

FEEDS: From Technology to the Learner

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The Florida Engineering Education Delivery System (FEEDS) has been delivering engineering graduate courses, including four graduate engineering management programs, the last 22 years to help engineers and other industry professionals meet the challenges of obtaining a graduate degree and new skills. In addition, for the last 14 years engineering technology courses and degrees have been included. FEEDS operates under the policy guidance and direction of the Florida Council of Deans, representing 11 private and public engineering colleges in the state. As FEEDS uses the latest technologies to serve hundreds of students each year, an effort to expand and coordinate learner support services has lagged behind. This paper gives FEEDS statistics and a focus of this paper addresses an implementation outline for a learner component of FEEDS from the Engineering Management degree perspective. Once students have made the decision to take courses at a distance, a different support is needed from the face-to-face students. This support is both academic and non-academic and needs to be designed for both graduate and undergraduate students.

FEEDS, a consortium of institutions delivering engineering and technical education at a distance, was established by legislative mandate in 1982 in response to industry's need for access to high quality graduate degree programs and extended studies in engineering. The first degree program was the Engineering Management Masters degree from the University of South Florida. FEEDS operated under the Florida Board of Regents (BOR) until the Florida educational system was reorganized and the BOR phased out circa 1999. Three private institutions joined the eight public institutions in the year 2000, and the FEEDS menu has expanded to permit delivery of graduate and undergraduate engineering and technical degree courses and programs, certificate programs, topical non-credit continuing education courses and seminars, and training programs. Currently, both synchronous and asynchronous delivery are web-based via the Internet.

FEEDS currently operates under the guidance and direction of the Florida Council of Engineering Deans (FCED). A State System Operations Committee (SSOC) develops operational protocols, establishes and maintains partnerships with Florida-based high-tech industries and government agencies, coordinates the marketing and delivery of its distance learning products, works collaboratively to identify and implement new delivery technologies, and engages in cooperative efforts to secure resources needed to support life-long learning delivered at a distance for engineers and technical professionals.

With a goal to produce a website, SSOC requested funds from the FCED to partially support a dedicated web development individual, who would design and implement a statewide website. The first generation of this website is available at <http://www.feedsnet.org/>. In addition to fulfilling the marketing mission of the website by making FEEDS information available to anyone at any place or time, SSOC envisioned a website that could solve some of the data latency problems associated with keeping FEEDS information current and accurate.

Four years ago the SSOC evaluated the emerging distance learning course delivery technology in an attempt to plan future hardware upgrades. At the time, there were several technologies that appeared promising, but the problem that remained was the inability to accurately forecast the consumers' choice of playback technology. While SSOC could decide upon a delivery technology that suited their purposes, the real decision needed to be made by the telecommunications providers and the end-users (students). It was concluded that Internet streaming of course videos was the most favored technology, but the uncertainty of an accurate time-frame for ubiquitous deployment of home broadband internet access meant that another format, i.e. CD-ROM or DVD-ROM, would be available as an intermediate measure. In reality, it appears that the broadband deployment occurred much faster than anticipated.¹

Statistics

Academic Year 2003-2004 was outstanding in terms of FEEDS productivity and achievement. Five hundred seventy graduate and undergraduate credit courses, Table 1, were delivered to over 100 sites throughout Florida, the nation, and the world. This activity represents a 3½ % increase in the number of courses delivered compared to AY 2002-2003. Only the public institutions are given.

University	Undergraduate	Graduate	Total FEEDS
FAMU-FSU	5	10	15
FAU	21	65	86
FIU	44	45	89
UCF	55	135	190
UF	2	106	108
USF	22	60	82
Total	149	421	570

Table 1. Course Offerings Academic Year 2003-2004

The 5,308 course enrollments in Table 2 reflect a significant 17.4 % increase over last year's productivity, notwithstanding that last year's enrollment figures were the highest in FEEDS' history. Only the public institutions are given.

University	Undergraduate	Graduate	Total FEEDS
FAMU-FSU	15	38	53
FAU	224	603	865
FIU	717	308	1025

UCF	1066	1170	2236
UF	30	575	605
USF	184	378	562
Total	2236	3072	5308

Table 2. Course Enrollments for Academic Year 2003-2004

The total number of course enrollments recorded by consortium members since AY 1984-85 are reflected in Table 3.

