



American Chemical Society

Project SEED

Student, Mentor, and Coordinator Handbook



Updated 10/2010

**PROJECT
SEED**



Project SEED

Student, Mentor, and Coordinator Handbook

The Project SEED *Student, Mentor, and Coordinator Handbook* was prepared with help from the Project SEED Committee, the staff of the American Chemical Society, and many friends of the program. It is a guide to introduce Project SEED and to illustrate how Project SEED has been a powerful, positive force in the lives of thousands of students, mentors, and coordinators for four decades. Selected portions of the book *Advisor, Teacher, Role Model, Friend*, published by the National Academy Press, Washington, DC, 1997, were reprinted with permission.

Project SEED

Mission Statement

"To assure that students from economically disadvantaged backgrounds have opportunities to experience the challenges and rewards of chemically related sciences."



Visit Project SEED at:
www.acs.org

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BREAKING THEIR BOUNDARIES

City kids thrive in high-tech world

Seventeen-year-old Carnell Ambrose spent this summer studying high-temperature superconductors in a research lab.

Jacqueline Martinez, also 17, spent her summer in a lab, too. She learned about changing alkane compounds to alkene compounds.

Meanwhile, Doris Dzissah, 18, worked on DNA sequencing using polymeric chain-reactions.

This trio of Plainfield High School seniors may be "just" teen-agers, but they are gifted with wisdom and knowledge beyond their years.

They're perfectly capable of explaining in layman's terms the results of their lab research, and did just that to a scientifically challenged newspaper columnist who met with them last week. But that's irrelevant.

What is important is that these three students, along with 47 other economically disadvantaged students, each spent eight weeks in science laboratories throughout the state this summer exploring worlds far, far removed from their urban neighborhoods.

The program in which they participated, Project SEED, is sponsored annually by the American Chemical Society. It's designed to encourage high school students to pursue career opportunities in the chemical sciences and provides them with adult mentors who monitor their lab research.

Started in the late 1960s, the nationwide program accepts only high school students who come from families with an annual income of less than \$27,000.

In other words, Project SEED helps those who need help most — those who ordinarily might never get the chance simply because they aren't wealthy.



**PASQUALE
DiFULCO**



STAFF PHOTO BY KATHY JOHNSON

From left, Doris Dzissah, Carnell Ambrose and Jacqueline Martinez all took part in the American Chemical Society SEED program this summer.

"This program gives students a real sense of confidence in themselves," says Plainfield High School physics teacher Gail Van Ekeren.

"It's true," adds chemistry and biology teacher Toni Watt. "They were picked out of Plainfield and moved around in this other world for eight weeks, and until you do that, you have a hard time believing you can go back and forth from Plainfield to those places. ... It's so important for these students to be able to see themselves working in places like that, because if you can't envision it, you may never get there."

It also helped that the students earned between \$750 and \$1,750 for their eight weeks of laboratory work. Ambrose had

lined up a summer job at Popeye's Fried Chicken that would have paid him \$5.15 an hour, but when he was selected for Project SEED, he says he jumped at it because "I'd be getting money, which is why I wanted a summer job, but I'd also be learning something, too."

Dzissah, who emigrated with her family from Ghana five years ago, says, "If I sit in my house, I wouldn't do anything, go anywhere. When I got to the lab, I had something to do and I looked forward to doing stuff in the lab."

Last month, the students presented their laboratory findings to members of the North Jersey chapter of the American Chemical Society at a meeting at Seton Hall University in South

Orange. Much as the students were proud of their accomplishments, they say their parents made an even bigger fuss.

"My mother, when I told her about it, basically flipped out," Ambrose says with a shy giggle. "Oh, my son is so smart." She said I should be proud, because most kids my age don't get this kind of opportunity."

It's not only their ages that create barriers, the students say. Their ethnic backgrounds put them at a disadvantage, too. Ambrose, who is black, says young people of color often don't get the opportunities others do because "people in high places don't readily recognize us and see us doing the things they do. ... It's sad."

"But it's a reality," adds Mar-

tinez, who was born in El Salvador and came to America as a young girl.

"You always have to keep your head up, no matter what," Dzissah says.

"I think I'll look back on this and say, 'Wow, I really did this when I was 17 years old,'" Ambrose says. "It's something you'll tell your kids someday and smile at."

Pasquale DiFulco's commentaries and stories about Central Jerseyans appear Sundays, Wednesdays and Fridays.

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STUDENTS

This section of the manual is intended to provide information to prospective student participants in Project SEED.

What Is Project SEED?

Project SEED is a program administered by the American Chemical Society (ACS) that offers a unique opportunity to spend a summer conducting hands-on research with a scientist in a laboratory setting. Project SEED programs are initiated and hosted by research institutions (academic, government, or industrial laboratories). Students' work 8-10 weeks and are awarded a stipend. Students who satisfactorily complete the first summer and who have not yet entered college may return for a second summer of research and receive a higher stipend. Because of the design of the research projects and the close mentoring relationship between student and scientist, the program has had a very positive influence on students.

"I'm glad this program exists! Project SEED offers a great opportunity for students to learn and to experience what the field of science is really like. I found the program to be very rewarding and educational."

Judy Lam, San Francisco, CA

"I really enjoyed my summer working in Project SEED. It gave me insight into higher education and what working in a real science environment is like."

Ledawn Quadrick Hall, East Orange, NJ

"If it wasn't for this wonderful SEED experience I wouldn't know what I know now, and I wouldn't feel as prepared as I do for my future....the SEED experience helped me to be prepared for the world, and gave me and insight of what life as a Chemist would be like."

