Abstract

For the Fall Semester 1999, new freshmen and new transfer students entering the College of Engineering and Applied Science at the University of Colorado at Boulder, were advised to register for their courses via a web-based registration system. This registration was completed prior to meeting with a faculty or staff advisor, and prior to an on-campus orientation program. Previously, the College utilized a telephone-based registration system with mixed results. Today the development of a web-based system provides a more visual and user-friendly registration system. This study comes from a College interest in securing a better understanding of the new student registration experience. A telephone log was maintained for this study by faculty and staff advisors and a follow-up e-mail survey was conducted of our new students once the Fall Semester was underway. This survey secured new student comments on the registration experience and their level of satisfaction with the web-based registration system. Overall, most students registered successfully and were satisfied with this registration process. However, a few students did find it necessary to meet with an advisor to answer specific questions prior to registration. Also, some problems were encountered early on the first day of new freshman registration, when the web-based registration system was overloaded and new freshmen were directed to the original telephone-based registration system. A small number of our new students also found our registration instructions to be vague and incomplete in select areas, prompting a number of calls to departmental faculty and staff advisors. Minor new student schedule adjustments were required once these new students were on campus for the Fall Semester.

1. Past Registration Practice

Some colleges at the University of Colorado at Boulder have elected to offer multiple on-campus registration and orientation programs for their new students during the summer prior to the Fall Semester. The College of Engineering and Applied Science has not participated in these summer programs because of concern over the potential cost for new students, difficulties in arranging these programs to accommodate student schedules, faculty and staff summer work schedules, and an assumption that these two-day programs were not needed because of our structured engineering curricula. For the decade prior to the Fall Semester 1999, engineering students registered via telephone or while attending the New Student Orientation Program, offered immediately prior to the Fall Semester.
With much greater student use of the World Wide Web, a decision was made by the University of Colorado at Boulder to develop a web-based registration system to supplement the existing telephone-based system. The web system provides our students with information on almost all campus programs and services. For example, a means to check course schedules and grades, order textbooks, update addresses, and apply for College of Engineering merit-based scholarships. As with many colleges and universities, the web is increasingly used as a reference and operational tool that integrates a great variety of College and University programs and services. Surveys conducted by the Office of the Registrar indicated a strong student preference for using a visual (web) mode of registration over the non-visual (telephone) mode. Internal student surveys within the College of Engineering indicated that more than 70% of our students owned a computer and all others had access to a computer. Also, our current and potential students were increasingly accustomed to using the web for many different activities.

The College registration instructions to our new freshmen and new transfer students was revised to provide information on both the web and telephone-based modes of registration. Registration instructions and registration information, along with a Schedule of Courses and Registration Handbook was mailed to our new students early during July of 1999. New freshmen had registration access to the web-based student information system on July 20 and 27, and new transfer students had access on July 15 and 22. If students did not register on these days, a final registration period was offered from August 2-13, and a late registration period would follow beginning with the first day of Fall Semester classes. Based upon our prior engineering student registration experience, we were confident that most of our new students would not delay their registration because of a lack of familiarity with the registration process, procedures, or uncertainty over the courses to be selected.

2. Prelude to Registration

July registration periods were selected because about one-half of our new freshmen have Advanced Placement (AP) credit, and would not know their AP examination scores prior to mid-July. This also permits our new freshmen and transfer students the time needed to receive their final grade in college transfer courses and have their transcripts sent to our Office of Admissions for initial evaluation, before being forwarded to the appropriate academic departments for evaluation concerning degree requirements.

Prior to the student receipt of these registration packets, faculty and staff advisors received numerous telephone calls from new freshmen and transfer students, inquiring about the registration process and with specific questions about the transferability of Advanced Placement (AP), International Baccalaureate (IB), and college credits. Many of these calls were motivated because our new students had friends who were coming to other College on-campus summer registration and orientation programs, and they were concerned over a later registration period and their access to recommended courses. A few students, mostly those who lived locally, did come to the Boulder Campus to meet with a faculty or staff advisor about their course selection --- usually in conjunction with a visit to check on the status of their residence hall assignment.
Faculty and staff advisors in the academic departments and the Engineering Dean’s Office kept a log of student telephone calls with questions about course selection and the registration process. A Dean’s Office toll-free telephone number was available for students, from which calls were directed to the appropriate academic departments. Consequently, many student calls were forwarded to the academic department faculty and staff advisors. College faculty and staff recorded a total of 255 telephone calls, with calls from 219 new freshmen (38% of the new freshmen ultimately enrolled) and 36 new transfer students (43% of the new transfer students ultimately enrolled). It is my estimation that we ultimately received calls from 45-50% of all new freshmen and 65-70% of all new transfer students. Staff advisors, who were more available during the summer than faculty advisors, answered most student telephone calls. Also, there were a few student contacts via e-mail; staff recorded these as if a telephone call had been made.

