



CAHSI

COMPUTING ALLIANCE OF HISPANIC-
SERVING INSTITUTIONS

NSF 2011 Annual Report

Award # 08337556

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Project Participants

University of Texas at El Paso

Name: Gates, Ann

Worked for more than 160 Hours: Yes

Contribution to Project:

Principal Investigator - Ann Gates (UTEP) coordinates the collective activities and initiatives of CAHSI, manages the general budget of the Alliance, and coordinates MentorGrad and undergraduate research intervention at UTEP. She receives support from BPC funds.

Name: Casas, Claudia

Worked for more than 160 Hours: Yes

Contribution to Project:

Other professional staff - Claudia Casas is the Project Manager for CAHSI. She manages the activities and accounts within the Computer Alliance for Hispanics including the coordination of meetings and workshops, and interaction with other agencies and national organizations. She is supported by BPC funds

Name: Esparza, Patricia

Worked for more than 160 Hours: Yes

Contribution to Project:

Other professional staff - Patricia Esparza is the CAHSI web developer. She is responsible for the design, development and maintenance of the CAHSI website. She is supported by BPC funds

Name: Freudenthal, Eric

Worked for more than 160 Hours: No

Contribution to Project:

CAHSI Faculty - Eric Freudenthal oversees the CS-0 effort at UTEP. He does not receive support from BPC funds.

Name: Roach, Steve

Worked for more than 160 Hours: No

Contribution to Project:

CAHSI Faculty- Steve Roach is the CAHSI faculty advocate, and PLTL faculty leader at UTEP. He does not receive support from BPC funds.

Name: Fuentes, Olac

Worked for more than 160 Hours: No

Contribution to Project:

CAHSI Faculty - Olac Fuentes supervises MentorGrad students at UTEP. He does not receive BPC funds.

Name: Teller, Patricia

Worked for more than 160 Hours: No

Contribution to Project:

CAHSI Faculty - Patricia Teller supervises MentorGrad students at UTEP. She does not receive BPC funds.

Texas A&M University – Corpus Christi

Name: Fernandez, John

Worked for more than 160 Hours: Yes

Contribution to Project:

CoPrincipal Investigator - John Fernandez (Texas A&M - Corpus Christi) serves on the CAHSI Executive Committee. He leads the PaperNet initiative. He is participating in the following interventions: undergraduate research, CSO, and PLTL. He receives support from BPC funds.

Name: Escobar, Krystal

Worked for more than 160 Hours: Yes

Contribution to Project:

Other professional staff - Krystal Escobar oversees grant activities at Texas A&M University - Corpus Christi. She receives support from BPC funds.

Name: King , Scott

Worked for more than 160 Hours: Yes

Contribution to Project:

CAHSI Faculty - Scott King supervises MentorGrad students at Texas A&M University - Corpus Christi.

Name: Li , Longzhuang

Worked for more than 160 Hours: Yes

Contribution to Project:

CAHSI Faculty - Longzhuang Li supervises MentorGrad students at Texas A&M University - Corpus Christi.

Name: Mahdy , Ahmed

Worked for more than 160 Hours: Yes

Contribution to Project:

CAHSI Faculty - Ahmed Mahdy supervises MentorGrad students at Texas A&M University - Corpus Christi.

Name: Tedford, Phyllis

Worked for more than 160 Hours: Yes

Contribution to Project:

CAHSI Faculty - Phyllis Tedford teaches the CSO course which is one of the key interventions of CAHSI at Texas A&M University - Corpus Christi.

Name: Scherger , Mike

Worked for more than 160 Hours: Yes

Contribution to Project:

CAHSI Faculty - Mike Scherger supervises MentorGrad students at Texas A&M University - Corpus Christi.

University of Houston – Downtown (UHD)

Name: Aló, Richard

Worked for more than 160 Hours: Yes

Contribution to Project:

CoPrincipal Investigator - Richard Aló supports, supervises and oversees the development of the student and faculty intervention activities at UHD pertaining to the project. These include MentorGrad, CSO, PLTL, ARG and undergraduate research. He also is disseminating CAHSI activities at other HSIs and MSIs and national international venues He receives support from BPC funds.

Name: Gad, Sangeeta

Worked for more than 160 Hours: Yes

Contribution to Project:

CAHSI Faculty - Sangeeta Gad assists Richard Aló at UHD with activities pertaining to the project. These include student and faculty development, ARG implementation and undergraduate research. She receives no support from BPC funds.

Name: Hemmati, Hooman

Worked for more than 160 Hours: No

Contribution to Project:

Other professional staff – Hooman is administrative assistant for Dr. Aló and Dr. Sangeeta. She receives no support from BPC funds.

Name: Hodgess, Erin

Worked for more than 160 Hours: No

Contribution to Project:

CAHSI Faculty - Erin at UHD is CAHSI faculty advocate, CAHSI Student Advocate Coordinator and assists with ARG development. She receives support from BPC funds.

Name: Mitsue, Nakamura

Worked for more than 160 Hours: Yes

Contribution to Project:

CAHSI Faculty - Mitsue Nakamura trains and supervises PLTL peer tutors at UHD under the supervision of Richard Aló. He has received support from other CCSDS sources and some travel funds from BPC.

Name: Sirisaengtaksin, Ongard

Worked for more than 160 Hours: No

Contribution to Project:

CAHSI Faculty - Ongard Sirisaengtaksin is in charge of developing CS0 and PLTL materials for CS at UHD. He has received support from BPC funds.

California State University – Dominguez Hills

Name: Beheshti, Mohsen

Worked for more than 160 Hours: Yes

Contribution to Project:

CoPrincipal Investigator - Mohsen Beheshti (CSUDH) is overseeing the student intervention activities at CSUDH pertaining to the project. These include MentorGrad, CS0, PLTL, and undergraduate research. He receives support from BPC funds.

Name: Boadi, Antonia

Worked for more than 160 Hours: No

Contribution to Project:

CAHSI Faculty - Antonia Boadi is a faculty research advisor at CSUDH. She receives support from BPC funds

Name: Han, Jianchao

Worked for more than 160 Hours: No

Contribution to Project:

CAHSI Faculty - Han Jianchao is the PLTL and research faculty advisor at CSUDH. He receives support from BPC funds.

Name: Kazimierz, Kowalski

Worked for more than 160 Hours: No

Contribution to Project:

CAHSI Faculty - Kazimierz Kowalski is a faculty research advisor at CSUDH. He receives support from BPC funds

University of Puerto Rico – Mayagüez

Name: Rodriguez, Nestor

Worked for more than 160 Hours: Yes

Contribution to Project:

CoPrincipal Investigator - Nestor J. Rodriguez (UPRM) oversees UPRM interventions (MentorGrad, development workshops and undergraduate research). He also coordinates the Annual Meeting Research Poster Session. He receives support from BPC funds.

Name: Rodriguez, Domingo

Worked for more than 160 Hours: Yes

Contribution to Project:

Senior Personnel - Domingo Rodriguez (University Puerto Rico Mayaguez) co-leads the Development Workshops effort. He receives support from BPC funds.

Name: Santiago, Nayda

Worked for more than 160 Hours: Yes

Contribution to Project:

Senior Personnel - Nayda Santiago (UPRM) co-leads the undergraduate research effort. She receives support from BPC.

New Mexico State University

Name: Ranjan, Desh

Worked for more than 160 Hours: No

Contribution to Project:

Desh Ranjan (NMSU) supports the student intervention activities at NMSU pertaining to the project. These include MentorGrad, CSO and undergraduate research. He left NMSU in 2009 and was replaced by Enrico Pontelli as chair. He received support from BPC funds.

Name: Pontelli, Enrico

Worked for more than 160 Hours: No

Contribution to Project:

CoPrincipal Investigator - Enrico Pontelli (NMSU) replaced Desh Ranjan on the project. He took over the student intervention activities at NMSU pertaining to the project. These include MentorGrad, CSO and undergraduate research.

Name: Cao, Huiping

Worked for more than 160 Hours: No

Contribution to Project:

CAHSI Faculty -Huiping Cao (NMSU) has joined the CAHSI effort by providing her expertise in the area of ontology development. She is supporting the activities aimed at the development of a cyber-infrastructure for CAHSI.

Name: Villaverde, Karen

Worked for more than 160 Hours: Yes

Contribution to Project: Senior Personnel -Karen Villaverde (New Mexico State University) leads the CAHSI efforts at NMSU, including Affinity Research Groups and MentorGrad. She is supported from BPC funds.

Florida International University

Name: Adjouadi, Malek

Worked for more than 160 Hours: Yes

Contribution to Project:

CoPrincipal Investigator - Malek Adjouadi (FIU) oversees the CAHSI Fellow-Net initiative. FIU is participating in Mentor-Grad, CS0 and PLTL initiatives. He receives support from BPC.

Other Participants

Name: Thiry, Heather

Worked for more than 160 Hours: Yes

Contribution to Project:

Senior Personnel - Heather Thiry is one of two CAHSI evaluators for the grant. She receives support from BPC funds.

Name: Hug, Sarah

Worked for more than 160 Hours: Yes

Contribution to Project:

Senior Personnel - Sarah Hug is one of two CAHSI evaluators for the grant. She receives support from BPC funds.

Name: Alonso, Miguel

Worked for more than 160 Hours: No

Contribution to Project:

Senior Personnel - Miguel Alonso is leading the SACI funded project and the adoption of CAHSI initiatives.

Name: Guillen, Rocio

Worked for more than 160 Hours: No

Contribution to Project:

Senior Personnel - Rocio Guillen is leading the adopting of CAHSI practices at California State San Marcos. She does not receive travel support from BPC funds.

Name: Figueroa, Andres

Worked for more than 160 Hours: Yes

Contribution to Project:

Senior Personnel - Andres Figueroa (UT Pan American) represents one of the adopting CAHSI institutions. He does not receive support by BPC funds.

Name: Perera, Graciela

Worked for more than 160 Hours: Yes

Contribution to Project:

Senior Personnel - Graciela Perera (Youngstown) represents a CAHSI adopting institution. Her travel has been funded by BPC funds.

Name: Valenzuela, Eliana

Worked for more than 160 Hours: Yes

Contribution to Project:

Senior Personnel - Eliana Valenzuela (Arecibo) represents a CAHSI adopting institution. Her travel has been funded by BPC funds.

Organizational Partners

Anita Borg Institute for Women and Technology

Anita Borg Institute (Grace Hopper Conference). CAHSI students in the FemProf program under the direction of Nayda Santiago and Nestor Rodriguez were accepted for the poster session of the 2011 Grace Hopper Conference. Nayda Santiago serves on the Grace Hopper Academic Advisory Committee.