Anja Garcia, Union City, NJ

You supply the interest and Project SEED can provide an opportunity to discover what scientific research is all about! Discover:

*What you might want to do in the future.
That scientists are ordinary people.
That you could be a scientist, too.*

Who Is Qualified?

Project SEED is designed for economically disadvantaged (see page 28) high school students. You must have taken high school science courses and be recommended by your teacher. You must also have demonstrated ambition, motivation, and the willingness to work hard.



Jacklyn Ellis, from Riverside High School in Durham, NC, is working with a compound that yields two products that bend light at different angles.



Jesse H. McCoy II of Hillside High School, NC, worked with Dr. Robert Webster of Duke University Medical Center, Department of Biochemistry, on "The Characterization of Tol-R Protein in *Escherichia coli*".

Do you like high school science courses?
Do you like to think about puzzling questions?
Are you willing to work hard?

Apply for Project SEED

What Are Typical Projects?

Students in Project SEED are provided projects that give them the opportunity to do meaningful research. The projects are suggested by mentors and reviewed by an ACS committee to make sure they are exciting, meaningful, and doable by Project SEED students. Many of the projects involve learning about making new compounds, testing them using instruments, and analyzing data. The range of projects spans the amazing range of functions by practicing scientists today and will depend on what types of scientists and equipment are available in your area. A few titles of previous projects are listed below to illustrate the wide range of “typical” SEED projects. Many students have done well enough to present posters at scientific meetings, and a few students have even become co-authors of scientific papers!



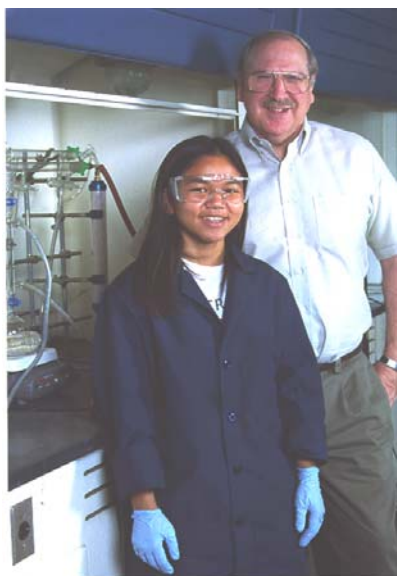
Paulo Lizano and Veronica Lujan, from Union City High School at the Local Section SEED poster session at Seton Hall University, NJ.

SOME RECENT PROJECT TITLES

Design of New Polymers	Microwave-Assisted Reactions
Role of Organic Synthesis in Drug Discovery	Molecular Orbitals in Organic Molecules
Ion Chromatography Research	Nitration Reactions of Cinnamic Acid
Isocyanide Monolayers on Gold	Organic Fiber-Optic Coatings
Peroxides in stores Petroleum Fuels	Polymer Engineering
Water Purity Analysis at a Coal Fired	Laser Reactions with Gases
Power Plant	Rapid Enzyme Tests
Treating Nanoparticles as Large Molecules	Synthesis of Alcohols
Metal Binding in Biological Systems	Chemical Composition of Plant Nutrients
Enzymes of Marine Invertebrates	Extraction and Purification of Bioactive
	Lipids

What Are Your Rewards?

Project SEED will provide you with the opportunity to build a good working relationship with a scientist who can provide career guidance, encouragement, and letters of recommendation for the college of your choice. During the course of the summer, you will develop laboratory skills as well as skills in written and oral communication. You will learn to work as part of a team. You will have a chance to develop and demonstrate creativity and to discover that you can do scientific research. And you will get paid!



According to Routh Long: "Project SEED has been a great learning experience. I know that I am able to accomplish almost anything. The program extends my learning to a whole new level."

Routh Long and one of her mentors, Larry Spreer, at the University of the Pacific, CA. Routh, who intends to become a forensic pathologist, investigated the formation of macrocyclic metal-metal complexes.

Project SEED offers high school students exciting research opportunities:

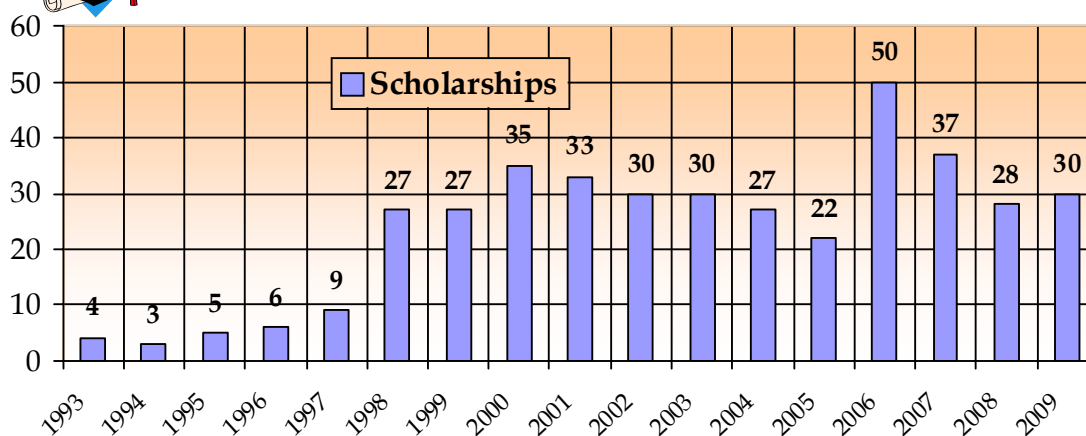
- information on career paths,
- preparation for college studies,
- individual mentoring by a scientist,
- exposure to other assistance programs,
- opportunity to present their summer research at a scientific meeting,
- eligibility to apply for SEED college scholarship awards,
- chance to enhance their self-confidence.

