

UNIVERSITY OF HAWAI‘I SYSTEM ANNUAL REPORT



REPORT TO THE 2008 LEGISLATURE

Annual Report on
The Construction Academy Curriculum

HRS 304A-1144
Act 234, SLH 2006

December 2007

THE CONSTRUCTION INITIATIVE BACKGROUND

In session 2006, the Hawai'i State Legislature passed Senate Bill 2980 SD2, HD1, CD1, which appropriated \$5.4 million to expand the Construction Academy to other public high schools on O'ahu, as well as, on the islands of Kaua'i, Maui, and Hawai'i, and, to increase Apprenticeship Training at Honolulu, Hawai'i, Kaua'i, and Maui Community Colleges.

The Construction Academy began in 2004 with a \$1.4 million grant from the U.S. Department of Labor. This grant started a pilot program whereby the University of Hawai'i's Honolulu Community College (HCC) partnered with eight Department of Education high schools on O'ahu—Kahuku, Kailua, McKinley, Mililani, Pearl City, Radford, Waipahu, and Waialua—to prepare high school students with the technical, academic, and employability skills necessary to pursue a career in the construction industry. The initial results of this federally funded academy model displayed such great potential that in late 2005 many associated with education and construction felt it warranted expansion.

By late 2005, the construction and building industry found itself in a dire situation. Construction projects and developments could move no faster unless there were more qualified workers for the job sites. In late 2005, the industry approached HCC to request its assistance in educating and training a greater number of qualified construction workers. In a true industry-education partnership, HCC, with its experience in the pilot Construction Academy as well as its long history in Apprenticeship Training, developed a comprehensive proposal (the "Construction Initiative") that encompassed both high school education (Construction Academy) and post-high school career training (Apprenticeship).

THE CONSTRUCTION ACADEMY

Our mission is to prepare high school students with the technical, academic, and employability skills necessary to pursue a career in the construction industry.

From servicing over 200 students at 8 pilot schools during the 2005–2006 school year, the Construction Academy has grown to a capacity of over 1600 students in 34 high schools statewide in the Fall 2007. In this pre-apprenticeship program, students actively participate in an integrated classroom setting that promotes the use of math, reading, and writing skills as they engage in building and construction activities. At the end of the course, students build real world projects such as children’s playhouses and storage sheds to test the skills they have learned throughout the year. This hands-on approach to learning requires students to apply skills in math, communication, construction technology, problem solving, and most importantly, teamwork.

CONSTRUCTION ACADEMY STATEWIDE ENROLLMENT SUMMARY

SCHOOL YEAR 06-07 AND 07-08

Community College	Hawaii		Honolulu		Kauai		Maui		Total	
	06-07	07-08	06-07	07-08	06-07	07-08	06-07	07-08	06-07	07-08
School Year	06-07	07-08	06-07	07-08	06-07	07-08	06-07	07-08	06-07	07-08
Participating High Schools	3	9	14	15	0	3	7	7	27	34
Building & Construction 1	31	214	415	477	n/a	142	82	153	528	995
Building & Construction 2	n/a	46	54	119	n/a	15	2	25	56	195
Mechanical Drawing	n/a	n/a	87	110	n/a	n/a	0	n/a	87	110
Drafting Technology 1	11	45	97	96	n/a	n/a	85	98	193	236
Electricity and Electronics	n/a	n/a	111	157	n/a	n/a	n/a	n/a	111	157
Total	42	305	764	959	0	157	169	276	975	1697

*07-08 enrollment counts reflect Fall 2007 semester registration only.