ATLAS Assessment & Research Center

Heather Thiry and Sara Hug from the ATLAS Assessment & Research Center, located at the University of Colorado-Boulder, work on the evaluation of the project.

A4RC

A4RC is collaborating with CAHSI to disseminate the Affinity Research Group model. A4RC promotes CAHSI (ARG) on their website (<http://www.a4rc.org/pages/links.php>). Ann Gates serves on A4RC's Advisory Board.

CMD-IT

CMD-IT is an organization led by Dr. Valerie Taylor with a goal to ensure that underrepresented groups are fully engaged in information technologies, and to promote innovation that enriches, enhances, and enables these communities such that more equitable and sustainable contributions are possible by all communities. As a representative of CAHSI, Ann Gates serves on the Executive committee. CAHSI is a co-sponsor of the Academic Workshops for Underrepresented Participants with CDC, CMD-IT, and AccessComputing.

Computer Science Collaborative Project (CSCP) Computer Science Collaborative Project (CSCP) is run by Karen Peterson of EdLabGroup in Washington State and funded by the National Science Foundation as part of its Broadening Participation in Computing Program. The goal of CSCP is to increase diversity in computing by building collaborations across K-

12, community-based organizations, higher education, and industry. CAHSI's collaboration is focused on sharing resources for K-12 outreach.

CRA Coalition to Diversify Computing-CDC

Kathleen Fisher invited CAHSI to be part of a data gathering effort nationwide. CRA-W and CDC Alliance have made contact with CAHSI through our evaluators (Sarah and Heather) and plan to gather data for students from mid-undergraduate through finishing PhD students, post doctorates, and faculty.

DotDiva

Ann Gates, as a representative of CAHSI, serves on the Board of Advisors for the DotDiva initiative. DotDiva provided CAHSI institutions with materials to distribute that can be used in outreach activities to inform young girls about careers in computing.

EL ALLIANCE

Some CAHSI students are members of the EL Alliance.

Excelencia in Education

CAHSI will be participating in the upcoming Celebracion de Excelencia with the ALASS workshop this coming September, 2011. The 2011 CAHSI All-Hands Meeting will be held at Washington, DC along with the Board of advisors review meeting in order to integrate to Excelencia's activities. CAHSI will be part of a panel on Strategies for Latino Success in STEM during the ALASS Workshop.

Google

Google was a student financial sponsor for the 2010 CAHSI Annual Meeting. Previously, Google hosted the 2009 CAHSI Annual Meeting. Anna Davda, University Program Specialist, is working with CAHSI to identify students and faculty to apply for Google scholarships, RISE, and BOLD. Opportunities are reserved for CAHSI students.

Hispanic Scholarship Fund Institute

Hispanic Scholarship Fund (HSF) HSF is the nation's leading Hispanic scholarship organization, providing the Hispanic and other underserved communities more college scholarships and educational outreach support than any other organization in the country. HSF will serve as a liaison between potential industry partners and CAHSI. HSF and CAHSI collaborate to develop programs for joint solicitation of sponsorships and new scholarship programs. HSF has provided CAHSI with bilingual pamphlets promoting computing careers for outreach efforts.

Latinas in Computing (LiC)

Latinas in Computing (LiC) LiC is comprised of Latinas from the industry, government labs and the Academia. Their goal is to define key strategies to promote leadership and professional development among current and next generation of Latinas. Latinas in Computing works with CAHSI in preparing developmental workshops and panels.

Microsoft

Bradley Jensen, Principal Academic Relationship Manager at Microsoft is part of the Board of advisors for CAHSI. Previously, CAHSI hosted the 2010 CAHSI Annual Meeting in April at its Redmond office. In addition, CAHSI members were invited to the Microsoft Cloud Computing workshop that immediately followed the annual meeting.

NCWIT

NCWIT: National Center for Women in Information Technology NCWIT published three Promising Practices handouts that include CAHSI initiatives. CAHSI is adopting practices to increase the number of Hispanic women in computing. CAHSI has collaborated with NCWIT in developing and reviewing content for the development of the REU-in-a-box online resource which is now available through the NCWIT website (<http://www.ncwit.org/reubox>). Ann Gates is on the committee for the development of the REU-in-a-Box project to incorporate the Affinity Research Group model.

SACNAS

Society for Advancing Hispanics, Chicanos, and Native Americans in Science (SACNAS): This society is dedicated to fostering the success of Hispanic/Chicano and Native American scientists, from college students to professionals in attaining advanced degrees, careers, and positions of leadership. With a focus of expanding to include computing and engineering, CAHSI is currently in the planning stage for a partnership with SACNAS since it is critical because of its focus on preparing and advancing students in research careers. The next CAHSI annual meeting will be aligned with the SACNAS conference as part of the initial steps to work more closely with this organization.

Society for Professional Hispanic Engineers

Society for Professional Hispanic Engineers (SHPE) and CAHSI are entering into an MOU to partner in student development workshops.

Team for Research in Ubiquitous Secure T

Kristen Gates, Executive Director of Education (TRUST) at the University of California, Berkeley has been working with CAHSI in recruiting students to attend development workshops and participate in research experiences in the TRUST program. CAHSI has entered into an MOU with TRUST and is promoted on the TRUST TAO website (<https://tao.truststc.org/Members/whrobinson/cahsi/?searchterm=CAHSI>).

The GEM Consortium

GEM Consortium and CAHSI have partnered in GEM workshops, in particular in the preparation of competitive fellowship application sections such as a Statement of Purpose. CAHSI is using these materials for its MentorGrad effort. CAHSI has representation on the scholarship review panel.

The IBM Academic Initiative (AI) program

The IBM Academic Initiative (AI) program provides CAHSI institutions with access to software, hardware, workshops, training, tools, books, and discounts with the goal of improving student preparation for information technology and jobs in computing.

Young Women in Computing

New Mexico State University works with Young Women in Computing in outreach activities directed to attract middle school students into the Computing fields.

Other Collaborators or Contacts

Miami Children Hospital

FIU has established a strong and ongoing collaboration with Miami Children's Hospital for over 10 years on pediatric epilepsy and neuroscience research. This joint FIU-MCH Neuroengineering Program addresses key issues in brain functional mapping. These efforts extend over and above the allocation of clinical resources, which are also utilized in fulfillment of our goals. Some of the resources include, (a) commitment of over thirty physicians (Members of MCH's Brain Institute); and (b) capital equipment for MRI and SPECT imaging, EEG/EP recordings, and near-infrared and optical spectroscopy units.

Baptist Hospital

FIU has established a joint collaboration with Baptist Hospital on brain research with Dr. Sergio Arias Gonzalez, head of the Neurosurgery department. This collaboration entails the development of the 3-D source localization program already well-established at Miami Children's Hospital but for adult epilepsy, and then we are extending this work into EEG triggered fMRI studies.

CATE Center

The CATE Center is an integral part of the CAHSI Alliance. It houses the multisite fMRI data repository for pediatric epilepsy to study among other things language network reorganization. The network and core infrastructure for this multi-site currently involve over thirteen institutions that includes medical centers, children hospitals, a foundation, and an institution of higher education.

Cyber-ShARE Center

UTEP's NSF-funded CREST Cyber-ShARE Center of Excellence supports students doing interdisciplinary research (computer science, geosciences, environmental science, and computational science) and coordinates with CAHSI to conduct outreach.

VACCINE

Is a new Homeland Security Center of Excellence in Visual Analytics for Command, Control and Interoperability Environments The center promotes CAHSI initiatives amongst its MSI outreach. Richard Alo is Associate Director for MSI outreach.

Activities and Findings

Describe the major research and education activities of the project.

This section is divided as follows:

- A. CAHSI Initiatives
- B. Continuous Quality Improvement
- C. Mentoring Initiatives
- D. Resource Infrastructure
- E. CAHSI Promotion and Collaboration

A. CAHSI Initiatives

The field-tested academic initiatives CS0, ARG, and PLTL have been continuously implemented, promoted, and analyzed by CAHSI since the launch of the project. Departments are institutionalizing the CAHSI initiatives and at the same time broadening the impact of CAHSI efforts beyond the original institutions.

CS0

Institutionalized at nearly all CAHSI institutions, CS0's main objective is to attract students into the computing fields by providing pre-CS courses that teach basic programming concepts and problem solving and reasoning skills. Initiative effectiveness is currently tracked in the SACI schools, institutions that began to scale and adapt CAHSI initiatives in 2009.

Dr. Eric Freudenthal is an Associate Professor at UTEP. He leads the "Media Propelled Computational Thinking" (iMPaCT) projects and Computer Science Zero courses. CS0 utilizes computer graphics to synergistically motivate exploration of math and programming. The iMPaCT projects started as an intervention for entering college students, and have evolved to a family of interventions integrated within a variety of math, engineering, and computer science classes, initially at the college level, and now in high schools. Results from a pilot study which iMPaCT infused programming into existing high school math classes are encouraging: Five high school sections included programming on calculators. 25% of these students subsequently elected to attend a programming class, and 40% of those students were female.

AFFINITY RESEARCH GROUPS

The ARG initiative provides undergraduate and graduate students with the opportunity to learn, use, and integrate knowledge and skills that are necessary for research. There are three fundamental aspects of research incorporated through ARG: 1) research methods, 2) experimentation and validation, and 3) technical writing and presentations. The ARG model targets the retention and advancement of students into graduate school.

PLTL

PLTL is a proven strategy for retention, providing an active learning experience for students and creating leadership roles for undergraduates. PLTL implementation in CAHSI departments focuses on cooperative learning as a structured method to support student learning in a positive classroom environment focused on active-learning strategies. During the PLTL sessions, students create a learning environment that is far different from the traditional classroom. In this nontraditional setting, cooperation and participation are encouraged over competition and individualism.

B. CONTINUOUS QUALITY IMPROVEMENT

Continuous quality improvement comes from the evaluation and Board of Advisors recommendations. CAHSI evaluators attend the CAHSI All-Hands meetings, annual meetings, and Board of Advisors (BOA) meetings. The evaluators conduct surveys and engage in regular dialogue with PIs, faculty, and students. The evaluators present the results of the Evaluation Report at the All-Hands Meetings, making recommendations for improvement of CAHSI initiatives and group functioning.