Scholarships

To be eligible for a Project SEED scholarship, one-year, nonrenewable scholarships, high school senior students must have worked at least one summer at a science institute under the auspices of Project SEED. Scholarships are restricted to students who plan to major in a chemical science or engineering field such as chemistry, chemical engineering, biochemistry, materials science, or some other closely related major. The scholarships are intended to assist former SEED participants in their transition from high school to college and consist of up to \$5,000.



Project SEED Scholarships Awarded



- Nonrenewable scholarships are for the first year of college only.
- Selection considers achievement in school, success in the Project SEED program, need, and intended chemical related field of scientific study.



Andrea Ayers, 2000 Scholarship winner, from East Orange High School, NJ, worked under the direction of Anju Sharma at Stevens Institute of Technology, Hoboken, NJ, on a synthetic chemistry project to make derivatives of bioactive molecules for new drug leads. She is now a student at Ramapo College of New Jersey, Mahwah. And Haythem Latif from Linden High School, NJ, worked with Robert Rosen at Rutgers University, New Brunswick, NJ. Latif is now student at Rutgers University, Piscataway, NJ.

What Are Your Responsibilities?

Project SEED students are expected to be good employees. You should be at work every day on time and be dressed appropriately for the laboratory environment. You will need to maintain a good attitude toward work, use the safety training provided, and share any concerns about work with your mentor (or program coordinator). You are expected to learn as much as you can about your specific research project. You will be asked to do research that may involve, for example, making new compounds, collecting data, or working with instruments or computers. You will be required to complete surveys and reports concerning your experience. In some settings you will be required to give an oral presentation at the end of the summer describing what you did and learned.



Project SEED student from the North Jersey Local Section at the Sci-Mix Poster Session presentation at the 238th ACS 2009 Fall National Meeting in Washington, DC.

Basic Responsibilities

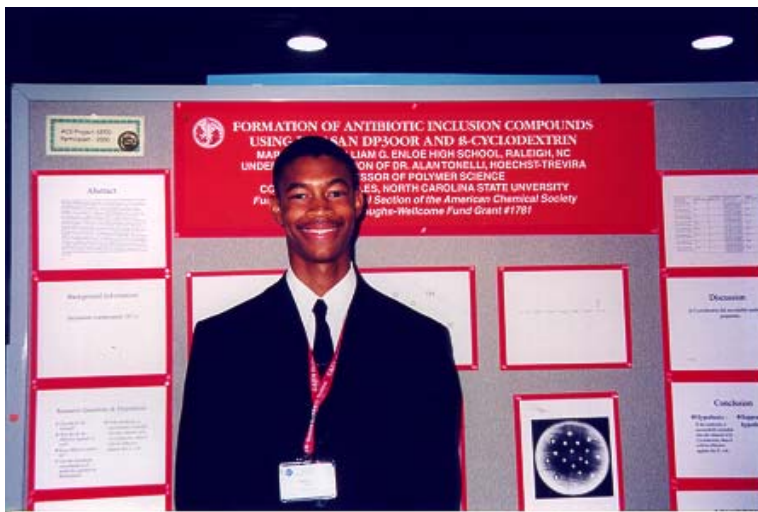
- *Learn about your project.*
- *Be engaged and interested.*
- *Submit a final report.*
- *Complete a follow-up survey.*

MENTORS

This section of the manual is intended to help potential mentors decide if they can and should participate in Project SEED. Mentors are central to the success of Project SEED since they work most closely with the students and determine the quality of their scientific experience. A Project SEED mentor can be any scientist involved in scientific work in several arenas including academic, industrial, nonprofit, and government facilities.

Do You Have a Suitable Project?

A student project can take many forms but should be accomplishable in 8–10 weeks. It can be part of a larger project but suitable for a student with a minimal science background. The project should be in a chemically related discipline and can involve laboratory or field work. Computer-based projects are also acceptable.



Marcus A. Hill, from W.G. Enloe High School, NC, worked under the supervision of Alan E. Tonelli, mentor, at North Carolina State University, on "Formation of Antibiotic Inclusion Compounds Using Irgasan DP300R and B-Cyclodextrin".

Basic Project Requirements

- *Hands on research.*
- *Chemically related discipline.*
- *Appropriate for student with minimal science background.*
- *8 – 10 weeks long.*
- *Leads to a written final report.*

Why Take Students?

Project SEED is exclusively for economically disadvantaged students, who will probably not become science majors if they are not exposed to research. SEED mentors have found it so rewarding that several have been mentoring students for 12, 14, even 30 years! They dedicate many hours to their students even though graduate or even undergraduate students require less time for the same output in most cases. SEED mentors, however, are not masochists; they usually get a lot in return for their time. For example, the mentor:

- May serve as excellent public relations for the institution as it demonstrates its interest in education in the local community.
- May enjoy guiding a beginning student through a research project.
- May get an additional project initiated or completed. SEED students have co-authored publications in many fields.
- May find that the SEED student goes to their college and adds to the otherwise small number of science majors.
- May find that the SEED student is a stimulant to graduate students or undergraduate students who learn as they teach the SEED student.
- May serve to make connections with high school science teachers (who often have a big influence in their students' college plans).
- May enjoy working with students who can be brighter than the average student at their institution; students who often are enthusiastic and not just interested in a better grade (there are no grades in SEED).
- May enjoy the feeling that they are making a significant difference in the student's life and career as a mentor to an economically disadvantaged student in the summer before he or she applies to college.

