

*Oxnard College CCRAA HSI STEM 2<sup>nd</sup> Year  
External Evaluation Report: 2010*

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## Introduction

Oxnard College has recently completed the second year of a two-year grant award under the College Cost Reduction and Access Act (CCRAA) Hispanic-Serving Institutions (HSI) Program, administered by the Title V office in the U.S. Department of Education. The purpose of the CCRAA HSI Program is to provide financial assistance to Hispanic-serving institutions in order to carry out activities that will improve and expand institutional capacity to serve Hispanic and other low-income students. Oxnard College is uniquely qualified to administer a STEM project geared towards Hispanic achievement for multiple reasons. First, Oxnard College (OC) is serving a student population that is increasingly Hispanic (65% as of 2010). Second, student participation and outcomes in STEM programs show that Hispanics are severely underrepresented. Third, and most importantly, OC is serving an increasingly large number of local high school graduates that are underprepared to enter STEM majors. Achievement data from the most recent high school testing period on 11<sup>th</sup> grade students show that Latinos are two to two and half times less likely to meet or exceed state standards in Language Arts, Math, and Science:

<b>Percentage of 11<sup>th</sup> Grade Students in the Oxnard Union High District Meeting or Exceeding State Standards on the California Standards Test in 2010</b>		
<b>Subject</b>	<b>White (non-Hispanic)</b>	<b>Hispanic</b>
<b>English Language Arts</b>	67%	29%
<b>Algebra II</b>	20%	14%
<b>Biology/Life Sciences</b>	52%	24%
<b>Chemistry</b>	68%	28%
<b>Earth Science</b>	50%	22%

The picture painted above, although bleak, is not unique to Oxnard College. California Community Colleges face significant challenges to meet the needs of their students especially in light of diminishing state support due to enormous budget shortfalls. Because the state financial picture is not expected to improve in the next two to four years, federal assistance in the form of grants represents the only source of income for colleges to improve and expand on activities that national research has shown to be effective in increasing Hispanic student attainment.

In order to respond to the needs of its students, Oxnard College's CCRAA STEM project established three key goals:

1. To establish an early readiness awareness framework for STEM degrees with emphasis on math and science, which is consistent with national best practices with Hispanic and other underrepresented students and thus has potential to increase the number of qualified Hispanic professionals in these fields.
2. To establish an accessible, seamless pathway from OC to bachelor's degree completion at CSUCI and UCSB which is effective with underrepresented, at-risk students.
3. To establish assessment systems needed to evaluate the baccalaureate pathway both in terms of student outcomes and related institutional effectiveness measures.

To evaluate successful progress towards those goals Oxnard College established the following five measureable objectives:

1. To increase the number of Hispanic and other low-income students who are identified early, prepared, and tracked as potential STEM majors on the pathway to degree completion at CSUCI and UCSB over baseline 2007-08 data.
2. To establish a seamless transition and remove all identified institutional obstacles on existing transfer pathway for degree completion in STEM fields from OC through CSUCI/UCSB.
3. To increase the number of Hispanic and other low-income students who are formally enrolled in a fully articulated curriculum in STEM fields with an approved plan to complete degree/credential on schedule by 20% over baseline 2007-08 data (within 6 years of initial enrollment at OC, the national benchmark for Hispanic students).
4. To increase the number of Hispanic and other low-income students who complete all pathway preparation in STEM fields at OC on schedule over baseline 2007-08 data (within 2 years of enrolling in college-level courses by Fall 2010, or on schedule mapped out in their baccalaureate pathway educational plan).
5. To increase the number of Hispanic and other low-income students who transfer to CSUCI and UCSB as STEM majors by 30% over baseline 2007-08 data by Fall 2010.

## Methodology

This report is based on the information about the CCRAA HSI project gained from the discussion with key personnel, examination of all written materials provided by the college and its partners, and visits to Oxnard's STEM Center and Marine Education Center. The evaluator met with Dr. Cynthia Herrera, Project Director; Dr. Carolyn Inouye, Dean of Mathematics and Science; Dr. Erika Endrijonas, Executive VP of Student Learning; Dr. Yong Ma, Science Department Chair; Diva Ward, Director of Title V HSI Grant; Bola King-Rushing, Instructional Technology Specialist; David Magallanes, Math faculty; Dr. Shannon Newby, Biology Instructor; and Tom O'Neil, Biology faculty and Marine Education Center Director. During the site visit, the evaluator discussed progress toward meeting the project objectives, status of budget expenditures including budget modifications made, data collection and analysis, status of documentation and dissemination of results, internal reports, and significant project accomplishments and/or problems. The evaluator also visited the new STEM Center and the Marine Education Center to observe grant accomplishments on site.

