

**DELTA STATE UNIVERSITY: ACADEMIC ANNUAL REPORT**  
**Academic Year 2006-2007**

**I. Unit Title:** Mathematics Department

**School or College:** Arts and Sciences

**Unit Administrator:** Rose Strahan

## II. Educational Program Learning Outcome Assessment Plan

These are Learner Outcomes identified for the **current** year.

### Outcomes for the B. S. Degree with a Major in Mathematics

Learning Outcome	Data Collection and Analysis	Results of Evaluation	Use of Evaluation Results																														
<p>General Education Outcome</p> <p>Demonstrate proficiency in basic knowledge of College Algebra topics.</p>	<p>The final examination in MAT 104 College Algebra will be used to determine the level of mastery of the topics in College Algebra. The examination is written each semester by a committee of faculty members who do not teach the course during that particular semester, and the examination material covers specific course objectives which have been defined by a committee of departmental faculty. All college algebra students take this common final exam during an exam period that is dedicated solely to this course. Following the administration of the final exam, an item analysis will be performed to determine areas of weakness and strength.</p>	<p>Analysis of fall 2006 semester grades is shown in the following table.</p> <p>The objective number corresponds to the published objectives for College Algebra (MAT 104). The final exam questions were matched to these 9 objectives. The number of students that demonstrated mastery of each objective was computed. (See appendix for the objectives.)</p> <table border="1" data-bbox="1020 906 1493 1424"> <thead> <tr> <th>Objective Number</th> <th>Mastery Percentage</th> <th>Number of exam questions for that objective</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>42%</td> <td>6</td> </tr> <tr> <td>2</td> <td>53%</td> <td>9</td> </tr> <tr> <td>3</td> <td>30%</td> <td>5</td> </tr> <tr> <td>4</td> <td>45%</td> <td>12</td> </tr> <tr> <td>5</td> <td>43%</td> <td>3</td> </tr> <tr> <td>6</td> <td>34%</td> <td>2</td> </tr> <tr> <td>7</td> <td>51%</td> <td>7</td> </tr> <tr> <td>8</td> <td>40%</td> <td>2</td> </tr> <tr> <td>9</td> <td>44%</td> <td>1</td> </tr> </tbody> </table>	Objective Number	Mastery Percentage	Number of exam questions for that objective	1	42%	6	2	53%	9	3	30%	5	4	45%	12	5	43%	3	6	34%	2	7	51%	7	8	40%	2	9	44%	1	<p>Since 12 questions matched objective number 4 and 9 questions matched objective 2, these objectives will be rewritten so that the exam questions and the objectives are aligned. A committee from the faculty will rewrite the objectives. One question for objective 9 is not enough to judge mastery; however, not much course time is devoted to this objective.</p> <p>Although review sessions were held, the mastery rate is very low. The department has decided to change the textbook and the approach to teaching college algebra. We will begin using an approach with a computer component to try to enable students to learn the concepts.</p>
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<p>Major Field Outcomes</p> <p>Demonstrate understanding of fundamental ideas, concepts, and applications of mathematics.</p>	<p>The students in MAT 490, the capstone course, read a variety of papers which included, but was not limited to, biographical writings about contemporary mathematicians, research articles, and articles about current topics in mathematics.</p> <p>In addition to the capstone course the department will require completion of a major field test in mathematics.</p> <p>ETS Major Field Test Content areas: 1. calculus 2. algebra (linear &amp; abstract) 3. additional topics: advanced Calculus, real analysis, discrete, probability &amp; statistics, dynamical systems, point-set topology, geometry, differential equations, numerical analysis complex analysis</p>	<p>The students summarized four of these articles to be included in their portfolios. The four students studied an article about projective geometry and developed a presentation about this non-Euclidean geometry which also incorporated ideas from algebra and Euclidean geometry.</p> <p>Two students took the online version of the test in May 2007. The mean score was 162 which is higher than the mean for last year's students.</p>	<p>The presentation was made to the Department of Mathematics in the fall semester, and a shortened version of the presentation was given at the Faculty Research and Scholarship Symposium on campus in April.</p> <p>The department is still searching for a more appropriate time for the students to take the test. We also plan to offer review sessions prior to the testing date next year. Currently we do not have sufficient information regarding the test content nor enough data from our students to determine a target score for our students.</p>
<p>Demonstrate the ability to communicate mathematics.</p>	<p>In each of the 400-level mathematics content courses, the students will read an article from the area of content covered in the particular course. This article</p>	<p>The committee used a rubric to evaluate the writing and reached consensus on the scores. On a scale of 1 to 5, the scores ranged from 1 to 4 with 7 students scoring 3 or better and 8 scoring below 3. (See the</p>	<p>The department will continue this type of writing assessment by gathering data in all 400-level courses in fall semester. We will track those who made below 3 on the</p>