Participating High Schools SY 2007-2008

Hawai'i Community College		Honolulu Community College		Kaua'i Community College	Maui Community College
Hilo	Konawaena	Campbell	Mililani	Kapaa	Baldwin
Kau	Laupahoehoe	Farrington	Nanakuli	Kaua'i	Lahainaluna
Keaau	Pahoa	Kailua	Pearl City	Waimea	Lana'i
Kealakehe	Waiakea	Kaimuki	Radford		Hana
Kohala		Kalaheo	Waialua		Maui
		Kahuku	Waianae		Moloka'i
		Leilehua	Waipahu		King Kekaulike

The statewide implementation of the Construction Academy model has been exciting as well as challenging. Remaining flexible to the individual needs of each high school and its surrounding communities remains an essential element of implementation. The following update reports from each community college provide a brief description of progress being made by each campus.

Hawai'i Community College

Hawai'i Community College continues to energetically support the construction academy at all public high schools on the island. Currently, construction academy classes made possible by Act 234 of the Hawai'i State Legislature are being held in nine of the ten identified public high schools on the island. Offerings in the tenth school, Honokaa High, are on hold until a classroom can be identified. Classes offered expanded from five (5) in academic year 2006-07 to twenty-six (26) in academic year 2007-08. The number of students increased from 42 to 305 resulting in a 37% increase in average class size from 8 to 11. The percentage of females in the academy classes for 2007-08 is 7.5%.

Results from academic year 2006-07, the first year, show that 82% of the students completed construction academy courses with a grade of "B" or better and thus, qualified for college credit. Graduating seniors totaled 26; 23% of them are attending Hawai'i Community College; 16% are attending another college or are working in the construction trade.

Positions:

Five home-based instructors, one traveling instructor, one coordinator and one clerk have been hired year. Recruitment is underway for three additional home-based instructors. Until the full time positions are filled qualified instructors are serving as casual hires. Funds provided for the counselor position are being used to cover instructor salaries since the funds allocated are not sufficient to cover the number of instructors needed.

	FTE Position Allocated	FTE Position Filled
Home-Based Instructors:	6	4 FTE/4 Casual Hires
Traveling Instructors	2	1
Counselor	1	(funds used for Instructors)
Clerical	1	1
Coordinator (Allocated as a 7 th home-based instructor)	1	1
	11.00	11.00

Activities Conducted from January 2007 – December 2007:

- Construction academy students taking classes during 2006-07 at Laupahoehoe High constructed, as culminating projects, two play houses for the school’s kindergarten students. They also built benches presented to dignitaries at the school’s annual town meeting.
- Construction academy students taking classes during 2006-07 at Kealakehe High constructed a guard shack requested by the school’s principal.
- Construction academy instructors participated in numerous recruitment events during the year. These activities recruit students for the construction academy classes as well as help them think about attending college. The most recent event was the higher education community college celebration, Ka Lei Lehua O Kona, held September 22, 2007 at the King Kamehameha Kona Beach Hotel Luau Grounds. Construction academy classes earning college credits are actively promoted at these events.
- Construction academy students from Laupahoehoe, Kealakehe, and Waiakea attended the June 2007 Hawai‘i Community College’s Model Home Open House. This event signifies the turning over to its new owners, the residential house constructed by the college’s carpentry and electricity students during the school year.
- Construction academy instructors attended the Department of Education’s Substitute Teacher Training Program during summer break 2007. They learned school policies and procedures specific to teaching at the secondary level. They also attended a hands-on workshop on

AutoCAD taught by the academy's expert Drafting Technology Instructor. Fall 2007 instructors required to apply for contract renewal January 2008 attended a workshop designed to help them develop the documentation to be included in their request to renew their annual contract.

- Summer 2007 six construction academy students attended Oregon State University's summer program "A Taste of College." They earned two college credits and in one student's words, "learned the importance of the academic side of college."
- Partnerships with high school instructors, registrars, and counselors were strengthened. Their support of the program assists in the recruitment of qualified students who are interested in developing abilities that will enable them to enter college and the work force at a higher, more qualified skill level.
- At the suggestion of the principal and community partners, Hawai'i Community College's construction academy is offering an Auto Mechanics class at Laupahoehoe High in addition to Building and Construction classes. The size of the school limits the pool of students available. To make efficient use of the instructor's time and to meet interest of students, one section of auto mechanics is being offered academic year 2007-08.