## Developing and Expanding Capacity To Serve Prospective STEM Students

### *The Oxnard College STEM Center*

Oxnard's efforts to revamp STEM education and increase access and success in STEM courses are anchored on the successful and innovative concept of a comprehensive and all-inclusive STEM Center. The center came online in January of 2010 and is a "one stop shop" for students enrolled in STEM courses. It occupies 2700 square feet within the Learning Resource Center and is equipped with the latest technologies that transformed it into a 21<sup>st</sup> century "smart classroom". Five permanent computers and a mobile computing center with 20 laptops are available to students, SI leaders, and faculty. The STEM Center offers rooms for student SI and tutoring sessions, but most importantly it functions as a hub for a variety of student services such as: Transfer information workshops; specialized STEM counseling; Supplemental Instruction; Peer Mentor group meetings; and workshops for career opportunities in STEM with industry participation. The physical décor of the center provides a "homey" atmosphere that is both inviting and utilitarian. The various components are adequately staffed with a director, staff, and numerous faculty that spend time helping students.

The STEM Center also serves as the project's hub for collaboration as described in the original proposal. California State University Channel Islands (CSUCI) tutors are available two days a week for drop-in tutoring. A CSUCI student advisor is physically located at the center facilitating continuous access to university advising as well as serving as a conduit for articulation. The center also houses the University of California Santa Barbara MESA coordinator who organizes a variety of outreach activities with wide participation for UCSB and OC faculty (details are provided below).

### Strengths

- The concept of a comprehensive STEM Center is innovative and is gaining traction around the nation as a method to improve student learning outcomes in STEM, including success and retention. As Vincent Tinto (national authority in Learning Communities) once put it, "*Access without support is not opportunity*". Minority students are more likely to enter college needing basic skills remediation; and support during their career is critical for success and retention.
- The Oxnard STEM Center is designed to offer comprehensive support for the unique needs of STEM students.
- The physical presence of the STEM Center combines aesthetic appeal (incorporating art exhibits from Oxnard students) with educational utility. Thus the center is both appealing and efficient.
- The management structure that is in place facilitates communication and collaboration among various college departments. The evaluator was encouraged by the synergy of efforts and the collaborative spirit exhibited by all faculty, staff, and administrators involved in the project.

### Threats

- Simply put, the biggest threat is sustainability. As mentioned above, one of the strengths of the effort is the strong leadership team that is in place. However, funding for the director and staff is provided by the CCRAA grant which will end September of 2011. While the services can continue to be offered without them, the continued success of the effort can only be secured by keeping the comprehensive management structure in place.
- In a very short time the Center managed to establish itself as an integral part of the STEM effort at Oxnard College. However, more needs to be done to ensure that additional faculty are using the Center.

### Recommendations

- Continue the existing effort to advertise the center as Oxnard's "one stop shop" effort for STEM student support.

- Publicize and discuss success and retention data as a result of the center's services in tutoring and Supplemental Instruction.
- Post minutes of the advisory committee minutes for easy access on the center's website.
- Encourage wider participation from Math and Science faculty in support of the center's efforts.
- Coordinate efforts with the existing Learning Center to improve services to students.
- If funding is available, hire or reassign counselors specialized in STEM to the center.
- Explore the opportunity to hire Learning Specialists in the disciplines of writing, mathematics, and general academic skills. Collaboration with the existing Title V grant could help in achieving this goal.
- Oxnard must ensure that it will continue to provide adequate support from faculty and staff as well as available space to accommodate the expansion of the center's services and activities.
- The College's administration, along with the Academic Senate and the Planning Council need to engage early in planning for the sustainability of these efforts without putting excessive strain in the college's budget especially in light of diminishing funding from the state.
- Possible solutions for sustainability include: (1) Engage the District/College foundation to fundraise for STEM specific donations and endowment creation; (2) Continue the effort in pursuing external grants; and (3) explore the possibility to partner with city governments, industry that can benefit from STEM graduates, and other community groups to ensure financial and human capital support.