	<p>will be chosen by a committee of faculty members who teach the 400-level content courses. The student will write a synopsis and critique of the article. Approximately 50-75% of the paper should be devoted to the synopsis of the article which should demonstrate that the reader understands the purpose of the article as well as the major mathematical concepts present in the article. The remainder of the writing will be devoted to a critique of the article. The grading of this paper will be done by a committee of faculty members who teach the 400-level content courses as prescribed by a rubric developed by the faculty members on this committee. The results will be analyzed by the mathematics faculty.</p>	appendix for the rubric.)	<p>first assessment and look for improvement in later assignments. We are now using this assignment in all 300-level courses.</p>
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**B.S.E. Degree with a Major in Mathematics Education**

Learning Outcome	Data Collection and Analysis	Results of Evaluation	Use of Evaluation Results																														
<p>General Education Outcome</p> <p>Demonstrate proficiency in basic knowledge of College Algebra topics.</p>	<p>The final examination in MAT 104 College Algebra will be used to determine the level of mastery of the topics in College Algebra. The examination is written each semester by a committee of faculty members who do not teach the course during that particular semester, and the examination material covers specific course objectives which have been defined by a committee of departmental faculty. All college algebra students take this common final exam during an exam period that is dedicated solely to this course. Following the administration of the final exam, an item analysis will be performed to determine areas of weakness and strength.</p>	<p>Analysis of fall 2006 semester grades is shown in the following table.</p> <p>The objective number corresponds to the published objectives for College Algebra (MAT 104). The final exam questions were matched to these 9 objectives. The number of students that demonstrated mastery of each objective was computed. (See the appendix for the objectives.)</p> <table border="1" data-bbox="1020 833 1491 1359"> <thead> <tr> <th>Objective Number</th> <th>Mastery Percentage</th> <th>Number of exam questions for that objective</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>42%</td> <td>6</td> </tr> <tr> <td>2</td> <td>53%</td> <td>9</td> </tr> <tr> <td>3</td> <td>30%</td> <td>5</td> </tr> <tr> <td>4</td> <td>45%</td> <td>12</td> </tr> <tr> <td>5</td> <td>43%</td> <td>3</td> </tr> <tr> <td>6</td> <td>34%</td> <td>2</td> </tr> <tr> <td>7</td> <td>51%</td> <td>7</td> </tr> <tr> <td>8</td> <td>40%</td> <td>2</td> </tr> <tr> <td>9</td> <td>44%</td> <td>1</td> </tr> </tbody> </table>	Objective Number	Mastery Percentage	Number of exam questions for that objective	1	42%	6	2	53%	9	3	30%	5	4	45%	12	5	43%	3	6	34%	2	7	51%	7	8	40%	2	9	44%	1	<p>Since 12 questions matched objective number 4 and 9 questions matched objective 2, these objectives will be rewritten so that the exam questions and the objectives are aligned. A committee from the faculty will rewrite the objectives. One question for objective 9 is not enough to judge mastery; however, not much course time is devoted to this objective.</p> <p>Although review sessions were held the mastery rate is very low. The department has decided to change the textbook and the approach to teaching college algebra. We will begin using an approach with a computer component to try to enable students to learn the concepts.</p>
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<p>Major Field Outcomes</p> <p>Demonstrate understanding of fundamental ideas, concepts, and applications of mathematics.</p>	<p>Praxis Math Content Test</p> <p>ETS Major Field Test</p> <p>Content areas:  1.calculus  2.algebra (linear &amp; abstract)  3.additional topics: advanced Calculus, real analysis, discrete, probability &amp; statistics, dynamical systems, point-set topology, geometry, differential equations, numerical analysis complex analysis</p>	<p>The state department for licensure of teachers determines the passing score which is currently 123. Four students took the content test with all four passing. For three of the four this was the first attempt with scores of 132, 143, and 135. The other student was successful this time.</p> <p>The two students took the online version of the test in May 2007. The mean score was 149 which is higher than last year's mean score.</p>	<p>The department will assist students in reviewing the content of courses taken early in their program prior to the taking of the test.</p> <p>The major field test will also be required to provide data for the department.</p> <p>The department will determine a more appropriate time for the students to take the test. Currently we do not have sufficient information regarding the test content nor enough data from our students to determine a target score for our students. We also plan to offer more review sessions prior to the testing date next year.</p>
<p>Demonstrate the ability to communicate mathematics.</p>	<p>In each of the 400-level mathematics content courses, the students will read an article from the area of content covered in the particular course. This article will be chosen by a committee of faculty members who teach</p>	<p>The committee used a rubric to evaluate the writing and reached consensus on the scores. On a scale of 1 to 5, the scores for the MAT 425 students ranged from 1 to 4 with 7 students scoring 3 or better and 8 scoring below 3. The writing assignment for the MAT 443</p>	<p>The department will continue this type of writing assessment by gathering data in all 400-level courses in fall semester. We will track those who made below 3 on the first assessment and look for improvement in later</p>

