Kapiolani Community College
Tribal Colleges & Universities Program for Science, Technology, Engineering and Mathematics (STEM)

Summer Bridge Final Report

I. Overview
The 2006 Summer Bridge Program at Kapiolani Community College (KCC) epitomized the College’s motto, adopted from Queen Kapiolani royal seal, “Kulia i ka nū’u, strive for the highest. The Summer Bridge Program ran from June 12 – July 7, and was attended by 23 Native Hawaiian students from 16 local high schools. High school 11th and 12th graders were engaged in multiple activities designed to promote group involvement, revisit and strengthen personal knowledge in math and science and to instill individual confidence. The goal of the program was to recruit Native Hawaiian students to Kapiolani Community College and to the University of Hawaii (UH). Of the eleven 12th graders who attended the 2006 STEM Summer Bridge Program nine students will be attending KCC in Fall 2006 and two students will be attending UH at Manoa. Of the 11th graders who attended the program all have made a verbal commitment to attend KCC in Fall 2007 and a few have expressed an interest in KCC’s running start and early enrollment programs. The focus of the program was to encourage the students to revisit their high school mathematics education to optimize their placement on the UH Compass Placement Test (CPT). One of the very important factor effecting recruitment into and retention within STEM education is the daunting and exhaustive sequence of math courses required of all STEM majors, particularly if the student is started in remedial math courses. One of the questions explored in this program was If students were to systematically revisit their math skills prior to taking the UH CPT would they be able to recapture the requisite knowledge to place higher on
II. Projects
The Summer Bridge Program was divided into three principal projects. The **first** project involved construction of a high-end personal computer from parts which the students kept upon completion of the program with the verbal commitment of attending a college within the UH system and entrance into a STEM academic field. This project was adopted from a very successful model developed by the Alaska Native Science & Engineering Program. The **second** project involved a web-based, artificially intelligent assessment and learning system called ALEKS. ALEKS uses adaptive questioning to quickly and accurately determine exactly what a student knows and doesn't know in a course. ALEKS then instructs the student on the topics she is most ready to learn. As a student works through a course, ALEKS periodically reassesses the student to ensure that topics learned are also retained. The **third** project focused on building underwater remotely operated vehicles (ROVs), made with PVC pipe. With a marine engineering theme, this project teaches basic skills in ship and submarine design and encourages students to explore naval architecture and marine and ocean engineering concepts independently. The Sea Perch program can easily be turned into a capacious, multidisciplinary venture. By incorporating sensors and camera systems the project can be easily adapted as a tool for teaching engineering, physics, chemistry and biology as well as oceanography and marine biology.

Students were surveyed on the summer bridge program and the three main projects. The results of appropriate survey question are presented as outcomes.

**Computer Building and AutoCAD**
Dennis Dishon (see Dishon CV below) was hired to oversee the computer construction and to provide instruction in AutoCAD in the first week of the summer bridge project. Each student constructed a personal computer from parts and installed a student version
Outcome: The summer bridge staff was impressed that all of the student-built computers passed a “burn in” test. Each student was given the PC that they constructed at the end of the summer bridge program along with a keyboard, a mouse, a flat screen monitor, a speaker system and a one-year site license for the student version of AutoCAD 2006 (an estimated value of $2100.00).
Having the computer building project at the start of the 4 weeks was great because it was both simple and exciting and the computer could then used in other parts of the program. Ideally it would be great if we could get these computers wired for internet so they could be used to work with the ALEKS program. We could not do this and therefore provided the students with a wireless laptop connection for web access.

Mr. Dishon proved to be a great asset to the program. He is very experienced and knowledgeable about the computers we were building and the AutoCAD software. In the future it is likely that we can oversee computer building project with our own faculty but we would be hard pressed to find a good AutoCAD instructor.

**ALEKS Math**

The Assessment and LEarning in Knowledge Spaces (ALEKS) is a web-based, artificially intelligent assessment and learning system. ALEKS uses adaptive questioning to quickly and accurately determine exactly what a student knows and doesn't know in a course. ALEKS then instructs the student on the topics she is most ready to learn. As a student works through a course, ALEKS periodically reassesses the student to ensure that topics learned are also retained. ALEKS courses are very complete in their topic coverage and ALEKS avoids multiple choice questions. A student who shows a high level of mastery of an ALEKS course will be successful in the actual course she is taking.
ALEKS also provides the advantages of one-on-one instruction, 24/7, from virtually any web-based computer for a fraction of the cost of a human tutor.

Information on ALEKS can be found at http://www.aleks.com/ and downloaded at a cost of $29 per student.

In weeks 2-4 student spent approximately 24 hours total or two hours per day M-TH working with ALEKS. Because the ALEKS program was available to student 24/7 some of the students spent time with the program in the evenings. ALEKS effectiveness was measured by pre-post testing using the UH Compass Placement Test. Students took the pre-test on June 13 in the morning with not coaching what-so-ever. On July 6, after three weeks of ALEKS training students retook the UH CPT.

Outcome: The ALEKS program was very simple to use once the students got used to it. Results of the Pre-Post test (shown below) show a clear improvement in student performance on the UH CPT. 65.2% of the students scored significantly higher on the UH CPT raw score after working with the ALEKS program. 9 students (39%) placed in at least one math course higher on the post test. In one case, a student moved from College Algebra (MATH 103) to Calculus (MATH 205). This improvement saves the student 3 semesters of mathematics at KapCC.

