Jorge A. Lopez

EXECUTIVE SUMMARY

In my first year as an Assistant Professor at UTEP--I had resigned to my position at CalPoly San Luis Obispo to return to my *alma mater* in 1990-- when I was interviewed by *Vista Magazine*, the newspaper supplement distributed in 28 cities across the country: "What mentoring methodology do you use in this bicultural-bilingual-binational area?" I was asked. "Whatever works", I answered. Over 29 years later, I still adhere to the same philosophy.

Mentoring is not a goal but a tool to improve the well-being of students, and as such it must adapt to the conditions. Sometimes mentoring must be seasoned with confidence-building ingredients (as for high school students taking college courses). Other times it must become more of a challenge than anything else (as for more mature university students).

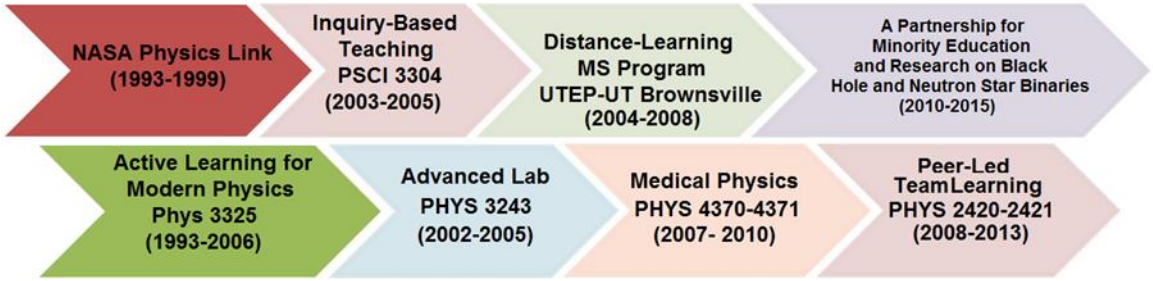
Teaching is the door for mentoring. I have been able to transition from traditional lecturing to inquiry-based teaching, to constructivism, to Peer-Led Team Learning (PLTL) methodology whenever the context was appropriate. I have been awarded millions of dollars to create virtual physics labs, introduce response technology in large class settings, train dozens of learning assistants, create science courses for education majors, pioneer the use of podcasts and video-problems, and even create the first distance-learning program in the UT system involving two universities.

The outcomes of these multi-dimensional efforts are, of course, also multi-dimensional. Success can be found for instance in the unsurpassed retention rate of STEM students after taking my course on electricity and magnetism. It can also be gauged by the 37 students who have completed a thesis under my supervision. Or by the hundreds of education majors who now take two semesters of physical science instead of one. Or by the many students who have received research awards and NSF's Graduate Research Fellowships.

In this Summary, I present a global view of the programs I have designed, funded, and directed; students impacted by such programs; grants obtained for such reforms; and students who have collaborated with me.