<p>Performs appropriate mathematics teaching skills.</p>	<p>the 400-level content courses. The student will write a synopsis and critique of the article. Approximately 50-75% of the paper should be devoted to the synopsis of the article which should demonstrate that the reader understands the purpose of the article as well as the major mathematical concepts present in the article. The remainder of the writing will be devoted to a critique of the article. The grading of this paper will be done by a committee of faculty members who teach the 400-level content courses as prescribed by a rubric developed by the faculty members on this committee. The results will be analyzed by the mathematics faculty.</p> <p>Surveys were sent to 25 BSE graduates in February 2007. Nine graduates responded (36% response rate). The survey contained 7 likert-type questions (5 high to 1 low) and two free-response items. (See appendix for the survey.) A committee of mathematics</p>	<p>students was graded with the same rubric. In that course 6 students scored 3 or above and 8 students scored below 3. (See the appendix for the rubric.)</p> <p>No items received a rating below a 3. Two items, effective use of classroom management and competency with technology, received ratings of 3. Numerical analyses and free-response comments were reported to the mathematics faculty. These comments will also be shared with</p>	<p>assignments. We are using this assignment in all 300-level courses.</p> <p>Since only 9 of the 25 graduates who were sent surveys responded, a concentrated effort will be made to reach more graduates. A list of graduates will be obtained from Alumni Services. Since the comments were helpful for</p>
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	<p>faculty summarized the data by listing for each question the percentages for each rating scale, medians, and means (See attached table in the appendix). Comments from the free response items were listed.</p>	<p>the appropriate teacher education area.</p>	<p>examining our program, the survey will be expanded to include both BS and BSE graduates. Questions will need to be added that are appropriate to measure BS career skills. A question about the number of years on the job will be added. Rationale: Experience on the job for at least 5 years will aid in ability to judge preparation. The survey will be repeated bi-annually.</p>
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### III. Division/Department Goals for 2006-07

This is a report on progress towards goals for the **current year**. These are operational goals for the unit that are NOT tied directly to student learning outcomes which are reported in the table above.

#### A. Goal # 1: To improve the writing skills of all mathematics majors

##### 1. QEP Institutional Goal #3 which was supported by this goal:

DSU students will gain knowledge and practice in a variety of communication skills by having these skills reinforced in all courses.

**2. Evaluation Procedure(s):** An improvement in the pass/fail rate on the Writing Proficiency Exam and on the writing component of the Praxis.

**3. Actual Results of Evaluation:** In 2005-2006 of the 6 students taking the WPE 5 passed. In 2006-2007 all three of the students taking the WPE failed. No failures on the Praxis I Writing test.

**4. Use of Evaluation Results:** The mathematics department will continue to make a more concerted effort to implement the following plans to try to improve the writing ability of our students. We will try to identify students who plan to take the WPE and have a seminar for them prior to the test.