The BOA meets annually to make recommendation for the evaluation instruments. The advisory board also serves to promote evaluation, strategic planning, and implementation advice for CAHSI. The members are as follows: Maricel Quintana Baker, consultant; Andrew Bernat, CRA; Bradley Jensen, Microsoft; Patty Lopez, Intel; Irene Hernandez Roberts, IBM; Bobby Schnabel, Indiana University (chair); and Richard Tapia, Rice.

C. Mentoring Initiatives

Fellow-Net

Malek Adjouadi is leading the Fellow-Net effort. CAHSI has created materials to assist students who are submitting fellowship applications to the NSF GRFP program. CAHSI institutions identify students who are eligible to submit applications and mentoring them. Cross-institutional review is also being conducted on applications. The Fellow-Net initiative is strategic in that it begins a year prior to the student applying for a fellowship program.

Paper-Net

The goal of the Paper-Net initiative is to provide external feedback to students involved in research through critique of their research papers in order to improve research quality. In addition, applications to conferences, such as Grace Hopper, student posters, and fellowship essays are reviewed as well. Computing faculty researchers and industry

professionals volunteer as paper reviewers and provide constructive feedback to improve quality in journal and conference publications. Reviewers were identified from established collaborations and new collaborations and partnerships. John Fernandez from Texas A&M leads this effort.

The development of template documents for poster and abstracts were developed by CAHSI and posted on our website for public use. This was particularly useful for students submitting posters for selection to our 2011 CAHSI Annual Meeting and for the coming 2011 Grace Hopper Conference. The papers presented at the CAHSI annual meeting were peer reviewed and required the student authors to address the feedback to improve the paper. The proceedings from the 2011 CAHSI Annual meeting, which are being edited, will be posted at <http://cahsi.cs.utep.edu/ABOUT/Reports/tabid/102/Default.aspx>.

Mentor-Grad

CAHSI's mentoring framework supports students at the critical stages in the academic pipeline: the transition from high school to college, from college to graduate school, and from graduate school to the professoriate. Our initiatives alleviate barriers that students face when trying to achieve academic success in computing. There is a total of 20 mentor-grad students among the CAHSI institutions and CAHSI adopting institutions, i.e., UPR-Arecibo and Polytechnic.

Mentor-Prof

CAHSI faculties mentor other faculty to support their advancement at the university and development of leadership skills. Much of the mentoring is done on an individual basis and others through workshops. Faculty Development Workshops are described in the Training and Development section. Other efforts are as follows: Dr. Nayda Santiago is mentoring in a CISE subcommittee to increase proposal funding to young faculty in CS and CEng at UPRM along with Dr. Nestor Rodriguez. Dr. Nayda Santiago recommended Dr. Lizdabel Morales, a new faculty at UPRM, to members of Verizon Company looking for collaboration with UPRM. Lizdabel is new faculty at UPRM.

D. Resource Infrastructure

The CAHSI website (<http://cahsi.org>) documents the CAHSI efforts and initiatives. It provides a student portal, as well as one for Ph.D. students. In addition, the website serves as a resource for social science information, it highlights accomplishments of Hispanic students, faculty, and professions, and it announces upcoming events and opportunities. CAHSI is currently working on a new website using the Drupal Content Management System which is expected to go live before the end of this year.

In addition to the CAHSI website, CAHSI's facebook page has been an effective and fast way to propagate news and opportunities to faculty and students. The CAHSI facebook page currently has 157 members. The National Girls Collaborative Project and Faculty from Latinas in Computing connect to our CAHSI members through our facebook page. We expect to have an increase in activity since there are plans to link facebook into our CAHSI webpage directly.

In its continuing effort to improve its networking efforts, CAHSI has been working on various projects and proposals to establish the foundation to build virtual collaborations and share information around the CAHSI initiatives using semantic web technologies. New Mexico State University and the University of Texas at El Paso are leading these initiatives. CAHSI materials and resources from different initiatives are being reviewed in order to define the essential knowledge, effective mechanisms to support adoption, and appropriate flow of information. This project is in its early stages of development. CAHSI started testing Lotus Live, an IBM online collaboration tool that allows sharing of information through a centralized location, management of project deadlines and tasks, and remote online meetings. Lotus live has already been used during ARG faculty development workshops for virtual remote participants that could not attend in person and by sharing workshop materials online. Also, CAHSI plans to use Lotus Live as a tool to keep track of meeting and action items along with tasks and deadlines. Lotus live has proven to be effective for online meetings; however, the file and data storage logistics is still being evaluated to make sure if it will suffice the needs of the CAHSI team.

Several videos have been created to show 'An ARG in Practice.' The first video demonstrates an ARG-style meeting in which the research group discusses a technical paper. The students were tasked with asking questions about the paper, and the video shows how the skill of 'asking probing questions' was deliberately taught and practiced. The second video demonstrates a meeting in which ARG students provide constructive critique of a technical talk. Other videos demonstrate poster critique, setting goals and objectives, and ethical conduct of research

E. CAHSI DISSEMINATION AND COLLABORATION EFFORTS

One of CAHSI's key strategies for dissemination is through in-person interactions, panel presentations, presentations at educational and technical conferences, and workshops focusing on adoption of best practices. In addition to this, CAHSI has identified institutions and organizations that can benefit from CAHSI and invited them to work with us to expand participation. The CAHSI Annual Meeting also serves as an effective venue for increasing involvement and commitment to CAHSI's efforts.

The 2011 CAHSI Annual Meeting was held in San Juan, Puerto Rico March 27-29, 2011. Speakers and panelists from different institutions and organizations were invited to participate in an effort to engage Hispanic leaders who share CAHSI's core purpose and can collaborate with CAHSI on national priorities. Summaries of the main program are listed below. The workshops are listed in the Training and Development section of this report.

- Keynote: Diversity, Identity, Inclusion, and Computing: One of these Things Is Not Like the Others, Or Is It?, Dr. Manuel Perez Quinones, Virginia Tech
- Panel: A National Agenda for Accelerating Hispanic/Latino Success Social Science Research on Hispanics; Lead: Ann Gates, Ph.D., UTEP; Speakers: Judit Camacho, Executive Director, SACNAS; Jan Cuny, Ph.D., Program Officer, NSF; Lorelle L. Espinosa, Ph.D., Director of Policy and Strategic Initiatives, Institute of Higher Education Policy; Deborah A. Santiago, Excellencia, Co-founder and Vice President for Policy and Research
- Panel: Social Science Research on Hispanics; Lead: Maricel Quintana-Baker, Ph.D.,

Principal, MQB-Consulting; Speakers: Clemencia Cosentino de Cohen, Ph.D, Senior Researcher, Mathematica Policy Research; Jill Denner, Ph.D., Associate Director, ETR Associates; Alicia C. Dowd, Ph.D., Associate Professor, Co-director, The Center for Urban Education; Dr. Carlos Rodriguez, Principal Research Scientist, American Institutes for Research, Washington, DC

- Roundtable Discussion: Setting a Unified National Agenda for Hispanic Success In Higher Education; Lead: Dr. Carlos Rodriguez
- Student Panel: Summer Research Internships
- Student Panel: Challenging the Future Computer Stereotype: Attracting Students from Underrepresented Groups to Computer Science
- Student Panel: Creating a Student Research Pipeline

As a result of CAHSI's efforts to engage organizations that share our core purpose, we are fostering closer collaborations with the following organizations:

SACNAS: With a focus of expanding to include computing and engineering, CAHSI is currently in the planning stage for establishing a partnership with SACNAS. This partnership is critical because of its focus on preparing and advancing students in research careers. The next CAHSI annual meeting will be aligned with the SACNAS conference as part of the initial steps to work more closely with this organization.

Excelencia in Education: CAHSI will be participating in the upcoming Celebracion de Excelencia and presenting a plenary session on promoting student success in STEM at the ALASS workshop that will be held in September 2011. The 2011 CAHSI All-Hands Meeting along with the Board of Advisors meeting will be co-located with the Celebracion de Excelencia in Washington, DC in order to provide the CAHSI investigators an opportunity to meet with policy makers.

National GEM Consortium: CASHI has been working with the National GEM Consortium to strengthen their collaboration and development of materials for graduate students.

CS Ed Week 2011: Dr. Nayda Santiago served on the organizing committee for CS Ed Week 2011 that focused on a call to action to share information and offer activities that will advocate for computing and elevate computer science education for students at all levels. CAHSI held a contest for students to develop a creative venue for promoting computer science. UPRM students David O. Bartolomei Guzman and Manuel Enrique Marquez Rodriguez won with their You Tube video that depicted what the world would be like without computers.

Computer Science Collaboration Project: CAHSI serves in an advisory position for the Computing Science Collaboration project with the purpose of engaging K-12 Hispanic youth in Computer Science.

Anita Borg Institute: CAHSI students in the FemProf program under the direction of Nayda Santiago and Nestor Rodriguez were accepted for the poster session of the 2011

Grace Hopper Celebration. Nayda Santiago serves on the Grace Hopper Academic Advisory Committee. Ann Gates is a member of the organizing committee for the Senior Women Summit that will be held at the 2011 Grace Hopper Celebration.

NCWIT: CAHSI (Ann Gates) has collaborated with NCWIT in developing and reviewing content for the development of the REU-in-a-box online resource which is now available through the NCWIT website (<http://www.ncwit.org/reubox>). In February 2011, Drs. Steve Roach and Rodrigo Romero (UTEP) participated in the ceremony for local participants in the NCWIT Award for Aspirations in Computing, which honors young women interested in computing and technology. Dr. Nayda Santiago (URPM) collaborated with Ruthe Farmer and Anthea Johnson to disseminate the NCWIT Award for Aspirations in Computing in April 2011.

CRA-W/CDC: Kathleen Fisher invited CAHSI to be part of a national data gathering effort. CRA-W and CDC Alliance plan to gather data for students from mid-undergraduate through finishing PhD students, post doctorates, and faculty.

FemProf leaders developed a plan to make FemProf a nation-wide initiative. Dr. Richard Alo, Dr. Sarah Hug, Dr. Gladys Ducoudray, Prf. Sangeeta Gad and Dr. Nestor J. Rodriguez collaborated in the proposal for the establishment of a FemProf Alliance submitted to the NSF BPC program.

Other efforts to disseminate CAHSI include the following efforts and presentations:

Dr. Nayda Santiago is currently representing CAHSI at the committee creating a Women of Color Track at Grace Hopper 2012 recommended by Dr. Ann Gates.

Title: Stuck in the Shallow End: What it means for New Mexico

Presenter: Ann Gates, PhD, and UTEP

Description: Keynote talk to the Second Annual Conference of the New Mexico Society for Technology in Education Conference. The conference is designed to bring educational leadership from across New Mexico for collaboration and advancement of technology in P20 education.