### *The Oxnard College Marine Education Center (OMEC)*

The evaluator was especially impressed by the OC Marine Education Center. As far as the evaluator could ascertain, Oxnard is the only community college with such a center. The Oxnard College Marine Center and Aquarium is located at Fisherman's Wharf in Channel Islands Harbor. Classes offered at the Marine Center include: Oceanography, Marine Biology, Geography, Environmental Studies, Art History, Math, MST 190/195. The Mission of the Channel Islands Marine Education Center is to serve the needs of Ventura County through innovative marine science education programs that:

1. Provide elementary and secondary teachers and students with an understanding of and appreciation for the marine life of Southern California.

2. Provide exemplary, innovative and accessible marine science educational programs to college and university students.

3. To encourage active public participation in informed decision-making concerning the marine environment of southern California.

4. Improve and enhance public awareness of the importance and value of the marine environments of Southern California.

Besides being an exemplary education center, the OMEC serves an excellent outreach venue attracting community visitors while facilitating field trips from local K-12 schools. During 2010, more than 700 K-12 students visited the center and interacted with marine life at the center.

The OMEC is also the place for the popular Harborside Speaker Series that offers presentations in topics from marine science, history, climate change, and green technologies.

### Strengths

- The OMEC is uniquely positioned to function as the anchor of community support towards Oxnard's STEM efforts because of its visibility and public appeal. Staffed with highly qualified faculty and experienced staff, the center also facilitates collaboration with UCSB and CSUCI whose faculty provide support for it.
- The OMEC is a concept that although not easily replicable in other colleges, could nevertheless provide a blueprint for developing similar science centers that respond to the specific needs of other colleges. Oxnard College can emerge as a leader in promoting such efforts statewide.
- The OMEC has both an educational and an aesthetic appeal. As such, it affords Oxnard the opportunity to use it as a fundraising venue and promote science outreach activities.

### Threats

- Unfortunately, the original site housing the OMEC was completely consumed by fire in the spring of 2010. Through the valiant efforts of faculty and staff, the tanks along with most of the marine animals and plants were rescued. Working with extreme haste and with commendable efficiency, faculty and staff located an empty building in the Oxnard Harbor that became the new center. No class time was lost and in a short time the center was up and running almost in its full capacity.
- The new site needs substantial work to restore the OMEC to its previous condition. Although the needs are merely cosmetic, substantial effort and expense is needed for complete renovation.

## Recommendations

- The College must ensure adequate funding is available for renovations and educational equipment. Although in the short term grant funding can help, long term planning must be initiated in order for the center to continue to fulfill its mission.
- The OMEC can help the College in its planning by completing a comprehensive program review (if not already done) that will explain its importance both as an educational endeavor, and as a community service. The needs in terms of staffing and equipment must be clearly communicated to the main campus community as well as the community at large. Suggested activities include:
  - Presentations by the President to the District Board of Trustees
  - Presentations by the Director to City officials and solicitation of city redevelopment funds
  - Establish an electronic presence (web site, facebook, etc.) for regular updates
- Engage local groups and the District's Foundation in promoting the center, with the view of attracting external donations in order to ensure sustainability.
- Statewide presentations to appropriate conferences should be pursued to publicize the effort. The potential of such effort is to bring prestige to the college as well as attracting external philanthropic funding.
- A long term solution could be to increase the number of classes offered at the center; an effort that could serve a dual purpose. First, it will increase state funding as a result of increased FTES; and secondly, possibly in a short time, it could qualify as an educational center that could be funded as a line item in the California Chancellor's Office budget. As the center achieves sustainable enrollment milestones - 250, 500, or 1000 FTES- Oxnard College could qualify for a one time funding increase as well as increased base funding.

## **Oxnard College CCRAA HSI STEM Project Activity Goals - Objectives - Activities – Performance Measures**

According to the College's application for CCRAA HSI funds, the purpose of the project activity is to address the problems and weaknesses identified in the pipeline leading to degrees in Science, Technology, Engineering, and Mathematics (STEM) in the Oxnard College service area. Oxnard College (OC) proposed to partner with California State University, Channel Islands (CSUCI), and the University of California, Santa Barbara (UCSB) to establish a model transfer and articulation agreement in STEM fields to increase the number of Hispanic and other underrepresented low-income

students who attain degrees in STEM fields. This project clearly meets the purpose and priorities of the CCRAA HSI grant program.