1. Each faculty member will include at least one question on each test in both upper and lower level classes that requires students to provide written explanations of concepts. Evaluation of the answers to such questions will include mathematical content and also spelling, grammar, and sentence construction. An evaluation rubric will be created by the mathematics faculty and shared with the students prior to any writing assignment.

2. All classes above the 100 level that are taken by mathematics majors will require writing in the form of written projects and essay portions of the exams. The written projects will concern an important concept in the course and may include reading and summarizing mathematics articles. Students should turn in a rough draft, receive feedback from the instructor, and then turn in a final draft. These projects will be graded for content and writing.

**B. Goal # 2: Prepare students to teach using appropriate technology and prepare students who will enter the work force in non-teaching jobs to function in today's technology dependent society.**

**1. QEP Institutional Goal #2 which was supported by this goal:** DSU will increase the use of technology and web-based communication in classroom activities and assignments.

**2. Evaluation Procedure(s):** Graduates should be able to use appropriate technology including graphing calculators, computers, and computer accessories in the classroom and as a means of presenting and storing information. Technology skills are incorporated into courses that our majors will take in their program.

In Teaching Secondary School Mathematics (CUR 487), the content methods course for the BSE majors, the students create their portfolios with technology. These portfolios are evaluated using STAI Domain I indicator 3 and STAI Domain III indicator 25 rubrics (4 high to 1 low).

MAT 322 is a course in differential equations. Early in the semester, this class meets in our department's computer lab for a *DERIVE 5* demonstration. *DERIVE 5* is a computer algebra program which processes algebraic variables, expressions, equations, and functions. This program can perform numeric and symbolic computations, algebra, trigonometry, calculus, and plot graphs in 2 and 3 dimensions. Individual homework problems assigned constitute 50% of the grade in the class. Due to the nature of the problems assigned in this class, the verification of answers to homework questions often entails tedious computations involving derivatives and algebraic processes. Students are required to verify answers to homework problems before submitting them for grading. For students

who fail to verify answers and who consequently get incorrect answers, papers are returned to the student with no credit awarded. The student then gets the opportunity to resubmit a corrected version of the problem for a maximum of 80% credit.

In MAT 300 Excel is used to:

- Construct frequency tables and graphs

- Perform probability simulations

- Simplify normal distribution and Student's t distribution applications

- Estimate confidence intervals for population means

- Perform hypothesis testing (single means, difference of means for independent samples and for matched pairs, correlation and regression analysis)

Evaluation Procedure: For each of the MAT 300 Excel applications, the students are shown a real-world example and are then given an assignment to complete. The assignment is graded on both the use of Excel and in the analysis of the results (since results are meaningless if the student doesn't understand them). Additionally, students are asked questions on the section tests similar to the lab assignments. On some occasions, they may be asked to use Excel to determine the answer to a particular question. Other times, the students may have to explain, in general, how to do a procedure(s) in Excel and then how to analyze the findings.

If the student makes mistakes on the section tests regarding lab-type work, they should still see the instructor to figure out their mistake, as the final exam also has questions of this nature.

In MAT 207, the students were given a list of 13 tasks to perform using the computer algebra system *DERIVE*. These tasks included computer graphics in three dimensions as well as symbolic manipulations to compute solutions to problems. Each task was assessed based on the accuracy of the output. Credit was given only if the output was correct.

The MAT 443 students were asked to search the internet for three sites giving information about Fermat's Last Theorem. The students were to write a paragraph containing the major facts which they found and to note any discrepancies among the web sites which they searched.

The paragraphs were read for content and for correct spelling and grammar. The students needed to include a statement of Fermat's Last Theorem, a brief statement concerning the history behind the many attempts at proving it, and a statement of who and when the theorem was finally proved. The paragraph was graded on a 25 point scale.

The students in Quantitative Reasoning (MAT 103) were required to use computer spreadsheets, graphing calculators, and scientific calculators with the course objectives that pertained to probability and statistics. Each student used sets of data, made displays of these data, and analyzed the data with both calculators and Excel spreadsheets. They compared these methods to performing these same procedures by hand.