Although ~24 hours were provided to work with ALEKS the average amount of time the students were logged onto ALEKS was 25.6 hours. One of the students spent 45.1 hours logged onto the program. A positive correlation exists between the student’s Pre-Post UH CPT score and the number of hours spent working with the ALEKS program (see below).
SEA PERCH Underwater ROV

The third major project introduced as part of the summer bridge program was the construction of a “Sea Perch” Underwater Remotely Operated Vehicle (ROV).

The Sea Perch is made from PVC pipes and other materials purchased at a local hardware store. It can maneuver to port and starboard and submerge using three small nine-volt motors driving small propellers. The sea perch is made to be nearly neutrally buoyant at the surface using lead weights. The unit is attached to an electronic control box via a 30 ft., six-wire strand tether. The sea perch carried an underwater camera that was mounted to its substructure and could be used to help maneuver the ROV.

The students worked in groups to inventory parts, construct, test, and pilot the sea perch ROV.

Outcomes: The sea perch was a fantastic instructional tool. The peer mentors served as the primary instructors and the students learned a wide variety of construction techniques and skills including things such as acquiring neutral buoyancy and vessel stability, hermetic sealing of motors using wax and electronic soldering. Some students commented that they had never used an electric drill!

III. Activities

A number of activities complemented the three main projects allowing the summer bridge students to meet successful STEM faculty and professionals and to visit interesting STEM sites on Oahu.
Meet the Faculty
Throughout the program KapCC faculty and industry professionals were brought in to visit with students and to discuss career opportunities and the academic pathways that are emphasized within the Math/Science Department.

KapCC Faculty
Hank Snider - Ecology
Maria Bautista – Engineering and Space Science
Robert Moeng – Marine Biology
Nelda Quensell – Botany
John Berestecky – Biotechnology
Doug Crowell – Exercise Science
John Rand – Sleep Science

Industry Professionals
Darren Okimoto – Hawaii Sea Grant Extension Agent
Thomas Duate – Water Engineering

Outcomes: The value of having these professionals was: 1. to introduce the students to faculty prior to taking classes at KapCC. By meeting the faculty the students could place a face with a name as they signed up for Fall 06 classes. For example, six summer bridge
students are enrolled in the “Science of Sleep” (PHYL 160) course in the Fall 2006. 2. the students were able to interact with STEM career professionals and were able to find out specific information about these careers, like daily tasks, the education necessary for the profession and salary information. 3. to show the students that they have the potential to work in STEM careers if they choose to. Dr. Duarte is a Hawaiian who got his education on the US mainland and came back to work in Hawaii as a water engineer. Darren Okimoto worked professionally for many years on the US Mainland and in the south pacific as a marine biologist but for our summer bridge students the most significant thing about him was that he graduated from Kaimuki High School.

**Group Building**

The summer bridge students participated in a number of activities designed to strengthen the bonds between students and between students and peer-mentors and between students and faculty. Students were given newspaper and masking tape and asked to build a bridge that spans a 3 foot distance between table surfaces.

Student also participated in other physical activities such as a Whiffleball tournament, a trebuchet competition as well as a number of noncompetitive games lead by peer mentors.

**Field Excursions**
Students were taken on a number of excursions to STEM sites around Oahu. Students were taken on a tour of Lyon Arboretum and were introduced to plants and fauna indigenous to Hawaii. Students went on a two-hour hike through Tantalus with Hank Snider a biologist and ecologist.

Students visited the Hawaii Underwater Research Lab and got to see the remotely operated vehicles and support vessels used in research in Hawaii. They visited the Imaginarium at Windward Community College and the Waikiki Aquarium, Hanauma Bay and the Hawaii Adventure Water Park.

IV. Personnel

John Rand and Judith Kirkpatrick coordinated the summer bridge projects and activities. Ms. Kirkpatrick also mentors Thomas Duarte in providing a image and video record of the projects and activities. Keolani Noa was in charge of the daily operations and logistics. Ms. Noa was also the primary contact for all summer bridge students and peer mentors. Herve Collin and Lavache Scalan were the primary teaching faculty and supervised the Peer Mentors for ALEKS project.
Faculty
John Rand, Ph.D. – STEM/TCUP Program Director

Phone: 734-9433
Email: jrand@hawaii.edu
Office: Kokio 209B

ALOHA! I am a Professor of Math and Science here at Kapiolani Community College (KCC) and also at the University of Hawaii at Manoa (UHM) medical school. I am the Program Director for the Kapiolani Community College’s, National Science Foundation sponsored, Summer Bridge Program. I will also be one of the faculty instructors overseeing the construction and testing of underwater robots.

I spent my youth in New England and received both my BS and MS degrees in Physics from the American University in Washington DC. I worked as an optical engineering after college in Virginia before moving to Hawaii in 1989 to go to graduate school in Biomedical Sciences. I received my PhD in Biomedical Sciences - Physiology from the John A. Burns School of Medicine in 1999.

I have taught many courses at both KCC and UHM from Animal Physiology to the Science of Sleep. I have taught courses in Astronomy, Physics, Engineering and Zoology and I am the pre-engineering coordinator at KCC. My personal interests include airplane building and flying, skiing, hiking and cycling.

Keolani Noa – STEM Summer Bridge Program Coordinator

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Email: keolani@hawaii.edu
Office: Kokio 202

Welina, O Keolani Lindsey Noa ko’u inoa. He kanaka maoli au. I am currently the Outreach Coordinator for Kapiolani Community College’s Science, Technology, Engineering and Mathematics (STEM) Program. I am the coordinator of the Summer Bridge program.

