

Distance Learning for Georgia Surveyors

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Abstract

The Engineering faculty at Middle Georgia College has a well-established program in place to serve practicing and potential surveyors who need course credits to meet the educational requirements for registration as a professional surveyor in Georgia. Using state-wide distance learning facilities and innovative approaches to promoting the classes, facilitating registration, and providing remote instruction, the program is in continuing demand by practicing and potential surveyors throughout Georgia. This presentation will discuss the major aspects of the current program and the potential for applying the same practices to meet the needs of other non-traditional students.

I. Introduction

Over the past few years, educators in all areas of the U.S. have sought innovative ways to integrate rapid technological advances in computers and communications with traditional methods of instruction. Thanks to the foresight, planning, and financial support of Georgia State government officials, the University System administrators and college officials, Middle Georgia College has been provided the resources needed to provide distance learning opportunities to residents all across the State of Georgia. In this presentation, the authors will describe one of Middle Georgia College's distance learning programs that has been singularly successful in the hope that our experience will stimulate interest and ideas for others in the development of distance learning programs elsewhere. The authors are fully cognizant that similar programs have been under development at other colleges/universities, and look forward to sharing ideas to improve our efforts through feedback from this presentation and other papers presented at this conference.

Middle Georgia College (MGC) is unique among junior colleges. It is the oldest junior college, not just in Georgia, but in the nation. Additionally, MGC has a tradition of a strong pre-engineering program dating back more than forty years. MGC students transferring to Georgia Tech consistently succeed academically as well or better than entering Tech freshmen. This success prompted the University System to implement a Regents' Engineering Transfer Program (RETP) based on the MGC program that would facilitate the transfer of highly-qualified students from other state institutions to Georgia Tech to complete their engineering degree. Likewise, many students attend MGC for two years before transferring to Southern Polytechnic State University or Georgia Southern University to complete the requirements for a Bachelor's degree in Engineering Technology. To complement this strength in its engineering curriculum MGC in 1997 began two new initiatives: (1) preliminary approval was granted to establish a new Associate's degree program in Civil Engineering Technology, and (2) a new Georgia Academy for Math, Engineering, and Science was sited at MGC. The GAMES

program offers the opportunity for highly-qualified Georgia high school students to attend MGC as resident students, earning college credits for their work while simultaneously completing the requirements for their high school diplomas. And finally, MGC has maintained a strong commitment to assist non-traditional students who are interested in furthering their education through certificate programs or night classes. The combination of a strong engineering/technology program and an interest in providing educational upgrade opportunities to non-traditional students led directly to the development of a program to benefit Georgia surveyors.

II. Discussion

Until recently, individuals interested in obtaining a surveying license in Georgia were only required to serve a period of apprenticeship in surveying practice and then pass a state licensing test. When the laws were changed to require at least 20 quarter hours of college credit in surveying-related courses, many prospective surveyors found themselves caught between the need to continue working to maintain their livelihood and the need to attend classes to obtain the necessary college credits. Individuals in the immediate vicinity of Middle Georgia College began calling to determine what classes were offered that would satisfy the new requirements. Most were interested in evening classes that would not conflict with their normal work schedule. As these inquiries increased, it became apparent that the need for surveying courses presented a unique opportunity for MGC to develop a program to serve that need. From the outset it was obvious that the traditional courses already in place for MGC's established engineering/engineering technology transfer programs would not suffice. Although a few individuals were already taking time from work and were driving distances up to 100 miles one way to attend one class each day, a much better solution was needed.

The answer to the dilemma of the surveyors proved to be the Georgia Statewide Academic and Medical System (GSAMS) distance learning and healthcare network. The largest and most comprehensive network of its kind in the world, GSAMS uses advanced telecommunications technology to permit interactive video and audio communications between people in up to 8 locations statewide. Managed by the Georgia Department of Administrative Services, the GSAMS network has been expanded throughout Georgia to include sites at public primary and secondary schools, colleges, universities, and technical institutes. The network was to prove to be the key that would enable the surveyors to continue their employment and to meet the new educational requirements for licensing.

