

ALPHAS: Alta Loma Peers Helping the Advancement of Science

A proposal by the

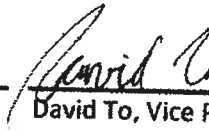
Society of Physics Students Chapter 0202

Angelo State University, San Angelo, Texas

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Total Requested Amount: \$300

Submitted on

15 October 2012

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Abstract

The goal of this outreach program is to use peer instruction to help a local elementary school increase student knowledge and performance on science objectives. Science teachers will identify deficiencies and the local SPS will work to create interactive lessons which they will then help teach at the school.

Overview

The purpose of this program is to create and maintain a partnership between the Angelo State University Society of Physics Students (ASU SPS) and Alta Loma Elementary for the purpose of advancing science education. The acronym coined for this program is ALPHAS; Alta Loma Peers Helping the Advancement of Science. The program's central component relies upon enrichment activities at Alta Loma, hosted by the ASU SPS, but also including several other science related student organizations at ASU and community partners. The primary goal of the program is to identify deficiencies in science objectives and provide enrichment activities through the participation of the ASU SPS at Alta Loma in order to help correct the identified deficiencies. Assessment of student comprehension before and after the enrichment sessions will aid in measuring the effectiveness of the enrichment activities.

The specific science curriculum targeted for enrichment activities will be identified by each grade's (3rd – 5th) science teachers and provided to ASU SPS prior to the enrichment activity. Identification of specific objectives may come as a result of pre-test data, by otherwise measured deficiencies, or through identified lack of suitable materials to cover a specific objective. To measure the effectiveness of the partnerships, pre- and post-testing will be administered for the first five six-week periods for science classes in grades three, four, and five. In the first week of each six-week period a pre-test will be given covering the specific objectives of the six-week period for each grade level as outlined in the Instructional Sequence and Resource Alignment guide provided by the San Angelo Independent School District.

A post-test follow-up on the same objectives will be given in the last week of each six-week period. The goals of these assessments are to primarily help each teacher identify objective deficiencies and individual students with deficiencies. Secondly, the pre- and post-test data will be consolidated by grade level for tracking student progress on a campus-wide basis. Plans to continue such assessment for at least two years will be followed so that progress of current third grade students can be tracked as they finish fifth grade. Each grade level will be targeted at every enrichment event and will provide the students with hands on activities in small groups so that a strong learning environment as well as greater student camaraderie can be achieved.

Timeline

The program started at the beginning of the 2012 school year with the first pre-test given during the first week of classes. A kick-off event occurred on Friday the 14th of September in the form of a Peer-Pressure Team demonstration show by the SPS. A science night event hosted by all student science organizations at ASU and various community partners, and open to all family members of Alta Loma students was held on the 12th of October. (The included photo below was taken at the conclusion of the science night event.) All classroom enrichment activities are currently being scheduled on Friday afternoons at 1:00 pm on an alternating two week basis. This program will continue into the spring 2013 semester beginning with a science presentation by ASU SPS. Biweekly visits will continue as in the fall semester and objectives provided by the science teachers will continue to be targeted in preparation for the STAAR test, the standardized test given by the State of Texas. Current spring events planned are on-campus labs for the individual grade levels along with visits to the ASU planetarium. A challenge has been given to the students to strive for a high grade on this test. If the percentage of acceptable grades has increased from previous years, the principal has agreed to lie on a bed of nails.

Budget

To date, the ALPHAS program has only incurred a cost of \$25 on small grocery items used for a mixtures and solutions laboratory for the third grade science classes. We expect only a few more instances of such costs and are thus requesting a total of \$75 for the cost of various grocery items necessary for such activities. (Examples included food coloring, corn starch, vegetable oil, marshmallows, etc.) The SPS has requested a matching amount of funds for consumable materials from ASU's project director of the HSI office. As part of the program, t-shirts have been designed and will be purchased for the students as well as the SPS volunteers. In order to defray part of this cost, we are requesting \$150 toward the purchasing of these shirts which will be matched by the local SPS and Alta Loma Elementary. Finally, the SPS is requesting a total of \$75 for the construction of the bed of nails. This item is a needed addition to the Peer Pressure Team's repertoire of physics demonstrations on pressure and will be a centerpiece of activities for not only the conclusion of this year's ALPHAS program but also for many future SPS outreach activities.

Conclusion

Alta Loma is ranked as the third from the bottom in San Angelo Independent School District for median household income. 86% of students qualified for free or reduced lunch. The school is 76.5 % Hispanic, 15.5% Caucasian, and 6% African-American. With some of the lowest science scores in the district, Alta Loma is the epitome of a school in need of positive reinforcement and encouragement that their students can and will succeed in science. We hope to encourage and challenge these students toward a positive future in science, one they would probably not have otherwise. We feel this program and these students are a perfect match for the targeted needs the Future Faces of Physics program seeks to aid and encourage. We hope the selection committee feels the same.

Chapter Tax ID: 131667053



Pictured left to right: Mrs. Sherry Hall (4th and 5th grade science teacher, Alta Loma), Dustin Thivierge (SPS Outreach Coordinator), Dr. Hardin Dunham (SPS Chapter Advisor), David To (SPS Vice President), Blake McCracken (SPS President), James Anderson (SPS Secretary), Jeremy Johnson (SPS Webmaster), Mrs. Susan Staha (Principal, Alta Loma), Ms. Kristen Shirley (3rd grade science teacher, Alta Loma).