The overall impression from the evaluation visit is that Oxnard College is making significant progress towards achieving the goals of this collaborative effort. There is a strong management team in place to provide leadership and organization, and strong support from faculty and staff. A general overview of activities and performance measures used for assessment as they apply to each grant objective and project administration is provided below.

### *Goal 1 (Related Objectives 1, 3, 4)*

- To showcase the newly established STEM Center an open house was held on September 30, 2010. The event was attended by all STEM faculty, many people from the community, and more than 100 students.
- Multiple outreach activities have taken place to increase visibility for the Oxnard STEM efforts to local high schools as well as develop awareness for parents, students, and community. Those were culminated with the Oxnard-CSUCI College Summer 2010 Bridge program that served 62 students.
- The OC Math Academy hosted at Hueneme High School attracted 31 high school students who received college level instruction from OC faculty and Supplemental Instructors.
- Co-sponsored the career and transfer day at OC which attracted over 1000 students.
- Co-chaired the OC Youth program that featured industry, faculty, and student workshops.
- Co-sponsored a parent night with UCSB's EAOP program to increase parental awareness in STEM opportunities.
- Worked with the UCSB MESA program to offer workshops in career pathways and foster close collaborations between OC, UCSB, and CSUCI.

### **Strengths**

- Oxnard College faculty, staff, and administration have shown the necessary commitment and dedication to make this effort successful.
- Community and partner support and participation is strong, and the necessary partnerships between the college and K-12 are in place.

### Threats

- The success of Oxnard's outreach efforts could present a unique problem: Overwhelming participation can impose physical and human resource strains if the program continues to expand.
- Funding beyond the grant period has not been identified as of yet. The deterioration of state funding could not be expected when the proposal was submitted two years ago. As a result, sustainability planning has stalled.

### Recommendations

- An immediate solution for sustainable funding can be applied by collecting positive student attendance data at the center. State law requires that either a faculty or an instructional aide be present at all times for the college to claim such funding.
- Although, an instructional aide maybe a less costly solution, it is recommended that a faculty member is instead utilized to supervise learning activities at the center.

### *Goal 2 (Related Objectives 2, 3, 4, and 5)*

- Faculty from various STEM disciplines are involved in interdisciplinary discussions about SLO development and assessment in STEM courses.
- Faculty collaborations among OC, CSUCI, and UCSB faculty have begun and are expected to strengthen further in the future.
- The concept of "smart classroom" has expanded campus wide allowing faculty to incorporate technology in pedagogically sound activities. To date 36 rooms on campus have been retrofitted with "smart technology" equipment.
- The Faculty Resource Center is in full swing and has already produced results in helping faculty integrate technology in their courses, as well as facilitating a culture change on campus.
  - A full time instructional specialist (IS) has been hired to work with faculty in technology-infused teaching strategies
  - The IS is holding workgroup seminars as well as one-to-one help sessions with faculty
  - Software, hardware, as well as physical space is available to meet the needs of faculty
- The Distance Learning Project is underway incorporating a three-tiered process: Individual web-based training; group training; and individual training.

- Created course sequences leading to degrees and certificates in Chemistry, Physics, and Environmental Studies.
- Developed transfer agreements with CSU and UC system.
- The UCSB MESA program:
  - The UCSB MESA coordinator engaged in STEM awareness activities with all 8 Oxnard area high schools resulting in a 35% increased participation.
  - The MESA Coordinator also successfully organized special STEM events including the Wind Energy Challenge Day competition (Feb. 2010) at Oxnard College, and the UCSB MESA Science and Technology Day (March 2010).
  - The number of MESA of high school MESA students increased from 340 in the first year, to 525 during the second year of the grant.
  - 20 MESA workshops on MESA competitions were held.
  - Oxnard students participated as mentors in the MESA college day.
  - MESA advisors assisting students with academic advising and planning, and application preparation hold regularly scheduled sessions.
  - The Wind Energy Project Academy was held on February 6, 2010, attracting 53 high school student and 36 volunteer students from UCSB and Oxnard College. Six of those students received 12 awards. And one of the teams qualified for the regional finals in April 2010.
- Marine Aquarists from UCSB's Marine Science Institute assist regularly the Oxnard Marine Science Center in the maintenance of animals, and installation and repair of tanks. Grant funding resulted in the following collaborative activities between OC and UCSB:

At Oxnard Marine Education Center (OMEC):

- Weekly maintenance of Tanks (water changes, cleaning filter pads, protein skimmers, etc).
- Assist in the collecting of organisms for exhibit aquariums.
- Transport kelp from REEF to OMEC for exhibit enhancement and feeding.
- Assist in exhibit design & maintenance.
- Maintain brine hatchery for feeding.
- Support husbandry and feeding of organisms.