Being a Good Mentor

A mentor is someone who takes a special interest in helping another person develop into a successful professional. A good mentor shares life experiences, wisdom, and technical expertise and is a good listener, observer, and problem solver. Being a SEED mentor can be part of your already established program. It can be a very rewarding experience for both you and your student.

WHY BE A GOOD MENTOR?

The primary motivation for being a good mentor was well understood by Homer: the natural human desire to share knowledge and experience. Some other reasons are to:

Achieve satisfaction. For some mentors, having a student succeed, and eventually become a friend and colleague, is their greatest joy.

Attract good students. The best mentors are most likely to be able to recruit—and keep—students of high caliber who can help produce better research, papers, and grant proposals.

Stay on top of your field. There is no better way to keep sharp professionally than to coach junior colleagues.

Develop your professional network. In making contacts for students, you strengthen your own contacts and make new ones.

Extend your contribution. The results of good mentoring live after you, as former students continue to contribute even after you have retired.

Good Mentors

- *Enjoy working with students.*
- *Provide a professional role model.*
- *Get to know students personally.*
- *Are concerned about the students' development and learning.*

Mentor Responsibilities

The first responsibility is to provide a meaningful research experience, including technical and safety training. Expectations should be clearly defined. The student should have an understanding of the project and its importance within the overall research program. It's also important to help students develop their communication, presentation, and team skills. One of the major responsibilities of a mentor is to listen and provide guidance.

ADVICE FOR NEW MENTORS

For most people, good mentoring, like good teaching, is a skill that is developed over time. Here are a few tips for beginners:

Listen patiently. Give the student time to get to issues that are sensitive or embarrassing.

Build a relationship. Simple joint activities—walks across campus, informal conversations over coffee, attending a lecture together—will help to develop rapport. Take cues from the student about how close the relationship should be.

Don't abuse your authority. Don't ask students to do personal work, such as mowing lawns, baby-sitting, and photocopying.

Nurture self-sufficiency. Your goal is not to “clone” yourself but to encourage confidence and independent thinking.

Establish “protected time” together. Try to minimize interruptions by telephone calls or visitors.

Share yourself. Invite students to see what you do, both on and off the job. Talk about your own successes and failures. Let the student see your human side, and encourage the student to reciprocate.

Provide introductions. Help the student to develop a professional network and build a community of mentors.

Be constructive. Critical feedback is essential to spur improvement, but do it kindly and temper criticism with praise when deserved.

Don't be overbearing. Avoid dictating choices or controlling a student's behavior.

Find your own mentors. New advisers, like new students, benefit from guidance by those with more experience.

Basic Mentor Responsibilities

- *Provide technical and safety training.*
- *Provide career guidance.*
- *Define expectations clearly.*
- *Meet program deadlines.*
- *Guide student in writing a final report.*
- *Listen and provide advice.*

Frequently Asked Questions from Mentors

Q: Should I apply if I don't know any suitable students or I don't have the time to recruit them now?

A: Apply first, before you find students. If your application is approved, you have almost two months to find students or to ask someone else to find them for you.

Q: I have high standards. How can I avoid having to work with unsuitable students?

A: The final choice of student is always up to you. Plan on interviewing the student before making your final decision.

Q: I don't know definitely whether or not I will be in my lab this summer. Should I apply?

A: If you can probably be a SEED mentor, apply. If you are allotted money from ACS, be sure to let the national SEED office know if you will not be able to take on students.

Q: How can I take a student when I will be out of town for a week or so during the summer?

A: Here are four possible solutions that have worked for others:

1. Two people mentor one student, allowing each mentor to take some time off.
2. Let a graduate student or technician take over for a while.
3. Assign the student some library work and/or writing early drafts of the final report.
4. Ask the student to take a short vacation, adding some time before or after the break.

Q: There is no public transportation to my institution; how can students get here?

A: Ask about a family member with a car. In other cases, secretaries, graduate students, janitors, or cafeteria workers at your institution may live near the student and be willing to drive the student to work.

Q: I work in a corporation. Can I take a SEED student?

A: Yes! Many companies, such as Lucent, Hoffmann-LaRoche, D. A. Stuart, Ciba-Geigy, and Unilever, have taken SEED students. In most cases, companies have paid for the stipends themselves, but if you can take a high school student between the junior and senior year, you can apply for the stipend money from ACS.

Q: I have never worked with a high school student. What kind of project can they do? Should we pick experiments out of a college textbook or just have students watch?

A: No. The student should be given a small piece or variation of your regular research project. It's more fun, and you may see your work go a little further. SEED students don't have to understand the whole picture at first, as long as they understand what they did and why, in the course of the summer.

COORDINATORS

This section of the manual is intended to provide information to potential Project SEED coordinators. A coordinator is a person who assumes responsibility for operating a Project SEED program generally consisting of more than one mentor. Historically, some of the most successful regional SEED programs have been organized in this way.

Project SEED Coordinator

What does a SEED coordinator do? The most important responsibility is assembling a group of one or more mentors within a geographic area. Mentors are academic, corporate, or government scientists and staff members who can guide a bright, economically disadvantaged student for 8–10 weeks of summer laboratory work.