In this telephone log, a student usually asked multiple questions; consequently the number of responses does not equal the total number of calls received. A summary of the faculty and staff telephone logs is noted below.

SURVEY OF REGISTRATION INQUIRIES

<table>
<thead>
<tr>
<th></th>
<th>New Freshmen</th>
<th>New Transfers</th>
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</thead>
<tbody>
<tr>
<td>New Freshmen:</td>
<td>Males 162</td>
<td>Females 57</td>
</tr>
<tr>
<td>New Transfers:</td>
<td>Males 28</td>
<td>Females 8</td>
</tr>
</tbody>
</table>

Nature of student questions or problems:

<table>
<thead>
<tr>
<th></th>
<th>New Freshmen</th>
<th>New Transfers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selection of Math/Calculus Course(s)</td>
<td>37</td>
<td>1</td>
</tr>
<tr>
<td>Selection of Chemistry or Physics Course(s)</td>
<td>43</td>
<td>0</td>
</tr>
<tr>
<td>Selection of Computer Science Course</td>
<td>36</td>
<td>2</td>
</tr>
<tr>
<td>Selection of Engineering Course(s)</td>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td>Selection of Technical Elective Course(s)</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Selection of Humanities/Social Science Course(s)</td>
<td>41</td>
<td>2</td>
</tr>
<tr>
<td>Question on Transferability of Course(s)</td>
<td>9</td>
<td>16</td>
</tr>
<tr>
<td>Question About the Registration Process</td>
<td>29</td>
<td>6</td>
</tr>
<tr>
<td>Question on Personal Matters (housing, meals, etc.)</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Questions on AP or IIB Credit</td>
<td>38</td>
<td>5</td>
</tr>
<tr>
<td>Questions on Other Topics</td>
<td>70</td>
<td>10</td>
</tr>
</tbody>
</table>

We also asked the faculty or staff advisors receiving the student calls to provide an estimate as to whether the new student had carefully read the mailed registration materials prior to making the telephone call; the staff choices were "yes," "no," and "uncertain." Among the faculty and staff there was a degree of uncertainty as to whether these new students had carefully read our registration instructions. There were 32 notations that the student had not read the materials and 63 notations of "uncertain." It
seems that about 60% of the new students had not carefully read through their registration materials. The males tended to have more questions about the selection of their math, science and computer science courses, and the females had more questions concerning the selection of their humanities or social science courses. We were surprised with the number of telephone calls coming from parents--approximately 10% of all calls. The parents claimed to be calling for their son or daughter because their child was not at home, was traveling, was at work, or had asked the parents to call with unanswered questions.

It appeared from these telephone calls that our mailed registration information was not being carefully read by many students--and their parents. A majority of their questions had been answered in the materials provided, but may have been missed by a casual reading. There were also a number of terms in common use in higher education that may not be fully understood by these new students such as "lecture," "recitation," "corequisite," and "linked activities." We need to be more careful not to insert our terminology in the registration instructions without adequate definition. Several students had difficulties when attempting to evaluate how their AP, IB and prior college credits would apply toward degree requirements. We did neglect to insert information on the evaluation of IB credit; this will be corrected in next year's registration instructions. Sample student questions include the following. "Do my calculus credits apply toward the engineering calculus course?" "Is chemistry the same as college chemistry or Chemistry for Engineers?" "My computer science course was in C, will this count toward a C++ course?" Overall, our new transfer students had more specific questions on the acceptance and application of college credits toward degree requirements. We anticipate that many of these questions must be answered by a faculty or staff advisor, and cannot be answered through a general College registration instruction packet.