Date: April 30, 2011.

Title: Engaging Latino Youth in Computer Science: The NMSU Experience

Presenter: Enrico Pontelli, PhD, NMSU

Description: This was part of a webcast hosted by The Computer Science Collaboration Project.

Date: May 12, 2011

Title: Where and When are Collaborations Especially Likely to be Valued or Not

Presenter: Ann Gates, PhD, UTEP

Description: Invited panelist for NSF Workshop (4th Understanding Interventions that Broaden Participation in Research Careers). Vanderbilt University (attended via video conference)

Date: May 26, 2011

Title: What YOU can Do to Recruit and Retain Undergraduate Women for Your Computing Programs

Presenter: Ann Gates, PhD, UTEP

Description: Ann Gates talked about PLTL and ARG models as practices shown to be effective through the CAHSI consortium

Venue: Microsoft Faculty Summit

Date: July 18, 2011

CAHSI Adopters

- Dr. Mohsen Beheshti and Dr. Richard Alo are in discussions with Navajo Technical College to work with CAHSI towards advancing new BS programs and CAHSI practices.
- Dr. Eliana Valenzuela from the University of Puerto Rico Arcibo, has adopted the Mentor-Grad program and in discussions of developing an MOU with CAHSI.
- Dr. Graciela Perera from the Youngstown University has adopted the ARG model.
- Dr. Maureen Biggers from A4RC and faculty at Indiana University has adopted and assists to promote the ARG model. Dr. Biggers and Dr. Geoffrey Fox have developed a research course that uses the ARG model. Dr. Biggers also implements the ARG model in the A4RC research pods and presents workshops at the STARS conference.
- Dr. Clayton Lewis, CS faculty at UC Boulder and investigator with the A4RC Alliance, attended the ARG Fundamentals Professional Development Workshop in June 2011 and will be adopting the ARG model for the A4RC research pods. He is interested in identifying a way to apply the ARG model for virtual research groups.
- Dr. Dana Richter-Egger has adopted the ARG model for the Math-Science Learning Center at University of Nebraska at Omaha.
- Dr. Rocio Guillen has adopted the ARG model at California State University, San Marcos.
- Dr. Veronica Mallet, Chair of Gynecology and Obstetrics, is adopting the ARG model at the Paul Foster School of Medicine, Texas Tech University Health Sciences Center at El Paso, TX.
- Dr. Eddie Castaneda, UTEP Chair of Psychology at UTEP, and Dr. Joao Ferreira Pinto, UTEP College of Health Sciences, will be adopting the ARG model to train interdisciplinary student researchers working on an NIH-funded research and training program.

- Dr. Edgar Ferrer from Polytechnic University of Puerto Rico has adopted the Mentor-Grad program and the ARG model.
- Since 2009, SACI (Miami Dade, UTPA, and CSUSM) institutions have been implementing and adopting CAHSI initiatives.

Sustainable Infrastructure

CAHSI is facilitating an infrastructure for virtual collaboration centered on recruitment, retention, and advancement for Hispanics. In the continuing effort to improve these networking efforts CAHSI has been working on various projects and proposals enhance our research infrastructure:

- CAHSI has started the first steps to establish the foundation for Cyber infrastructure around research collaborations to share information around the CAHSI initiatives. New Mexico State University and the University of Texas at El Paso are working together in the development of a cyber infrastructure environment where CAHSI research collaborations and initiatives can be disseminated through semantic web technology. CAHSI materials and resources from different initiatives and research areas are being reviewed in order to develop the correct flow of knowledge across disciplines. This project will be developed during the new CAHSI's BPC extension period.
- As part of the plans to improve the dissemination of information, CAHSI started testing Lotus Live, an IBM online collaboration tool that allows sharing of information in a centralized location, management of project deadlines and tasks, and remote online meetings. Lotus live has already been used during ARG faculty development workshops for virtual remote participants that cannot attend in person and by sharing workshop materials online. Also, CAHSI plans to use Lotus Live as a tool to keep track of meeting and action items along with tasks and deadlines. Lotus live has proven to be effective for online meeting, however, the file and data storage logistics is still being evaluated to make sure if it will suffice the needs of the CAHSI team.
- Several videos were created to show "An ARG in Practice." The first video demonstrates an ARG-style meeting in which the research group discusses a technical paper. The students were tasked with asking questions about the paper, and the video shows how the skill of "asking probing questions" was deliberately taught and practiced. The second video demonstrates a meeting in which students ARG provide constructive critique of a technical talk. Other videos demonstrate poster critique, setting goals and objectives, and ethical conduct of research.

Findings

Findings: (See PDF version submitted by PI at the end of the report)

WEBSITE METRICS

The following metrics, taken from Google Analytics (period: 9/1/10 - 06/30/11), shows

the following analysis of our CAHSI website:

- The site attracted 3,308 unique visitors from 6,407 total visitors (an increase of over 2,000 visitors from the previous year)
- Visitors spent an average of 4:01 on the site
- Visitors averaged 3.96 pages viewed per visit
- Total page views by visitors were 25,341
- The site averaged 21.15 visits/day
- Visitors came from 69 countries/territories

The top content viewed by visitors include the homepage, 2011 CAHSI Annual Meeting, CAHSI Events, CAHSI Opportunities, CAHSI Annual Meeting Call for Student Posters, About CAHSI, Student Portal, Hispanic PhD Profiles, and News Releases 2010.

CAHSI STUDENT ACCOMPLISHMENTS

The following Fellow-Net Students have been selected to receive fellowships:

- Marisel Villafane-Delgado, UPRM-Fem-Prof Student, 2011-2012 NSF GRFP Fellowships
- Gabriel Lizarraga, FIU, 2010 GAAN fellowship
- Christine Laney, UTEP, EPA STAR Fellowship
- Sylvia Natividad, UTEP, 2011-2012 NSF GRFP Fellowships
- Beatrice Perez from UPRM 2010 HENAAC Lockheed Martin Scholarship

Other student accomplishments are as follows. Samantha McGuinn from Las Cruces High School is one of the 35 students selected for the 2011 NCWIT Award for Aspirations in Computing. She participates in the Young Women in Computing Program; it works in conjunction with CAHSI and NMSU. Eight of Dr. Graciela Perea's ARG students with six research projects were accepted at the National Conference for Undergraduate Research (NCUR) 2011 in Ithaca, New York. Numerous CAHSI undergraduate students received REU awards.

UTEP PhD student Irbis Gallegos received Best Poster in Computer Sciences and Information Management at the 2011 Emerging Researchers Conference in STEM hosted by AAAS in Washington, DC, April 24-26, 2011. PhD student Pearl Brazier received her PhD in Fall 2010 and received promotion to full professor in 2011. Michael Walker (ARG student from Youngstown University) was accepted to Vanderbilt University's Ph.D. program in fall 2011. Marisel Villafane-Delgado was accepted to University of Maryland's graduate program.

CAHSI Faculty Accomplishments

The role of the CAHSI faculty advocates is to promote Hispanic faculty and young professionals into leadership roles. This includes award nominations, and making recommendations for key committee positions, panels, and other positions that build leadership.

The following is list of the CAHSI faculty highlights during 2010-2011:

- Dr. John Fernandez from Texas A&M-Corpus Christi was promoted to full professor and named the Executive Associate Director, School of Engineering and Computing Sciences. He was invited to be a participant for the CRA's CCC Leadership in Science Policy Institute (LiSPI) to be held on Monday, November 7, 2011 in Washington, DC. LiSPI is intended to educate a small cadre of computing researchers about science policy in the U.S.
- Dr. Ann Gates received the 2011 Anita Borg Social Impact Award. She was also appointed to the Computer Science Accreditation Board (CSAB). CSAB is part of the Accreditation Board for Engineering and Technology (ABET) that accredits Computer Science programs nationwide
- Dr. Martine Ceberio at UTEP co-chaired the 2011 International NAFIPS conference held at UTEP.
- Dr. Paulo Pinheiro da Silva was invited to the National Academy of Engineering to present a research talk and was promoted to associate professor at UTEP.
- Dr. Olac Fuentes was promoted to associate professor at UTEP.
- Dr. Eric Freudenthal of the University of Texas at El Paso and Dr. Mohsen Beheshti received a competitive Microsoft Research Award of \$27,000 for the project entitled 'Early scale dissemination and evaluation of iMPaCT-Math. The effort is already engaging a team of El Paso high school teachers to collaborate with and college faculty in the preparation of a threaded set of teaching modules suitable for infusion into Algebra I classrooms, and evaluates their effectiveness. The teaching will include the use of F# on tablets and is an extension of Dr. Freudenthal's NSF-funded Media-Propelled Computational-Thinking (iMPaCT) project. During academic year 2011-2012, iMPaCT-MATH will reach 1300 El Paso high school freshmen (50 sections) and 50 community college students in California.
- Dr. Patricia Lopez, PhD, CAHSI Advisory Board Member was selected to be featured as Great Minds in STEM's 'Role Model of the Week' for the week of June 13-19, 2011.
- CAHSI Faculty members Dr. Sarah Hug (research associate, ATLAS), Dr. Susan Jurow (Associate Professor, School of Education), and Wendy Chi (graduate student from School of Education) received an honorable mention for the 2011 Best Paper Award from the American Society for Engineering Education for the paper titled 'Evolving Identities: Undergraduate Women Pursuing the Engineering Professoriate.' The honorable mention was announced at the Joint K-12/Minorities/Women in Engineering Reception on Monday June 20 at the ASEE Annual Conference and Exposition in Vancouver, BC.
- Dr. Nayda Santiago from UPR-Mayaguez was recommended by Dr. Patty Lopez to participate in a Panel at GHC from the CDC on Women of Color: Early Experiences in their Careers. Dr. Manuel Perez submitted the panel for the conference.
- Dr. Nayda Santiago was part of the GHC 2011 Panels, Workshops, and Presentations subcommittee of the Grace Hoper Conference 2011. In addition, she was invited to the 2011 Senior Women Summit at the GHC 2011.
- Dr. Richard Alo, Executive Director of Center for Computational Sciences at UHD was appointed Program Director at NSF Directorate for Education and Human Resources, Division of Undergraduate Education.

