

E-MENTOR: AN ELECTRONIC MENTORING PROGRAM FOR UNDERGRADUATES FROM HISTORICALLY BLACK COLLEGES AND UNIVERSITIES, MINORITY INSTITUTIONS AND TRIBAL COLLEGES

Gay Kendall¹

Abstract - "E-Mentor" is a new program that has been designed to provide an electronic mentoring opportunity to minority students who have traditionally been under-represented in the areas of science and engineering. Developed at Benet Laboratories, US Army Armament Research, Development and Engineering Center, Watervliet, NY, the program provides students from Historically Black Colleges and Universities, Minority Institutions and Tribal Colleges with an opportunity to communicate on a regular basis with Army scientists and engineers who are working in a field which corresponds to their academic major. A one-year pilot program is currently underway. While feedback from both students and mentors indicates that this effort is successful in meeting program objectives, difficulties have been encountered in student recruitment. Several measures to address this issue have been identified and are now being incorporated into the program. Through participation in E-Mentor, Army scientists and engineers hope to provide an informative and supportive experience for college-level minority students. As studies have indicated that mentoring can be crucial to success, E-Mentor presents this opportunity to students in a manner that previously has been geographically prohibitive, providing an important step in ensuring a diverse population of future scientists and engineers.

Index Terms – Mentoring, Historically Black Colleges, Minority Institutions, Tribal Colleges

INTRODUCTION

According to a 1997 study conducted by the National Science Foundation [1], minorities (African-Americans, Hispanics and American Indian/Alaskan natives) constituted only 6.7 % of the science and engineering labor force. While slight variations were observed in participation among specific fields (e.g. social science vs. "hard" science or engineering disciplines), minorities in general represented only 3.2 % of the engineering professionals in this country. This under-representation clearly indicates a tremendous untapped resource of scientists and engineers. In an effort to provide encouragement and support to minority students who have entered into collegiate science

and engineering programs, Benet Laboratories, an organization within the US Army's research and development community, has created an electronic or "virtual" student mentoring program. Benet Laboratories has long recognized the value of diversity within its workplace as contributing to its reputation as being a world leader in large caliber gun technology. Benet's commitment to furthering diversity of its researchers has been demonstrated through a variety of Benet also conducts extensive education-related programs at both the local and national levels. Locally, Benet researchers participate in a variety of community-based activities including job shadowing, a pen-pal scientist program, laboratory tours, classroom visits to conduct "hands-on" science workshops, and participation in several career-related programs for students. On the national level, Benet Labs has joined with an Armament Research, Development and Engineering Center (ARDEC) in Dover, NJ, for a variety of teaming initiatives with the Historically Black Colleges, Universities and Minority Institutions (HBCU/MIs). Together these two organizations have expanded their efforts through implementation of the E-Mentor program. Benet's E-Mentor program provides students from Historically Black Colleges and Universities, Minority Institutions (HBCU/MIs) and Tribal Colleges (TCs) with an opportunity to communicate on a regular basis with Army scientists and engineers. Through use of the Internet, this mentoring opportunity is being made available to students in a manner that has previously been geographically prohibitive (e.g. a majority of the HBCU/MI campuses are located in the Southern region of the United States, whereas the currently participating Army organizations are located in the North East). As studies have shown that mentoring can be crucial to student success, E-Mentor may help to ensure a diverse population of future scientists and engineers [2 -4].

PROGRAM CONCEPT

The E-Mentor program offers students from the HBCU/MIs and TCs an opportunity to communicate electronically on a regular basis with Army engineers and scientists who are working in a field that corresponds to the student's academic major. Participation in this program is offered at no cost to

¹ Benet Laboratories, US Army Armament Research, Development and Engineering Center, Watervliet, NY, 12189, gkendall@pica.army.mil.

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students. Eligibility criteria for student participation include US citizenship and enrollment in an appropriate HBCU/MI or TC Bachelors Degree program (engineering or science). Communication between students and mentors is anticipated to occur on a weekly or biweekly basis. Mentor - student discourse may include discussions of current research, input or suggestions regarding student projects, or the recommendation of additional coursework that may prove helpful to students in a given field. An Army staff member monitors the program throughout the year, and a representative (faculty or staff) from each participating HBCU/MI campus functions in a similar capacity. Currently being run as a one-year pilot program, all participants (students, mentors and monitors) will be surveyed and feedback will be incorporated into a proposed second year of the E-Mentor program.

PROGRAM STATUS

A one-year pilot program is currently underway. Prior to its initiation, it was necessary to identify Army scientists and engineers to serve as mentors. Following a general announcement of the program at both the Watervliet and Dover ARDECs, a significant number of technical staff volunteered to participate as mentors. Several measures were then taken to publicize the program to the HBCU/MI community. The E-Mentor program has been continuously featured on the Army Materiel Command's (AMC) HBCU/MI website [5]. Briefings on E-Mentor have been presented at two Department of Defense (DoD) HBCU/MI Technical Assistance Conferences and a DoD Annual Minority College Relations Program (MCRP) Chancellor's Day and Workshop. AMC designed and printed brochures describing the E-Mentor program, which were distributed at these meetings. Announcements of the program were also sent directly to those professors and administrators from HBCU/MI campuses that have participated in previous teaming initiatives with Benet Labs and the Dover ARDEC. Unfortunately, these initial efforts have produced a limited number of students for participation in the E-Mentor program. Therefore, a scaled-down program was launched in the spring of 2000. Interested students were matched immediately with appropriate Army scientists and engineers. In an effort to provide additional benefit to this mentoring experience, female students were matched with female mentors whenever possible. Army staff and representatives from participating campuses are now monitoring the program. At the conclusion of the spring 2001 semester all E-Mentor participants (students, mentors and program monitors) will be formally surveyed and feedback will be incorporated into a proposed second year of the program.