Without yet knowing how the web-based student registration process would work, several of our staff advisors were concerned over what appeared to be a larger than normal number of telephone calls from students and parents. The staff was also questioning, as they had done the year before, whether these new students were carefully reading our registration materials and the apparent difficulty many new freshmen had in evaluating their AP, IB and concurrent college credits.

3. The Web-Based Registration Periods

This College, and the Office of the Registrar, was not fully prepared for the surge of new freshman that hit our web-based registration system on the first day open to new freshman registration. On July 20, all new freshmen had access to the web-based registration system beginning at 8:00 a.m. MST. By 8:30 a.m., the large volume of incoming telephone calls taxed the web-based registration system and several students were directed to the telephone-based system as an alternate means of registering. However, these new students had been instructed to complete their registration according to web-based instructions, and some changes were necessary to use the telephone-based system. While the web-based system never went down, a large number of new freshmen did report delays in registration access and being directed toward the telephone system.
There was also an apparent sense of unwarranted anxiety by the new freshmen because, prior to the registration day, these students noticed on the web that a limited number of seats were available in the recommended classes. They did not realize that the number of seats available in courses on registration day is increased to meet projected demand. It seems that these new freshmen thought they must register early on July 20 or would not have an opportunity to be enrolled in the recommended courses. Several students attempted to call the Office of the Registrar, inquiring about the status of the web and telephone-based registration systems, further tying up incoming telephone lines and creating additional anxiety from students still attempting to register.

Students continued, however, to gain access to the web-based and telephone-based registration systems and by 11:00 a.m. on July 20 they had full access to either system. Registration activity began to taper off by 11:30 a.m. with most of our new freshmen registered. By 4:30 p.m., 520 new engineering freshmen had registered. This surge of new freshmen was not anticipated by the College of Engineering and Applied Science or the College of Arts and Sciences, which offers many of our entry-level courses. We found it necessary to work closely with the College of Arts and Sciences during this day to open additional spaces in Calculus I for Engineers, Calculus 2 for Engineers, General Chemistry for Engineers, and General Physics 1. During past years, the engineering students had a two-week open registration period and this greater length of time allowed a more leisurely approach to registration.

To further complicate matters, the College of Arts and Sciences was also attempting to register about 400 of their new freshmen, who were attending an on-campus registration and orientation program on July 19 and 20. These students were scheduled to register for classes beginning at noon on July 20. By the time the Arts and Sciences students were to begin registration, the spaces designated for them in many of the humanities and social science elective courses had been filled by the new engineering freshman. The College of Arts and Sciences had to open up additional spaces in many of their courses so their own students could have access to the core courses recommended by their advisors.

After about 11:30 a.m. on July 20, the Office of the Registrar, the Engineering Dean’s Office, and the College academic departmental offices received few telephone calls from new freshmen or new transfer students-for the rest of the summer! There were isolated telephone calls from new freshmen, but they were infrequent and were usually questions about non-registration topics. Examples of the questions received include the following. "Is the mandatory New Student Orientation Program in August required?" "Does the Engineering Dean recommend that our new freshmen live in the Engineering Residence Halls?" "Is a computer required?" "What type of a computer (or calculator) do you recommend?" And, "how do I select a double degree or a minor?" On the second day of new freshman registration, July 27, only 47 additional new freshmen registered and few calls were received.

The first day for new transfer students to register, July 15, was relatively uneventful. A few telephone calls were received in the departmental offices and 45 transfer students registered. The second registration day, July 22, was quiet with only 15 additional new
transfer students registering. With few exceptions, the remaining transfer students would register during the final registration period in August; a total of 9 new freshmen and transfer students registered during this late registration period. In retrospect, it seems that two-thirds of the new transfer students needed to talk with a faculty or staff advisor prior to registering for the Fall Semester. Almost all new transfer student questions to faculty and staff advisors had to do with how specific transfer courses would be used to meet degree requirements in their new academic program.

4. Student Survey on the Registration Process

Early during the Fall Semester, the Dean’s Office conducted an e-mail survey of the new freshmen and new transfer students who entered the College that Semester. Of the 581 confirmed new freshmen and 84 confirmed new transfer students, we received only 30 new freshman surveys and one new transfer student survey. While the number of these returned surveys provide only a very limited sample of student responses, the responses are of interest. An assumption made by this researcher is that we are more likely to hear from a student who was frustrated or who had problems with his or her registration process than a student who did not have problems.