In this Middle Georgia College experience, the primary objective was to provide quality instruction in surveying-related courses to these non-traditional students with minimal disruption of their livelihood. With this goal in mind, the faculty at MGC launched a certificate program designed to deliver the required surveying courses to remote GSAMS sites strategically located throughout central and south Georgia. Classes would be offered in the evenings, 2-1/2 hours twice a week to minimize conflicts with their normal workday. To succeed with this program the authors found that non-traditional means would be required to recruit students for the program, to meet basic MGC registration and administration requirements, to select remote sites at which classes would be held, and to conduct the classes.

Initially the individuals who had called to ask about possible courses served as a nucleus of names of those who might be interested in the program. The names, addresses, phone numbers, and business names of these individuals were kept in a database for future reference. Once the program was announced and classes began, surveyors in one locality quickly spread word of the program to others needing the same credits and inquiries about future courses increased. Additionally, announcements of upcoming classes were sent to the engineering/surveying firms of past and present students to promote continued interest. Finally, the Internet proved to be an excellent source of names and addresses of engineering/surveying firms. By conducting a search of firms in the "engineering" and "surveying" categories located in or within 60 miles of previous or likely remote sites, announcements could be sent to those firms to promote interest. This unique use of the Internet to locate potential students has proved to be particularly productive.

Once the "pool" of individuals interested in the certificate program was established, another unique problem to be resolved was to determine the location of the remote sites at which the courses would be offered. Because of the statewide distribution of the GSAMS sites, locating a facility to use has been simply a matter of selecting a regionally centralized location that can attract a class of at least 10 students. Then the schedule for use of the facility must be coordinated locally to ensure that the facility is available for use and can be staffed at the scheduled day and time the class is to be offered from MGC. The minimum number of 10 students for each site has been required to cover operating costs. In at least one instance, three students near a site were able to make arrangements to operate the communications equipment themselves and thus avoid the cost of using the site and the 10-student minimum class size. A second, equally important consideration in the selection of sites is to minimize the distance students have to travel to attend the classes. Most students in the program typically have already worked a full 8 to 10 hour day before attending the evening classes, so every effort is made to reduce their travel time to classes (and home after classes) to one hour or less. Frequently students are aware of the GSAMS site(s) in their vicinity and will suggest a preference. Since initiation of the program in 1994 classes have been transmitted to seventeen separate locations throughout Georgia.

Another non-traditional feature of the MGC distance learning program has been its administration. Although the program is a certificate program, students at the remote sites must conform to university system admissions and registration requirements to be given college credits for their coursework. Applications to become MGC students must be submitted along with high school and college transcripts as appropriate. Applications can typically be handled by mail, but because many of the program participants have been out of high school and/or college for a few years, many have to be guided by personal telephone calls to arrange for transcripts to be sent to MGC. Registration for the courses, however, is a different matter. In order to facilitate registration of students at these remote sites and avoid having each make a special trip to the MGC campus for registration, the authors arrange each quarter to go to them. Prior to the start of a distance learning course, a notice is sent by mail to those individuals whose applications have been completed and who have expressed a desire to attend the class to be taught at a specific location. The notice specifies the date, time, and place in their locality that a faculty member will arrive to assist them in registration. One or more MGC faculty members make the trip to that meeting, typically spending 1 to 2 hours at each site having the

students complete the necessary registration forms, accepting payment for fees, and selling the textbooks needed for the course(s). Several sites can be accommodated in this fashion each day as long as driving distances are not excessive. This practice of taking the registration process to the students allows these individual to complete much of the administrative work for taking a course with only minimal disruption of their workday. These visits are also good for public relations, giving the faculty an opportunity to meet each student personally and to promote other courses to be offered at a later date.

Finally, a few comments about the authors' experiences in the actual conduct of the remote classes might be of interest. The arrangement of the GSAMS classrooms is likely similar to those of other systems with which other educators may be familiar. Cameras in the classroom are controlled from an electronic panel by an individual monitoring the class and views of either the instructor at the front of the class or of the class can be transmitted to the interconnected sites. Cameras can be zoomed in to more clearly show work on black- or whiteboards, or the instructor can switch to an overhead camera to show prepared notes or figures placed on the desk or to a display of a computer monitor to show prepared computer text/images. Cameras at the remote sites can be controlled similarly, but are most frequently trained to view the students in the classroom. Large monitors at each site provide both video and audio communications among all interconnected sites. Typically all sites have two monitors at the front of the classroom on which the transmissions from the instructor are viewed. In the originating site monitors at the front of the classroom enable local students to view the same material as the remote sites. A monitor at the rear of the classroom allows the instructor to also view the same screen that the students are seeing, while a second monitor gives a view of the students at one of the remote sites. The view of the remote sites is automatically selected by the system according to audio activity, that is, whenever a student at a remote site speaks up to ask or respond to a question, the view seen by the instructor and at the other remote sites automatically switches to the "hot" site. Thus, there is both visual and audible connectivity among all sites during the conduct of a class session.

