

# TechREACH Eastern Washington External Evaluation Report

July 2007

## EXECUTIVE SUMMARY

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The Eastern Washington TechREACH program, funded through the National Science Foundation, the Washington State University Center to Bridge the Digital Divide, and Microsoft is an extension and enhancement of an existing Western Washington program through the Puget Sound Center for Teaching, Learning, and Technology (PSCTLT). It is designed to serve low-income and at-risk middle school students through after school programs that focus on science, technology, engineering, and mathematics (STEM) activities.

The external evaluation team, RGI Corporation, employed assessment instruments including participant surveys, stakeholder interviews, and student focus groups, and analyzed associated program data to measure the program's goals of 1) increasing student interest, confidence, and achievement in STEM, 2) increasing school and community support for STEM learning and interest, and 3) increasing the number of students pursuing STEM classes, degrees, and careers. The following are the major findings of the program's first year activities.

Over the first program year, TechREACH has served 98 students in eight clubs (five girls clubs and three boys clubs) from five middle schools located in the communities of Pasco and Sunnyside.

### **E-Mentoring Program**

Forty-six (46) mentors who work in STEM fields were matched with students and provided mentoring via e-mail and club visits. Having a mentor positively impacted students in a number of different ways. Many students enjoyed having the support of a mentor and felt that they "can turn to my mentor and learn" and that "mentors help us out – they give us advice and let us share our goals." Students also commented on how the mentors impacted their thoughts about careers – "Having a mentor helped me think about a career" and "my mentor helped me learn a lot about science careers." Motivated by this newfound knowledge and interest in a career, one student said, "I want to be an engineer and send my designs for people to build" while another said that "I now know I need good grades in science to be a vet[erinarian]."

### **Curriculum and Field Trips**

There were three major units covered during the first academic year organized around the following content areas: digital photography, Internet use and Web site development, and Investigating Apples, which relates to the science, math and technology involved in the production of apples. A highlight of the TechREACH clubs for a majority of students and club leaders was the field trips. During the focus group sessions, the students unanimously said that they loved the trips, particularly those to the Laser Interferometer Gravitational Observatory (LIGO) for the mentor/student kick-off and the visits to Sunnyside and Pasco orchards. Club

leaders also felt that students greatly benefited by these trips, as many do not have opportunities to even leave their neighborhoods.

Most students had positive feedback regarding the applied approach to the after school clubs. “I learn in a different way in the TechREACH club,” said one student while another said, “TechREACH is really fun – we do lots of hands-on activities.” A number of club students also believed that TechREACH impacted their everyday school lives as evidenced by comments such as “TechREACH makes school way more fun” and “TechREACH will help you during class – it will help you to change your grades [for the better].”

### **Summer Technology Workshops**

Following the completion of the first academic year of the program, TechREACH students were provided the opportunity to participate in a two-week summer technology workshop led by representatives of the DigiPen Institute of Technology. DigiPen is an accredited school which offers degrees in computer engineering, computer simulation, and production animation. These workshops are part of ProjectFun, a long-time DigiPen enterprise designed to increase student interest in pursuing technology degrees. A total of 54 students participated in the summer workshops. Boys and girls workshops were held separately.

When asked what they liked about the workshop, students near unanimously reported that they really enjoyed creating the games. Many wished that the workshop was longer and almost all felt that their expectations coming into the workshop had been met. Several questions asked participants to rate how the workshop impacted their interests in technology and technological careers, and future course selections. Student survey results show that 90% of students agreed or strongly agreed that the workshop increased their interest in technology. 74% agreed or strongly agreed that it made them want to take more technology classes in high school, 73% said it increased their interest in a career in technology, and 63% said it increased their interest in a career as a computer scientist. The workshop impacted the students’ interest in mathematics to a lesser extent. 39% of students agreed or strongly agreed that it increased their interest in math, and 45% said it made them want to take more math classes in high school.

### **Teacher Professional Development**

All TechREACH club leaders received three full days of professional development to help them lead their club. Training was provided on the TechREACH curriculum, technology skill-building, and strategies for increasing student interest in STEM careers and education. All trainings were rated highly by teachers--an average of 4.8 out of a scale of 1 to 5 with 5 being the highest rating. Following are some additional findings of the 2006-2007 TechREACH evaluation:

- The program has served 98 students, which is 63% more students than originally anticipated.
- The primary student program components have been successfully implemented at all school sites.
- 90% of TechREACH students surveyed reported that they liked the activities in which they participated.

- All TechREACH students, their parents, and their teachers surveyed have reported significant increases in student interest, confidence, and grades for STEM coursework.
- 88% of TechREACH students agreed or strongly agreed that TechREACH increased their interest in technology.
- 64% of TechREACH students agreed or strongly agreed that TechREACH increased their interest in science.
- 56% of TechREACH students agreed or strongly agreed that TechREACH increased their interest in mathematics.
- 72% of students surveyed indicated that they planned to take more science, technology, and math classes in high school because of TechREACH.
- 95% of TechREACH girls and 75% of TechREACH boys want to participate in a TechREACH club next year.
- 74% of students responded that “having a TechREACH mentor has been very important to me.”
- The mentoring component can be strengthened by formalizing communication processes between mentors and club leaders.
- Girls’ interest and confidence has increased in science but has declined in math over the first program year.
- Girls’ interest in a STEM career declined slightly over the first program year.

The Eastern Washington TechREACH program has had a successful first year in terms of both its implementation and in the achievement of its goals. It has served significantly more students than originally proposed, has implemented all of its student program components, and has been particularly successful in achieving key program objectives relating to student interest, confidence, and achievement in STEM. The TechREACH program, as it enters its second academic year has a solid foundation in which to build upon these successes to further impact the lives of the students, families, and the communities it serves.