I was born and raised in Kuli’ou’ou Valley, the ahupua’a where my family has lived for seven generations. I have a Bachelor of Science in Business Management from the University of Phoenix. I am active in community development, student affairs and in facilitating cross-cultural awareness. I am certified in specialty education with the Schools Attune program, Oli, Ho’oponopono, and Religious Studies.

Prior to joining KCC, I taught Hawaiian Studies and Health at a private school in Honolulu. I received the Ellison Onizuka National Award from the National Education Association and was recently inducted into the NEA’s National Women’s Historical Biography.

Judith Kirkpatrick, M.A. – Education Specialist
I help direct the campus in its development and use of electronic portfolios, coordinate Professional Development opportunities for STEM faculty, and work with our Palolo Pipeline project to support a technology center at Palolo Valley Homes.

I have taught more than ten different English classes at the College, have sponsored national computers and writing conferences (1997 and 2004), and sat on the executive committee of the National Council of Teachers of English’s College Composition and Communication board, 2002 thru 2005.

I am committed to public higher education in Hawaii, and have substituted my 3-year old Labrador retriever, Hapa, to take the place of my two daughters, both in their twenties, who are living on the mainland. I know more about computers than most people, and my latest interest is in digital story telling and the capture of teaching and learning in digital formats. In my spare time, I love to watch professional soccer on t.v.! Go World Cup!

Hervé Collin, M.S. – Math and Sciences faculty

I will be one of the faculty members involved in the summer bridge program this summer to help students consolidate their mathematics skills. I love mathematics as a game and as a tool to describe the natural environment in which we live. I have a Master of Sciences in Physics and currently am pursuing a PhD in Biomedical Sciences at the University of Hawaii at Manoa, focusing on trying to map the complexity of the human brain using Chaos Theory.

I came to Hawai‘i in 1992 from France and have lived on this beautiful island ever since. I currently teach Physics, Astronomy, Civil Engineering, and Physiology (The Science of Sleep) here at Kapi‘olani Community College. I enjoy hiking on Oahu’s mountains, spear fishing at night in the ocean, and messing around with other people’s computer (when they are not looking!).

Lavache Scanlon, M.Ed. – Holomua Math Faculty
I have taught Pre-College Mathematics and Beginning Algebra at Kapi‘olani Community College (KCC) since 2000. I am currently a faculty member of the Holomua Department and coordinator for the Pre-College Mathematics program at KCC. I also coordinate several student success programs, which include Supplemental Instruction (SI), math tutoring, and math brush-up workshops. I serve on several department and campus-wide committees at KCC and am the KCC representative on the UH System Native Hawaiian Council. I am most proud of receiving the Excellence in Teaching Award for a Lecturer at KCC in 2003.

I received a Bachelor of Science in Biology and a Master’s in Secondary Education from Chaminade University. I was born and raised in Hilo, Hawaii and am of Hawaiian, Cherokee, Portuguese, Irish, and English decent. I am married and have two children. I enjoy hula, arts and crafts, scrap booking, and spending time with my family. I also serve on the board of the parent group for Pūnana Leo o Kawaiahaʻo, a Hawaiian Immersion Preschool.

**Dennis Dishion A+, Net+, AAE, MCP. - Summer Bridge Program Instructor**

![Dennis Dishion](image)

*Email: dennis@freightsled.com*

Hello, my name is Dennis Dishion. I am a consultant working with many different schools and businesses in the Northwest US. I will be the instructor overseeing the computer building and AutoCAD portions of the program.

I grew up on the west side of Oregon and moved to the east side after graduation. Alaska is now where I call home after moving here in 2001 (no I do not live in an igloo). I have a background in both construction and computers. I am A+ certified, Network+ certified and also an Autodesk applications engineer and a Microsoft certified professional.

I began my teaching career at Central Oregon Community College in 1991. I was an instructor and program chair in the Computer Aided Drafting Degree program. I moved to Alaska to take a job as the Administrator of an adult vocational training school in Kotzebue, 40 miles above the Arctic Circle. I began full time consulting/training in 2004 and have taught at over 40 different sites since that time. My personal interests include hunting, camping, fishing, guiding and aluminum fabrication.

**Peer Mentors**

Peer mentors provided support and instruction in all aspects of the summer bridge program. Peer mentors were employed for 5 weeks from June 5 through July 12. The first week was spent as an orientation and group building week. Peer mentors also helped plan summer bridge activities and helped move equipment and prepare the facilities. All peer mentors had completed calculus prior to the program.

One of the mentors, Thomas Duarte was used as a videographer charged with capturing the all projects and activities with pictures and video, and interviewing faculty and students.

*Kawai Mar – Peer Mentor*
ALOHA! I am a student here at Kapiolani Community College. Next spring I will be transferring to UH-Manoa. After changing my major several times, I have decided to major in Civil Engineering. Currently, I am a peer mentor at KCC for the Astronomy/Hawaiian Studies Learning Community and I tutor in Physics and Math.

I grew up in Palolo Valley, and then moved to the North Shore. I graduated from Kahuku High School in 1999. Since then, I have been working and going to school. My personal interests include shopping, going to the beach and hanging out with my family.