Other important functions are recruitment of students, fund-raising, if possible, and perhaps providing additional field trips and follow-up activities for the SEED students. One SEED student, now herself a chemistry professor and mentor said that the encouragement from her SEED contacts was vital to her success in college.

A coordinator does not have to be a mentor. An altruistic high school chemistry teacher or counselor, a retired industrial chemist, an active industrial, government, or hospital chemist, a professor, or an administrator would all make good coordinators. It is ideal for a consultant who wants a good reason to talk to many chemists.



Project SEED student from the Pittsburgh Local Section and mentor Dr. Michael Leonard, at Washington & Jefferson College, PA.

Establishing a SEED Program

For a SEED program to be established and flourish, it is desirable to have a coordinator. The first step for the coordinator is to identify mentors and suitable projects. The coordinator can call on colleagues to furnish contacts who can be mentors in academic institutions, local government offices, or local industries. The new program should be geared to a small number of students initially, as the various people involved learn how to make it work. Contact with the academic administration or with the ACS Local Section is essential in managing program funds. The necessary materials to get started can be obtained from the Project SEED ACS Washington office (see page 25).

Finding Good Mentors

The coordinator can identify mentors, for example, through the staff administrators of local college science departments or through government scientists or industry administrators. The coordinator can look for scientists who do active research in the summer and for departments that maintain a Web site, where research summaries are often located. (See pages 12, 13, and 15 for talking points in recruiting mentors.)

Strategies That Work

- *Ask the candidate mentor, "Would you like to interview a student?"*
- *Explain that ACS will provide funds and the coordinator will help with the paperwork. Some coordinators write the grant themselves on the mentor's project description.*

Finding Appropriate Students

Local high schools are an excellent source for Project SEED students. Usually high school science teachers and guidance counselors are extremely happy to help recruit students. You may have a better chance if you recruit from schools with a large number of low-income students; these need not be the closest ones to the laboratory. The central/district office may be able to tell you which schools have a high proportion of low-income students or even give you the students' names. Students on government lunch assistance programs are considered economically disadvantaged. Upward Bound a summer program funded by the Department of Education, exists on many college and university campuses and may also be an excellent source for Project SEED students.

Strategies That Work

- *Personal or telephone contacts.*
- *A mailing with a cover letter/program announcement, SEED brochure, fact sheet, and comments from former SEED students.*
- *Inviting teachers to an ACS Local Section meeting to discuss the program.*

The Student/Mentor Match

Have the student prepare a résumé. This can include science courses completed, interests, and the kind of work the student wants to do. The résumé can also identify areas of interest such as chemistry, biology, biomedicine, biophysics, physics, engineering, or environmental science. If the student does not know how to prepare a résumé, the coordinator can use an interview to identify these points.

The coordinator's job is to sell the student to the mentor and to prepare the student for the interview with the mentor. It is important to make sure that the student does not feel bad about any rejection that may occur. This can be done by counseling the student before the interview to be prepared for rejection, limiting the number of students recruited, and finding alternate programs or alternate mentors for the rejected students.

Student/Mentor Interaction

The coordinator should first make sure the students know what is expected of them.

- Role-playing with the students can identify pitfalls to avoid.
- Find a telephone mentor – someone who may not be able to be a lab mentor but who can call the student and the mentor every two weeks to check on how things are going.
- Use a form that the mentor and student can fill out after two weeks and five weeks as a check on their satisfaction with the program.
- Hold meetings with students as a group. This may be done through scheduling a field trip during the summer.



Project SEED student at the SciMix event in Washington DC. 238th ACS National Meeting, 2009.

ACS Project SEED

Mentor Report on Summer Research Experience

Institution _____

Mentor _____

Student(s) Name _____

Please answer the following questions. This information will be used to evaluate your Project SEED summer experience.

1. What was the purpose of the research project or assignment given to your SEED student(s)?

2. How much retraining did the student need with instruments and general lab techniques?

A lot _____ Some _____ A little _____

3. Was the student adequately prepared before beginning the assignment?

Yes _____ No _____

4. How much supervision did the student need?

A lot _____ Some _____ A little _____

5. Did your program have activities besides lab research for the students?

Yes _____ No _____

If so, what were they?

6. Did you provide college counseling? Career counseling? Guidance?

Yes _____ No _____

If yes, explain which.

7. Did you inform students about Project SEED scholarships? Yes _____ No _____

8. Did you have any trouble finding students who met the guidelines for Project SEED?

Yes _____

No _____

If so, what were they?

9. What changes would you suggest for the SEED program?

10. Would you like to be a mentor again next year?

Yes _____

No _____

Would you recommend this experience to others?

Yes _____

No _____

11. Did you receive funds from any of the following for your SEED program? If yes, how much?

NIH	_____	Amount	_____
NSF	_____	Amount	_____
JTPA	_____	Amount	_____
PRF (ACS)	_____	Amount	_____
Local Section	_____	Amount	_____
Other sources	_____	Amount	_____

12. Did the student receive the total stipend for Summer I or for Summer II?

Yes _____ No _____

13. Did you explain the Project SEED Summer II program to your students?

Yes _____

No _____

14. What impact if any, did the booklet, "Safety in the Academy Chemistry Laboratories", have on you and your students? _____

Strategies for Finding Support

A Project SEED program may be established with ACS funds alone, depending on the availability of funds. Additional sources of support are available, including

- Your ACS Local Section,
- Corporations,
- School systems

When Things Go Wrong

It's sometimes easy to spot: A student repeatedly doesn't show up or a mentor is never around anymore. Or it can be much subtler: A student goes to a mentor's office to talk but never gets around to stating the problem. It can be caused by a lack of communication between mentor and student or a demand that is inappropriate. It can happen to anyone, but when things go wrong, it can be terribly disruptive and sometimes hard to figure out what to do. This most often reveals a need for counseling for all concerned parties.