- Drs. Richard Alo and Ongard Sirisaengtaksin are co PIs on the NSF OCI- SDCI From Desktops to Clouds -- A Middleware for Next Generation Network Science (with UHD partner Virginia Tech, Madhav Marathe, PI).
- Dr. Richard Alo was appointed Associate Director for MSI Outreach/Research /Education, DHS International Center of Excellence for Command Control and Interoperability in Visual Analytics (led by Purdue University)
- Dr. Sangeeta Gad was awarded the NSF S-STEM grant 'Undergraduate/Graduate Student Immersion in Computer Science, Technology and Mathematics' -- DUE 096592, Alo and Ongard are Co-PIs.
- Dr. Sangeeta Gad was awarded the NSF OCI- SDCI grant 'From Desktops to Clouds -- A Middleware for Next Generation Network Science' -- OCI 1032677, Alo and Ongard are Co-PIs.
- Dr. Junius Gonzales, Ann Gates, Ben Flores, et al. received an NSF I3 award, 'A Cyber infrastructure and Communication-Based Model to Foster Innovation that Broadens Participation in STEM Fields through Institution Integration.' The grant is synergistic with CAHSI.

Evaluation Results

Please refer to the attachment for the preliminary report from the evaluators. The evaluation report will be updated in early September to include institutional data.

In keeping with the BPC common core indicators, the CAHSI evaluation focuses on three strands of programmatic improvement: participant outcomes, organizational capacity, and broader impacts. Evaluation in years 6-10 focus on the following participant outcomes: institutional data and tracking student advancement through the major, experience of the annual meeting, and ARG researcher experiences. In addition, evaluators focus each year on a case study that deepens understanding of student experiences in specific initiatives. Initiative effectiveness is now tracked in the SACI schools, institutions that began to scale and adapt CAHSI initiatives in 2009. Organizational capacity measures the extent to which CAHSI departments are institutionalizing CAHSI initiatives and broader impacts focuses on the reach of CAHSI beyond the original institutions and change agents. This report does not include institutional data, as the institutions did not have this information available. The report will be updated in early September to include this information and related analyses.

CS0

SACI evaluation findings to date: An evaluation performed on students that took the Computer Science Zero (CS-0) course at California State University San Marcos during the fall of 2010 shows the benefits of SACI initiatives for students, especially Hispanic students.

Following the course, students reported increased interest in computing careers and in the computing major, increased confidence that they could succeed in the major, and perceived academic support in their department. Students commented that the structure of the course and real-world problem solving associated with developing apps contributed to their learning.

CS0 POSITIVELY INFLUENCED STUDENTS' CAREER AND EDUCATIONAL GOALS

Participating in the semester CS-0 session increased students' commitment to their major and to completing an undergraduate degree. Seventy-five percent of students reported a positive increase (slight to strong increase) in their intention to remain enrolled in their discipline over the next semester, to obtain a college degree in their major, 77% increased intention earn a bachelor's degree, and 69% said they were more likely to work in computing after graduation following the course. Students were much less committed to enrolling in graduate studies (38% reported increase in intention to pursue a master's degree and one student, 8%, reported an increase in intention to pursue a Ph.D.) or joining the professoriate (16% reported a slight increase in intention; none of the students reported a strong increase in intention).

STUDENTS GAINED CONFIDENCE IN THE DISCIPLINE

Students also rated the impact of the course on their confidence that they could achieve their career goals. In the terminology of social cognitive career theory, this sense of mastery of computing is called *self-efficacy*. Students reported substantial increases in their self-efficacy in computing because of the CS-0 course. For example, 100% of students reported a slight or strong increase in confidence that they could excel in their discipline over the next semester, complete all the math requirements for their major with a grade of B or higher, and complete the upper-level courses in their major with a grade of B or higher. Almost all students also reported an increase in their confidence that they could program a computer—one student reported a slight decrease in confidence.

CS-0 REDUCED BARRIERS TO ACADEMIC SUCCESS

Because of the CS-0 course, students perceived greater social support and fewer barriers in their major in many aspects of their academic pursuits, though a few barriers remain. For instance, 77% of CS-0 students felt that after taking the course, they were more able to balance their work/academic and personal lives, and 77% felt they could find effective ways to study despite competing demands on their time. Thus, the CS-0 course seemed to enhance students' sense of work-life balance and improve students' study skills. Students found they were more likely to persist in their major even if they perceive the environment to be unwelcoming (61%) while a slightly smaller proportion of students gained confidence they could complete a degree despite financial challenges (46%). However, only 31% of students felt that they were better able to cope with a lack of support from an advisor or professor, and a slight majority of students felt they could overcome communication problems with professors (61%). See chart below for means on a ten-point scale.

STUDENTS GAINED A POSITIVE VIEW OF COMPUTING CAREERS

Another tenet of social cognitive career theory asserts that students will be more likely to pursue careers in certain fields if they value those careers and associate those careers with

positive outcomes. In the terminology of social cognitive career theory, these expectations of a future career are called *outcome expectations*. Students reported that the CS-0 course positively influenced their outcome expectations of a computing career. There were few negative responses (slightly disagree to strongly disagree) to the items on the outcome expectations scale. For instance, 83% of students slightly to strongly agreed that the computing field will allow them to receive a good job offer, do work that can make a difference in people’s lives, and do work that is exciting. More than ninety percent of students felt jobs in computing would allow them to do satisfying work and would increase feelings of self-worth, as well as work in a field of high employment demand. Thus, CS-0 students strongly believed that a career in computing would yield many positive outcomes. The data presented demonstrates the means for survey items related to outcome expectations of the computing field.

STUDENTS GAINED INTEREST IN COMPUTING

Overall, students reported that the CS-0 course increased their interest in computing and technology applications. Few students reported that they experienced a decrease in interest from the course. In keeping with the curriculum of the CS-0 course, the strongest increase in interest was related to “solving computer software problems”—all students reported an increase in interest in this area. Nearly all students (92%) reported increased interest in solving technical problems and learning new computer applications, while slightly fewer (83%) increased interest in “working on a project involving principles related to computing” and solving practical math problems (74%).

STUDENTS LEARNED FROM REAL-WORLD PROJECTS

In open-ended questions, students were asked to name a project or assignment that they were proud of, and they were also asked why the project was meaningful to them. All of the CS-0 students listed real-world projects or assignments as the most meaningful aspect of the course. Typical student responses to this question were: “the movie”, and “the midterm project.” Students cited these projects as meaningful because they were challenging and involved effort and problem-solving. Following are typical student responses describing why these real-world applications were meaningful to them:

“I was able to figure out how to work with the methods to make the objects appear the way I wanted them to easily.”

“I was able to make a movie using a computer program that I could share with others and I felt that I did a good job.”

STUDENTS ARE MORE LIKELY TO PERCEIVE THAT THEY HAVE ROLE MODELS AND SUPPORT

After the CS-0 course, students were more likely to perceive that they had role models or mentors in their discipline and support in the pursuit of their studies. Three-quarters of students reported that they were more likely to have a role model in the discipline, and

have access to a mentor that could offer advice and encouragement. Almost all students (75%) reported that they were more likely to feel that there are “people like me” in the discipline. Most students (73%) reported that their close friends and relatives were “proud of me for making this decision.” A few of the items were negatively worded, meaning that these are outcomes that are undesirable. Students rated the possibility of these undesirable outcomes as less likely after completing the CS-0 course. For instance, half of the students (50%) reported that it is unlikely that they will worry that their chosen career path requires “too much time or schooling.” Likewise, 83% of students were unlikely to feel that they “don’t fit in socially with the other students in their discipline.” Because these items are negatively worded, a low mean on the 10-point scale is actually the desirable response. We note that two students who consistently marked negative responses were not in computing majors.

In conclusion, students received many positive benefits from participating in the CS-0 course at CSUSM. Students became more committed to their major and their pursuit of an undergraduate degree. Students also gained a more positive view of computing careers and increased their interest in computing. They also perceived more academic and social support in their major. Students credited the authentic projects and problem-solving within the course as providing a window into “real-world” computing and increasing their confidence that they could succeed in their major. These data suggest the CS-0 initiative may impact student success in the major.

ARG

Evaluation findings to date: Students are socialized into the computer science profession from participating in ARGs. Students’ educational aspirations have been influenced by ARGs: 79% of students reported that they are more interested in graduate school after their ARG experience. Students are also enhancing their preparation for graduate school. ARG students have authored or co-authored journal articles at twice the rate (13% for ARG students vs. 6%) of a large, diverse national sample of REU students, and presented a paper or poster at a national conference at three times the national rate (51% for ARG students vs. 14% for national sample of REU students). Note that these differences are statistically significant (journal publication: $\chi^2(1, N=626) = 4.194, p < .05$; conference presentation: $\chi^2(1, N=626) = 46.82, p < .001$). CAHSI students are also supported in their path to graduate school. Following the CAHSI annual meeting, most students indicated they had received informal career path mentoring from faculty (76%); this figure compares favorably to a recent study by MentorNet which indicated that of 1,876 STEM students surveyed, only 62% had an important mentor in their undergraduate years.

Students are gaining confidence that they are prepared for graduate school and computing careers from their participation in ARGs. Students reported reasonably strong gains on all the Undergraduate Research Student Self-Assessment (URSSA) gains scales (between 3.0 and 4.0 on the 4.0 point scale, or between “good” and “great” gain). Students’ highest gains were in collaboration, intellectual growth, and personal growth. The collaboration scale also measures the extent to which leadership is distributed, the research group works cooperatively, and other markers of a high-functioning Affinity Research Group. Because

students reported their strongest gains in collaboration and they affirmed many of the ARG indicators on the collaboration scale, this suggests that the ARG model has been adopted across CAHSI institutions. Students also reported large intellectual gains in critical-thinking, problem-solving, and understanding the research process. Finally, students reported personal growth from their ARG experience, including increased confidence in the discipline and increased interest in computing.

PLTL

Evaluation findings to date: Prior to the implementation of PLTL in “gate-keeper” courses in the major, only 77% of students completed the course, while 87% of students completed the course after the advent of PLTL. This ten percent increase in course completion rates is statistically significant ($\chi^2(1, N=5195)=53.07, p<.01$). Likewise, Hispanic students showed a six percent increase in course completion ($\chi^2(1, N=2716)=17.4, p<.01$) after PLTL was implemented, also statistically significant.

