

Louisiana Preparatory Program (LaPREP): A Highly successful Engineering and Science Enrichment Program for Grades 7-9

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Abstract

Louisiana Preparatory Program (LaPREP) is an intervention program in engineering and the mathematical sciences for high-ability middle school students that is held on the LSU-Shreveport campus over two consecutive summers. Its ninth summer session will begin in 2000. Eighty percent of the participants have been minority students and sixty percent have been female.

LaPREP stresses hard work and discipline; students must maintain a 75+ average to stay in the program. Activities include course work in engineering and the mathematical sciences. Lab experience, including “hands-on” research activities, introduces engineering, math, and science as active and participatory processes.

The program has been very successful in identifying high-ability middle school students and encouraging and educating them. Evaluations contributed by the participants, their parents, and by local and state officials who have visited LaPREP have been very high. No current or former participant has dropped out of high school and 84% of exiting participants have indicated that LaPREP has increased their desire to study math and science. Moreover, all 55 former participants who are eligible have enrolled in college and more than 90% of those responding to a survey indicated they were majoring in math or science. This is considerably different from the survey taken from these same students when they entered LaPREP where only 53% of them indicated an interest in attending college and majoring in math or science.

LaPREP has received local, regional and national attention. It has received awards from the Shreveport City Council, the Mathematical Association of America and the Jacqueline Kennedy Onassis Foundation for its contribution to mathematics and science and to the youth in Louisiana. Also within the past three years, its program director has won several awards, all due in part to his work with LaPREP. They include the Carnegie Foundation’s award as the Louisiana Professor the Year, the Mathematical Association of America’s award for the Louisiana/Mississippi college math teacher of the year and the Jefferson Award for service activities benefiting local communities.

Part of the reason for LaPREP’s success is because it is a good program with good course content and excellent instructors. However, it also does an excellent job of advertising its product. The program and marketing strategy will be discussed in this paper.

I. Program

The goal of LaPREP since its beginning in 1992 has been to identify, encourage and educate competent middle school students, especially targeting women and minorities. An enrichment program, LaPREP emphasizes the development of abstract reasoning, problem solving, and technical writing skills. For two consecutive summers, seven weeks per summer and six hours per day, students attend intellectually demanding classes and labs.

Participants study topics that are not substitutes for the usual courses in the middle or high school curricula. For example, they study course work in engineering, logic, algebraic structures, probability and statistics, discrete mathematics, technical writing, problem solving, ACT preparation and medical careers preparation. Other aspects include college and career awareness activities, a study skills seminar, and field trips to local industries. Individuals in the technological fields, including many minority professionals, discuss career opportunities. Program faculty includes college, high school and middle school teachers. Minority college science majors serve as program assistants and excellent role models.

LaPREP will begin its ninth summer session in June, 2000. Each year, 30 high-ability sixth- and seventh-grade students from more than 70 applicants are selected to be first-year participants. Approximately 80% of them are minority students and approximately 60% are female. All successful first-year participants are invited to continue as second-year participants. Historically, 20 to 25 of them return for the second year. Consequently, there are 50-55 students participating in LaPREP each summer.

To be eligible to be a first-year participant, an applicant must be a full-time student in the sixth or seventh grade, be nominated by his/her math teacher, have a 90% average in math, and a 80% overall average (high CAT or Iowa Test scores are given special consideration), and submit a 100-word essay which presents his/her reason for wanting to attend LaPREP.

It costs a little more than \$1,000 per student per summer to run LaPREP. Because a significant number of the participants come from economically disadvantaged neighborhoods, LaPREP charges no tuition or fees. In this way, low income does not become a barrier for applicants. Free transportation, books and lunches are also provided.

Other than in-house support from LSUS which provides classrooms, computer facilities, use of the library, cafeteria and other facilities, LaPREP is funded entirely from outside sources. Each year, granting agencies, local churches, businesses and individuals contribute on the average of \$60,000 to the program. In addition, the Caddo Parish School District supplies school buses for the field trips, and the Shreveport City Transit System provides transportation to and from the program site at a reduced rate.

II. Marketing Strategy

A good marketing strategy is essential to the continued existence of any program that relies upon outside funding and successful recruitment of participants. Below are listed some of the things that have been included in the strategy of LaPREP and which should be included in plans of similar programs.

- A. *Advisory committee.* The formation of such a committee should be the first order of business. Prominent school board, city council, education, business and religious leaders should be members. The committee serves as a two-way communication mechanism, receiving as well as contributing information. Additional one-on-one meetings may be held between certain committee members and the program director.
- B. *Grant applications to local as well as regional and national foundations.* Local foundations often have more of an interest in local projects than regional and national organizations. The project director should visit the grant person at his/her institution before any applications are written.
- C. *Letters and visits to businesses, industries, churches and schools.* The program director should write and speak to as many teachers, groups of students, church congregations and business organizations as possible. The purpose is to inform, recruit and solicit funds. One tactic that may help recruit participants and obtain funding from local churches is to offer to accept qualified participants from congregations who are willing to finance them for one summer session of the program.
- D. *Media coverage.* Good media coverage keeps the public informed as well as helps solicit funds. An annual newspaper article is essential but hard to obtain—often taking several calls and/or visit to the newspaper office. Persistence reaps dividends, however. Articles should accompany all solicitation letters and grant applications.
- E. *Leaders.* Local, regional and national leaders should visit the program. They should be encouraged to mingle with (lunch is an ideal situation) and speak to the participants. They should also be asked, informally at least, to evaluate the program.
- F. *Student and parental evaluations.* At the end of each session of the program, participants should complete an attitudinal evaluation and write a paper explaining what the program has meant to them. In addition, the parents of the participants should be asked to write letters stating the benefits of the program. Some of the parental letters as well as some of the comments from the student papers and the other parental letters should accompany grant applications and solicitation letters.
- G. *Awards ceremony.* This is a lot of work but well worth the effort. A prominent person should be the feature speaker. Contributors should be invited, recognized and appropriately thanked. The participants should be recognized and given certificates of completion. A few of them should be allowed to read their papers written during

the evaluation portion of the program. The top graduates should be recognized and rewarded.

- H. *Thank you letters.* Thank you letters should be mailed to persons who have contributed money and/or time to the program. Letters should be personal and mailed as soon as possible. Procrastination causes ill feelings.
- I. *Final report.* A final report of the program's activities and successes should be mailed to all contributors and interested persons. The reports should also include newspaper articles and some of the parental letters of support, as well as some of the student and parental comments mentioned in II. F.

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Carlos Spaht is a Professor of Mathematics and the Chair of the Mathematics Department at LSU-Shreveport. He also founded and serves as Director of LaPREP (Louisiana Preparatory Program), the highly acclaimed enrichment program which this paper addresses. Dr. Spaht has won several awards including the Mathematical Association of America's Award for Distinguished College Teaching of Mathematics in Louisiana/Mississippi, the Carnegie Foundation's award for the Louisiana Professor of the Year and the Jacqueline Kennedy Onassis Award for Greatest Public Service Benefiting Local committee. Dr. Spaht received his Ph.D. in Mathematics from LSU.