At the Research Experience Education Facility (REEF):

- Maintain and log system water quality (salinity, temperature, etc) for tropical tanks.

- Assist in development of Tropical Research Tank exhibit to be duplicated at OMEC.
- Assist in design and construction of aquaria exemplifying Temperate marine habitats to sustain OMEC exhibit specimens.
- Maintain population of endangered species white abalone- *Haliotis sorenseni*.
- Assist in the development of protocols relevant to the acquisition and maintenance of marine education facilities (Dept. of Fish/Game, IACUC, FDA, USDA, etc).
- Three Oxnard students were recruited to participate in a summer internship program at the CA Nanosystems Institute at UCSB. For eight weeks, the students engaged in serious research at UCSB working on projects such as: “Mating System Evolution”; “Developing a High Power Electron Paramagnetic Resonance Spectrometer to Analyze Electron Spin Dynamics”; and “The Effects of Dye on Cercariae.”
- One student was awarded a 3-year STEM scholarship to pursue a mathematics degree at UCSB.

### Strengths

- The incredible synergy and strong collaborative spirit among the three partners is the strongest component of the program. Through the tireless work of the project’s leadership team, students have benefited from scholarships, internships, and transfer agreements. National research conducted by the Excelencia group has recommended exactly those types of activities as a method to engage and retain Hispanic and other underrepresented students in STEM.
- Communication among the partners is ongoing, and the collaborative seems to be on a strong foundation that will only strengthen in the future
- Grant officials have made a strong case for the need for STEM efforts in the Oxnard service area, and have established the necessary partnerships for continuation of this effort beyond the duration of the grant period.
- Articulation agreements are in place, and roadblocks for transfer have been identified. The Articulation Roadblock Summit with CSUCI -held last spring- helped to streamline the transfer process and provided an avenue for faculty to explore further alignment of curricula.

### Threats

- No specific threats were identified. Articulation and transfer discussions are time consuming because of the different structures of the three educational systems in California. As a result,

the slow but sure progress that has been reported so far is satisfactory and indicative of continued success in the near future.

### Recommendations

- Explore the establishment of a dual enrollment option with CSUCI and UCSB, so that students can take advantage of the seamless transfer transition that the option provides.
- Participate in the state academic senate's efforts to establish the new Course Identification System (C-ID) and develop transfer degrees in most STEM disciplines according to the guidelines of the recent bill SB 1440. (Care should be taken here because the new transfer degrees only require 18 units in the major, whereas CSUs and UCs require many more for most STEM majors.)
- Strengthen the undergraduate research collaborative by pursuing grant assistantships for Oxnard students from UCSB and CSUCI research professors.
- Transfer rates in STEM from Oxnard to the partner institutions can be increased if transfer students are given priority for work opportunities or other scholarships. This avenue should be pursued further by Oxnard STEM officials.

### *Goal 3 (Related Objectives 1, 2, 3, 4, and 5)*

A project with such a wide scope as "Realizing the Dream" requires continuous monitoring and assessment through data collection and analysis in order to evaluate its efficiency and efficacy. Some of the activities and systems that are in place for continuous meaningful assessment are:

- Students are registered in a computer database when they first use the STEM Center and their time is tracked every time they return.
- The college has purchased a graduation assisting software called AGILE that allows students to track their progress towards graduation online.
- Divisions develop two-year course schedule plans and enter them into AGILE. This allows students to plan their course of study better reducing thus the time to degree completion.
- Assessment of student learning outcomes will be tracked and managed through Elumen, which is a comprehensive database that facilitates longitudinal assessment and provides a variety of reports that can be used by the college's planning committees.
- Additional research support is provided by the college's research specialist.

### Strengths

- There is a strong campus commitment for data-based decision making.
- There is significant investment in technology to assist students in academic planning.
- Faculty have embraced the need for continuous evaluation and lead the efforts for student learning assessment.

### Threats

No threats were identified beyond the need for continual funding of licenses and maintenance of the STEM Center database, and the AGILE and Elumen software programs

### Recommendations

- Continue the development of Elumen as a tool for SLO assessment tracking.
- SLO assessment analysis should be accompanied by action plans that will inform campus planning, and assist in program review and updating the Educational Master Plan.
- Start the development of Program Learning Outcomes and develop curricular mapping that relates SLOs to PLOs and eventually to Institutional Outcomes.

