

Original Paper

Preparing for College and Graduate School

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Abstract

We know of no single programs that prepare students both for success in college and entry to graduate school. Here we will describe a 5- week summer program that attempts to do that.

This 5- week summer program helps students with Math, Writing and gives them access to information on graduate schools and research as a career. We recruit primarily underrepresented or economically disadvantaged (Pell eligible) entering freshmen science students (likely science majors) using a rigorous application form that includes high school transcripts, letter of recommendation and an essay.

For success in improving academic skills, motivation is key. That's why we carefully and rigorously evaluate all candidates for this program. And that's why we can claim some success.

For science majors, Math is critical. So let's begin with describing our Math program, which runs 3 days a week, for 5 weeks, all day, usually Mon, Tues and Fri.

1. Math Program

The goal of the Math program is to provide strong foundations for Pre-Calculus and eventually for Calculus, as most science majors will need to take Calculus. During the class meetings, we review basic arithmetic and algebra skills, and we build on those that to cover higher level concepts as well. These essential topics include graphing, linear, quadratic, and polynomial functions, radicals, exponentials, and logs. These topics were covered for all students with individualized practice depending on the needs of the students. The more advanced students had the opportunity to learn basic trigonometric topics, as well.

2. Brief Summary the Math Program

1) Week 1

- a. Order of operations
- b. GCD/LCM, Mathematical Algorithms
- c. Adding/subtracting fractions
- d. Multiplying/dividing fractions
- e. eg. Ratios
- f. Percents

2) Week 2

- a. Equations and inequalities
 - i. Solving linear equations
 - ii. Solving linear inequalities
 - iii. Solving absolute value equations
- b. Graphing
 - i. Slope-intercept form of a line
 - ii. Point-slope form of a line
 - iii. Inequalities
- c. Functions
 - i. Function notation
 - ii. Evaluating function value using a table, graph, and given function
 - ii. Domain
 - iii. Range

3) Week 3

- a. Polynomials / polynomial functions
 - i. Simplifying exponents
 - ii. Multiplying and dividing monomials
 - iii. Distributive property
- b. Factoring
- c. Solving quadratics
 - i. Factoring
 - ii. Completing the square
 - iii. Quadratic formula
 - iv. Solving equations in quadratic form

4) Week 4

1. Roots and Radicals
2. Rational expressions
3. Evaluating exponentials and logs

4. Exponential and log functions

3. Class Conduct

The morning session (9:30-12:30pm) was led by an instructor with the help of two in-class tutors. The instructor provided a brief lecture on the topics for the day, and then the students worked on worksheets and exercises in groups. This provided opportunity to the students to communicate the language of mathematics effectively, discuss the topics by brainstorming together, and present their solutions. The instructor and the two tutors walked around to make sure each student grasped the concepts, and they provided extra help and explanations as needed. To make the class more engaging, the instructor developed reviews, games, and presented real-life applications of the math concepts covered previously. The instructor provided feedback to each student about their progress in the class, suggesting study and time management tips, as well as strategies for success in the student's math course in Fall. We focused not only on the math skills of the students, but also strengthening the students' confidence in their abilities as demonstrated via their improvement in Math, emphasizing growth mindset and reducing math anxiety (pre and post test for reducing math anxiety?).

During the afternoon session (1:30-4:30pm), we took advantage of the adaptive nature of ALEKS PPL (Placement, Preparation, and Learning), a National Science Foundation funded, University of California Developed research-based online program, that has been used nationwide to help students improve their math skills and get them placed appropriately in their math course. Among many other CSU campuses, this is the tool the Mathematics Department at CSUN uses to place students in math courses. by placement test results.

ALEKS PPL is the perfect tool to ensure student engagement through the equity lens. Each student has their own weaknesses and strengths in math, and ALEKS PPL provides the tools to bring each student up to the same level. When students sign up for ALEKS PPL, they take an initial assessment, so ALEKS PPL can map their knowledge. Based on this assessment, ALEKS PPL provides the necessary practice problems to students and checks their mastery level regularly with knowledge checks. In their individualized path, the students work on the problems they need to master. Even though ALEKS PPL provides explanations and help for each problem, the instructor and the two tutors also helped the students with the problems, and motivated students to keep working on their path even at home.