Justin Carland – Peer Mentor

Howzit! I am an Electrical Engineering student here at Kapio’lani Community College (KCC) and the University of Hawai’i at Manoa (UHM) College of Engineering. I am one of the peer mentors for the Kapio’lani Community College’s, National Science Foundation sponsored, Summer Bridge Program. I will also be one of the mentors overseeing the construction and testing of underwater robots and computer building.

I was born in Honolulu and have lived most of my life on Oahu. After high school, I joined the Navy where I was a Nuclear Reactor Operator on two fast attack submarines. Subsequently, I was a teacher at Farrington High School as part of the Alliance for Drama Education. I enjoy freediving, playing the violin and listening to music.

Thomas Duarte – Peer Mentor

Hello sunshine! I am a student here at Kapio’lani Community College (KCC) and a peer mentor for the Kapiolani Community College’s, National Science Foundation sponsored, Summer Bridge Program. I will be transferring to UH Manoa in the Fall 2006 attending both KCC and Manoa. During the project, I will be creating a video highlighting the events and tasks of the summer for use by faculty, administration, and to show all of you the progress you will make.

For the fall semester, I will be the Editor and Chief of the Kapio’lani campus newspaper, the Kapio. If you like to write, let me know. I am excited and pleased to have this opportunity to work with the Summer Bridge students and expand their educational careers as well as my own.

Heather Manoi – Peer Mentor
ALOHA! My name is Heather Manoi, and I am a peer mentor for the Summer Bridge Program. I have lived in Aiea for the past 3 years and graduated from Kaimuki High School in 2000. I have attended Kapi'olani Community College for four years as a full-time student. I have an educational background in Nursing and am majoring in Marine Biology. I plan on transferring to UH Manoa in Spring '07. My hobbies are surfing and spending time with my family and friends.

Andron Garrigus - Peer Mentor

Hi! My name is Andron X Garrigus. I’ve attended KCC for two years, and I plan on becoming an engineer. I enjoy watching cartoons and reading comics. I also think that physics and math are totally radical! I’m really looking forward to helping the bridge program participants; this summer is going to be lots of fun!

Summer Bridge Students

Of the 23 students who completed the 2006 KapCC Summer Bridge Program 11 were graduated seniors and 8 of these seniors have enrolled in courses at KapCC, 1 student who is enrolled at KapCC as a current high school senior as a running start student. All of the other high school seniors this year who attended the summer bridge have made a verbal commitment to Attend KapCC in the Fall 2007. A list of the 2006 Summer Bridge students is provided below. The students currently attending classes at KapCC in Fall 06 are highlighted in bold.

<table>
<thead>
<tr>
<th>Andrade, Christina*</th>
<th>Lewis, Kawehi*</th>
<th>Pohano, Leighton*</th>
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<td>Chinn-Galindo, Erika*</td>
<td>Lindsay, Kanekawaiola*</td>
<td>Rickard, Ku'u puamaiole*</td>
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<td>Duarte, Tyler*</td>
<td>Makino, Eric*</td>
<td>Sagawa, Yoichi*</td>
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<td>Nakamoto, Reyn*</td>
<td>Tui, Aaron*</td>
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<td>Fukushima, Cayla*</td>
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<td>Vegas, Kahau*</td>
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<td>Kalua, Heather*</td>
<td>Parker Kamuela*</td>
<td>Iwamoto, Melia*</td>
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<td>Kratzke, Chris*</td>
<td>Parker, Kapualehua*</td>
<td>Weidknecht, Edmund*</td>
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<tr>
<td>Lenchanko-Andrade Duke*</td>
<td>Pasion, Jazmine*</td>
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</tr>
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</table>

V. Facilities

The KapCC Bistro Café was used for the summer bridge program. The café was separated into two sections, one section was setup with café style bench seating where students worked with ALEKS using laptop computers. The other section was used as a laboratory where students could work on projects as a group. This physical setting was well suited for the summer bridge program.
### VI. Assessment

Student assessment of the three principal projects is included below. Also, answers to open-ended questions and peer-mentor responses are included.

<table>
<thead>
<tr>
<th>Questions</th>
<th>mean</th>
<th>Standard Error</th>
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<tr>
<td>Aleks program helped me improve my mathematical skills</td>
<td>3.2</td>
<td>0.3</td>
<td>23</td>
</tr>
<tr>
<td>Aleks program was easy to use</td>
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<td>Aleks program was fun to use</td>
<td>2.7</td>
<td>0.2</td>
<td>23</td>
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<tr>
<td>I have been using Aleks at home during the Summer Bridge</td>
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<td>0.3</td>
<td>23</td>
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<tr>
<td>I will most likely use Aleks after the Summer Bridge</td>
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<td>23</td>
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<tr>
<td>Aleks was helpful in preparing me for the placement test</td>
<td>2.9</td>
<td>0.3</td>
<td>23</td>
</tr>
<tr>
<td>Explanation within the Aleks program were helpful to me</td>
<td>3.2</td>
<td>0.2</td>
<td>23</td>
</tr>
<tr>
<td>Building computers helped me understand better how they work</td>
<td>3.5</td>
<td>0.2</td>
<td>23</td>
</tr>
<tr>
<td>I will build another computer in the future</td>
<td>2.3</td>
<td>0.3</td>
<td>23</td>
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<tr>
<td>Autocad was easy to use</td>
<td>2.6</td>
<td>0.3</td>
<td>23</td>
</tr>
<tr>
<td>Autocad was fun to use</td>
<td>2.8</td>
<td>0.2</td>
<td>23</td>
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<tr>
<td>I will use Autocad after the Summer Bridge program</td>
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<td>0.3</td>
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<tr>
<td>I am planning to major in STEM in college</td>
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<tr>
<td>The summer bridge program taught me about careers in STEM</td>
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<td>The summer bridge program helped me to decide to major in STEM in college</td>
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<td>16</td>
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<tr>
<td>The summer bridge program helped to convince me to attend college at KCC</td>
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<td>16</td>
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<tr>
<td>Talking with Peer Mentors about college was helpful to me</td>
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<td>0.1</td>
<td>16</td>
</tr>
<tr>
<td>Meeting the KCC faculty was helpful to me in learning about the KCC STEM program</td>
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<td>0.1</td>
<td>16</td>
</tr>
<tr>
<td>Peer mentors were helpful during the summer bridge</td>
<td>3.8</td>
<td>0.1</td>
<td>16</td>
</tr>
<tr>
<td>Learning Communities seem like a good way to learn in college</td>
<td>3.8</td>
<td>0.1</td>
<td>16</td>
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<tr>
<td>I will contact a peer mentor for help when I get to college</td>
<td>3.1</td>
<td>0.3</td>
<td>16</td>
</tr>
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</table>
I will stay in contact with other summer bridge students when I get to college | 3.7 | 0.1 | 16