Next Steps:

- A competition for the "best of the best" will be hosted at Hawai'i Community College spring 2008. Representatives from each high school's construction academy will construct items. Students will be judged on workmanship, safety, skill, and attitude.
- Recruitment of instructors for Hilo, Konawaena, and Pahoehoe high schools will be completed.
- Field trips for participating high schools are being planned for May 2007 so students can tour the Hawai'i CC model home and visit the college campus.
- The college will develop pre and post test procedures for students enrolled in the Construction Academy courses and investigate the desirability of their taking the Compass placement test during their junior year.
- The construction academy's traveling instructor will attend the World of Concrete workshops in January 2007. A summer workshop will be held so he can pass on the knowledge to the home-based instructors.
- The college will develop procedures for tracking students enrolled in construction academy courses.
- The college will train instructors in the use of effective techniques to recruit and retain non traditional students, particularly females.

- The college will actively explore opportunities to improve student achievement, to incorporate best practices and integrate activities and programs especially in the areas of reading, writing, and math.

Honolulu Community College

Honolulu Community College continues to increase school participation with the addition of Kaimuki High School in SY 2007-2008 with Roosevelt High School scheduled to join the academy in school year 2008-2009. Student interest is on the rise with an increased enrollment of almost 200 students.

Pre and Post testing with the ACT[®] ASSET numerical skills test continues to be used to track Construction Academy student performance in math. Honolulu Community College determined that a scale score of 42 is needed for students to place into *Math 24*, *50*, and *53*— the entrance mathematics courses required by most HCC building and construction-related degree programs; and the level students will be tested at for acceptance into HCC's apprenticeship programs.

Students who score at a 42 or better are considered to have passed the test. Initial results from school year 2006-2007 showed little change in student performance over the first year (see summary of student performance).

SUMMARY OF STUDENT PERFORMANCE

School Year 2006-2007

	Pre-Test*	Post-Test*
Number of Students Tested	565	508
Number of Schools	14	14
# Passed	205	187
% Passed	36.28%	36.81%
Mean	39.04	39.55
Median	39.00	39.00

* Results from schools who follow a yearly academic schedule (2006-2007 SY) and modular-scheduled schools (Spring 2007 semester only).

Further analysis of the test scores disaggregated by courses show that over half, 58.33% of the courses increased test scores, 6.25% showed no improvement and 35.42% showed a decrease in test scores between the pre and post test math test. Analysis by course also indicates that there are differences between classes (see table below).

Course	Average Change In Test Score
Mechanical Drawing	+4.35 points
Electricity and Electronics	+2.06 points
Drafting Technology 1	+1.55 points
Building and Construction 2	+1.01 points
Building and Construction 1	-1.25 points

To improve student math performance, academy instructors will continue to integrate math problems within the construction academy's curriculum. Instructors will also use a computer based math tutoring program designed to supplement the math instruction in the classroom. The Construction Academy has invested in over 100 desktop computers to deliver the on-line math tutoring program in each of the construction classrooms. Participating students will also be able to access the on-line tutoring program from home.

The College will have a full-time academy counselor who will be on staff this November 2007. The counselor will be able to work with Construction Academy students to assist them in goal setting, academic planning and post high school planning. The counselor will also be responsible for graduate follow-up and tracking of academy students.

Positions:

	FTE Position Allocated	FTE Position Filled
Home-Based Instructors:	16	16
Traveling Instructors	4	4
Administrative Profession Technical	1	1
Clerical	1	1
Instructor, Cooperative Education	1	**
	23.00	22.00

** Position held vacant; funds used to support an Interdepartmental Agreement with DOE to temporarily assign a DOE employee to Honolulu Community College. This person will assist with the implementation and integration of this program.