The students in MAT 231 Geometry, Measurement, and Probability explored geometry concepts using Geometer's Sketchpad in the computer lab. They were asked to recreate some of the same explorations that were done in class using compass and straight edge. They were asked to compare the methods.

The assignments were graded as daily grades using a 10 point grading rubric (10 high to 1 low).

MAT 215 is designed to provide the prospective mathematics teacher with ways to appropriately use technology to support the learning of mathematics. Mathematics content suitable for the secondary mathematics classroom was the vehicle used to illustrate and demonstrate the use of a wide variety of technology and relevant multimedia.

### **Course Objectives**

Upon completion of the course, the student will be able to:

1. Explore and compare the uses of available technology for specific classroom uses.
2. Select the appropriate technology or other media that supports specific learning objectives of mathematics.
3. Use graphing calculators in the teaching of content suitable for the secondary mathematics classroom
4. Select and use computer software suitable in the teaching of content for the secondary mathematics classroom
5. Explore and evaluate math-specific Internet sites

The assignments were graded as contract grades. Each student was required to work on an assignment until it was completely accurate. If an assignment did not meet the specified directions, it was returned and the student was expected to redo the assignment.

### **3. Actual Results of Evaluation:**

In CUR 487 no student received a rating below 3. They demonstrated that they can present and organize information with technology, select appropriate technology for the 7-12 classrooms, and conduct lessons that use technology.

The grades in MAT 322 for the spring 2007 semester indicate that the students were successful in using technology in the class. Of the 10 students who completed the course, there were four students who made A's, 1 student who made a B, three students who made C's, and two students who made D's. The results can be used to conclude that the use of *DERIVE 5* was effective.

Even though *DERIVE 5* has the capability of solving differential equations in MAT 322, students are not allowed to use the software for this purpose. Students must show every detail of the work involved in solving the differential equations. They use *DERIVE 5* to verify their answers to homework problems and must also indicate on each problem exactly how the answer was verified. When the technology is used and an answer cannot be verified, this is an indication to the student that there are errors in the problem solution. At this point, students are forced to analyze their work and employ critical thinking and problem solving skills to find the errors and correct them.

Results: For MAT 300, the lab assignments are graded and are counted as quizzes. Similarly, the test questions related to the labs are graded as part of the tests.

Results of the evaluation for students in MAT 207: 1 student got 10 correct, 5 students got 12 correct, and 5 got 13 correct.

Results of the evaluation for MAT 443: 11 students scored 20 or more points, 2 students scored less than 20 points, and 1 student did not submit the assignment.

In MAT 103, no student received a rating below 7, thus demonstrating a satisfactory use of technology.

No student in MAT 231 received a rating below 10, thus demonstrating excellent use of technology.

All MAT 215 students completed all assignments as specified, thus demonstrating excellent use of technology.

#### **4. Use of Evaluation Results:**

The use of technology in the preparation of the teaching portfolios (CUR 487) will continue as a requirement. This method continues to be a wonderful improvement over the hand written version of a few years ago. These skills carry over to their student teaching semester where each student is expected to include technology rich lessons in their plans.

The students in the MAT 322 class have indicated that the use of this software has been very valuable to them not only in terms of verification of solutions to homework problems, but in general understanding of all aspects of the problem. As the semester has progressed much interest was generated in the use of *DERIVE 5* to assist with work in other courses as well, especially the courses in the calculus sequence.

For MAT 300, the lab assignments are graded. If there are several students making the same type of mistake (either in Excel or in the analysis), the mistake and correction are discussed in class. Otherwise, the student is expected to either figure out how to correct any mistakes on their own or ask the instructor how to correct them. This is necessary as the section tests have questions related to the labs. If the student makes mistakes on the section tests regarding lab-type work, they should still see the instructor to figure out their mistake, as the final exam also has questions of this nature.

Because the MAT 207 students seemed to do very well on this assignment, more challenging work will be assigned in the future. Also more computer work will be incorporated into the course.

For the MAT 443 students the most frequent problem with the paragraphs was spelling and grammar. The students will be urged to pay closer attention to the mechanics of their writing in the future. Because students seemed to learn some new facts from this assignment, more of this type of assignment will be incorporated in the upper level courses in the future.

The MAT 103 students demonstrated that data displays and analyses of data using technology were easier and more accurately completed than doing these same procedures by hand. These procedures should be continued with these students.