During the last week of the program, the students took the 2nd assessment on ALEKS PPL; a practice placement test to give them an idea how they would score on the proctored placement test. At the end of the program, the students took the proctored placement test on ALEKS PPL. They were not allowed to use their notes or any other websites. Their score was available for them once they submitted the test, and if they were not satisfied with their score, and consequently their Fall math placement, they had the opportunity to practice more and retake the proctored placement test two more times, if they wanted to.

4. Placement Test Scores and Fall Math Placement

- **Score of 40-64:** MATH 102/L (Pre-Calculus I) or appropriate entry level GE math course
- **Score of 65-79:** MATH 105/L (Pre-Calculus II)
- **Score of 80-100:** MATH 150A/L (Calculus I) or MATH 255A/L (Calculus I for Life Sciences)

5. Results-Summer 2023

The primary goal of the program was not to push students to a higher level of math class for Fall 23 but rather increase their content knowledge and confidence. Nevertheless, some students had the opportunity to start at higher level of math in Fall 23 based on their proctored placement test score. These students saved some units, and some skipped a semester or two in their math sequence. Although higher placement is impressive, we primarily focused on learning and providing the tools to be successful college students.

The results for the 20 students who took the placement test are shown below in the table.

Table 1. The Results for the 20 Students Who Took the Placement Test

Student	Initial score	Placement test score	Major	Initial Fall Math Placement	Fall Math Placement	Units saved
1	19	55	Bio BA	M 102/L	M 102/L	0
2	33	70	Bio BA	M 102/L	M 105/L	4
3	25	43	Chemistry	M 102 Trio	M 102/L	1
4	43	55	Bio BA	M 106	M 106	0
5	8	48	Bio BA	M 106	M 106	0
6	11	33	Bio BA	M 106 Duo	M 106 Duo	0
7	43	68	Math	M 102/L	M 105/L	4
8	14	42	Psychology	M 141 Trio	M 141/L	1
9	24	78	Marine Bio	M 102/L	M 105/L	4
10	42	58	Biotech	M 102/L	M 102/L	0
11	31	59	Public Health	M 140SCI	M140SCI	0
12	5	12	Marine Bio	M 102 Trio	M 102 Trio	0
13	77	99	Psychology	M 141/L	M 141/L*	0
14	29	9	Psychology	M 141 Trio	M 141 Trio	0
15	69	96	Bio BS	M 102/L	M 255A/L	10
	50	66	Bio BS	M 102 Trio	M 105/L	5
16						
17	71	81	Public Health	M 140SCI	M 140SCI*	0
18	40	82	Bio BS	M 102 Trio	M 255A/L	11