In 2011, PLTL evaluation focused on SACI implementation of the initiative. Miami Dade College implemented PLTL in the spring of 2011 for the first time. Dr. Steve Roach and his associates at the University of Texas at El Paso trained instructors and students via videoconference. Dr. Roach is the lead professor for computer science PLTL at UTEP, and has over four years experience leading the initiative in his program. Students enrolled in PLTL courses at MDC courses receiving supplemental instruction led by their peers, in the case of SACI MDC students, during Saturday sessions in the spring semesters. This report focuses on 15 student responses obtained in the spring of 2011. Nearly all of the students were Hispanic (13, or 87%), 14 were engineering majors, though only five were computer science majors. The vast majority of PLTL students were male (13 or 87%). Two thirds of students responding to the survey attended most PLTL sessions (76-100% of the sessions), and three students had attended less than half of the sessions. Given that PLTL occurred on Saturdays in the spring term, it may be that fewer students were able to participate than would be expected if the sessions were mandatory. Participants were fairly well experienced with mathematics courses needed to succeed in engineering- 67% state they have taken 4 or more math courses at the time of the survey. Students were comparatively new to computing coursework, however, as 27% had never taken a computing course before their PLTL course, and 20% had taken only one other computing course. Students’ educational backgrounds were varied—parents of the 15 students ranged in educational attainment from not finishing high school to doctoral level degrees.

Surveys were adapted from Lent’s 2008 Social Cognitive Career Theory instrument, which measures student self efficacy, student coping efficacy, student interest in the field, student educational goals, student outcome expectations of the major, and student perception of social supports and barriers. The instrument was obtained from Dr. Robert Lent of the University of Maryland, and was modified to indicate change based on PLTL course experience.

Between 80 and 100 percent of students surveyed showed gains/positive values across all of the Social Cognitive Career Theory constructs, including self efficacy, coping with a

difficult major, strongly held educational goals and educational outcome expectations for themselves, access to social support, and interest in computing.

Recommendations

The following recommendations were provided by our CAHSI evaluators regarding the improvement of the CAHSI initiatives. (Please refer to evaluation report attached.)

- Easing the transition from CS0 to CS1 would be beneficial. Developing projects that are more difficult for the end of the CS-0 semester or getting a taste of a more common, syntax-heavier language may help students see what is on the horizon.
- Creating a set of reusable electronic and physical (paper, string) PLTL materials may allow students who lead the initiatives to share ideas more readily and reduce the amount of time spent on creating new materials.
- Spending some time researching ways to maximize time in the classroom so that all students are busy at all times may improve PLTL as experienced by leaders and students. This may also be a good modeling activity, in which a group of leaders runs an activity with other leaders who are charged with acting in “off-task student” roles. Also, sharing evaluation data regarding why PLTL is helpful for increasing student achievement may assist student buy-in.
- CAHSI has made progress in promoting Hispanics through the Fellow-Net initiative. Analysis of past successes at CAHSI schools indicates potential collaborators in STEM on three CAHSI campuses, as patterns of successful application indicate faculty or departmental expertise in this area.
- A stumbling block for CAHSI in the area of broader impact has been the dissemination of materials in a format that would allow a new institution to implement CAHSI initiatives easily. This issue has multiple influencing variables, including: the lack of resources to develop and maintain “slick” materials of high visual and content quality, the lack of uniform implementation and presentation of content across the institutions, and the idea that many initiatives require training to understand the process of educating in a new way rather than a more straightforward presentation of information to students. In the new proposal, CAHSI suggested development of primers that allow interested parties to understand the initiatives, then Cyber infrastructure to support members in implementation. This is currently in development.
- CAHSI has promoted initiatives in multiple sites beyond the original seven and the expanding community of CAHSI schools. Diversifying the trainings offered beyond CAHSI is important- CAHSI’s effectiveness may be due to its holistic, tiered approach, and providing access to multiple initiatives may be vital to success.
- Some MentorGrad students note that though they are interested in graduate school as a career path, but they have not had the opportunity to find the one research area for which they are completely passionate. Without that internal motivation to explore a subfield of computing, they are not sure that graduate school would be “worth it” for them. Finding ways to expand students’ experiences with research beyond CAHSI departments, such as through REUs, for example, may assist students in finding the topic that would drive them towards graduate school.

- Researchers value the CAHSI meeting as a time to discuss their research with a new community of professionals. In focus groups, they mentioned the need for more structured opportunities for collaboration at the departmental level and across CAHSI. They note that having an internal directory for connecting with peers and faculty following the meeting would enhance their development beyond the annual meeting.
- The CAHSI grant is designed to increase the number of students, particularly underrepresented students, who receive degrees in computing fields. While research opportunities are often framed as the initiative to *advance* students to graduate studies, it is important also to note how research opportunities work to retain students in their undergraduate majors as well (Seymour & Hewitt, 1997). Evaluators will work to ensure MentorGrad and ARG include measures to ascertain whether and how research experiences influence students' continued study in undergraduate computing programs.
- Finding ways to train and engage faculty, particularly those from larger, more distributed departments will be important for the institutionalization of CAHSI.

Feedback from the 2010 BOA meeting was focused on the next stage of the grant, i.e., becoming a prominent national organization. The following recommendations were provided by the BOA report during the All-Hands Meeting on October 2010 regarding the improvement of the progress and plans of the Alliance (see attachment).

- The board's main recommendation is that CAHSI needs a roadmap, or strategic plan, for how it will achieve its goal of being a significant national organization. Key topics that this plan should address include:
 - CAHSI's plans and goals for affiliating with other institutions and organizations, in particular:
 - a) Hispanic, computing, and STEM organizations
 - b) Other universities
 - c) K-12
 - The infrastructure that CAHSI will require to function successfully as a national organization, including for dissemination of and training in effective practices, and fundraising.
- The board also discussed several more specific points that resulted from the meeting and has the following additional recommendations:
 - The board supports CAHSI's plans to develop workshops that train people in effective practices CAHSI has developed. The focus of the workshops should be on these practices, with multi-cultural training integrated into the discussions as opposed to CAHSI offering stand-alone workshops on this topic. It would be good to include education on implicit bias and for both graduate student and faculty, on attracting and fairly considering Latino candidates, and after they come, making sure that the environment fosters their retention. Scheduling these workshops in conjunction with national conferences would be a good approach.

- The board supports CAHSI’s goals to increase fundraising, including from corporations and foundations, to build the national organization. It encourages the CAHSI leadership to realize that success in fundraising will be predicated on potential donors seeing a realistic plan for sustainability of the organization, built upon a strategic plan and a sustainable infrastructure. This type of organization is quite different from the self-described grass roots approach that has served CAHSI well to this point.
- The board cautions that entry into the K-12 space can be a vast undertaking and encourages CAHSI to think about how it can begin this in a manageable way. One possibility would be to select one successful CAHSI program – CS0, or another – and work with some high schools to implement a version of this program at the high school level. It would be good to align CAHSI’s K-12 programs with the CS/10K efforts.
- The board congratulates CAHSI and its external evaluators on the care that they have given to collecting assessment data, as well as the successes this data demonstrates. The board encourages CAHSI and its evaluators, as much as possible, to include in its analyses in an “apples to apples” comparison of CAHSI institutions to a corresponding more general set of U.S. institutions. This is likely to require having a version of the data that disaggregates data from Puerto Rican institutions. (This comment in no way is meant to diminish the importance of CAHSI’s efforts in Puerto Rico and their impact upon the mainland of the United States.)

Training and Development

2010-2011 CAHSI Faculty Development workshops

Title: Launching a Successful Research Program _ Presenter: Nayda Santiago, PhD, UPRM

Description: Invited panelist for 2011 CDC/CMD-IT/CAHSI/AccessComputing Academic Career Workshop for Underrepresented Participants

Date: February 25, 2011

Title: ARG Fundamentals Professional Development Workshop

Presenters: Ann Gates, PhD, UTEP; Elsa Villa, PhD, UTEP; Steve Roach, PhD, UPRM

Participants: The workshop had 10 faculty and 8 student attendees representing various colleges and departments from the University of Texas at El Paso (Department of Teacher Education, College of Science, College of Health Sciences, Hispanic Health Disparities Research Center, Cyber-Share Center of Excellence, and the Department of English); one participant was the Chair Gynecology and Obstetrics Paul Foster Medical School Texas Teach University and another from the University of Colorado Boulder

Venue: UTEP

Date: June 20-22, 2011

Title: ARG Fundamentals Professional Development Workshop

Presenters: Ann Gates, PhD, UTEP; Elsa Villa, PhD, UTEP; Nayda Santiago, PhD, UPRM
Attendance: Approximately 20 faculty members from different universities in Puerto Rico and the U.S.

Venue: Rincon, Puerto Rico

Date: August 11-12, 2011

Title: ARG Advanced Professional Development Workshop

Attendance: 12 student and 7 faculty attendees representing Indiana University, Virginia Tech, University of Nebraska-Omaha, University of Puerto Rico-Mayaguez, Youngtown University, and California State University San Marcos, Texas State University, and University of Texas at El Paso.

Venue: UTEP

Date: May 16-29, 2011

Title: Affinity Research Group Model

Topics: Affinity Research Group Philosophy and goals, brainstorming, cooperative team

Presenters: Ann Gates, PhD, UTEP and Elsa Villa, PhD, UTEP

Venue: Academic Careers Workshops for Underrepresented Junior Faculty and Senior Graduate Students, USC, Los Angeles, CA

Date: Feb. 24-27, 2011

Title: Mock Panel Review

Facilitator: Ann Gates

Venue: Academic Careers Workshops for Underrepresented Junior Faculty and Senior Graduate Students, USC, Los Angeles, CA

Date: Feb. 24-27, 2011

Title: Positioning Yourself for Opportunities in Administration

Panel Member: Ann Gates, PhD, UTEP

Venue: Academic Careers Workshops for Underrepresented Junior Faculty and Senior Graduate Students, USC, Los Angeles, CA

Date: Feb. 24-27, 2011

Title: Multicultural workshop

Presenter: Manuel Perez Quinones, PhD, Virginia Tech

Venue: CAHSI Annual Meeting, San Juan, Puerto Rico

Date: March 29, 2011

Title: 300+ Students Can't Be Wrong! Gamescrafters, a Computational Game Theory Undergraduate Research and Development Group

Presenter: Dan Garcia, PhD, UC Berkeley

Venue: CAHSI Annual Meeting, San Juan, Puerto Rico

Date: March 29, 2011

Title: Navigating the T&P Process

Panel Organizer: Ann Gates, PhD, UTEP

Participants: Underrepresented junior faculty and senior graduate students
Venue: Academic Careers Workshop held at USC, Los Angeles, CA
Date: Feb. 24-27, 2011

Title: Strategies for Involving Undergraduates and Master's Students in Research and Publishing
Presenter: Ann Gates, PhD, UTEP
Venue: ADVANCE-PAID Professional Development Workshop, Rice University, Houston, Texas
Date: May 19-22, 2011

