Continuous Improvement in an MSIS Graduate Program

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Abstract

The quality-oriented organization makes customer satisfaction its main focus. To deliver quality products, process owners must determine the needs, requirements, and expectations of customers. They must then ensure the process outputs meet customer needs. In the context of quality, *continuous improvement* means a systematic approach to closing the gap between customer expectations and the characteristics of process outputs.

This paper details the continuous improvement approach taken with regard to the MSIS program at Dakota State University. The MSIS program is a relatively new program which as undergone continuous changes since its inception. This paper discusses the approach taken by the administrators of the program to establish a mechanism designed to obtain customer feedback and a process to determine and implement changes in the program. The goal has consistently been to make changes that meet the needs of the students, while maintaining or improving the quality of the educational process.

Keywords: continuous improvement, quality, education, MSIS program

1. BACKGROUND

In the fall of 1999, Dakota State University introduced its first graduate program, a Master of Science degree in Information Systems. The program required 30 credit-hours of work, with up to an additional six hours of prerequisite courses and six hours of foundation courses required for those students with neither business and/or technical backgrounds. It was assumed that prerequisite courses could be satisfied by enrollment in existing undergraduate courses offered by the College of Business and Information Systems. The thirty hours of required courses were divided into fifteen hours of core courses, nine hours of courses in a selected concentration, and a six-hour project. The program offered a choice of three possible specializations (concentrations). The capstone IS project required the planning and implementation of an actual IS project. Specializations in the program were Data Management, Networking, and Analysis.

The program was intended to give IS professionals the opportunity to upgrade their skills or to seek an advanced degree that would serve as a formal certification for the work that they had been doing as they ad-

vanced through their IT careers. It was felt that the program would be relatively small, part-time while working for companies in South Dakota. DSU is located in Madison, South Dakota, a community of approximately 6,500 people. Geographically, Madison is about 50 miles from Sioux Falls, the largest city in the state. It is also located approximately 25 miles from the EROS Data Center, which employs a large number of IT professionals.

The program was approved by the Board of Regents in the summer of 1999 and accredited by NCA in August. The program began in September with no formal advertising or promotion. But it did fill a void within the geographic region. Thus, it was able to start in the fall semester of 1999 with thirty-four degree-seeking students enrolled, including two international students and ten non-degree seeking students taking individual courses and considering application. This exceeded early expectations by about ten-to-fifteen student. The students came from varied backgrounds; some were currently working in the IS/IT field, while others were attempting to change careers from non-technical areas. The program began with three courses, two foundation courses and one core course. The initial assumption was that students would be non-traditional working students, so all courses were offered using four-hour classes on campus that met mornings and afternoons on alternating Saturdays. An additional ten students were admitted during the fall for the spring semester. The number of courses offered in the spring was expanded to five courses. Two courses were then offered during the summer – one foundation course and one core course.

Four months prior to the start of the fall semester, DSU hired an administrator for this and other anticipated graduate programs. Her job was to administer this first-ever graduate program and to help the university establish the graduate policies and procedures necessary to implement and operate the program. While she did not bring a wealth of experience in graduate programs, she did bring academic administrative experience and a firm belief in the principles of Total Quality Management.

with a steady-state enrollment of about 25 FTE students taking the degree
This paper describes the process of continuous improvement that was adopted by the Graduate Programs Office (GPO) and the MSIS Program Committee and its impact upon the MSIS program and the student enrolled in that program. A method of continuous improvement was selected because: (1) it is based upon feedback from stakeholders; (2) the university had no prior experience with graduate programs and the desire was to make changes/corrections as quickly as possible; and (3) the graduate program director and the MSIS coordinator both had successful experiences with this methodology from their work at another university.

2. THE GRADUATE PROGRAM COMMITTEE

The University already had a Graduate Council because it frequently offered graduate level courses, especially for teachers seeking further certification and lane changes. Graduate Council was also charged with approving courses and curriculum. It took on the charge of establishing policy decisions for its graduate programs. This council was comprised of representatives from each of the four colleges, the Academic Vice President, and the Graduate Programs Director. This council was responsible for overall graduate policies and issues. A MSIS Graduate Program Committee was created to deal with all operational issues related to the MSIS program. The committee was comprised of the Graduate Programs Director, the dean of the college, and graduate faculty teaching in the program. This committee was charged with ensuring program integrity. It met monthly to review the operations of the program and make any decisions related to the program.