I will have internet access at home for my new computer | 3.4 | 0.2 | 16

I will be taking my computer with me when I attend college | 3.4 | 0.3 | 16

N value=23

<table>
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<tr>
<th>Questions</th>
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<th>Not Enough</th>
<th>Too Much</th>
<th>Not Answered</th>
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<tr>
<td>The amount of time spent on Aleks was</td>
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<td>4</td>
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<td>1</td>
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<tr>
<td></td>
<td>73.9%</td>
<td>17.5%</td>
<td>4.3%</td>
<td>4.3%</td>
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<td>The amount of time spent on computer building was</td>
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<td>1</td>
<td>1</td>
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<tr>
<td></td>
<td>60.9%</td>
<td>30.5%</td>
<td>4.3%</td>
<td>4.3%</td>
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<tr>
<td>The amount of time spent on Autocad was</td>
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<td>10</td>
<td>3</td>
<td>1</td>
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<tr>
<td></td>
<td>39.2%</td>
<td>43.5%</td>
<td>13.0%</td>
<td>4.3%</td>
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</table>

Did the Sea Perch project helped you decide to become a STEM major? Why or Why not?

- No because I knew I would major in engineering. It probably would have swayed my decision to major in STEM if I were undecided.
- The Sea Perch project was a very good experience and it has got me thinking about going into a STEM major, but I have my heart set on becoming a Pharmacist and so that is my desired major.
- The Sea Perch helped convince me to become a STEM major because of the skills involved. The construction process employed skills from different areas in STEM. Each new skill I learned was useful in my current life and will be in my career as a STEM major.
- Not necessarily, it wasn’t the sea perch itself, but I was very interested in making it and seeing it work. It was very neat to see the final product and outcome of the sea perches.
- Yes it did because it opened up many doors of interest that I wasn’t interested in the beginning…So now I am having second thought on what I want to be.
- Yes, it helped me to see Engineering in practice.
- The sea perch has helped me decide to become a STEM major because of all the hands on things we did but I think it would have been more helpful if we did more of the planning of the sea perch, for example, more of the Auto CAD program and drawing out the sea perch or even creating our own sea perch.
- No, although I do not want to major in engineering, I now have a feel for how an engineer might approach his/her work.
- Yes, at first it was no but after building it made me have an interest in it.
• Well not really because my mind is set on forestry... but it did give me the opportunity to explore the engineering side of STEM which I greatly appreciate...

• Not really because it was fun to put it together but I didn't really make a connection to it as work, I saw it as fun.

• Yes it got me interested in studying and operating similar objects in marine research.

• In a way it did cause it gave me a better understanding on engineering involving water and hydrology.

• The Sea Perch was not only a helpful influence to become a STEM major but it fulfilled a strong interest of mine in structural design and electronic mechanisms. For me I was always involved in building different things therefore the Sea Perch allowed me to apply my skills and knowledge and also advance them through the help of my classmates and peer mentors.

• Yes it did, it gave a little insight on what I will be really doing....

• In a way it kind of helped me to decide to be a STEM major or not because I enjoy building and putting stuff together. So yeah I guess building the sea perch got me 1 step closer to joining the STEM program.

**If we were to change everything next year except one thing, what would you keep and why?**

• Building the computer. The experience of building the computer and the excitement of taking it home made me very glad I found the program.

• I would keep the Aleks program because although it wasn't my favorite thing to do, I really benefited from it. It built my math skills, I relearned a lot of things that I have forgotten, and I also learned new things. The Aleks program not only got me into a higher math class, it also gave me confidence when I took the test.

• ALEKS math training must stay. The program may seem like an unnecessary burden but ALEKS introduces math more as a life tool. ALEKS is a good motivator for learning math and applying it outside of what is written in a textbook.

• If this is in regards to the summer bridge program itself, then I really wouldn't change anything because everything was very informational. One thing that I do encourage the program to keep would be Aleks because it is very helpful in brushing up in your mathematics especially when it comes to taking the placement exam.

• I would have to say keep ALEKS!!! That made us think faster and do better with in four weeks on the test.