Honolulu Community College hosted the inaugural Hawaii Construction Career Day event. This was the first event of its kind in the State of Hawaii. The partnership included the Hawaii Department of Transportation, Hawaii Local Technical Assistance Program, Department of Labor and Industrial Relations, the Federal Highway Administration, and more than a hundred volunteers. In total, there were over 800 students who were bused to the event from public and private high schools, as well as some home-schooled participants. There were many hands-on activities to stimulate and engage the high school students. One student reported on the evaluation form, “What made this event different from the rest was the hands-on activity and getting a chance to talk to the pros about their trade.”

Construction Academy staff development workshop was conducted at Honolulu Community College on July 13-20, 2007. Thirty nine (39) Construction Academy community college instructors from Maui, Kauai, and Honolulu participated as well as DOE instructors. The staff development activities included a review and revision of the current curriculum, curriculum mapping, hands-on construction of student projects, and training in the new math tutoring program.

Efforts are currently underway to follow up with students who have graduated from the academy program in 2007. Surveys will be conducted via the telephone to determine current student placement. Are former Construction Academy student in apprenticeship training, community college programs or gainfully employed in the construction industry? Has the Construction

Academy program assisted them in preparing for their current experience? How are they doing in math placement? The answers to these questions will help the program improve its efforts to service academy students.

Maui Community College

Maui Community College and Department of Education Construction Academy (CA) partnerships are continuing to flourish in the seven high schools located on three islands in Maui County. The following are some of the accomplishments of the past year made possible by legislative funding of the Construction Academy:

- Students in all seven high schools completed final projects in their classes according to professional guidelines and Construction Academy curriculum requirements. The playhouse projects completed at one high school were featured in articles in two newspapers, complete with photos, when they were donated to a community children's organization.
- In the past year, students and faculty from Construction Academy classes in the Maui County high schools attended two presentations at Maui Community College facilitated by representatives of the carpentry, electrical, and labor unions and local businesses. Students were also taken on guided tours of the campus facilities. Feedback from students indicated that a number of them were planning to pursue careers in the construction industry as a direct result of the presentations and their experiences in the CA program. Students also appreciated having the opportunity to meet and talk with CA students from other Maui County high schools.
- Computers capable of running CAD software were purchased and delivered to high schools. Four high schools received two computers each; one school received four, and one received six. More computers will be purchased according to the individual needs of the schools, and as the CA budget allows.
- One faculty member has received advanced training on architectural CAD software appropriate to the high school where he is assigned; other faculty members will receive updated training on the type of software that their schools will be using. They will in turn train high school faculty and students.
- CAD software that is available at no cost to the schools was located, copied, and distributed to high schools.

- Regularly scheduled informational and planning meetings have been held with DOE teachers, principals, and CTE coordinators. The open communication at these meetings has been an important element in the success of the Maui County Construction Academy program.
- The full time Construction Academy counselor has regularly visited high schools, assisting students with academic planning and goal setting. The counselor also makes presentations in individual high school CA classes, answering questions about such things as financial aid, COMPASS testing, and student housing.
- Official counts, names, and grades of students taking part in Construction Academy classes have been obtained from high schools. Any high school student earning a B or better in a CA class that articulates with a Maui CC class will receive college credit for that class.
- The number of Maui County high school students enrolled in the CA program has increased from 169 in school year 2006-07 to 276 in 2007-08; recruitment in the high schools and at high school and college career fairs continues.
- A portfolio assessment system to document student achievement of Construction Academy standards was adopted. Over 225 portfolios were printed, assembled, and distributed to participating high schools; more are currently on order and will be compiled and distributed.
- Faculty members and the counselor have attended a number of professional development activities, including the July 2007 Construction Academy staff development workshop and the Hawai'i Construction Career Day event, both at Honolulu CC; non-traditional student recruitment and gender equity training at Maui CC and on Oahu; and sustainable building conferences, both in Maui County and on the mainland. The training received by CA faculty members in turn benefits high school teachers and students.
- All Maui Community College Construction Academy positions funded by the State Legislature in 2006 have been filled by qualified personnel:

