Biotechnology E-Mentor / Program Enhancement Initiative

Problem:

Phase I (Jan-April) Excerpt:

Palm Beach Lakes Community High School has historically catered to low- income students from Riviera Beach. Reading proficiency levels on state standardized tests is well below average at 26%, while math proficiency numbers are below average and closer to 55%. Science scores are slightly higher than reading scores at 29%.

Due to the historically high number of disciplinary issues and below-average proficiency numbers at the school, recruitment efforts of top-tier teachers have largely been unsuccessful. Additionally, turnaround numbers in prior years has been abnormally high. There are very few teachers that have been there longer than 10 years. Despite the challenges that exist, the school has managed to attain 5 choice programs, including a Biotechnology Program. It is our hope that by revitalizing the biotech program it will further assist our efforts of attaining a more balanced STEM program.

The first teachers who were initially trained by the district's biotech initiative alliances, SCRIPPS and UF, have left the school. Currently, there is one teacher facilitating the program, she runs all four sections and levels of the program in addition to a section of Biology.

Phase II (May 2012- May 2013):

Following the near completion of phase I of the Biotech E-mentoring Program a more specific action plan has been developed to assist in developing the biotech program at PBLHS. It is clear that there are weaknesses in both teacher capacity as well as physical resources, the first area will be addressed using the mentoring model established in Phase I. E-mentoring will continue as it has into the new school year. However, the participating teacher will now have a leadership role in the school based biotech team, as a second participating teacher is slated to be added to teach the first and second year courses.

The second participating teacher is new to biotechnology but holds a wealth of pedagogical knowledge specific to our student population's needs. Part of this initiative would provide funds for both participating teachers to complete the professional development opportunities at the University of Florida over the summer of 2012.

To address the need for supplies that are in alignment with the curriculum being utilized for the CTE exam approved by the University of South Florida, a detailed list of materials has been developed. Upon implementation of phase II of this initiative the biotechnology program will be self sufficient for years to come. The vendor, Sargent-Welch, who has partnered with the author of the biotech curriculum, has a grant matching program that we may be able to utilize as a result of this funding. This could potentially allow for the complete restoration and build up of the supplies needed for the program.

An additional area of concern addressed by this proposal includes the development of the STEM program through an active and competitive SECME club. The money being requested will allow us to purchase needed materials for projects that will be required for the district's annual competition in February of 2013. This grant would allow us to fund the extracurricular club for at least four years, thereby allowing it to establish roots into the academic culture of the school. We have recently attained a new talented physics teacher who is eager to start the club, his project ideas combined with the SECME concepts will lead to increased interest in math and science throughout the school.

Need:

Phase I (Jan-April) Excerpt:

The current biotech teacher needs to be mentored by an experienced teacher in an analogous program so that she can learn pedagogical best practices. While she comes from the biotechnology field as a lab researcher there is still much development needed with lesson delivery and lab implementation.

One of the goals is to increase the enrollment and attract a more academically diverse group of students to the school. This could then possibly allow for the choice programs to expand into other career-based choice programs unique to South Florida. The key to increasing student enrollment is to develop the program's instructors. The grant would allow for a sister academy within the school district to share one of their experienced teachers for mentoring, planning, co-teaching, and other collaborative efforts.

Phase II (May 2012- May 2013): Phase one of this initiative revealed areas that are in need of development. Specifically, the addition of a second teaching unit as well as the addition of much needed resources. The recommendation as determined by the Biotech Master Teacher and school-based administration is to utilize the second biotech teacher for the 1st and 2nd year courses, while the current and more experienced teacher will facilitate the 3th and 4th year courses. Summer training and collaboration will also be required by both the participating biotech teachers as well as the master teacher. The master teacher will assist her mentees in the ordering and set up of materials derived from the grant. The mentees will also participate in summer training to obtain certification to teach the third year biotech course (8736030).

Computer Needs: One aspect of an effective learning environment includes differentiated instruction; it engages students from start to end and promotes learning outside of the classroom. However, many of the departments within our school lack that sort of environment. One item that could assist us in this effort to reach all students is classroom computers. It should be noted that it will not solve the problem, but it will increase the teacher's ability to cater to different learning styles and expand on project based learning. With the changing accountability standards set by the state regarding computer based testing, many of our teachers have limited access to computer labs. A significant portion of this grant will go towards the purchasing of 5 classroom computers for each science, math, and social studies classroom. These computers will be used in a balanced instructional model that includes components in technology/ projects, literacy, small group teacher directed support, and in science, inquiry based labs.

Objectives: There are several objectives that we hope to accomplish in the next 3 years:

- Preparation of the two participating teachers at PBLHS to efficaciously implement a rigorous curriculum for our incoming academy students.
- Utilization of experienced biotechnology instructor (Master Teacher) at sister academy as a mentor to the participating teachers.
- Development of a balanced STEM program that includes a SECME club and numerous Advanced Coursework offerings in Science and Math subjects.
- Development of the Biotech and Science Department to implement a balanced rotational model of instruction
- Exceed district proficiency average for Biology and Algebra I End of Course assessments by 10%.
- Increase our incoming FY 12/13 biotechnology cohort numbers by 30%.
- Increase the overall academy cohort numbers over the next 5 years by more than 100%.