• I would keep the peer mentors because no matter what we did they were helpful, knew what to do, and made everything fun. They helped us to understand what college life was going to be like. It made me feel confident that I could do it.

• I honestly can't say what to change or keep because everything that was planned has taught me something, what I can say is maybe add more projects to the program.

• I would definitely keep the ALEKS program because it helped me to be more confident on math.

• ALEKS...It helps a lot to brush up and learn different ways to do problems.

• I would think that keeping the computer making and working with AutoCAD is something to keep.. Because I learned a lot by building the computer...
and by using AutoCAD such as computer terminology and engineering basis by using AutoCAD.

- I would keep Aleks because Aleks REALLY helped me with my math skills. There were times that I hated doing it but it really helped me to review my math and at the end of the program I really like Aleks because it helped me.

- Aleks, it seemed like the only "real" work we did in the class. everything was really like fun educational activities.

- The field trips must be kept because for me learning outside the classroom is very helpful and I really enjoy it.

- If I had to change everything except one thing I would have to keep the sense of a strong unified group atmosphere where all the students can share a bond amongst each other. This to me is the most important part for it allows the students to help each other but more to continue their friendship into college. Therefore I suggest keeping the group activities and the field trips as a unifying experiences.

- The mentors they were a big influence on me. They were there with us through everything. Because as we were learning they were as well...

- I would want to keep the kindness and support that the peer mentors and advisors gave to us. So basically if I was to be in the summer bridge again I would want the same people to help me because they were so good.

Would you recommend this program to your friends? Why or why not?

- I already have. It's a great program for those interested in science and it's free.

- Yes I would definitely recommend this program to my friends because I learned a lot from this program. I not only gained math skills from the Aleks program, I also gained knowledge about the STEM majors, the KCC campus and faculty, computer building, and underwater robot building (Sea Perch). Most importantly I gained the relationships of my peers that I plan on seeing at KCC in the near future and also the peer mentors and faculty from KCC.

- YES!! The STEM summer bridge introduced me to new ways of thinking and working. The summer bridge helped me to find interest in one the STEM majors which I had previously not considered. Summer bridge can bring more of my friends into these fields who had never considered STEM before.

- Yes, I would gladly recommend this program to my friends because it is a wonderful opportunity especially for native Hawaiian kids nowadays. I would like them to take advantage of what you are providing them with. I am glad that I decided to come thank you for offering me the opportunity to come into this program.

- Yes I would, this program has a lot of connections to get you to places that interest you and some how you will find something that interest you in this program.

- YES. YES. YES. It was a great program. It accomplished the main objective for me which was to decide on a major. It was also fun!

- Yes I would recommend the program to my friends because it has taught me many new things and gave me hands on experience on how my future career may be if I choose the STEM path way

- Yes because it was a challenging, but rewarding experience.
• Yes, because it open many doors of interest for me that I really thought it would be boring.

• I would definateley recommend this program to my friends. Because It prepared us for college.. cause right when u get out of college you just forget about school and it doesn't become an obligation any more. But joining the program will keep us on our feet and ready toi further our education.

• I would totally recommend this program to my friends because before I entered the program I wasn't interested in Science and Math but I thought I should just try it. After the program was completed I was glad that I attended because it was an awesome experience and I learned that Science & Math can be fun. Through attending this program, my eyes were opened to so many different jobs that are out there then just being a basic Scientist. Many of the careers that we learned about, I never knew were part of the STEM major. Knowing all that I know now about the program, I think that anyone would love it. They may not think it's for them, just as I did but if I recommend it to them, and they come, they will see that it is awesome. So, I totally would recommend this program to my friends!!!

• yes!this program was a blast. i learned many interesting things and at the same time i was having fun too. i also got the opportunity to meet many new people that i will hopefully see when i go to kcc.

• Of course because it not only prepares you for college but you feel alot more comfortable about college and the requirements involved

• For me I would definetly recommend this program to my friends for it's not only a place to meet new people but it helps to open up pathways that can be pursued in the future. The STEM program branches it self out to many careers that some have never seen but yet when informed may find an interest in its subject. The opportunities this program offers in retrospect is just a stepping stone that guides you to your destination of a successful career.

• Yes I do because this program had helped me decide what i can do in my future.

• yes. deffanently. because there is so many things you can learn in the program that will help you later on in your college life.

In one year, what do you think you're going to remember the most about this program? Please explain.

• The people. I don't meet very many new people outside of my school, and the people at the program were very different from those I know from school.

• In one year I think that I am going to remember the computer building, maybe not the whole processes but the experience and also the people. Every one has made a big impact on my life in a positive way. I now feel confident that I am ready for college.

• I will remember the friendships I made during the program and how those new bonds helped me to accomplish tasks in the program. The social atmosphere of the summer bridge was very light. The work all of us shared made us all good friends and good motivators for each other.

• The people. I met a lot of people from all over the island that came to this program to learn. I have bonded with each and every one of them and became close friends. We all do keep in touch and I really miss them and
can't wait to see them all again. In fact, I wouldn't mind coming back next year I know not as a student, but maybe as a mentor or assistant who knows. I had a lot of fun and I am glad that I came. Thank you.