Title: Recommendations to Address Hispanic Underrepresentation in STEM
Presenter: Ann Gates, PhD, UTEP
Venue: NSF JAM, CREST/HBCU-RISE Listening Session
Date: June 7, 2011

Title: Building Effective Multidisciplinary Teams--When is the Whole Greater than the Sum of the Parts
Presenter: Ann Gates, PhD, UTEP
Venue: NSF JAM, CREST/HBCU-RISE Listening Session
Date: June 8, 2011

2010-2011 CAHSI Student Development Workshops

Title: Effective Research Plan Preparation Workshop
Presenter: Malek Adjouadi, PhD, FIU
Venue: 2011 CAHSI Annual Meeting, San Juan, Puerto Rico
Description: A research plan is created to communicate one's research goals and aspirations. Research plans are written for a number of different audiences, e.g., a proposal review panel, a committee that reviews fellowship applicants, and a search committee reviewing applications for a research or faculty position. The focus of this workshop is on developing a research plan for a fellowship application. It will cover the importance of defining the motivation and significance of the work, articulating research questions and goals, describing initial results, and presenting the approaches and methods used to conduct your research.
Date: March 27, 2011

Title: Speed Mentoring
Presenters: Gilda Garretton, Ph.D., Principal Engineer, Oracle Labs/Oracle; Patty Lopez, Ph.D., Component Design Engineer, Intel Corporation
Venue: 2011 CAHSI Annual Meeting, San Juan, Puerto Rico
Date: March 27, 2011

Title: Why Graduate School and Gem Fellowships
Presenter: Marcus A. Huggans, Ph.D., Director of Recruitment and Programming, The National GEM Consortium

Venue: 2011 CAHSI Annual Meeting, San Juan, Puerto Rico
Date: March 29, 2011

Title: Submitting a Successful NSF GRFP Application
Topics: Application requirements, NSF Fastlane components, essay sections of the application, NSF Review Criteria, personal statement essay, timeline for completing the application
Presenters: Ann Gates, PhD, UTEP and Claudine Riccillo, MA, UTEP
Venue: UTEP-STEM students
Date: August 27, 2010

Title: GEM GradLab
Presenter: GEM Consortium
Participants: 70 students
Venue: Mayaguez Resort and Casino, Mayaguez Puerto
Description: The objective of the activity was to help students understand how to get to and what to expect from graduate school. The activity was co-sponsored by The National GEM Consortium, FemProf and CAHSI.
Date: October 9, 2010

Title: FemProf retreat
Venue: Hyatt Regency, Atlanta, Georgia, co-located with the Grace Hopper Conference.
Description: The students participated in the following activities: Fallacies and Myths of Female Careers and Workplaces (Workshop); Timeline for Graduate School (Workshop); Gender Issues (Workshop); Unconscious Bias and Stereotype Threat (Conference)
Date: October 2, 2011

Title: Affinity Group Orientation
Topics: Affinity Research Group Philosophy and goals, brainstorming, cooperative team skills, writing a personal statement
Presenters: Elsa Villa, Steve Roach, and Ann Gates
Participants: Cyber-ShARE Center's multidisciplinary research groups
Venue: UTEP
Date: October 17, 2010

Title: Functional MRI in Clinical Research and Practice including Measurement, Design and Analysis
Participants: Florida International University IT Engineer, Ms. Niovi Rojas, FIU CATE Center Manager, Ms. Mercedes Cabrerizo, as well as two Ph.D. students, Mr. Gabriel Lizarraga and Mr. Anas Salah-Eddin.
Venue: 17th annual meeting of the Organization for Human Brain Mapping, in Quebec City, Canada at the Centre des Congres de Quebec
Description: 1 week training workshop designed to provide the required know-how on using structural and functional MRI in clinical research studies.
Date: June 26-30, 2011

FIU students also participated in the NSF- Partnerships for International Research and Education (PIRE) program during the summer program to be exposed to the merits of high performance computing and to learn from the mentorship and skills of our colleagues and their student counterparts overseas. Last year it was in Barcelona, Spain. Both Javier Delgado and Anas Salah-Eddin have been selected this year.

FIU students are also given the opportunity to perform valuable on-site testing and feasibility studies and with access to modern infrastructure and real-world data, in order to augment their practical skills through real-world applications. This is strengthened with Dr. Malek's lead in establishing a multisite repository in pediatric epilepsy involving several hospitals including Children's National Medical Center (CNMC) and Miami Children's Hospital (MCH), providing students access to data and infrastructure too costly to budget otherwise. With the efforts on the multisite consortium, FIU is also able to forge new relationships that include: Jackson North Medical Center on the design of fast and accurate algorithms for 3-D extraction and rendering of liver and tumor and to then gauge their respective volumes using both PET and CT imaging; and Oregon Health & Science University in Portland, for the processing of signals generated by the nervous system in response to sensory stimuli. This consortium allows the diversification of the training capabilities of FIU students in several cross-disciplinary activities.

Some FIU students have also participated in the Affinity Research Group (ARG) workshop as means to learn the different research methods, as well as the required experimentation and validation aspects of research. This workshop includes how students can improve their technical writing and structure their presentations. These types of sessions train students to project a professional demeanor and the best approach at conveying their research findings and contributions.

Outreach Activities

- On May 5, 2011: Dr. Romero and Cyber-ShARE Research Scholars Ivan Gris, Erika Ollivier, Sergio Montezuma, Elizabeth Pardo, Valeria Estrada, and Julio Olaya presented Cyber-ShARE projects to students from Socorro Middle School attend Tour of College Engineering organized by the College of Engineering of the University of Texas at El Paso.
- On June 8, July 11, 12, 13, 20, 25, 27, 28, August 3, 2011: Dr. Romero and Cyber-ShARE Research Scholars Ivan Gris, Erika Ollivier, Sergio Montezuma, Elizabeth Pardo, Valeria Estrada, and Julio Olaya presented Cyber-ShARE projects to students who attended the ExcITES Summer Camp organized by the College of Engineering of the University of Texas at El Paso. In this camp, students from regional middle schools and high schools attended 90-minute sessions at the UTEP campus which combined presentations and hands-on activities. The Cyber-ShARE Scholars explained the Center projects, including the visualization projects. At the end of each session, students were asked to answer a survey which revealed that, out of a total of 273 attendees in the month of June, after the outreach sessions the number of students interested in pursuing a college degree increased by a 67%. In addition, out of the 114 attendees in the month of July, after the

outreach sessions the number of students who were very interested in pursuing a college degree increased by a 53%.

- June 15, 22, July 13, 20 and August 3, 2011: Dr. Romero and Cyber-ShARE Research Scholars Ivan Gris, Erika Ollivier, Sergio Montezuma, Elizabeth Pardo, Valeria Estrada, and Julio Olaya presented Cyber-ShARE projects to UTEP's first year students who attended the College Engineering Orientation organized by the College of Engineering of the University of Texas at El Paso.
- On June 16, 2011, Dr. Romero and Cyber-ShARE Research Scholars Ivan Gris, Erika Ollivier, Sergio Montezuma, Elizabeth Pardo, Valeria Estrada, and Julio Olaya presented Cyber-ShARE projects to Transmountain Early College High School (TMECHS).
- During the Fall 2010 period, NMSU developed and deployed a high school competition. The competition tried to engage students in learning foundation of programming through App development for the Android platform (using the App Inventor environment). The team conducted weekly workshops to train students in the use of App Inventor – about 80 students participated in the training workshops. The competition required teams of 3 students (and at least one female student per team). 10 teams entered the final rounds of the competition. Students were judged based on three criteria: their program (the app), a 2-page paper, and a PowerPoint presentation. A panel of judges including a Program Coordinator, a CS graduate student, and CS professor selected the winner, with each winning team member receiving an Android tablet. The winners of the competition developed an App titled “Mind Flex”, aimed at providing mental exercises for the elderly.
- In collaboration with the Young Women in Computing Program, NMSU conducted a two-week summer camp for middle school female students from local schools. The camp was attended by 21 students. During the two weeks the students learned basic programming with story-telling Alice, Scratch, and were exposed to aspects of computational thinking through off-line activities (e.g., social games).
- In collaboration with the Young Women in Computing Program, NMSU is conducting a 5-week summer camp for women from local high schools. The camp will include exercises in geometrical and 3D thinking, Alice programming, robotics and computational textile sessions.
- University of Houston held a summer PREP program.. UHD had 250 students this summer. This is the fourth year students in the program took both CS0 and Intro to Psychology as dual credit courses for their UHD and High School Credit with a total of 30 students. The classes were taught by our tenure track faculty.
- Each summer, Florida International University offers an introductory course in computing (CS0) or (COP-1000 at FIU) as a three-unit course that uses graphics and animation to engage and prepares students who have no prior experience in computing. Students are provided with an opportunity to learn the basics of programming concepts and to develop problem solving and systemic reasoning skills, while becoming familiar with a programming environment. Such CS0 courses through the Computing Alliance of Hispanic Serving Institutions (CAHSI) serve as a recruitment and motivational tool to attract students who are taking a computer science course as one of their science or general studies electives. Anywhere between 15 and 35 students take this course every

summer, and those who decide to join FIU will already have 3 credits of course work count towards their BS degree.

- The FIU Engineering Expo (March-2011): A community outreach event organized by the FIU College of Engineering and Computing. The FIU Engineering Expo has become a legacy event for students at the college and the community; the Expo 2011 was the tenth annual expo. It is an annual event where all departments, all student professional societies and all research labs work together to make the event a huge success. CAHSI students serve as guides for lab tours and provide research demonstrations to entice high school students to join FIU. The guest speaker this year was Barrington Irving who is the youngest person to pilot a plane around the world. He is also the first black person and first Jamaican to accomplish this feat. In 2007, he was an aerospace student at Florida Memorial University. His airplane, a Columbia 400 is named the "Inspiration". His journey took 97 days and included 27 stops around the world. Over 1200 students from Miami Dade and Broward County Schools (elementary schools, middle and high schools)

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Engineering Expo 2011- 22 Miami-Dade and Boward county K-12 schools attended the April 2011 Engineering Expo

TAMU-CC outreach activities are described below:

Activity Title: Science Rules Competition

Date of Activity: March 2011

Activity Coordinator(s): College of Science & Technology, Texas A&M University-Corpus Christi

Number Participating: 3 CAHSI students visited with 200 fifth graders

Activity Description:

Science Rules is an exposition for the fifth grade students from West Oso School. This event is greatly appreciated by the faculty and staff at West Oso, as well as rewarding to the participants who plan and deliver the demonstrations. The fifth graders enjoy breakfast, and then begin their tour of the Expo at Texas A&M University-Corpus Christi, which includes a computer science booth along with many others. After the expo, the students are treated to lunch and vote for their favorite science booth. The students then return to the expo center for closing ceremonies during which prizes are awarded to the first, second, and third place booths.