Positions:

	<u>FTE Position Allocated</u>	<u>FTE Position Filled</u>
Home-based Instructors	4	4
Traveling teacher	1	1
Clerical	1	1
Counselor	1	1

The seven men and women in these positions have enthusiastically committed their talents and energies to meeting the challenge of serving the diverse needs of students at the seven high schools

in Maui County. Three of the schools are located in areas far from the main Maui CC Kahului campus and must be reached by plane (Molokai), boat (Lanai), or a long automobile trip over a winding road (Hana). Nevertheless, all of these programs are thriving.

Kauai Community College

Kauai Community College brought on four new instructors in July of 2007 to work with the various high schools. We brought in individuals with a varied background in construction. The instructors work with the DOE teachers to provide both a real world professional experience regarding construction and an interactive learning experience that helps promote a positive attitude and sense of accomplishment.

Materials are being ordered and staged at KCC, and we are distributing them as needed to each school. In addition, we are ready to conduct our training for the DOE Industrial Arts teachers from the three high schools. This training will be held at KCC.

The instructors we have hired for the Construction Academy are going through a professional development course on AutoCAD to prepare for its introduction as part of our program of offering.

Students will be involved in helping with the set construction for a KCC production of the 'Man of La Mancha' performance at our Performing Arts Center. We hope this will make a connection with the English departments at the high schools, with the students meeting the performers, directors and all involved with the production culminating with their being invited to the performance.

In cooperation with the local Carpenter's union, we are setting up a community service project that will involve students from each high school. These students will build picnic tables that will be offered to people attending our annual ACF Culinary Arts Breakfast at KCC. The students will build the tables while the breakfast is being held. Attendees from the breakfast will have a chance at receiving the tables made by the students of the three high schools. The breakfast event usually draws approximately 2500 people to the campus.

Implementation in the high schools has now included all three schools, Kauai H.S., Waimea H. S., and Kapaa H.S. We are working closely with the district level Technical Education Resource Teacher, the principals, and the industrial arts teachers to introduce the Construction Academy

program to their schools and the students. Agreement contracts have been distributed to the high schools and terms are being defined. It is clear that each school's needs are individual, based upon the facility and the existing programs, and we are inserting our resources to best fit these areas.

Our work has been focused on two basic objectives. First is the alignment of the curriculum and standards and second is the marketing of the program and recruiting students.

The following is the total student enrollment for each high school:

Waimea High School:

Total enrollment is 104 students.

Male:	92
Female:	12
English Language Learner:	0
Economic Disadvantaged:	0
Special Education:	19
Building & Construction 1:	104
Building & Construction 2:	0

Kapaa High School:

Total enrollment is 23 students.

Male:	20
Female:	3
English Language Learner:	0
Economic Disadvantaged:	0
Special Education:	6
Building & Construction 1:	19
Building & Construction 2:	4

Kauai High School:

Total enrollment is 30 students.

Male:	30
Female:	0
English Language Learner:	1
Economic Disadvantaged:	1
Special Education:	0
Building & Construction 1:	19
Building & Construction 2:	11

We have met with the schools to introduce the Construction Academy curriculum and standards to the High School DOE teachers and are having them assist us in evaluating their lessons for including the standards within each course.

We are aligning our courses at the community college to the standards of the program for articulation between the High Schools and the community colleges. In addition we are focusing on

the second part of the goals of the Construction Academy in having an up to date program at the college level here in Kauai for those students seeking a construction related program at the community college level.

APPRENTICESHIP

The second component of the Construction Initiative is to improve and expand apprenticeship training. The University of Hawaii Community Colleges currently administer the related instruction portion of apprenticeship training for most of the non-union and union construction industry apprenticeship programs. Substantial increases in apprenticeship enrollments in recent years have strained the campuses' personnel resources, facilities and equipment and continued significant increases are anticipated in the coming years. Additional funding was needed to more adequately meet current and future industry demands for training. The general fund appropriations include allocations for support staff, lectureship costs and supplies and equipment.