Getting Help

In serious cases, you might want to contact ACS staff. Coordinators (and mentors) need to know that help is only a phone call away. Project SEED staff: 1-800-227-5558, ext. 4380.

Establishing a Strong Program

The coordinator should look for ways to publicize the program locally, advertise among Local Section members, and go after big money support, which can be publicized, for the benefit of the donor and the program.

Sample letter to ask for support:

YOUR COMPANY'S LETTERHEAD

Dr. Helen R. Scientist
ABC Chemical Company

Dear Helen:

Thank you for asking me to write to you about Project SEED. As I said, this is a program that allows [your area] high school students to work with a scientist/mentor for about 10 weeks for the summer. For this effort, students can receive a stipend of \$_____ during their first summer and \$_____ for a second summer. In addition, students can now also apply for a special Project SEED college scholarship of \$5,000 for their first year in college.

Project SEED is well established and is 41 years old. The program has helped thousands of students. A recent survey indicates that for more than 50% of SEED participants, the program led them to make the choice to attend college. Many companies across the nation (Lucent, Hoffmann-LaRoche, Ciba-Geigy, Unilever, Clorox, Chevron, ICI Americas, Varian, etc.) have participated with great success. I wonder if [ABC Chemical Company] might be interested in participating in this year's program in some manner.

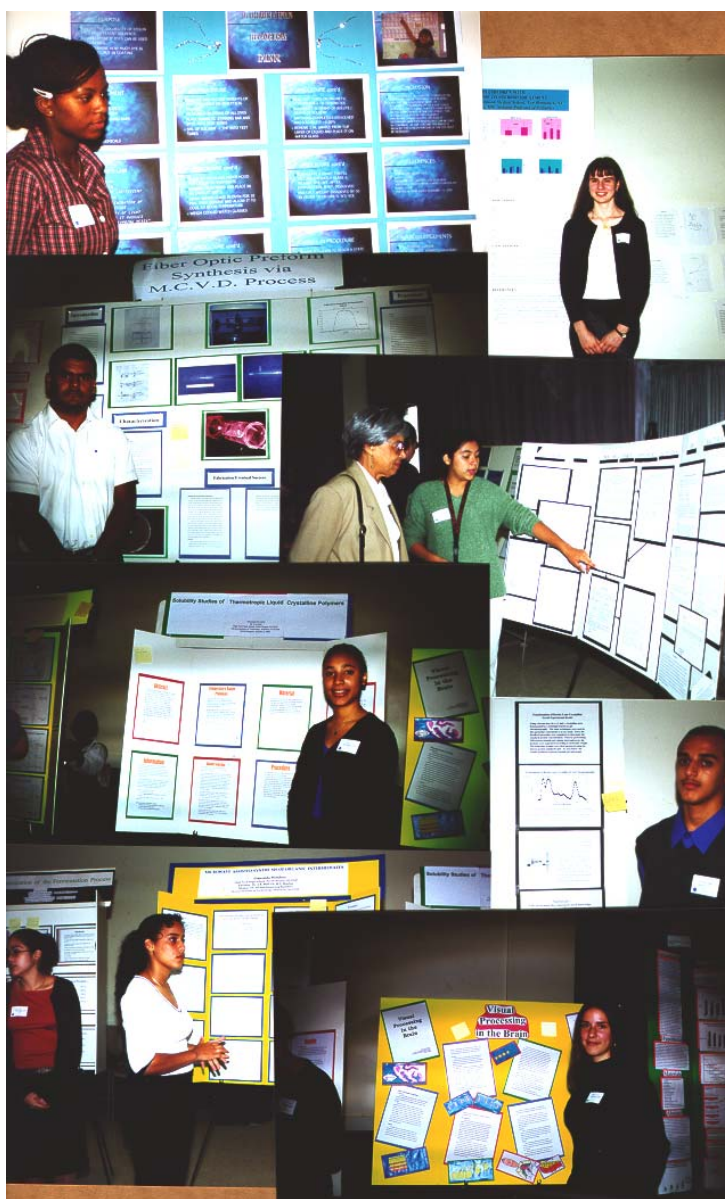
Please call me to discuss the program if you like.

Thank you for your consideration and your support of ACS.

Helping Your Program to Grow

You must evaluate the limitations to the growth of your program, which may include the number of mentors or funding availability. Then you can seek to increase the limiting factor. For example, if the limitation is money, you can explain to mentors the availability of matching funds, or go after support from a foundation. Publicity can help with both problems.

Local Section, SEED Poster Session at
Seton Hall University, NJ.



New Jersey Local Section, Project SEED students from Irvington High School, Linden High School, Union Hill High School, and High Tech High School.

PROJECT SEED INFORMATION

Project SEED ACS – Washington Office

Project SEED is one of the major student programs of the K-12 Academic Programs Department of the ACS Education Division. Project SEED is managed by the Manager, Business and Endowed Student Programs and staff liaison to the ACS Committee on Project SEED, and the Education Associate. The office is located in the ACS headquarters building in Washington, D.C.