- The computer, I made it myself from scrach with help from all kind of people...And I got to take it home...Thank you!!
- The people. The faculty staff, mentors, and students. The fellowship was great.
- the people and the friends i met through out the stem program
- building my own computer, and making lasting friendships
- I am certain that i will remember the bond that we gained between our peers, mentors and instructors. And the Race we had with our Sea perches at the water park.
- I am not able to pick out something that I may remember the most in one year because this program has blessed me with may things that I will remember always. That said, I think some of the things that I will remember are all of the bonds that I made through the program and all that I learned through being given the opportunity to attend. I will remember that because of this program, I have learned to appreciate the sciences and Math especially. I will also remember all the fun that we had building our computers and the knowledge that we now have of what goes into building a computer. And lastly, I will remember all of the awesome memories that we made on our field trips. Those were great times!!
- I will prbably remember all the fun goofy activities the peer mentors had planned for us.
- All the fun stuff we di which was basically the entire program... the field trips, and even ALEKS cause it made math somewhat fun....
- The one thing that I will remember the most about this program is the people that I encountered. Within the program I made new friends from my classmates, to my mentors and my teachers. This to me I will never forget for they are the ones that in such a short time had a big influence in my life and I know for certain that we will continue that same bond through our lives.
- the directors,mentors and fellow students..pretty much everything.
- the friends that i made in the program. my advisors. and everthing that we did and accomplished.

**Peer Mentors Survey**

**List 3 activities that you feel were MOST beneficial to the summer bridge students.**

**Explain how the summer bridge students benefited from these 3 activities.**

- Ultimately, the Aleks program. This program has definately improved the student's knowledge in math and allowed them to practice taking math test on a computer, similar to their math placement test. Next, the introduction of different STEM majors. This showed the students the different programs and classes offered ar KCC that they could continue on at UH Manoa. A lot of students entered our summer bridge unsure of their majors or field of study. This activity gave the students a clear insight of what they wanted to achieve in school and in their careers. Also, just meeting the staff and peer mentors gave the students a sense of
community and support throughout their college career. Meeting the different professors on campus helped the students decide on their STEM pathways and, I feel, gave them a confidence in taking their classes with these professors. Along with getting to know our staff very well gives the students additional resources and guidance that first time college students need. Especially the peer mentors, we sat with kids during classes and after the program ended deciding on what they would major in college. We explained to them how college life worked, which classes to take, what professors to take, and what field would most interest them.

• The computer building was by far the most beneficial on a practical level. I feel that way because I think it was very valuable to even myself as a mentor. The fact that any of us has the potential now to build or upgrade a computer on our own is wonderful. Academically, ALEKS training was the most needed activity. Any student who went up even one level in math due to ALEKS saved money and showed that they left with a higher level of knowledge. The activity that was most constructive (no pun intended) and at the same time fun was the Sea Perch building. It gave the students a chance to learn useful skills like soldering and electrical wiring. They may not know it yet, but it could come in handy someday.

• Aleks-participants were able to brush up on their math skills
• Field Trips- allowed participants to see what people do with a degree in STEM
• Sea Perch- gave participants an opportunity to build a robot.

• I think the computer building/AUTOCAD segment of the program went very well. Dennis was extremely organized and the kids remained motivated throughout this segment. The students pursuing careers in engineering greatly benefited from the preparatory, hands-on experience offered by this part of the program, that is, many of them will eventually have to master the skills outlined during this segment. The students who are not pursuing careers in engineering still benefited, however. For example, using AUTOCAD improves one's spatial reasoning.

• I believe the Sea Perch segment of the program went quite well. Despite the fact that constructing a Perch is a long and complex process, nearly all of the students remained motivated and participated to the best of their ability. Again, the students pursuing careers in engineering benefited the most. Soldering and following wiring diagrams, for example, are necessary engineering skills. All of the students, however, could take pride in the fact that they helped build an intricate, working robot. For many of them, building the Sea Perch was the most technically exacting hands-on project they had ever attempted.

• 3) I believe the ALEKS segment of the program was, for those who took advantage of it, very helpful. At least two-thirds of the students were fairly diligent. Although I overestimated the impact that the ALEKS sessions would have on the students’ Compass scores (I sort of thought that the majority of them would place in Math 100), all of the students benefited from the refresher course.

• Aleks, AutoCAD, Sea Perch
• Aleks was a proven tool and showed that it worked, many of the students who worked hard of the system improved their compass scores.
• AutoCAD is an important software for engineers to know and they received an excellent workshop in how to use this software.
• The sea Perch really gave the students a chance to critically think and understand what they are to do. It wasn't too difficult to build, but difficult enough to have to concentrate. They also had to apply teamwork to make the project successful.
List 3 activities that you feel were LEAST beneficial to the summer bridge students. Explain how you might change these activities to make them better.