19	46	47	Psychology	M 141/L	M 141/L	0
20	49	66	Psychology	M 141 Trio	M 141/L**	1

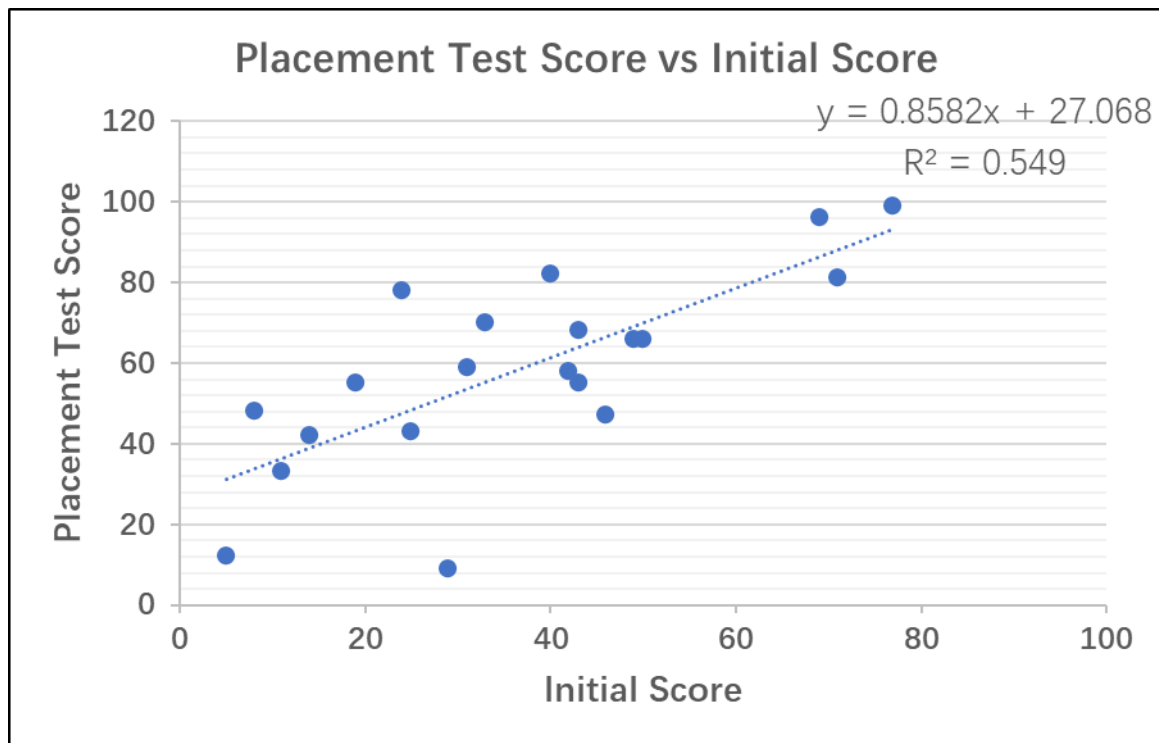


Figure 1. Placement Test Score vs Initial Score

Remarks:

- 19 out of 20 students improved on their score.
- The mean difference in scores is +21.9 with standard deviation 16.3.
- 4 students (20%) scored into Calculus. Two of these students are taking MATH 255A/L in Fall, instead of Pre-Calculus I, saving 2 semesters and 10-11 units. The other two students (marked with *) are eligible for Calculus but their major doesn't require it.
- 5 students (25%) placed into MATH 105/L, Pre-Calculus II. Four of these students skipping a semester of math saving 4-5 units. One of the students (marked with **) doesn't need the Calculus sequence as a Psychology major, so that student will just take MATH 141/L.
- 2 students (10%) are placed out of the trio classes (either MATH 102 + 102L + 91B or MATH 141 + 141L + 91S). They don't need to take MATH 91B/S in Fall, saving a unit.
- 4 students (20%) improved in their content knowledge, but they were already in their GE math, and they don't need to take Calculus, so there is no improvement in placement (nowhere to move them) but their placement test score indicates improvement in their knowledge.

- 4 students are in the STEM field who could have been placed higher in the Calculus sequence, but they didn't score high enough. They learned a lot, it seems from their scores and work, but just didn't score high enough to move to a higher level, but they will have an easier time in MATH 102 or 106 having stronger foundations.
- 1 student did not improve in content knowledge.

6. Results Summer 2022

To evaluate the success of the program, we need to investigate more results. We need to ask whether the students are successful in their first academic year. Looking at the results of the 20 students from Summer 2022:

- 18 of the 20 students are still enrolled in Fall 2023. This is retention rate of 90.0% compared to the 1-year continuation rate of 74.1% for all CSUN students in Fall 2021 (the Fall 2022 continuation rate is not available yet)
- 17 of the 18 (94.4%) students passed their math class in Fall 2022
 - 8 of the 17 (47.1%) students passed their math class with a grade of A or A-
 - 6 of the 17 (35.3%) students passed their math class with a grade of B or B-
 - 3 of the 17 (17.6%) students passed their math class with a grade of C or C+
- The average GPA of the 18 students (after Spring 2023) is 3.33. This can be compared with a GPA of 2.76 for non-program students (source CSUN Counts).

Although there are many confounding variables, at least partially we can attribute the success of the students from the Summer 2022 cohort to this Summer Enrichment Program. It seems that the program prepared them to be successful not only in their math classes but also in general as college students.

Here are the actual student scores from Summer 2023 using the tool that lets students work at their own pace, called Aleks, a National Science Foundation funded, University of California Developed program, that has been used to train millions of students. The student code (first before the scores) is the first letter of the student's first name. The first number is the diagnostic day 1 test. The second number is attempt 2. The 3rd number is the placement attempt. In a couple of cases there is a 4th number (placement attempt 2). As can be seen, the program is what enhanced these student skills, as the initial scores vs final scores suggest.