## Project Administration

A successful program like “Realizing the Dream” requires strong leadership and imaginative faculty and staff. The evaluator is confident that the program’s success will continue under the strong leadership of Dr. Herrera and the highly dedicated group of faculty and staff she managed to put together. Although success is measured by outcomes, perception and communication are also important. STEM efforts and results are documented and communicated to the campus regularly. Substantial information about the project is available on the project’s well designed website.

- A STEM advisory committee was formed to report on activities and to assist in the development of new activities. Committee minutes show that the advisory team regularly discusses issues such as: Create and enhance STEM pathways; plan for student workshops; develop summer bridge programs; review, update, and create new curriculum (a new STEM support course called STEMinar has been approved by curriculum committee and is in the plans to scheduled next year); review the efficacy of the SI effort; explore avenues to strengthen articulation with partners and remove transfer barriers; and plan and deliver professional development activities.

- Regular meetings with faculty and administrators from the partner institutions are held. The two partners submit annual reports to Dr. Herrera. The comprehensive reports give a complete account of activities and financial accounting in support of those activities.
- Dr. Herrera oversees the project’s budget and ensures that all expenditures adhere to federal and state guidelines.

The evaluator commends Dr. Herrera and her staff for the transparency that is followed in the accounting and reporting on the project’s budget and financial activities. Although the evaluator did not examine the most recent audit report, there was no indication for any potential problems. Overall the project is progressing at a satisfactory pace, and it is expected that Oxnard will accomplish the originally stated goals by the end of the third year extension period.