Activity Goals and Objectives:

Science Rules is an interactive event, designed to engage children in science. It is also an opportunity to reinforce the fifth grade learning outcomes.

Activity Title: Island Days

Date of Activity: March-April 2011 (3 Saturdays)

Activity Coordinator(s): Office of New Student Programs

Number Participating: 2 BPC Students spoke to about 200 hundred parents and high school students

Activity Description: Each year Texas A&M University-Corpus Christi hosts a series of open houses in order to give students a first-hand look at what the university has to offer. Prospective students and guests are encouraged to take this opportunity to visit with staff and current students and get a sneak peek at what campus life is all about at the Island University. By attending Island Day, prospective students are invited to get a head start on the application process, living arrangements, and financial assistance. Computer science students help with the booth that parents and students visit during the day.

Activity Goals and Objectives:

Representatives from various departments were on-site to answer questions and assist people in obtaining the tools needed to achieve at Texas A&M-Corpus Christi.

Activity Title: Coastal Bend Engineering Competition

Date of Activity: March 2011

Number Participating: 3 BPC students set up a booth for parents and students competing at the event. Total attending about 70

Activity Description:

Coastal Bend school middle and high schools assembled teams and traveled to Texas A&M University-Corpus Christi to take part in the first annual Coastal Bend Engineering Competition. The student teams participated in a catapult challenge in which they used the given supplies to construct a catapult. Each team tested the catapults, earning points for reaching various targets. LSAMP students set up a booth at the event in which they demonstrated game design.

Activity Goals and Objectives:

The goal of the event was to spark interest in engineering and related computer science and mathematics fields by giving students hands-on experience in creating and developing scientific devices. The students were also given a glimpse into the various opportunities available for research at Texas A&M University-Corpus Christi.

Activity Title: Cub Scouts Summer Camp

Date of Activity: June 2011

Number Participating: Phyllis Tedford presented Alice to cub scouts to build animation and competed against each other. Number reached is about 50

Activity Description:

Cub Scouts from the local area attend a STEM summer camp at Texas A&M University-Corpus Christi. Various sessions were set up for scouts to do activities and learn STEM. The Alice sessions were very successful.

Activity Goals and Objectives:

The goal of the event was to spark interest in STEM fields and for scouts to achieve merit ratings in the process.

Journal Publications

Books or Other One-time Publications

Journal

Freudenthal, E. (July 2011). "Using Graphical Programming to Introduce Computer Science", *CSTA Voice*, Volume 7, Issue 3, Association of Computing Machinery.

Gates, A., "Broadening Participation in Computing: The Role of Hispanic-Serving Institutions in Contributing to an Educated Workforce," *Communications of the ACM*, 53(1), pp. 31-33.

Gates, A., "Discovery, Innovation, and Creativity: The Core of Computing," *Computer*, February 2010, pp. 94-96.

Gates, A., Hug, S., Thiry, H., Adjouadi, M., Beheshti, M., Alo, R., and J. Fernandez, "The Computing Alliance of Hispanic-Serving Institutions: Supporting Hispanics at Critical Transition Points," to appear in *ACM Transactions of Computing Education*.

Gates, A., Romero, R., Alonso, M., Klett, F., Naveda, J., and D. Requena, "Cultivating Entrepreneurial Thinking through IEEE-CS Student Chapters," *Computer*, April 2011, 44(4): 60-67.

Kephart, K., Villa, E., Gates, A., Hug, S., and H. Thirty, "Affinity Research Groups in Practice: Apprenticing Students in Research," revisions under review *Journal of Engineering Education*.

Villaverde, K., and Jaramillo, D. "Game Design and Development Course Taught with Alice", *The Journal of Computing Sciences in Colleges*, Vol. 26, No. 2, pp. 22-29, Dec. 2010.

Salamah S., Gates, A., Roach, S., and M. Engskow (2011). "Towards Support for Software Model Checking: Improving the Efficiency of Formal Specifications," *Advances in Software Engineering*, Volume 2011, Article ID TBD.

Thiry, H., Hug, S. & Weston, T. J. (2011). The Computing Alliance of Hispanic-Serving Institutions: Enhancing the success of Hispanic undergraduates in computing disciplines. *Journal of Enrollment Management*, in press.

Conference

A. Guzman, M. Goryawala, and M. Adjouadi, "Generating Facial Vasculature Signatures Using Thermal Infrared Images", 5th Annual CAHSI Workshop, San Juan, Puerto Rico, March 27-29, 2011.

Alonso, M., Hug, S., & Thiry, H. (under review, 2011) Work in Progress: Recruiting computing students through IN-COMMAND CS-0: An Introduction to Computing through Mobile Application Development. Paper presentation at the American Society for Engineering Education.

Freudenthal, E., Duval, A., Ogrey, A.N., Lim, K., Hug, S., Tabor, C., Gonzalez, R.Q., and Siegel, A. (2011). "Planting the seeds of computational thinking: An introduction to programming suitable for inclusion in STEM curricula." *Proceedings of ASEE Annual Conference*, Vancouver, BC, Canada."

Freudenthal, E., Ogrey, A.N., Roy, M.K., Hug, S., and Gonzalez, R. (2010). "A Computational Introduction to STEM Studies." *Proceedings of ASEE Annual Conference*, Louisville, KY."

Freudenthal, E., Ogrey, A.N., Roy, M.K., and Siegel, A. (2010). "A Computational Introduction to STEM Studies." *EDUCON (IEEE)*, Madrid, Spain.

Freudenthal, E., Roy, M.K., Ogrey, A., Magoc, T., and Siegel, A. (2010). "A Computational Introduction to Computer Science." *Proceedings of Annual Symposium of the Special Interest Group on Computer Science Education (ACM SIGCSE)*, Milwaukee, WI."

G. Lizarraga, M. Cabrerizo, and M. Adjouadi, "A GPU Approach to Extract Key Parameters from iEEG Data", 5th Annual CAHSI Workshop, San Juan, Puerto Rico, March 27-29, 2011.

Guillen, Rocio and Cowart, Charles. "A Hybrid Approach to Concept Assertion in Medical Records." Presentation at Fourth i2b2/VA Shared-Task and Workshop in Challenges in Natural Language Processing for Clinical Data. Washington, DC. Nov. 2010. Published in Workshop Proceedings.

Gutstein, S., Freudenthal, E., Jamal-Kamali, A., Kreinovich, V., and Morgenthaler, D. (2011). "Rod-Spring Approximation: An Intuitive Approach to the Best-Fit Least-Squares Approximation." *Proceedings of FIE*, Rapid City, SD.

Huang J., Barreto A., Alonso Jr. M. and Adjouadi M., "Image Precompensation for Visually Impaired Computer Users with Variable Pupil Size", submitted to The International Joint Conferences on Computer, Information, and Systems Sciences, and Engineering (CISSE 10), to take place December 3 – 12, 2010.

Hug, S. & Jurow, S. A socio-cultural perspective on supporting critical female advocates for equity in engineering learning communities. Paper presentation at the American Society for Engineering Education.

Hug, S., Tedford, P., & Thiry, H. (2011) Learning to Love Computer Science: Peer Leaders Gain Teaching Skill, Communicative Ability and Content Knowledge in the CS Classroom.

Paper presentation for the Special Interest Group for Computer Science Education (SIGCSE) conference.

Hug, S., Thiry, H., Villa, E., & Kephart, K. (2010). Situated learning theory as a framework for apprenticing Hispanics into computer science research in the CAHSI community. Presented at *Understanding Complex Ecologies in a Changing World*, 2010 Annual Meeting of the American Educational Research Association, Denver, CO, April 30-May 4, 2010.

J. Delgado and M. Adjouadi, "Assessing the Performance of Medical Image Segmentation on Virtualized Resources, 5th Annual CAHSI Workshop, San Juan, Puerto Rico, March 27-29, 2011.

Jalal-Kamali, A. and Freudenthal, E. (2011). "Using GraphicsI Programming to Contextualize a conventional Programming Course." *Proceedings of FIE*, Rapid City, SD.

Jurow, S., & Hug, S. (2011) Developing female advocates for equity in science communities: A Socio-cultural perspective. Paper presentation at the International Society for Cultural-Activity Research, Rome, Italy, 2011.

Magoc, T., Freudenthal, E., and Modave, F. (2010). "Computation for Science and Engineering." *EDUCON (IEEE)*, Madrid, Spain.

Thiry, H., & Hug, S. T. (2010). The Computing Alliance of Hispanic-Serving Institutions: Supporting undergraduate computing majors at critical transition points. Presented at *Understanding Complex Ecologies in a Changing World*, 2010 Annual Meeting of the American Educational Research Association, Denver, CO, April 30-May 4, 2010.

Contributions within the Discipline

CAHSI is promoting best practices for recruiting, retaining, and advancing Hispanics in computing. Resources associated with the practices are disseminated through the CAHSI website, CAHSI Facebook page, A4RC website, Trust Science and Technology Center website, HACU, and others. Approximately twenty institutions have adopted one or more CAHSI initiatives.

Contributions to Other Disciplines

A number of talks and articles were presented on CAHSI efforts that reached an audience outside of computing disciplines (please refer to the journal and conference section). ARG workshops were given at various venues (see descriptions in the Training and Development section) that included faculty from mathematics, english, psychology, environmental science, geological science, health science, school of medicine, and engineering.

Contributions to Human Resources Development

CAHSI initiatives focus on the development of professional, team, and research skills of students. The Activities and Training sections describe the various efforts. In addition, CAHSI supports early and mid-career Hispanic professionals with networking opportunities, funding, mentoring, technical and career related information, as well as training opportunities.

Contributions to Resources for Research and Education

The website contains resources for faculty and the general public.

- Social Science publications
- Statistics on Hispanics
- Reports on Hispanics
- News releases about Hispanics

In addition, the website includes resources that target students and faculty specifically. CAHSI faculty and evaluators have disseminated their knowledge of effective practices through journal publications, conference presentations, and other venues.

Contributions Beyond Science and Engineering

The ARG model is being adopted in programs beyond science and engineering. Also, CAHSI is collaborating in different efforts that involve various areas outside science and engineering. (Please refer to the activities section)