Reactions from the MAT 231 were mixed. Half the students preferred the hands-on method, but the other half preferred the use of technology. Each method should be continued as this comparison seems to be an important part of the assignment.

Exposing students to the many ways that technology can be used in the secondary classroom is important. These “infusions of technology” need to be continued as a part of the BSE majors program. A separate course, MAT 215, may not be necessary if there are ways to incorporate these objectives into their other classes. A quote by one of the MAT 215 students demonstrates this need.

*I learned that technology in the classroom is something that should not only be accepted but it should be welcomed. When first entering this class I was much fonder of the traditional mathematics classroom with little to no technical support. I was not even sure that I was ok with calculators. Having gone through the class, I now feel that calculators, computers and web sites do not diminish the quality of the education each student receives; they actually enhance the possibilities.*

### **C. Goal #3: Host an annual Mathematics Tournament to be held each spring on our campus and sponsored by the Mathematics Department.**

#### **1. Strategic Plan Institutional Goal #2 which was supported by this goal:**

Students will enroll in greater numbers and a larger percentage will persist to graduation.

**2. Evaluation Procedures:** Analysis of the data from the previous year's tournament to compare the number of students participating and the number seniors who choose to attend DSU.

**3. Actual Results of Evaluation:** In 2006, the number of schools increased to 19, the number of teams to 30, and the number of students to 120. Ten students who were not on a team also attended to observe. Of the 120 participants, 58 were high school seniors and only 4 of those attended DSU in fall 2006. In 2007, the number of schools increased to 21 and the number of teams to 36. We have been forced to change locations because of the increase in participation.

#### **4. Use of Evaluation Results:**

We have increased the role of DSU mathematics majors in tournament activities so the high school student has more contact with the university mathematics majors. The DSU students wrote questions, monitored the written test and assisted with the grading, assisted with the ciphering and relay activities, and served as campus guides. The DSU students also wrote personal notes to all high school students who attended.

The Mathematics Department will follow-up with the seniors having the highest scores, especially the scholarship winners, to encourage them to attend DSU. We will work more closely with the recruiting office to encourage the seniors to attend DSU.

**IV. Data and information for department:**

**Note: The Department has no active degree granting graduate program, however, graduate hours are offered through institutes and special courses.**

	<b>Sp 06</b>	<b>S 06</b>	<b>F 06</b>
<b>Total credit hours, undergraduate</b>	1797	183	2538
<b>Total credit hours, graduate</b>	0	102	0
<b>Totals</b>	<b>1797</b>	<b>285</b>	<b>2538</b>
<b>Number of Majors</b>			
Mathematics	18	4	23
Mathematics education	25	3	24
<b>Total</b>	<b>43</b>	<b>7</b>	<b>47</b>
<b>Grade distribution</b>			
A	61	17	106
B	122	12	124
C	132	18	177
D	84	4	104
F	169	12	233
W	29	6	53
Other (I, AU)	3	4	4

There are two courses that are taught in the mathematics department that do not appear on the print out of faculty load or credit hour production--MAT 099 and CUR 487. The following table indicates the enrollment in those courses for 2006-2007.

<b>Enrollment</b>	<b>F 06</b>	<b>Sp 07</b>
<b>MAT 099</b>	130	40
<b>CUR 487</b>	4	0

**Number of Graduates**

	<b>F 06</b>	<b>Sp 07</b>
BS degree	2	2
BSE degree	2	2

**Writing Proficiency Exam**

	<b>S 06</b>	<b>F 06</b>	<b>Sp 07</b>
Credit	0	0	0
No credit	0	1	2

**Advisees per Faculty Member**

	2006-2007
Hebert	1
Norris	16
Strahan	12
Wear	12
Wingard	14

### Praxis

	Sp 06		F 06		Sp 07	
PPST	Pass	Fail	Pass	Fail	Pass	Fail
Math	1		1		1	
Reading	1			1		
Writing	1		1		1	
PLT			2		1	
Math content area test	1		2		1	

### External Funding/Grants

**Summer Institute 2006**—*Integrating Algebra and Geometry: Institute for Teachers of Grades 5-8* funded by IHL through the No Child Left Behind Title II: Improving Teacher Quality Program. Grant total was \$95,267.