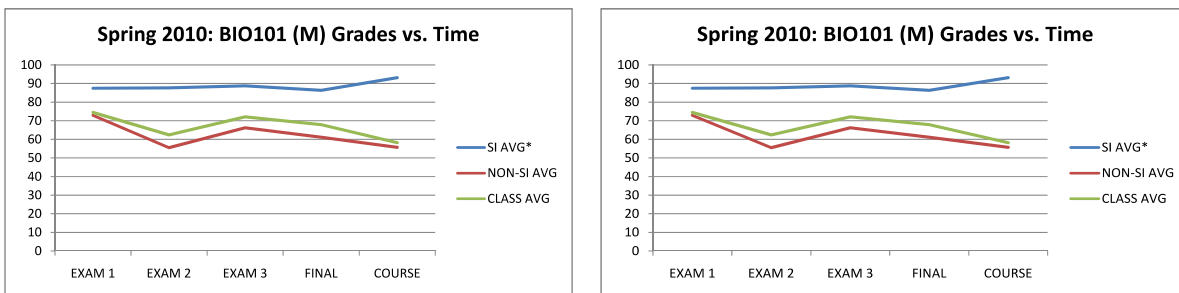
## Results

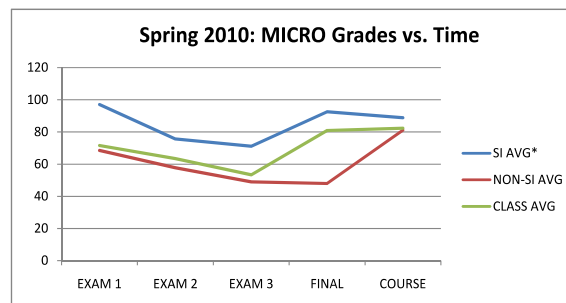
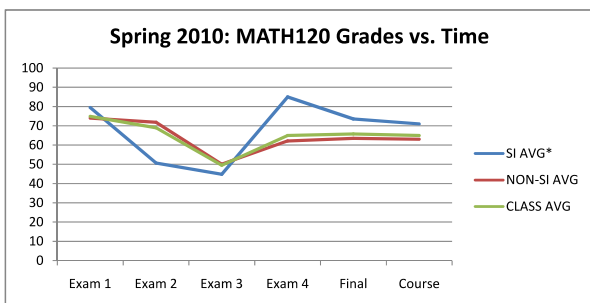
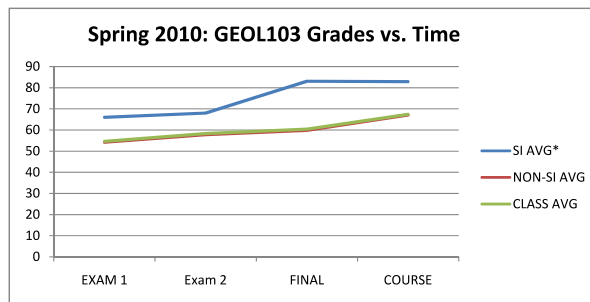
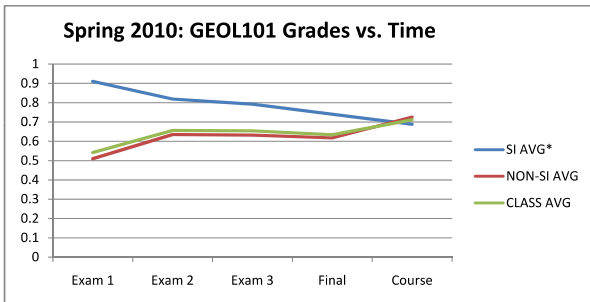
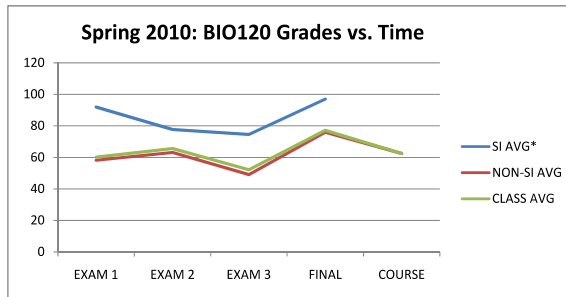
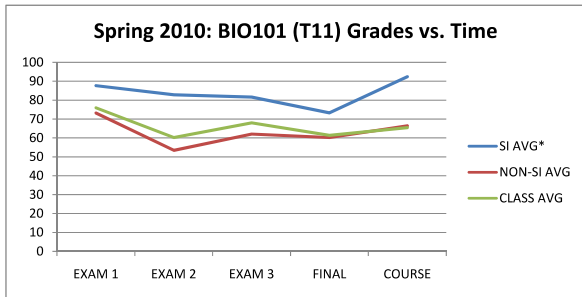
### STEM CENTER

The STEM Center is the anchor of a new paradigm in student support for STEM students at Oxnard College. The center is adequately staffed and is run very efficiently. Scheduling issues are addressed effectively and communication with students, faculty, staff, and administrators is timely and meaningful. When students first visit the center they are entered into a database for tracking purposes. In a short time period (only ten months) 300 students have registered in the database and received support. Among all services provided at the center, Supplemental Instruction has shown to affect student success the most as seen by the graphs below:

### Supplemental Instruction

**Figure 1.** Comparison of student performance in exams for students enrolled in SI sessions vs non-SI students within the same semester.





It is evident from the graphs above that SI students perform significantly better in class exams as compared to non-SI students. Very important also is the trend that SI students improve their exam scores within the same semester at a higher rate than non-SI students whose scores are more likely to stay flat or even decrease as the semester progresses.

**Student Enrolment and Accomplishment in STEM**

The CCRAA STEM HSI grant has had a significant impact on increasing student enrollment in STEM majors. Using 2007 as baseline year, one can see from the table below that there was a 70% increase in enrollment.

**Student Enrollment In STEM Majors 2007-2010**

2010	2009	2008	2007
739	677	456	434

Table 1: Student enrollment on all STEM majors for years 2007 through 2010.

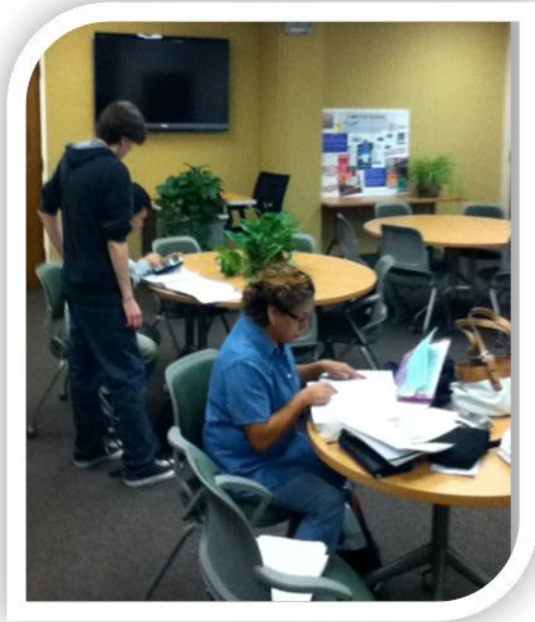
Among individual majors Biology had the largest increase of 205% (59 to 180), Physics majors almost tripled from 5 to 14 students, and mathematics majors increased from 44 to 55. Clearly the Oxnard project is meeting its objectives to prepare and enroll more students in STEM (Objective 3).