- Honestly, I think there were no activities that didn’t benefit the bridge students. In one way or another, the activities were creative and beneficial to the program.
- If I had to list three activities, I would choose the excursions. They were very fun and educational, however, some of the students didn’t seem to be taking them in as an opportunity to relate them to possible careers. For example, our trip to Hanauma Bay became a day of swimming as oppose to learning about marine life. Also, building computers from scratch. It was an amazing experience to build a computer and understand the technology behind a tool we take for granted. However, it didn’t seem to flow with the goal of our program and the students seemed to be distracted with the fact that they would possibly be taking the computers home. In doing so, this program may be obligated to continuously providing computers to future summer bridge students. Lastly, the fact that the Aleks program was on the internet. If we could somehow get the software of Aleks and download them onto computers would eliminate the student's access to the internet. Often, while the students were practicing Aleks for a couple of hours every day they would click off the program and surf the web, mostly myspace.
- Um, what else was there? More time on ALEKS. Bigger Sea Perches. More powerful computers.
- Guest speakers- Some speakers were boring and the kids feel asleep.
- 1) Unfortunately, not all of the students took advantage of the ALEKS segment of the program. Early on, the peer mentors should have closely monitored and worked with these students. Furthermore, it's possible that, in comparison w/ the Compass test, the ALEKS "curriculum" was too broad and too deep. That is, maybe we should have analyzed the Compass test, identified the (20-25?) skills necessary to place in Math 100 at KCC, and drilled the students on this relatively narrow group of skills.
- 2) In general, I was very impressed by the students’ energy level and capability when they were constructing the computers, the bridges, and the Sea Perches. Consequently, I think that we should have included more hands-on projects.
- 3) Some of the field trips (e.g. the aquarium) were, I think, kind of pointless. That is, their educational payoff did not justify the amount of time and energy that they consumed.
- Field trips, The students seemed to be disinterested in understanding why we went on field trips. I wouldn't change anything if the field trips are used as a way to break things up and get them out of the classroom, but if it is to be more of a learning tools the students must be shown why they are important and what they can learn.
- I don't think there were any other aspects of the program that were not beneficial even the field trips were beneficial.

Do you think that the summer bridge students benefited from having peer mentors? Why/Why not?

- Definately, we guided the students through every day events. We became
their friends and counselors who they could rely on and trust. Sometimes it could be intimidating for students to ask professors questions. For peer mentors, we were just like the older version of themselves. They could have fun with us while at the same time know that is they had any questions or doubts about anything, they could always come to us. We even told the students where and how they could reach us after the program ended if they still had questions about anything.

- For sure. Peer mentors not only gave them someone they had more of a chance to relate to, it made it more fun for them. Given that some of us had a good ten plus years on them in age, we still have an idea where they are coming from. They will more quickly warm up to someone they feel comfortable with. I feel like that gave us an advantage to helping them.

- Yes. The students were able to get help from us when they were doing ALEKS, computer building and Sea Perch. Also they were able to ask us questions about college.

- I believe that the students did benefit from having peer mentors. All of the mentors guided and interacted with the students a great deal. Although I think that the peer mentors should have approached the ALEKS portion of the program differently (i.e. we should have worked individually with the more recalcitrant students), I believe that we were a tremendous help during the Autocad, the team-building, and the Sea Perch segments of the bridge program.

- Yes, I believe without the peer mentors they would have been less interested in doing some of the work, because the peer mentors were there to help them along and make them feel comfortable.

**Do you think that you benefited from being a summer bridge peer mentor? What did you gain/learn or what could be altered to enhance your summer bridge experience?**

- I believe I did benefit from becoming a peer mentor. I ultimately gained a new family, the same feeling of the students leaving the program. I gained a family from the students and the staff of the program. Just as the students, I got to know the professors on campus and got the support that I needed to continue my college career. This experience really benefitted me in this aspect because before this program I had never known such a support system in our school ever existed.

- Yes. I feel it added to the brief teaching experience I already have. In addition, it was interesting to teach with such a small age gap between us and the students.

- Yes I benefited from being a summer bridge peer mentor. Aside from the obvious reason of being employed, I was able to meet new people and somewhat help them in deciding the path of their future.

- First and foremost, the summer bridge program was a lot of fun. In addition, it helped me hone my tutoring skills. On the other hand, it's possible that I would have worked a lot harder if my responsibilities had been more structured.

- Yes, I gained a lot, I saw many things that I would have never seen done. I learned many new things about STEM and have a better understanding and belief in what students can do with a STEM degree.
**From your experience with this program, do you think that the summer bridge students are more likely to become a STEM major in college? Why/Why not?**

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<th>Yes, they have already expressed their feelings while in the program. Most had said that they were unsure if they wanted to even be in a science-related major. I think now a larger number of them have decided on a major and almost 95% of them all are interested in a science major.</th>
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<td>Yes. Most kids are afraid of a major as difficult as a STEM major. Others never thought they had a chance at something like it. The summer bridge gave them a taste of the opportunity they could give themselves.</td>
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<td>Some of the students attending the summer bridge already know what they want to major in. For those who were indecisive about whether or not to major in STEM at the beginning, they are probably going to major in STEM now.</td>
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<td>I definitely feel that the program persuaded many of the students to seriously consider careers in STEM. The participants experienced a string of successes, that is, they successfully completed a number of fun and challenging engineering projects. Accordingly, the program left them with a positive impression of science and buoyed their self-confidence with respect to math and engineering.</td>
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<td>Yes, I think they were shown that they can do it and have the ability to. Also they program did a great job of introducing the students to college and creating showing them what college and how to prepare for it.</td>
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**Do you think the summer bridge students will contact you regarding their college education after the summer bridge program is over?**

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<th>Yes, because a lot of them already have. I've given my e-mails and phone number to those who are serious about choosing the right way to start off in college. I have guided a lot of them about what classes to take and how to choose their classes. A few of them still e-mail me to confirm their fall schedule.</th>
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<td>At least for the time that I am a student as well, I think I will hear from them. Whether we made a strong enough connection with them for the long term is to be seen.</td>
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<td>Yes, I have been in regular contact with several of the students since the program has ended.</td>
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<td>I will probably lose touch with the students who do not eventually attend KCC or UH, however, I will certainly continue to informally advise and meet with the students who do, particularly those who major in STEM.</td>
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<td>Yes, I might be in class with a couple of them.</td>
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