For additional information, contact:

American Chemical Society, Project SEED,
1155 Sixteenth Street, NW, Washington, DC 20036;

Phone: 1(800)227-5558 ext. 4380 or (202) 872-4380

Email: projectseed@acs.org

Web site: www.acs.org



A Historical Look at Project SEED

After four decades, Project SEED continues to encourage and provide opportunities for economically disadvantaged young people to experience the world of scientific research. Since the program's inception in 1968, over 9,000 students have gained research experience and mentoring from volunteers in summer experiences. Even with this success, maintenance and growth of the program require recruiting more local coordinators, on-site mentors, and participating institutions. Support for the national program will help make this possible. In addition, ACS continually seeks support for student stipends and scholarships. Since ACS covers much of the administrative costs; contributions are used in entirety to directly support stipends and scholarships.

Project SEED Contributors

Continued cooperation and financial assistance from the Project SEED Endowment, chemical companies, private foundations, universities, corporations, ACS Divisions and Local Sections, ACS Petroleum Research Fund, and many ACS individual members who contribute to Project SEED throughout their annual membership renewal have been essential to maintain the summer program and scholarships. Contributors to the scholarships are the Bayer Corporation, Glen and Barbara Ullyot, Alfred and Isabel Bader, Russel J. Fosbinder Endowment, and the Hach Foundation. ACS absorbs all administrative costs (staff salaries and benefits, printing, travel, etc.) and contributes annually to stipends of the Summer II component.

Project SEED reaches out to students who have the potential to contribute to the future of science.

The Impact of Project SEED

Project SEED was established by ACS in 1968 to help high school students from economically disadvantaged backgrounds to expand their education and career outlooks. In 1996, an evaluation was conducted with the purpose of providing an analysis of the impact of Project SEED on their first 25 years of existence. The results of the surveys showed that nearly 70% of the surveyed students majored in science related fields.

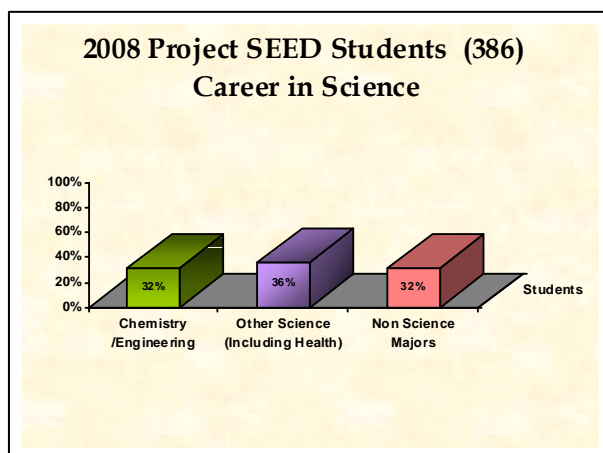
63%	obtained B.S. degrees
13%	obtained M.S. degrees
7%	obtained a Ph.D.
9%	received other degrees

Also the survey indicates that Project SEED “has had a positive impact on its student interns”. Project SEED is for the most part, serving its target population. Most of the students’ survey responses indicated that the program has helped them discover their own skills and abilities, understand the purpose of scientific research, learn what advanced study is like, develop responsibility, and influence their choice of college major.

The study concludes that “the data record presented in the evaluation report is evidence on how Project SEED made a difference, not in test scores but in opportunity; and not in job salary but in job satisfaction”.

Since 1968 Project SEED has helped more than 8,600 economically disadvantaged students, many of whom were the first in their family to attend college.

In summary, Project SEED can contribute to the quality of life—oftentimes a lasting quality of life—for good students who just happen to be in great need.



AMERICAN CHEMICAL SOCIETY (ACS)

PROJECT SEED 2011

PROGRAM GUIDELINES FOR COORDINATORS AND MENTORS

NOTE: If special circumstances suggest departure from the guidelines, please consult with the Project SEED staff at 1-800-227-5558, ext. 4380.

FINANCIAL GUIDELINES FOR STUDENT SELECTION

1. **Eligibility** – The student must be recognized as economically disadvantaged. Preference will be given to students whose maximum family income does not exceed 200% of the current Federal Poverty Guidelines based on family size (<http://aspe.hhs.gov/poverty/10poverty.shtml>). An economically disadvantaged student applicant who is physically disabled **must** be considered on the same basis as any other applicant and may not be discriminated against in any way.
2. **Other Considerations in Addition to Income Eligibility** – Project SEED will consider applications from students whose family income does not meet the eligibility in 1, if evidence is provided to the coordinator/mentor that factors which contribute to underrepresentation in the sciences exist.

Examples of such factors include the following within income guidelines:

- the students belong to an ethnic group (African-American, Hispanic, Native American) historically underrepresented in science,
- parents/guardians did not attend college, or
- the student lives in a single-parent household or is a member of a large family.

(None of the above factors alone qualify students who are beyond reasonable exceptions to the family income guidelines to be automatically eligible for Project SEED.)