The institute for mathematics teachers of grades 5 through 8 was held on Delta State University campus on June 3 through 30. Participants received 6 hours of graduate credit for MAT 532 Special Topics in Mathematics-Algebra/geometry. All of the 17 teachers who participated taught in public schools. The grade levels taught ranged from fifth grade mathematics through pre-algebra with most teaching at least two levels of mathematics.

The participants had a broad range of educational backgrounds with only two having attained a major in mathematics education and teacher certification in mathematics for grades 7-12. Although there were vast differences in the mathematical knowledge of the participants, they learned much from each other and were a very congenial group.

Participants wrote lesson plans, presented a teaching activity on a topic for their grade level, presented problems and solutions to the group, read and critiqued 5 journal articles, and participated in journal writing. There were two content tests--mid-term and final--that were also a part of the grade. Each person earned 6 semester hours credit with the grades distributed as follows: A--10, B--2, C--5.

Each participant took a pre and post content test, which was not used in computing the grade but was used to evaluate change. Each participant also completed a pre and post attitude test. To establish the significance of these data, a *t*-test was performed on the Algebra/Geometry content and the attitude tests. In each case, there was a significant difference ( $\alpha = 0.05$ ) between the pre- and post-test results (Algebra/geometry content:  $t = 4.0904$ ,  $df = 17$ ,  $p = 0.0004$ , one-tailed with critical  $t = 1.7459$ ; attitude:  $t = 4.7280$ ,  $df = 16$ ,  $p = 0.0001$ , one-tailed with critical  $t = 1.7459$ ).

The first of two academic year follow-up sessions was held on November 4 and the second session was held on February 24.

The project co-directors made a presentation entitled *Searching for Green* at the annual meeting of the National Council of Teachers of Mathematics in Atlanta in April 2007. The activities presented were taken from the 2006 Algebra/geometry Institute.

For additional information about the institute visit our web site at

<http://www.deltastate.edu/academics/artsci/math/summerinst.html>

## External Evaluation

On March 5 and 6, Dr. Teresa Floyd, Professor of Mathematics at Mississippi College, visited the Mathematics Department to conduct an external evaluation of the department. Her complete report is on file with the Dean of Arts and Sciences and with the Provost. Dr. Floyd made the following two recommendations: assessment of the department's effectiveness by an exit questionnaire and use of peer evaluations to improve instruction.

## V. Personnel:

### Noteworthy activities and accomplishments:

#### NCATE—Mathematics Program Report

The Mathematics Department has received the following notification from NCATE regarding the Mathematics Program report: **Nationally Recognized with No Conditions.** The report was evaluated by NCATE and the National Council of Teachers of Mathematics.

David Hebert gave a presentation with the other members of the SEC at the ROMEA Conference on campus.

Stella Wear and David Hebert were Co-chairs of Standards 5 and 6 for the University NCATE report.

Paula Norris serves as corresponding secretary and Rose Strahan serves as faculty adviser for Kappa Mu Epsilon, a national mathematics honorary society for students.

Lee Virden and Paula Norris were speakers at the annual meeting of the Mississippi Council of Teachers of Mathematics in Jackson in September. The title of their presentation was *Making Scents of Correlation* and focused on the teaching the statistical concept of correlation to elementary school students.

Lee Virden was the instructor for the mathematics activities in Kids' College in Summer 2006 and will do that again in June 2007. Stella Wear was a member of the Search Committee for the Dean for the College of Education.

Rose Strahan served as the Chair of the Search Committee for the Athletic Director.

Rose Strahan and Stella Wear made a presentation entitled *Searching for Green* at the annual conference of the National Council of Teachers of Mathematics in Atlanta, GA. They also presented a workshop entitled *Too Few Questions = Missed Opportunities* at the annual meeting of the Mississippi Council of Teachers of Mathematics in Jackson in November.

Rose Strahan and Stella Wear were Co-Directors of an IHL funded summer institute for teachers entitled *Integrating Algebra and Geometry: Institute for Teachers of Grades 6--Geometry*. They are co-writers and directors of a No Child Left Behind \$100,073 grant from IHL for a 2007 summer institute for teachers of mathematics in grades 5-8. This is the seventh consecutive year to have a funded grant through IHL. At an IHL meeting in Jackson in March, they shared their institute design with other recipients of No Child Left Behind grants for Summer 2007 institutes.