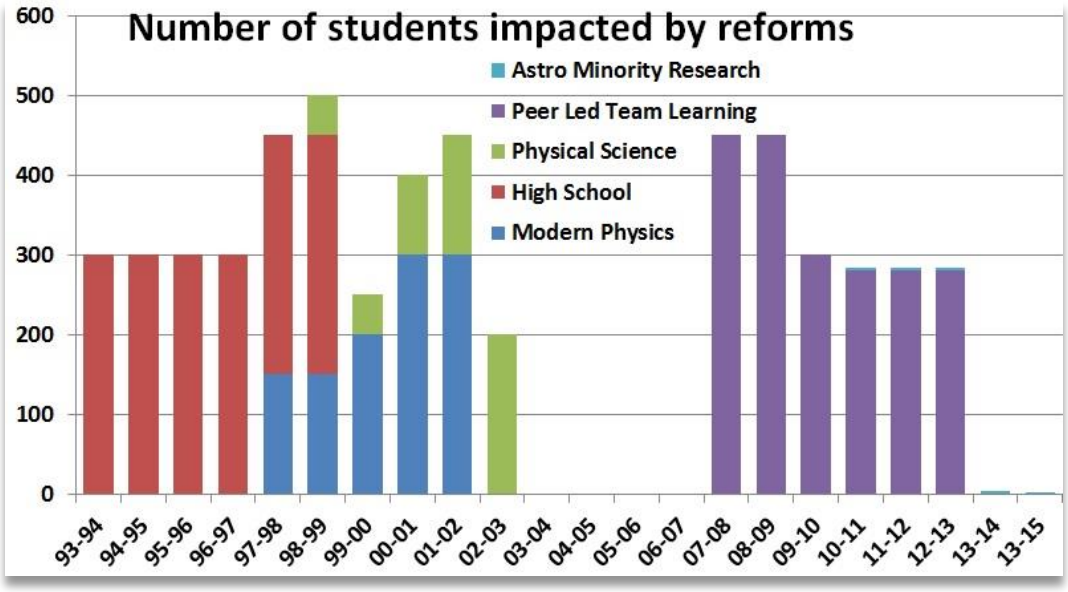
SUMMARY: EDUCATIONAL PROGRAMS

Over the years I have obtained funding for education programs that have impacted thousands of students. The diagram below outlines the major projects I have designed, funded, implemented and directed.

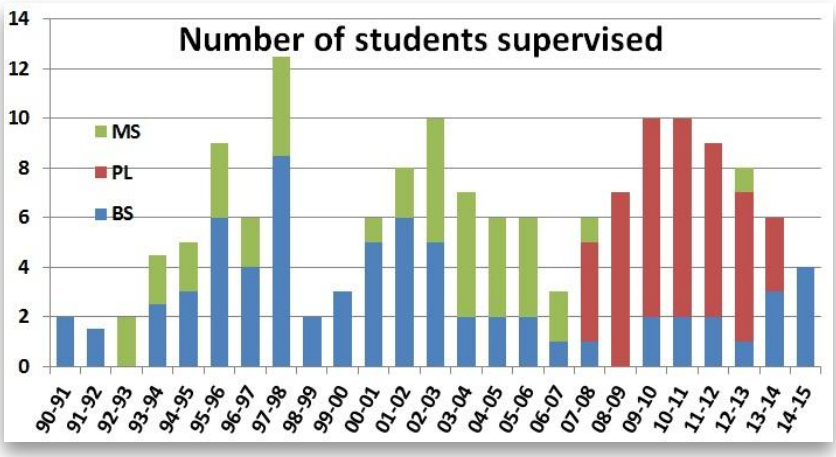


SUMMARY: STUDENTS IMPACTED BY PROGRAMS

Likewise, I revised several courses and directed educational projects through which I have impacted several thousand students. All these efforts have been funded by NASA, NSF, and other sources. The chart shows the timeline of the number of students impacted, in the NASA Physics Link program, which ran in six El Paso high schools; my reform of physical science course which organized teaching in eight elementary schools; my addition of computer simulations and in-class demonstrations to Modern Physics; and by my introduction of Peer-Led Team Learning to Field and Waves.



SUMMARY: STUDENTS TRAINED IN RESEARCH METHODOLOGY



An important aspect is mentoring students in research methodology. I have involved 37 undergraduate students (BS), 32 graduate students (MS), and 1 Ph.D. student in my research projects. The quality of their work can be gauged by the number of articles published with them and the conferences they attended. Additionally, in my introduction of Peer Led Team Learning to the physics sequence, I trained 24 undergraduate students as peer leaders (PL).

SUMMARY: GRANTS OBTAINED FOR EDUCATIONAL PROGRAMS

I have been the PI or co-PI in 108 grant proposals for research, education, and outreach activities and have received funding for 40 proposals for over $4 M. The chart shows only the funding received per year (in thousands of dollars) of the grants obtained for outreach and educational programs. In addition to those shown in the chart, I have also been part of other funded projects administered by Deans, such as the Partnership for Excellence of Teaching Education (College of Science, NSF $5M), Model Institutions of Excellence (College of Engineering, NSF $5M), and the Math and Science Partnership (College of Education, NSF $27M).