Since enrollments during this past academic year increased by over 670 from the previous year, an additional staff position was needed in the Records office to assist the Registrar with attendance and grades and in generating reports such as cumulative earned hours which are used by apprenticeship coordinators to track their students. An Assistant Registrar was recently hired and her primary responsibility is record keeping for the apprenticeship programs. She has assisted with registration and explored ways to streamline and improve data gathering and reporting processes. She is currently involved in planning revisions to our record keeping system that will need to be implemented if the University moves toward not requiring social security numbers for admissions and registration and is also assisting in the conversion of our attendance record keeping system from daily logs to one in which only class total hours are collected and retained. As reported earlier, the other campuses have much fewer apprentices so their appropriations did not include funds for additional positions. The Apprenticeship Offices at these other Colleges have had to obtain support from other departments on their campuses.

Position:

	FTE Position Allocated	FTE Position Filled
Administrative Profession Technical	1	1

Apprenticeship enrollments increased significantly on all campuses in the past year and continued increases are anticipated in the next academic year. At Honolulu Community College, the Hawaii Laborers Training program began offering their classes through the College for the first time last semester so in addition to the ever increasing enrollments in our current programs, apprentices from this program will also be adding to our numbers in the coming semesters. The funds earmarked for

lectureship costs helped the College retain our current staff of instructors and hire new qualified instructors to teach the additional classes that were needed. Wages for approximately 17,300 instructor hours (300 apprenticeship classes) were paid with these funds. Maui Community College also received an allotment for lectureship with which they hired over 15 instructors to staff new classes that were requested by their different training programs. The other campuses did not receive allocations for lectureship so any additional instructors had to be funded from existing sources.

Due to the almost unprecedented numbers of apprentices on the campuses in recent semesters, shop equipment were over taxed and materials and supplies depleted. The Colleges used their supplies and equipment budgets to replace old equipment, purchase new equipment and replenish shop supplies and materials. This funding enabled the Colleges to replace equipment which were outdated and/or unsafe and purchase different types of equipment that programs are utilizing to expand the scope of their training. For example, new welding machines were purchased by the Welding and Refrigeration programs to replace worn out, older models, electric conduit benders were bought by the Electrical and Refrigeration programs to help them teach an alternative method to manual pipe bending and a scissors lift was purchased by the Painters to expand their training to include the safe and proper use of this type of equipment. Funds from the supplies budget were used to purchase materials such as sand for the Masons, electrodes for the Welding shop and oxygen, argon and acetylene gases for the Boilermakers and Ironworkers. In addition to these construction-related equipment and supplies, laptop computers were also purchased because increasing numbers of apprenticeship instructors are requesting computers and web access to deliver their curricula and there are only a handful of computer labs on campus. These computers are configured as two mobile computer labs and can be wheeled from room to room so now virtually every classroom can be transformed into computer lab when needed.

In summary, with the additional funding, the University of Hawaii Community College Apprenticeship Offices have been able to more satisfactorily serve their rapidly expanding training programs. The Assistant Registrar at Honolulu Community College is working to ensure the accuracy and integrity of apprenticeship records and improve data gathering and dissemination capabilities. The funding for lectureship costs has helped the College meet the steadily increasing number of requests for courses from the training programs and will offset the added costs of instructor wage increases which are scheduled over the next two years. Allocations for supplies and materials have enabled the Colleges to at least partially restock shop consumables which constitute huge and growing expenses as enrollments rise. Perhaps the most significant beneficial outcome of

this funding is that the Colleges are now able to purchase much needed equipment. Departments have bought or are in the process of purchasing equipment to replace old, outdated and/or unsafe models and types of equipment that were earlier not available for training. Therefore, in several significant ways, the Colleges have and will be able to more completely meet the training needs of the construction industry.