M	29	31	9	
A	5	9	12	
S	14	37	31	
E	11	31	33	
A	19	35	39	55
C	25	45	43	
I	46	44	47	
A	8	25	48	

K	43 48 55
A	42 43 56
E	31 48 59
C	50 62 62 66
D	49 59 66
B	43 60 68
A	33 53 70
J	24 60 78
A	71 81 81
S	40 41 82
S	69 83 96
A	77 92 99

CUT OFF SCORES

Math 102: 0-64

Math 105: 65-79

Math 150a: 80-100

7. The Writing Program

Each Thursday of this 5-week program is dedicated to English Enrichment; our goal is to help students build basic college-level writing skills that they will utilize throughout their college career and beyond. The English Enrichment sessions take a deep dive into argumentative research essay writing as all aspects of this genre are transferrable to other genres of writing and communication that our students will perform in their future coursework and careers. We covered writing topics such as crafting and defending arguments; introductory, body, and concluding paragraphs; MLA and APA formatting; and academic voice.

8. Brief Summary the Writing Program

- 1) Week 1: Introductions
 - a. Ice breaker
 - b. Introduction to argumentation
 - c. Introductory paragraph structure
 - iii. Attention Getter, a.k.a. “hook”
 - iv. Background information
 - v. Claim, a.k.a. thesis
 - d. Writers’ workshop
- 2) Week 2: Thesis Statements & Research
 - a. Reading & understanding essay prompts

- b. Generating research questions
 - c. Crafting thesis statements
 - d. Finding credible sources (how to use OneSearch)
 - e. Writers' workshop
- 3) Week 3: Body Paragraphs & MLA/APA Formatting
- a. Body Paragraph structure
 - iii. Topic sentence
 - iv. Context for evidence (summary of source)
 - v. Quote (integrated into writer's words)
 - vi. Analysis (connect evidence to thesis)
 - b. Citation Basics
 - iii. Overview of MLA and APA citation formatting
 - c. Writers' workshop
- 4) Week 4: Counterargument & Conclusion
- a. Types of counterarguments (direct opposition vs. alternative viewpoint)
 - b. Counterargument paragraph structure
 - iii. Topic sentence
 - iv. Context for evidence (summary of source that supports counterclaim)
 - v. Quote (that supports counterclaim)
 - vi. Analysis (of how someone would use evidence to support counterclaim)
 - vii. Rebuttal (refute counterclaim & transition into writer's main argument)
 - c. Concluding paragraph structure
 - iii. Restate thesis in new words
 - iv. Briefly summarize main ideas from the body of the essay
 - v. Answer the questions "So what? Who cares?"—explain why the essay matters or future research implications
 - d. Writers' workshop
- 5) Week 5: Putting it All Together
- a. MLA & APA paper formatting
 - b. Peer review
 - c. Writers' workshop

9. Class Conduct

Students spent the first half of each English Enrichment day (9:00-12:30) with a faculty instructor who lectured and facilitated practice activities regarding that day's topics. The instructor led interactive lectures and incorporated interactive games to make writing content engaging, relatable, and memorable for students. The instructor also provided feedback on the students' writing each week, as

well as opportunities to revise their writing so that students could implement and grow from instructor feedback. During activities, the instructor and tutors monitored the room to assure that students remained on task, answer questions, and support students as needed.

After lunch, students spent the remainder of their day (1:30-4:30) with the two writing tutors who provided additional practice and writing workshop time. The tutors provided fresh perspectives on each day's writing topics; while writing in academia follows certain conventions, receiving nuanced writing instruction from the faculty member and tutors helped students understand that writing can be malleable, subjective, and individualized. The tutors also facilitated a writing workshop in the last 1.5-2 hours of each day to provide immediate feedback and support as students worked on their writing.

The Wednesday full day at home program on graduate programs, and virtual tours, and research papers. Here's what we tell the students. Because not all students are interested in advanced research programs, we offer them other educational opportunities. so here's what we have for them.

You have 2 choices for the Wednesday program (mix and match is fine):

- 1) for those interested in research, the first choice is each Wednesday email to steven.oppenheimer@csun.edu a one page summary of a program to which you might be interested in applying. It could be a Ph.D. program from a specific university. If you are interested in a research career, Ph.D. programs that often PAY YOU instead of you paying hundreds of thousands of dollars to M.D. or D.D.S or physician's assistant programs, this is a good option for you.
- 2) virtual tours. Each Wednesday email to steven.oppenheimer@csun.edu an insightful summary of TWO of the virtual tours linked below.