FUTURE PLANS

The E-Mentor program will continue to evolve and adapt according to the feedback of participants. Informal comments that were recently solicited suggest that E-Mentor is successful in satisfying the program objective of providing an encouraging and informative experience for students. Participants indicated that their mentors have been helpful in providing a variety of information, including websites and other references on scientific research and even career-related topics. When asked whether or not he would recommend the program to his peers, Joseph Langat from Bethune-Cooke College stated that "fellow students should join the E-mentor program without hesitating." The Army mentors have indicated that correspondence with students has served to broaden their awareness of the research conducted at participating campuses. This knowledge may potentially benefit both the campuses and the Army should future joint research opportunities avail themselves. Further, one student participant has expressed interest in becoming a summer intern at one of the ARDEC locations. Through communication with ARDEC scientists and engineers, students can be kept abreast of hiring opportunities, including the possibility of permanent employment following completion of their B.S. or B.E. degrees.

Several measures are now underway to increase the number of students participating in the E-Mentor program. Previous attempts to publicize the program have largely focused on professors and administrators whose numerous responsibilities may have prevented them from widely disseminating program information to students. In an effort to reach students directly, a press release is currently being prepared, to will be submitted to HBCU/MI and TC student newspapers. This article will provide students with a description of the program and contact information for participation. Further, brochures describing the program will be sent directly to appropriate campus offices (e.g. Dean of Students) and student groups (e.g. student chapters of the National Society of Black Engineers).

SUMMARY

While the one-year pilot program is currently underway, early indications are that E-Mentor provides a significant positive experience for minority students.

The ARDECs benefit directly from this program satisfying their organizational goals to:

- Be a good neighbor by developing mutually beneficial relationships with our surrounding communities (both locally and nationally)
- Promote interest in science and engineering Provide role models for students
- Enhance image of the ARDECs and the US Army in the eyes of the surrounding and extended

community. Increase employee morale by performing rewarding voluntary work.

Further benefits to the ARDECs include the possible recruitment of E-Mentor participants for employment following completion of their Bachelors degrees. As these organizations are committed to increasing diversity internally, E-Mentor may provide an excellent vehicle for identifying talented new engineers and scientists. Finally, through correspondence in this program, Army researchers can learn about current research efforts and the capabilities within various academic departments at HBCU/MI and TC campuses, and thus may identify areas for potential collaboration.

While electronic mentoring is a relatively recent phenomenon, successes have been reported for programs that have been designed for younger students (primary and secondary) [6]. E-Mentor differs from these current efforts as it focuses on college-level minority students from the HBCU/MIs and TCs..

While the potential impact of the E-Mentor program is large, the time spent by Army scientists and engineers participating as mentors has been reported to be small (15 – 20 minutes weekly or bi-weekly). Despite the extensive demands on these researchers due to the nature of their careers, many feel that a commitment of this nature is both manageable and in the best interest of the scientific and engineering fields in general. It is therefore our hope that interested colleagues from other organizations (government or industry) will consider teaming with us in the E-Mentor program, or will initiate a similar program. We believe that efforts of this nature play an important role in ensuring a diverse pool of future scientists and engineers.

ACKNOWLEDGEMENTS

The author would like to thank several people whose support has contributed to the development and implementation of the E-Mentor program, including Benet Lab's Director Mr. Russ Fiscella, ARDEC Associate Technical Director Mr. John Hedderich, TACOM-ARDEC Operations Research Analyst Ms. Adrienne Cheniqua Sapp, AMC Assistant Deputy Chief of Staff for Research, Development and Acquisition - Science, Technology and Engineering Ms. Renatta Price, AMC Chief of Tech Application and Lab Management Team Jack Byers and BRTRC Technology Research Corporation's Senior Analyst Mr. Richard W. Lind. The author would also like to express appreciation for her own mentor, Benet Lab's Dr. Paul Cote, who for many years has been an exemplary role model.

REFERENCES

- [1] National Science Foundation. Women, Minorities, and Persons with Disabilities in Science and Engineering: 2000. VA: National Science Foundation, 2000.
- [2] Bird, Stephanie J. et al. 1993. Mentoring means future scientists. Association for Women in Science. pp. 33-68
- [3] Gibbons, A. 1992. Mentoring. Science 255:1368-1369.
- [4] Sandler, Bernice R. Mentoring: Myths and realities, angers and responsibilities. In: A Hand Up: Women Mentoring Women in Science ed.: D.C. Fort. pp. 271-279.
- [5] http://www2.brtrc.com/amc/hbcu_mi/
- [6] <http://www.telementor.org/>

AUTHOR

GAY KENDALL

Dr. Gay Kendall is a Physicist at Benet Laboratories, US Army ARDEC, Watervliet, NY. She holds a Ph.D. in Engineering Physics from Rensselaer Polytechnic Institute, and BS. and MS. degrees in Physics from the State University of New York at Albany. As a researcher, Dr. Kendall conducts investigations of solid state and metallurgical phenomena involving mechanical and thermal properties of advanced materials. She is also coordinator for educational community outreach programs at her laboratory, overseeing and participating in activities including job shadowing, mentoring, pen-pal scientists, student/faculty tours of the lab, and conducting "hands-on" science workshops for both primary and secondary students. Dr. Kendall also coordinates Benet's teaming initiatives with the Historically Black Colleges, Universities and Minority Institutions (HBCU/MIs). She is an Adjunct Faculty member at Rensselaer Polytechnic Institute in Troy, NY.