Years	Undergraduate	Graduate	Total FEEDS
84-85	0	1800	1800
85-86	0	2578	2578
86-87	0	3035	3035
87-88	0	3274	3274
88-89	0	3382	3382
89-90	0	3575	3575
90-91	0	3902	3902
91-92	0	4243	4243
92-93	0	4203	4203
93-94	0	3704	3704
94-95	0	3481	3481
95-96	666	3049	3715
96-97	352	2777	3129
97-98	511	2396	2907
98-99	547	2567	3114
99-00	1151	2882	4033
00-01	992	2759	3751
01-02	1457	2971	4428
02-03	1631	2964	4595
03-04	2236	3072	5308

Table 3. All Course Enrollments for Academic Year 1984-85 to Present

Learner Component

The final focus of this paper addresses an implementation outline for a learner component of FEEDS. The first degree program for FEEDS was Engineering Management and currently there are four Engineering Management Master's degrees offered on FEEDS. The nature of engineering management courses makes this degree an easier entry into the offering of distance education degrees. There are many courses offered that do not lead to a degree, but are part of a face-to-face curriculum, a certificate, or continuing education. Thus the learner needs to be informed about what is available for their own needs. Once students have made the decision to take their courses at a distance, a different support is needed from the face-to-face students. This support is both academic and non-academic and needs to be designed for both graduate and undergraduate students. Several things have changed from the past for FEEDS students.

- FEEDS database is in place and students may clearly see what degree programs or certificates are offered at other FEEDS school, rather than look at programs in their geographic area.
- Courses are delivered by video streaming
- No longer are the primary targets the human resource departments at different industries as they gather information for students at their employment.

This means that now a student may enroll in a degree or certificate program and never have face-to-face contact with a human, only with a computer.

First, the customer needs to be identified. Initially customers included individual students and industries offering the course to employees. Now, with video streaming the customer is predominantly the student. This typical student even in the undergraduate programs, is an adult learner usually balancing work and family responsibilities. With their busy schedules online students need to have flexible schedules. Because of removing the middle-person (industry human relations personnel) it is most important for student support to be organized and clear. The new website and proposed data base of courses is the first step for the potential students.

Now a person desiring a Master's in Engineering Management (EM), for instance, may look at the website and see which schools offer EM degree programs, not just EM courses. Also on this site there is an explanation of the FEEDS collaboration agreement, Visiting Scholar, which allows a student to take up to nine hours at another FEEDS school, with their advisor's permission. Once a student has selected a particular FEEDS school for their degree the student is directed to that school. FEEDS does not offer the degree, but each FEEDS university is independent with their choice of technologies, courses, and their organizational and management requirements. The key features of FEEDS are given in Table 4.

Features	FEEDS
Program offerings	Primarily credit
Industry partnerships	Client
Budget	Subsidized by individual Colleges – 11 institutions

Organization structure	University board members
Markets served	Statewide-Florida/National-International
Course delivery	Video-streaming
Collaborations	Transfer of up to 9 credit hours within FEEDS system
Driving Force	Academia
Degrees	Offered by each FEEDS' member
Estimated State Population	Florida: 16,000,000+
Customer Base	Private/Public Mix

Table 4. FEEDS Summary

The learner component may be different at each FEEDS university. Organizational characteristics, based on the *Online Teaching Guide*, need to be placed on each FEEDS school's website. These include:

- Admission and registration procedures
- Online advising
- Directions and help. Online learners require access to guidance through the general requirements of the online system. These include: use of a particular platform such as WebCT, reception of the video streamed course, contacting professors.
- Assessment and record keeping. This would include testing, testing sites, how to use the tracking system of grades and courses
- Consistency and organization. Explicit and consistent organization increases the retention, not only of the new material, but also of the students.²

Once these characteristics are agreed to at each institution, SSOC needs to coordinate all the sites so that a learner may find the same type of information on each site. Now FEEDS includes all engineering colleges in Florida. Video streaming over the Internet and a new website and database are in place. This is the time for FEEDS to address a state-wide consistent learner component, as given above, at each school's FEEDS site.

Engineering Management programs that wish to either enter the distance field to offer their degrees or improve their own program now have examples, such as FEEDS, National Technological University, University of Tennessee, Drexel, and others, to use for their own benchmarking.³

Bibliography

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