All submissions on Wednesdays to Steve need to be by regular email (in body of email) or a regular email word attachment (in body of email is preferred) to steven.oppenheimer@csun.edu

For those doing virtual tours if you have Netflix

If you have Netflix or can access a friend's, the following are added options for your virtual tours:

A 5 part series on Our Great National Parks (each is about 1 hour long), narrated by Barack Obama 2022 includes:

A World of Wonder

Chilean Patagonia

Tsavo, Kenya

Monterey Bay National Marine Sanctuary USA

Gunung Leuser, Indonesia.

Steve will comment to the student when he receives each submission.

Here are the virtual tour selections that you can connect to without going on to netflix:

Virtual Tours - Yellowstone National Park (U.S. National Park Service)

<https://www.nps.gov/yell/learn/photosmultimedia/virtualtours.htm> ...× Contact Us Virtual Tours Ready to explore Yellowstone? You don't have to wait...You can start exploring now by virtually touring some

of the main ... Virtual Tours - Denali National Park & Preserve (U.S. National Park Service) <https://www.nps.gov/dena/learn/photosmultimedia/virtual-tours.htm> Virtual Tours, Guides, and Resources...× Contact Us Virtual Tours Virtual Tours: Science and Research in Denali Explore...in the park. View full ...

National Cemetery Virtual Tour - Gettysburg National Military Park (U.S. National Park Service) <https://www.nps.gov/gett/planyourvisit/national-cemetery-virtual-tour.htm> National Cemetery Virtual Tour...× Contact Us National Cemetery Virtual Tour Four Score and Seven Years Ago...Cemetery. NPS

Photo To Begin Your Tour ...Virtual Tours - Klondike Gold Rush National Historical Park (U.S. National Park Service) <https://www.nps.gov/klgo/learn/photosmultimedia/virtual-tours.htm> ...× Contact Us Virtual Tours Virtual tours let you explore park buildings and...significant historic buildings from home! Virtual tours are the next ...

Virtual Tour - Bandelier National Monument (U.S. National Park Service) <https://www.nps.gov/band/learn/photosmultimedia/virtualtour.htm> virtual tours...× Contact Us Virtual Tour Wishing you could visit the park but it just isn't...is available in the park. These virtual tours may be ...

Virtual Tour - Statue Of Liberty National Monument (U.S. National Park Service) <https://www.nps.gov/stli/learn/photosmultimedia/virtualtour.htm> ...× Contact Us Virtual Tour Want to know what's going on inside the Statue of...get an idea of what it's like, a virtual tour is the way to go. You ...

“Footprints of Our Ancestors”: Descendants Bring Stockbridge Mohican History to Life in Virtual Tour (U.S. National Park Service) https://www.nps.gov/articles/uhvnha_footprints.htm Stockbridge to record video for a virtual tour of their ancestral land....Stockbridge Mohican History to Life in Virtual Tour Odessa Arce and Robert ...

Virtual Tours - Grand Teton National Park (U.S. National Park Service) <https://www.nps.gov/grte/learn/photosmultimedia/virtualtour.htm> Contact Us Virtual Tours Access the park through a series of virtual tours. Experience...is recommended to view each of these tours. You will also ...

Virtual Tour - Upper Delaware Scenic & Recreational River (U.S. National Park Service) <https://www.nps.gov/upde/learn/virtual-tour.htm> virtual tour...× Contact Us Virtual Tour Created for the National Park Service Centennial celebration...celebration, the Upper Delaware Virtual Tour ...

Virtual Tour - Oregon Caves National Monument & Preserve (U.S. National Park Service) <https://www.nps.gov/orca/learn/photosmultimedia/virtual-tour.htm> ...× Contact Us Virtual Tour Last updated: November 1, 2019 Contact the Park Mailing Virtual Tour - Mount

Rushmore National Memorial (U.S. National Park Service) <https://www.nps.gov/moru/learn/photosmultimedia/virtual-tour.htm> ...× Contact Us Virtual Tour Mount Rushmore's rope access team scans Theodore Roosevelt...material including an interactive virtual tour of the memorial ...