Approval of Students with Other Considerations Besides Income Eligibility

All students being considered for Project SEED with a family income over 200% of the current Federal Poverty Guidelines must be supported in a letter signed by the coordinator/mentor and forwarded to the ACS Project SEED office. **The student should be admitted to the Project SEED program only after other considerations besides income eligibility are approved by the Project SEED office.**

3. **Location** – The student should be a commuting student, except in those cases in which the institution (college, university, industry, or government lab) can provide room and board and appropriate supervision at no cost to the student.
4. **Stipends and Duration of the Program** – Summer I and II students will receive a competitive stipend with the minimum for each program determined by the Project SEED Committee of the ACS. **For 2011, the Summer I and II stipends are \$2,500 and \$3,000, respectively.** The costs of supplies or laboratory materials cannot be deducted from student stipends. Both programs expect at least 8 weeks of participation at approximately 40 hours per week.
5. **Stipend Payments, Surveys, and Final Reports** – Two checks will be sent from the ACS national SEED office to the institutional sponsor or the ACS Local Section officer for disbursement to the student(s). The first check (the amount approved minus \$500 per student) will be sent upon receipt of the Student Financial/Information Statement. The second check (\$500 per student) will be sent upon receipt of all required paperwork and the Follow-Up Survey, Student Report, and Mentor Report. If this procedure is in conflict with the institution's administrative practices, other appropriate action can be considered. However, under no circumstances may mentors/coordinators deposit Project SEED monies into their personal funds. Mentors who disburse funds before the receipt of approved funds from Project SEED do so at their own risk.

The ACS offers "Automatic Direct Deposit" of Project SEED student payments. Your institution or university may take advantage of this payment method by filling out the enclosed Authorization of Direct Deposit Form and submitting it to the address indicated on the form. The Project SEED office recommends this payment method for faster payment issuance.

6. **Funding from Participating Institutions** – Participating institutions are encouraged to provide supplementary funds for each student. Also, the participating institution – or another source of local funds – will be expected to bear any overhead expenses.
7. **Program/Student Termination** – If the student terminates the program prior to completion of his/her obligation, the Project SEED office must be notified immediately in writing. The disbursement of the award will be prorated and the unused funds must be returned to Project SEED before the end of the institution's program.

ACADEMIC GUIDELINES

1. **Program Content** – The intent of Project SEED is to provide students with the opportunity to do meaningful research. The students' role should not be that of dishwasher or observer. The program implies no employee/employer relationship.
2. **Student Pre-requisites** – The Summer I student participant(s) should have completed a one-year introductory high school chemistry course. The Summer II student participant(s) must have participated in the Summer I program. Neither Summer I nor Summer II student can be matriculated in college.
3. **Students/Mentor Ratio** – The development of a personal relationship between the student and the mentor is considered a key factor in raising the student's goals and expanding his/her horizons. For this reason, a mentor should work with no more than two SEED students during the summer.
4. **Research Projects** – The coordinators/mentors should present only one project per student. Any change in project must be approved by the Project SEED committee within one week of receipt of the acceptance letter for a given project.
5. **Accident Insurance** – The ACS provides accident insurance coverage for Project SEED students, faculty members or chaperons. The period covered is limited to the 8-10 week Summer I and II programs each year. **The insurance company will administrate the plan on an excess basis, paying only eligible bills that remain unpaid after all other coverages have been exhausted.** The insurance coverage is not extended beyond the Project SEED summer activity. The activities covered are limited to scheduled, sponsored, and/or supervised activities of Project SEED. This insurance does not cover any conditions for which the insured is entitled to benefits under any Worker's Compensation Act or similar law. The ACS accident insurance policy coverage does not extend to damage or loss of personal property of Project SEED participants. Although ACS purchases accident insurance annually for Project SEED for the duration of the program, it is the mentor's duty to ensure that the student works in an environment in which all necessary and usual safety precautions have been taken. The student must understand both the precautions taken and the reasons for such precautions. A guideline booklet, "Safety in the Academic Chemistry Laboratories" for faculty and students, will be provided to mentors and students. "Students should wear safety goggles in the laboratory at all times."
6. **College and Career Counseling** – The mentor should give college and career counseling to the student. In addition, ACS will provide all students with a packet of career education materials.

ADMINISTRATIVE GUIDELINES

1. **The Student Report** – The student must write a final report of the summer's work (three to five pages are adequate). **The mentor must cosign this report** and a copy must be submitted to ACS Project SEED Office. Copies should be sent to the student's high school and to any other sources from which the student received financial support. The Follow-Up Survey, designed for the program's assessment and improvement, must also be completed online by the student no later than the established deadline. Upon receipt of the final report and the Follow-Up Survey from the student, ACS will send the institution the final \$500 fellowship award for disbursement to the student.
2. **The Mentor Report** – A brief report from the mentor must be sent to the ACS Project SEED office. This report should also be sent to the other funding sources, where applicable, at the conclusion of the program. Mentors/coordinators should publicize their programs as broadly as possible. The quality of the publicity should be carefully monitored by the mentor/coordinator with respect to content and detail.
3. **Role of the ACS and Participating Institutions** – ACS coordinates Project SEED and conducts the national-level fund-raising activities. Acting under the authority of the participating institution, the local SEED coordinator usually works with the mentor(s) to select the student(s) and to operate the program in accordance with the financial and academic guidelines set out above by ACS. The participating institution bears primary responsibility for the proper selection of eligible students within the guidelines of the program. ACS responsibility is the administration of the program and the approval of applications for students whose eligibility is outside the guidelines set for Project SEED.
4. **Publication of Project SEED Research** – Any publications resulting from the student's research should acknowledge support from ACS and the Project SEED endowment.
5. ACS reserves the right to deny funding for any student who does not meet the guidelines described above unless prior approval is obtained by the coordinator/mentor for other considerations prior to accepting students to the program.