

RECRUITING AND RETAINING TODAY'S ENGINEERING STUDENT: AN INTEGRATED APPROACH AT VALPARAISO UNIVERSITY

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Abstract ? Perhaps the most important goal of an engineering educational program is to have a system that addresses the needs of the College in an effective manner. Supported by an AT&T Foundation Grant and Alumni endowments, Valparaiso University College of Engineering is doing just that. In July of 2001, the Hesse Learning Resource and Assessment Center was established. Based on a mission to support recruitment, retention, and assessment in the college, the center acts as the heart of the engineering program. Information and special projects flow in and out of the center on a regular basis providing support for faculty and students. To give the center a strong support staff, students were selected by faculty to provide peer tutoring in all areas of engineering offered by Valparaiso University. The director of the center and this tutoring staff are currently phasing in all aspects of the support that this center will provide the college. These evolving programs will be discussed in depth in this paper.

INTRODUCTION

Recognizing that student success is the primary goal of an undergraduate engineering program, the administration and Engineering Faculty at Valparaiso University have developed two initiatives to enhance their academic program. These initiatives are the creation of the Hesse Learning Resource and Assessment Center and the Hesse Scholar Program. In combination, these two programs will support the College's commitment to provide an engineering program that serves highly talented students with tutoring and mentoring opportunities as well as highly promising students who need additional support in the classroom.

THE LEARNING RESOURCE AND ASSESSMENT CENTER

In order to have a key role in recruitment of outstanding engineering students, all programs for prospective students are centered in the Hesse Center. Admissions visit days, engineering building tours, and student inquiries are handled and promoted by the center coordinator. This includes everything from talking to parents about specific student needs to organizing College of Engineering mailings to admitted students. This step in the process is crucial to student success. It provides a connection to the students even before arriving on campus and during their first

experience in the halls of the engineering building. This connection makes using the Hesse Center an automatic step in the student's day when the need arises. On the other side of the picture it also allows the center director to be prepared for the needs of the incoming class of students.

When students arrive on campus as a student, the most extensive program begins. That is promoting student retention through the use of peer tutoring and other programs. The Learning Resource Center offers the following services:

1. Peer tutoring in Math, Physics, and Engineering
2. Group study sessions
3. Academic Counseling
4. Proofreading of technical papers, lab reports, and resumes
5. Resources on study skills
6. Faculty resource files

One-on-one tutoring is offered for all engineering students six days a week. Tutors represent all four major areas of study and offer tutoring in all courses taken by engineering students. These peer tutors are expected to participate in training offered by the center director in tutoring strategies and techniques as well as how to work with special needs students. This enhances the outstanding skills each of these students possesses when selected as a tutor. In addition to making the students aware of the services provided by the peer tutors, it is also important to make the physical appearance and atmosphere of the center appealing to all the students. This can be accomplished by finding a central location for the center and allowing the students to contribute to and adapt the space as it grows.

Even though a strong tutoring program can be available to all students, there will still be some that need a more individualized program. These students need to be identified by the center director before their academic stability reaches a crisis state. In most cases this can be done with strong communication with math, science and engineering faculty members. Faculty members are given reports on a regular basis to inform them of which students have used tutoring programs for their classes. Faculty members also share information with the center director about which students may need additional support several times throughout the semester. Interventions can then be used to provide these students with the tutoring support needed. In some cases this may even be support in study skills, time management, and test-taking skills. Special attention is given to students having difficulties with particularly challenging first year

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courses especially those students whose pre-collegiate experiences in Math and Science could limit their potential success.

The last objective of the Learning Resource and Assessment Center is to provide assessment support for the faculty and curriculum. The director is responsible for developing and collecting academic assessment data on an ongoing basis to help inform the faculty for curriculum development allowing them to make improvements at least twice a year. This assessment process is also used to help meet ABET accreditation standards and requirements. Since all reports are processed in the Hesse Center there is consistency throughout the departments and one main collection area. In addition to making the outcomes-based assessment procedure more organized and efficient, it gives the faculty members more time to focus on teaching and improving their courses to meet the student needs and objectives of the program. Feedback and suggestions can be collected and organized from several groups of constituents such as alumni, students, and employers without extensive faculty involvement until the feedback loop needs to be closed with improvements to the program.

THE HESSE SCHOLAR PROGRAM

The Scholar Program is designed to attract a special group of academically talented students. It builds on the broad, well-rounded educational opportunities at Valparaiso University focusing on the institutions strong ethical and service dimensions. It will not only provide educational enhancement activities but will also reinforce the scholars' core knowledge used in the practice of engineering through tutoring.

Since financial considerations are often the determining factor in choosing an engineering school, an annual scholarship is awarded to those students chosen to participate in the program. These scholarships will be funded through a special alumni endowment provided by Herman and Helen Hesse. A competitive national review process is used to select these students from those students that have been admitted to the College of Engineering. Students chosen will possess scholarship and interpersonal skills to be able to effectively understand material and communicate it to others. Character, leadership, and service are also important, as these traits will help the scholars serve as role models for other students. This scholarship award is in addition to any other financial-aid programs for which the student may be eligible.

What makes this program unique is the service aspect associated with this position. The Hesse scholars are expected to provide several hours of tutoring and mentoring services to the Hesse Learning Resource Center each week. These services begin with facilitating group study sessions in Calculus and Physics and develop into one-on-one peer tutoring in upper-level engineering courses in their major. The scholars also serve as ambassadors for the College of

Engineering by hosting prospective students and serving on focus groups to give feedback for assessment of current engineering programs in which they have participated. It may seem that these students give many services to the college without receiving much in return but it is a mutually beneficial relationship. The scholars engineering education is greatly enhanced by this program. The scholars exhibit a higher sense of responsibility and maturity than can be learned from coursework alone. One goal of the program is to encourage these students to assume leadership positions and to see work as a vocation and not just a source of income. It will also develop teamwork and communication skills that are very important in the engineering profession.

At this time the first group of seven Hesse Scholars are completing their first year at Valparaiso University with great success. These students will continue in the program until graduation as long as the following criteria are met:

1. The scholars must be taking courses to progress toward an engineering degree,
2. They must maintain a minimum of a 3.0 GPA,
3. They must provide a minimum of 5 hours of service to the Learning Resource Center a week.

During their second year in the program, these scholars will be leading group study sessions in Physics and Differential Equations as well as acting as mentors. The incoming class will then take over Calculus group study sessions. As the program progresses, the Learning Resource Center will be entirely staffed by Hesse Scholars that will replace the current peer tutors one class at a time.

CONCLUSION

In combination, these two programs provide a unique approach to unifying the College of Engineering programs. Recruitment, retention, and assessment can all be addressed together in one center with an accurate overall view of the college. This not only provides support for the students but also for the faculty making it the heart of the college with a network of programs to support student success.

ACKNOWLEDGMENT

The Hesse Learning Resource and Assessment Center is dedicated to former College of Engineering Dean Herman Hesse and his wife, Helen. They always embraced engineering students and other young people as their family. Joining the VU family more than 50 years ago, the Hesses shared in the efforts to build the college into what it is today. Herman served as the college dean from 1949 until 1965, guiding the transformation from a newly reinstated program into a fully accredited college. The Hesse Learning Resource and Assessment Center is an appropriate memorial to a couple whose love for students will live on through the scholarships provided as part of the center's program.