Bureau funded schools*. Washington, DC: Bureau of Indian Affairs, Office of Indian Education Programs.
- Smith, S.G. (2001). Boarding schools. *U. S. News & World Report*, 130, 38-67.
- The Association of Boarding Schools (2002). What are boarding schools? Retrieved July 13, 2002, from <http://www.schools.com/membership/research/index.html>
- Trennert, R. A. (1988). *The Phoenix Indian school: Forced assimilation in*

*The Academic and Occupational Outcomes of Private Residential High School Student Instruction  
Arizona, 1891-1925.* Norman, OK: University of Oklahoma Press.

Zimmerman, B.J., Bandura, A., & Martinez-Pons, M. (1992). Self-motivation for the academic attainment: The role of self-efficacy and personal goal setting. *American Educational Research Journal*, 29(3), 663 -76.