As one might imagine, in spite of the advantage of seeing and hearing all the activity from all sites, to date the authors have found that the system is still cold by typical classroom standards. Interaction between the instructor and individual students is repressed to the point of being almost nonexistent. Students tend to ask fewer questions, instructors are less likely to throw out questions for open discussion, and it is more difficult to get active student involvement, such as with providing problem solutions on the board. The system works much better for a course that is primarily lecture in nature rather than one that must involve problem solutions.

Another element that must be addressed is that there is little opportunity to effectively assign and grade homework problems in distance learning situations. To be useful homework assignments need to be completed, turned in, graded, and returned while the topic is still current. Where the students are located some distance from the instructor the process of having the students turn in their work, having it bundled and mailed the next day, waiting for delivery, grading the papers, returning them by mail to the site and finally returned to the students may require 7 to 10 calendar days. In that length of time it is highly likely that the class has progressed further into the course material and further discussion and/or correction of the homework are no longer current. One alternative would be to have the students complete the

problems, complete an answer sheet, and have all sheets faxed to the instructor, but this method is much more subject to answers being "shared" and does not give the instructor an opportunity to review the students' methods of solution and ascertain that the correct methods are clearly understood. Another method more commonly used is to assign problems to be completed for a particular class session, then go over the correct solution in class. In this way the correct solution can be presented and discussed, but there is no assurance that all students will complete the assignment nor is there an opportunity to assess each student's progress and/or understanding of the material.

Administration of periodic evaluations, or tests, poses some similar and other unique problems. Again because of the distance factor and the time involved in delivering the materials for the test, the date for which a test scheduled generally must be set in advance and adhered to. The flexibility of the normal classroom situation in being able to advance or to delay an exam by one class period in response to individual class progress is lost. To minimize the effect of delays caused by mail delivery, test materials are typically sent to each remote site by overnight mail. The completed tests are collected at the end of the test period, bundled, placed in postage-paid envelopes, and returned by regular mail to MGC for grading. Depending on the class and instructor, test solutions may be presented in class immediately following the collection of all test papers to ensure that any discussion of the results will be current and clarified before continuing to the next topic. Papers are graded upon arrival at MGC and in most cases the grades can be listed for viewing on the monitors during the next class period using the students' identification number to ensure anonymity for a specific individual's grade. Graded papers may be mailed to the remote site for return to the students at the instructor's discretion. The process is workable, but cumbersome and relatively inflexible.

As one might imagine, where the principal topic is surveying, labs must be a consideration. In the case of the MGC certificate program the solution to conducting labs for the surveying courses once again reflected the desire of the faculty to cater to the special needs of these students. Just as the twice-weekly classes are scheduled for evening hours to permit working students to maintain their regular jobs, the labwork required for the surveying classes is planned to minimize disruption of their work. For each surveying class, lab work may be scheduled for one full weekend or, as an alternative, two or three successive Saturdays, at the Middle Georgia campus and students are required to attend. Some students may face a 2 to 3 hour drive one way to the campus, but these alternative arrangements successfully compress all the necessary work into a short on-campus visit and has been accepted without complaint by all participants.

III. Conclusion

Middle Georgia College's surveying certificate program continues to enjoy broad success among members of this profession throughout Georgia. The key to its success has in large measure been the willingness of the college administration and faculty to modify traditional methods to serve the special needs of this component of the student population. That desire to develop and utilize innovative ways to serve the people of Georgia, combined with the powerful advances in education and technology (such as the GSAMS network) provided by the government and educational leaders in the State, provide just one more assurance to the people of the State that their investment in higher education is providing significant benefits and increasing opportunities to

all. It is a certainty that programs of this nature, where educational opportunities are delivered directly to the people, will expand dramatically in the near future. A "new" tradition, like change, is inevitable.

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