3. THE GRADUATE PROGRAMS OFFICE

The Graduate Programs Office was staffed by the director and one half-time secretary. It was charged with insuring excellence in graduate education at Dakota State University. This office was the primary focal point for graduate students and prospective graduate students, providing one-stop ser-

vices. Because of the newness of graduate programs to the campus, it was decided that the GPO would provide all services for graduate students, including the application process, paying tuition and fees, registering for classes, financial aid, etc. This office provided a warm and friendly atmosphere focused upon customer service, beginning with the first inquiry about the program and progressing through application process, admission, a new student orientation in the fall, and ending with an annual student debriefing session at the end of the academic year. A debriefing was also held for the graduate faculty at the end of the year.

4. THE CONTINUOUS IMPROVEMENT PROCESS

At its monthly meetings, the Graduate Program Committee and the Graduate Programs Director would discuss the how each of the courses were progressing and any problems that the faculty encountered. The committee would then decide if an action was required and if so, whether the Director, the dean, or the committee should deal with the problem. In some cases, a subcommittee was formed to formulate alternative solutions to the problem and bring them to the full committee.

5. A CHANGE IN TRADITION/PRACTICE/CULTURE

Since the MSIS was the first graduate program at a small university offering traditionally undergraduate daytime programs to students who all went home on the weekends, a number of cultural challenges had to be dealt with immediately. For example, the MSIS classes were only offered on Saturdays. But the bookstore, the student services and registrar's offices, and the cafeteria were all closed on the weekend. In fact, the faculty teaching those classes had to unlock the building prior to class and relock it after class. The GPO had to make special arrangements for students to register, pay their bills, and have their student ID picture taken.

6. THE FIRST DEBRIEFING/SWOT ANALYSIS

At the end of the first year, the GPO conducted two debriefings, one for faculty and one for students. The students identified the greatest strength of the program as the GPO; obviously, the customer focus was working. The second strength cited was the faculty – their teaching ability and willingness to help students outside of the classroom. The greatest weakness was the lack of sufficient classes to complete the program on a full-time basis. Based upon the information provided by the faculty and students, a number of changes were made to the program. Some of these are detailed in Table 1.

7. YEAR TWO – A FIRST MOVE TO THE DDN AND THE INTERNET

During the second year, the program size had increased to 60 degree-seeking students, including nine international students. Ten different courses were being offered and prerequisite courses were offered twice a year to facilitate the flexibility of student entry into the program. The program was beginning to attract students from greater distances in the state, so prerequisite courses were offered once as an in-class offering and once as an Internet offering. The state of South Dakota has the Dakota Digital Network available in most communities within the state. This provides interactive audio-video connections among various sites. Using the DDN, prerequisite and foundation courses were expanded to include both in-class and DDN students. A WebBoard (conference-based bulletin board) and chat room were added to telephone and email to facilitate communication among students and faculty. Once the DDN was added, it was a simple step to video-stream the class live to Internet students. That was quickly followed by recording the class and offering it in video-streamed format for those who had to view it asynchronously. During this year, all of the prerequisite and foundation courses were moved to the DDN format and also offered once a year in Internet only format. The Analysis specialization, which had not been selected by any students (most likely because it was ill-defined), was

Problem or weakness	Change
Prerequisite courses were undergraduate courses taught on campus during the day, two to three times per week.	Lower level graduate courses were designed and offered on the weekend that combined two or three undergraduate courses into one graduate-level course.
Students wanted to complete within two years and students not needing the prerequisite courses didn't have enough courses to take full-time.	The number of course offerings was increased.
Students taking two four-hour classes on a Saturday had trouble focusing by late afternoon.	Some classes were moved to nights and courses were schedules so that the courses offered on a Saturday were not likely to be taken by the same students.
It was assumed that students would be coming from an IT background or would be working in the field. In actuality, many did not know how to program.	The introductory programming course was expanded to include the topics from the undergraduate two-course sequence, while remaining one three-hour course.