Virtual Tour - Salem Maritime National Historic Site (U.S. National Park Service) <https://www.nps.gov/sama/learn/photosmultimedia/virtualtour.htm> Virtual Tour...× Contact Us Virtual Tour For photographs and text descriptions of the historic.

Jeff. Smiths Parlor Museum Virtual Tour - Klondike Gold Rush National Historical Park (U.S. National Park Service) <https://www.nps.gov/klgo/learn/photosmultimedia/jspm-virtual-tour.htm> Parlor Museum Virtual Tour Jeff. Smiths Parlor Museum AD Tour Guided,

audio-described...audio-described tour of the park's Jeff. Smiths Parlor Museum ...Virtual Tour of Monocacy - Monocacy National Battlefield (U.S. National Park Service) <https://www.nps.gov/mono/learn/photosmultimedia/virtualtour.htm> Contact Us Virtual Tour of Monocacy Worthington House Virtual Tour With rare...house is closed to the public. This virtual tour allows you to explore ... Virtual Tours In The Redwoods - Redwood National and State Parks (U.S. National Park Service) <https://www.nps.gov/redw/learn/photosmultimedia/vrtours.htm> ...× Contact Us Virtual Tours In The Redwoods Virtual Tours In The Redwoods We...We are bringing the redwoods in virtual reality to you. To experience ... Delta-09 Silo Virtual Tour - Minuteman Missile National Historic Site (U.S. National Park Service) <https://www.nps.gov/mimi/learn/photosmultimedia/d9-virtualtour.htm> ...× Contact Us Delta-09 Silo Virtual Tour The Delta-09 missile silo allows a rare...in-person tours are not conducted underground, however this virtual ... Virtual Tours - Minuteman Missile National Historic Site (U.S. National Park Service) <https://www.nps.gov/mimi/learn/photosmultimedia/virtualtour.htm> ...× Contact Us Virtual Tours Screenshot from the Delta-01 Launch Control Center...Center Virtual Tour NPS Photo Take a peek into once restricted places ... Virtual Tours - Canyonlands National Park (U.S. National Park Service) <https://www.nps.gov/cany/learn/photosmultimedia/virtualtour.htm> ...× Contact Us Virtual Tours The 360-degree panoramas available here require Quicktime Virtual Tour - Kobuk Valley National Park (U.S. National Park Service) <https://www.nps.gov/kova/learn/photosmultimedia/virtual-tour.htm> A virtual tour of the Northwest Arctic Heritage Center at Kobuk National Park...× Contact Us Virtual Tour of the Northwest Arctic Heritage Center You ... Videos - White Sands National Park (U.S. National Park Service) <https://www.nps.gov/whsa/learn/photosmultimedia/videos.htm> ...explore White Sands National Park virtually by watching the videos

GENE EDITING YOUTUBES (YOU CAN DO ONE OF THESE FOR A WEDNESDAY SUBMISSION)

<https://www.youtube.com/watch?v=4YKfw2KZA5o>

<https://www.youtube.com/watch?v=UKbrwPL3wXE>

<https://www.youtube.com/watch?v=Ft-160cAx38>

GLYCOBIOLOGY YOUTUBE (YOU CAN DO THIS FOR A WEDNESDAY SUBMISSION)

<https://www.youtube.com/watch?v=RorGifz6C2Y>

Oppenheimer lab simple papers for a taste of research. Anyone can do research. It's learned. You can summarize a paper for a Wednesday submission. Selections follow but any paper from a good journal is fine. Following is a selection of peer-reviewed papers from the Oppenheimer lab. We selected Oppenheimer lab papers because the director of this component of the Summer program is Dr. Oppenheimer. He responds to all submissions and because he knows his own labs' papers best, he is best qualified to respond.

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Information on the research program option.

About Ph.D. programs, you can look into these as a Web project.

Many of you awardees expressed an interest in eventually entering Ph.D. programs in research science but did not know about them. Here is some information. M.D., DDS, Pharmacy, Optometry, Veterinary, Physician Assistant, etc. careers are great for those who want them but one is often in debt for a half million to a million dollars from student loans. Ph.D. programs are so different financially. The majority of them or many of them in research science PAY YOU. So, no or little debt. No tuition. Instead you get a stipend in the \$30,000 per year range, no tuition and they often provide health insurance. You may have to do some undergraduate teaching or provide support in classes including solution preparation, tutoring and recitation session leader.