All of the new freshmen responding to this e-mail survey received their registration materials during the period from July 2 through 16, in sufficient time to prepare for the upcoming registration process. There were six (20%) new freshmen respondents and one new transfer student who found shortcomings in the registration instructions. Most of the shortcomings noted by freshmen were related to how their AP, IB or concurrent college credits would apply toward engineering degree requirements. The transfer student is also an athlete and we did not address the question of how an athlete might select their courses when considering sport practice limitations. There were seven new freshmen (23%) that indicated a desire to meet with a faculty or staff advisor prior to registration, and 16 new freshmen (53%) and one new transfer student contacted their major department prior to registration. Only three (10%) of the students responding to this survey called the Dean’s Office for assistance, and their questions were primarily about AP of IB credit or the schedule and content of our New Student Orientation Program.

Another survey question asked students about their overall level of satisfaction with the registration process. Nine students (29%) indicated "highly satisfied," 12 (39%) indicated "satisfied", 8 (26%) indicated "generally satisfied" and two (6%) indicated "not satisfied." In the comments provided, most of the dissatisfaction resulted from: problems in accessing the web-based system early on their first day of registration; uncertainty as to how their AP or other college credits would apply toward degree requirements; and anxiety that they were expected to read and register for courses without a significant amount of personal attention by the College.

This small sample of survey respondents also indicated they did seek the assistance of others in preparing to register. The most frequent source of assistance to students was parents 10 (32%) or a CU faculty or staff member 8 (26%), followed to a lesser degree by a college student friend 4 (13%) or another friend 2 (7%). This may help to explain the
large number of telephone calls that the departments and the Dean’s Office received from parents with questions about course selection and the registration process.

5. What Did We Learn?

We learned that a web-based registration system works well for most new students, as long as we provide a variety of means to answer their specific questions about the courses to be taken and the registration process itself. Specific lessons learned are:

- Ensure we provide adequate faculty and staff advisor access for students once the registration materials have been sent to new students. About one-half of the new freshmen and three-quarters of the new transfer students are likely to call with questions.

- Anticipate that many new students, especially freshmen, will not carefully read their registration instructions, will be anxious about making course selection decisions, and are likely to consult with parents and student friends (non-experts) about their proposed schedule. Prepare for numerous calls to faculty and staff advisors to seek assurance that the correct registration decisions are being made.

- Review registration instructions to ensure they are comprehensive, with special attention to those sections related to the acceptance and application of college credits earned by Advanced Placement (AP), the International Baccalaureate (IB), and college enrollment.

- Do not give all new freshmen access to the registration system at the same time, spread out their registration times throughout a day so they do not overload the online registration system and support staff.

- Probably about 20% of the new freshmen will find this registration experience daunting. There needs to be a provision to personally assist these students, otherwise, they may view the College as impersonal and not concerned about them.

- Provide an opportunity during the New Student Orientation Program for all new students to meet personally with an advisor, to review their Fall Semester course schedule, and make necessary schedule adjustments.

- Do not underestimate the impact of parents in this registration process. If the parents are confused about the selection of courses or the registration process, they may add to the student’s frustration and are likely to call the College with questions.

Online student services, such as web-based registration, are of great interest in higher education. According to a recent AACRAO survey of 334 higher education institutions, about 63 percent provide online class schedules and 71 percent provide online catalog
information. However, only 30 percent offer online registration and 29 percent offer online schedule planning services. The number of public and private higher education institutions that will implement an online registration system is likely to increase significantly in the next few years. It is important that we begin to learn from those institutions now utilizing web-based registration systems and provide an even more user-friendly system to our students in the future.

Bibliography
1. The University of Colorado computer system referenced in this paper is a large mainframe system that supports a four-campus Student Information System (SIS); which has been in use since the summer of 1988 and provides real-time access to almost one million student records. This system had one server until July 1999, when a second server was added to improve access. The telephone-based registration system can receive up to 64 calls at a time and the web-server has 12 access ports.
3. These new freshmen and new transfer student registration instructions may be found at this University of Colorado website URL [http://www.colorado.edu/enizineerinwar advisiniz.html].

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