Table 1: Problems and Resulting Changes

dropped and an e-commerce specialization was added. The year-end debriefing was held in the DDN studio so that the students taking the courses via the DDN could also participate.

8. YEAR THREE – EXPANSION OF DISTANCE OFFERINGS AND REFINING THE PROJECT REQUIREMENTS

The experience with the DDN and Internet was so successful that during the third year, all core courses were added to the distance offerings and preparations were made to begin offering specialization courses at a distance. The program now had 79 degree seeking students enrolled, despite graduating 22 students from the program.

During the third year, the project course was also revised. As the faculty became more comfortable with the application project required of all students, the faculty had begun to create a better definition of what was required of the students. This also had the effect of raising the expectations of what would be an acceptable project. This resulted in a number of students who did not finish their projects during the semester and resulted in Incomplete grades. While this was not a real problem, the rule that Incomplete grades automatically became F grades at the end of the following semester did. The result was that the project course was divided into three courses with more exact requirements aimed at better preparing students to complete their projects on time. Table 2 shows these requirements.

These changes resulted in better organization of the projects by the students (forced upon them by the requirements). A student may not enroll in the next course until the prior requirements are met. The debriefing session for this year was moved to the WebBoard, where students held an asynchronous discussion/SWOT analysis on the program. This resulted in an increase in the number of students participating.

9. YEAR FOUR – GETTING BETTER AT DISTANCE EDUCATION AND THE USE OF THE HYBRID MODEL

During the fourth year of the program, all courses were taught using what was referred to as the Hybrid Model – students were taught in a classroom (which was also a broadcast studio), at remote state sites using the DDN, and on the Internet. All of the students enrolled in a particular class were enrolled in the same class, i.e., there were not different sections for distance students. Team projects typically had teams comprised of an on-campus student, another student from some location in South Dakota, an a student (or two) from out-of-state.

Since many of the faculty did not have extensive experience at teaching distance

Step	Action to be taken by the Student	Result
1	Determine the project to be done, select a faculty supervisor, and obtain approval for the project idea.	Project Idea Approval
2	Enroll in Project Planning, a one-credit hour course in which the library research is completed and a project plan is developed, including a WBS and a Gantt chart.	Project Plan Approval (Graded)
3	Enroll in Project Implementation, a two-credit hour course. Complete the implementation, write a report that formally describes the project and implementation (which is bound and placed in the library), and make a formal presentation.	Project Approval (Graded)
4	If the project has not been completed during the semester, enroll in Project Continuation (one-credit hour course) and continue working on the project.	Project Approval (Graded)

Table 2: Revised Application Project Requirements

classes, the Program Committee worked with the Office of E-education to begin a series of seminars and workshops designed to help the faculty improve their teaching in this environment and to share "best practices" with others. These seminars have been directly beneficial to the faculty and indirectly beneficial to the students in their classes.

At the beginning of the fourth year, a program coordinator was also added by the College of BIS to help administer the program at the college level. The administrator's responsibilities include working closely with the GPO Director on program activities, coordinating the assignment of faculty to MSIS courses, and acting as an advisor for the incoming students, and representing the dean on graduate issues.

The debriefing for the fourth year was again done using the WebBoard. In addition to the normal questions/analysis, the students were asked to identify possible additional specializations. A specialization in ERP was suggested based upon DSU's strong partnership with PeopleSoft, Inc.

10. SUMMARY

This paper has discussed the approach taken by the Director and MSIS faculty to implement a continuous improvement process at Dakota State University. In general, the faculty believe that the program has improved in quality each year since its inception. Students and alumni echo that feeling. Thus far, the program has graduated approximately fifty-five students, all of whom have found jobs in the IT field. The program has continued to grow, as shown in Table 3.

Year	Students Enrolled*	Comments
1999-2000	34	
2000-2001	60	Includes some students from different areas of the state.
2001-2002	79	Includes distance (Internet) students from 10 states.
2002-2003	96	Includes distance students from 19 states and Canada.

*does not include special students

Table 3: Enrollment Growth in the MSIS Program

This paper has not attempted to detail all of the changes made in the program since its inception, but to simply highlight some of the representative changes. The Director and the Program Committee work well together and will continue to make improvements in the program as the needs are identified. That process will never be completed. The paper also does not attempt to compare this program with other MSIS programs.

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