Personally, I did my undergraduate work at a place like CSUN in New York and was accepted into a Ph.D. program in biology research science at Johns Hopkins. I found this program easier than my undergraduate program. That's just my personal situation.

You may ask, how in the world can I (you) do research? Sounds too complicated. Doing good research is learned! You are taught to do research by top scientists in the Ph.D. programs. So, for me, my Johns Hopkins Ph.D. program was fun. And I became sort of famous for the research I did. And now I'm Professor Emeritus. You can do a Web project on researching

Ph.D. programs and submit a one page review on Ph.D. programs. No specific format. In this way you can learn in depth about Ph.D. programs in research science.

What can you do with a Ph.D. degree? Professor, teacher, researcher, industry, biomedical research, drug development, environment, genetic engineering of eukaryotic cells and microbes, foods etc., national parks, water quality, etc. The key is to love what you do. That's the key for any career.

Here's an example of a student submission on Ph.D. programs. Slightly edited.

Fontana, Joaquin <joaquin.fontana.782@my.csun.edu>

Wed 7/19/2023 4:58 AM Oppenheimer, Steven B

Ph.D. at Scripps Institution of Oceanography, UC San Diego for Marine Biology

What makes up 71% of our world water, The Scripps hands-on program seems to be an excellent choice for a PhD program as it not only provides possible financial support, but also top notch scientific training in order to keep learning as the main focus.

Looking further than just California it is easy to note that Scripps Institution of Oceanography is globally known and respected due to its outstanding ripple in leading in research for marine sciences. This Ph.D. program uses its state of the art research facilities and vessels to promote further research for students in order to truly engage and provide impactful teaching and research.

Scripps not only use its state of art equipment to teach students but also their renowned scientists such as Simone Baumann-Pickering who has a PhD in Biology, M.S. Biology, B.S. Biology, and a B.S. in Media Engineering, which were all acquired from Stuttgart Media University, Germany. This is just one of the main seven Marine Mammal Biology professors and researchers. When using Scripps scientists, they provide a collaborative atmosphere with people who have further knowledge. Furthermore, into the collaborative space, the onsite work and programs which are in place give an emphasis to hands-on work and experiences with fellow colleagues. The programs allow for workshops, teaching opportunities, and also seminars which all work together in order to prepare students for future careers in academia, research, and the overall industry.

Even with all this program has to offer, the process in order to enter seems very straight forward as there is an application process, which uses transcripts, letter of recommendation, statement of purpose, and possible test scores (IELTS, TOEFL) however it seems as though that is due to change with the current pushes.

An Admission committee then evaluates students on academic background, passion, and possible scientific contributions.

Although the submission process seems straightforward, the acceptance rate here is not the highest as only 20% of students are accepted based on records which note that five hundred and two students applied; however only one hundred seventeen were accepted into this program.

In conclusion, people devoted to the research of Marine Biology and eager to learn and develop a deeper connection will find a perfect fit into the Marine Biology program at Scripps Institution of Oceanography at UC San Diego. With the amazing research backed up behind their renowned faculty and resources make Scripps a good choice, while still providing possible financial support in order to ease the stress on students. Sincerely, Joaquin Fontana

10. Conclusions

Success in programs such as this one depends on students buying into the concept and goals. The record of student placements in advanced Math courses speaks for itself. This program has direct and simple goals...Skills enhancement in mathematics and writing. We are fortunate that we have a Director of our Math Department Andrea Nemeth, an expert in ALEKS, who has the ability to place students completing this program in Math courses. When the program ended there was overwhelming enthusiasm by the students for the summer program. Many students for the Wednesday program chose to report on possible Ph.D. programs that interest them. These programs will stay in their minds when it comes to post graduate applications. So this program not only helps prepare students for success in Math and Writing but it also gives them a legs-up in applying to graduate programs. References 2-89 show that college students can co-author research papers. The seed of research career in STEM was planted during this five-week program.

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Please Note: Most of the co-authors on these papers are students. These are only the full length peer-reviewed papers from the Oppenheimer lab. Published abstracts and national presentations are not included. These references show that students can co-author peer reviewed papers and they have fun doing it. These references help plant the seed of doing science research in these beginning students. That's one of the goals of this summer program.