The project also was instrumental in increasing the numbers of students that complete Associates degrees, and become certified for transfer. Table 2 below shows that although the numbers of degrees awarded is still low, there was a significant increase from 2007 to 2010. The number of students that are becoming transfer ready however, is much higher and has exceeded expectations.

STEM CIP Group	2009-10	2008-09	2007-08
<b>Assoc. Degrees</b>			
Biological Sciences (04.xxxx)			
Information Technology (07.xxxx)	7	7	6
Engineering and Technology (09.xxxx)		1	
Mathematics (17.xxxx)	4	2	
GS: Natural Sciences (.xxxx)	5	1	
<b>Total</b>	<b>16</b>	<b>11</b>	<b>6</b>

<b>Transfer Certification</b>		
Transfer: CSU-GE	71	22
Transfer: IGETC	36	5
<b>Total</b>	<b>107</b>	<b>27</b>

Table 2: Numbers of students earning an associate degree in STEM or becoming certified to transfer to the California State University (CSU-GE) and University of California (IGETC) systems.



**Top Left:** CSUCI tutors provide drop in tutoring at the STEM Center. **Top Right:** A student working on a class assignment using a STEM Center laptop. **Bottom:** A Biology SI leader works one to one with a student





**Left:** The STEM Center's design is aesthetically appealing and the placement of the student workstations facilitates group work as well as Supplemental Instruction sessions. **Center and Right:** Mathematics and Science inspired artwork adorns the walls of the center. Note the Cartesian graph on the picture to the right.

## Discussion

The evaluator's overall impression is that *Realizing the Dream* is well on its way to achieve its goals by the end of the third year extension. The project is well thought out and is guided by strong leadership. It is evident that each member involved in the project implementation process was carefully selected. Faculty and staff expressed a unique and sincere passion towards the success of under-represented students in STEM fields. The frequent communication and collaboration among departments and staff significantly strengthened all program aspects and is clearly reflected through the personal gain and responsiveness of students.

We commend the project's management team and congratulate the commitment and dedication of Oxnard College's administrative team. In order for the project to continue to be successful and sustainable in the years to come the existing collaborative efforts must continue. However, the evaluators are aware of the dire condition the California state budget is, and it's potentially detrimental effect on community college efforts to serve their students. Exemplary programs such as *Realizing the Dream* require significant funding to continue. Based on our observations, we predict that the success and popularity of the STEM Center will increase in the near future. College officials need to engage in discussions about how to manage and fund this expansion. While we understand that it is almost impossible for colleges to absorb these costs in their general budget after the end of the grant, we suggest the following actions as possible mitigating solutions:

- Pursue further federal funding through the US Department of Education or NSF that has a multitude of programs supporting STEM.
- Establish a STEM fund within Oxnard's Foundation office so that contributions from employees and community can be solicited.
- Actively pursue collaborations with local industry and request in kind and/or financial support for the Oxnard STEM program and students.
- Form active partnerships with industry and four-year institutions to explore possible internships for Oxnard STEM students. National research has shown that internships significantly improve student retention while providing job training. In addition, student interns have a better chance to secure assistantships when they transfer to four-year schools.
- Accelerate the development of transfer degrees as required by the California Senate Bill 1440. This will increase the number of Oxnard degrees, and increase the transfer rate in STEM.

- Encourage college divisions relating to STEM to talk about the need for the STEM Center in their program review.
- Encourage faculty to continually assess SLOs in STEM courses and report the effect of the STEM Center activities on the SLOs.

## Sources

1. Oxnard STEM website:  
<http://www.oxnardcollege.edu/departments/academic/STEM/index.shtml>
2. CCRAA Annual Performance Report Year 1-2008-2009:  
<http://www.oxnardcollege.edu/departments/academic/STEM/2008-09%20STEM%20Grant%20Annual%20Performance%20Report.shtml>
3. UCSB Annual Report of accomplishments and deliverables submitted to Project Director Dr. Herrera.

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