Project Description:

Excerpt from Phase I:

Overview: This grant would allow for collaborative efforts between the biotechnology programs at Seminole Ridge High School and Palm Beach Lakes High School. Seminole Ridge HS is a newer school located in Loxahatchee, Fl, which is 20 miles west of Palm Beach Lakes. Despite the proximity of the schools, Seminole Ridge is dramatically different in community demographics. As a result of low turnaround and above average academics, teacher turnaround is not as high; as a result, teachers have a good opportunity to develop within the realms of their subject matter. The aforementioned collaboration would be with the department chair of Biotechnology at SRHS and the developing teachers at PBLHS.

The Master Teacher (Carolyn Slygh) who developed the curriculum at SRHS will guide the participating teacher in developing and utilizing various lab exercises in biotechnology. Since communication is a crucial component of this project the master teacher will meet with her participating teachers during her planning period and after school for a total of at least 4 hours weekly. This will be facilitated by Adobe Connect so that travel will not be an impediment. She will also coach the participating teachers in best practices for various labs by modeling and co-teaching using Adobe Connect and the Distance Learning Lab at least twice a week. The master teacher will also post numerous videos and lead discussions/ blogs on the external website. These efforts will utilize numerous research based learning strategies supported by the National Science Teacher Association, including but not limited to virtual leaning communities, student centered projects and collaboration, inquiry-based lab experiments, multimedia presentations/ videos, and small collaborative student structures.

Phase II: The overall project description as it relates to the mentoring program (phase I) will continue while the major changes that are proposed are essentially the result of the action plan that was developed. It is absolutely essential that a second highly skilled biology teacher assist in the program. Summer training and planning time will be needed for both participating

teachers. The time will be spent at PBLHS and UF for the purposes of becoming familiar with the equipment and curriculum.

Additionally, the program is in desperate need of supplies that will allow the school site to be certified to administer the CTE state exam in Biotechnician Assistant. The supplies will allow us to expand our course offerings over the next 3 years to include multiple sections of each biotechnology course and increase student participation in the program to numbers closer to 350 students.

Evaluation and Measurable Outcomes: Due to the collaborative efforts of this project we hope to: increase our biotechnology program participants by at least 30%; increase our FY 12/13 biology EOC scores by no less than 10%; achieve a significant passing rate in the CTE exam (Biotechnician Assistant) of 70% in the next 3 years. Short-term goals by August 1, 2012 will include the presentation of a multimedia rich website with numerous high level discussions via blogging through the online learning community. Additional goals will be aimed at the organizational and planning phases for the upcoming year.

The Marzano Evaluation system will be used to monitor the effectiveness of the mentoring program as well as the implementation of lab activities (utilizing the supplies provided). At a minimum, biweekly progress monitoring in all aspects of this program is anticipated.

Timeline: The sequence begins with Summer planning and professional development. The first PD opportunity will take place at the University of Florida from June 18th -29th The second professional development opportunity will take place in California from July 9-10, where the author of the curriculum will implement several major lab exercises. Early in the month of June a detailed order will be placed to Sargent-Welch, Apple, and Vernier. As the orders are delivered school administration, district support personnel, and the biotech team will catalog and inventory the supplies.

Implementation of the mentoring program will continue with common planning time for the master and participating teachers.

Weekly monitoring will occur to ensure that project tasks/ goals are progressing efficiently. The grant period for funding will expire June 30, 2015.

Sustainability: The mentoring approach has long been regarded as a powerful strategy for building a sustainable system. The overarching purpose is that the more experienced individual will transfer much of the key skills so that newer individuals can succeed, thereby allowing the system to flourish. The results would be tremendous for both parties in that the established program will gain further understanding of its academic goals while the newer program will gain in every other meaningful way. One clear benefit of this project is that it is relatively cost efficient while the results are long lasting.

Biotechnology E-Mentoring Program
Grant Proposal Budget

	Pew Fund	SDPBC	Quantum
Master Teacher			
High School Supplement	$3400		$1600
6th period Supplement (4 hrs x 20weeks x 23.50/hr x 1 master teacher)	$3760		
Summer Planning/ Support Stipend:	$1700		
Subtotal	**$10,460**		
Classroom Technology			
Personal Computers for 2 remaining biotech labs and 11 science classrooms (91 total)	**$91K**		
Participating Teacher			
Stipend (2teachers x 4hrs/week x 20wk x $30.50/hr)	$1710		$3170
Subtotal	**$4880**		
Professional Organizations			
NSTA Membership (75x2 participating teachers)	**$150**		
Participating Teacher Professional Development			
University of Florida 2 week workshop: IBTE tuition cost: 1250 x 2; Non-Residential Housing: 1250 x 2	**$5000**		
E Daugherty California workshop	**$4000**		
Biotechnology Supplies			
Sargent Welch Biotech Package:	**$100K**		
SECME Program Supplies (4 years)	**$15K**		
Grand Total	**$ 230,490**		
In-Kind Matching Contributions- School District of Palm Beach County			
Existing Mobile Poly –Com Distance Learning Lab at Palm Beach Lakes High School		**$11,000**	
Summer Administrative Support		**$10,000**	
Sargent-Welch Grant Matching Program: as much as 1:1 (ie 100K)		**$100K**	
Additional Participating Teacher Training		**$2500**	