Rose Strahan is serving as Senior College Vice-President on the Board of the Mississippi Council of Teachers of Mathematics.

Stella Wear was on the Steering Committee for the second annual ROMEA conference sponsored by the Teaching Excellence Committee. She chaired the registration committee.

Stella Wear was the Arts and Sciences representative on the Teacher Education Council, a member of the promotion and tenure committee for Social Work and the Mathematics Department, AAUW Cleveland Branch President and corporate representative for DSU.

Clifton Wingard was the recipient of one of the faculty prizes in teaching.

Clifton Wingard conducted a workshop entitled *Mastering Calculus Concepts by Building on a Foundation of Algebra* at the annual meeting of the National Council of Teachers of Mathematics in Atlanta in March. He also collaborated with William Staton at the University of Mississippi on mathematical research in graph theory for a paper which has been sent to [Ars Combinatoria](#) for review for possible publication.

Clifton Wingard served as newsletter editor of the LA/MS Section of the Mathematical Association of America for 2006-2007.

The Mathematics Department hosted the Sixth Annual Mathematics Tournament for high school students in February. Under the direction of Stella Wear all members of the department faculty served on committees to plan and implement the tournament. The effort was very successful with more than 144 students participating. DSU mathematics majors wrote letters to all high school

participants encouraging them in their study of mathematics and also encouraging them to attend DSU. Plans have already begun for next year's tournament.

**New position(s) requested, with justification:** No new positions but one new faculty member.

Dr. Leslie Horton is a new hire in the department. She will replace Stella Wear.

**Recommended change of status:**

Dr. Clifton Wingard promoted to Professor of Mathematics.

## **VI. Degree Program Addition/Deletions and/or Major Curriculum Changes:**

**Changes made in the past year**

None

**Recommended changes for the coming year(s)**

Continue to collect data to establish a minimum score requirement for the major field test.

## **VII. Division/Department Goals for 2007-08**

**A. Goal # 1: To improve the writing skills of all mathematics majors**

**1. QEP Institutional Goal #3 which was supported by this goal:**

DSU students will gain knowledge and practice in a variety of communication skills by having these skills reinforced in all courses.

**2. Expected Results:**

We expect to see improvement in the writing skills as we stress the importance of writing in our classes and as we collect writing samples for multiple years from our majors.

**3. Evaluation Procedure(s):**

Comparison of the samples collected in the classes to determine if individual students are improving.

**4. Use of Evaluation Results:**

If there is no improvement, we will work with the writing lab to try to assist students.

**B. Goal # 2: Prepare students to teach using appropriate technology and prepare students who will enter the work force in non-teaching jobs to function in today's technology dependent society.**

**1. QEP Institutional Goal #2 which was supported by this goal:** DSU will increase the use of technology and web-based communication in classroom activities and assignments.

**2. Expected Results:** We expect students to be able to use the most recent technology available for mathematics and for statistics.

**3. Evaluation Procedure(s):**

Paper incorporating advanced topics from mathematics or statistics will be submitted by students and will indicate the successful use of the appropriate technology.

**4. Use of Evaluation Results:**

Assignments will be revised, if necessary, to require students to become more proficient in using the appropriate technology—DERIVE, Geometer's Sketchpad, statistical packages, etc.

**C. Goal #3: Host an annual Mathematics Tournament to be held each spring on our campus and sponsored by the Mathematics Department.**

**1. Strategic Plan Institutional Goal #2 which was supported by this goal:**

Students will enroll in greater numbers and a larger percentage will persist to graduation.

**2. Expected Results:** Actively encourage all regional high schools to participate.

**3. Evaluation Procedure(s):**

Did some regional high schools that have never participated send a team in 2008?

**4. Use of Evaluation Results:**

Continue to encourage high schools to participate and share the success having we are having with the tournament.

**D. Goal #4: Revise the MAT 104, College Algebra, course to include a technology component.**

**1. Delta State University Quality Enhancement Plan Goal #2:**

Delta State University will enhance student engagement through increased use of technology and web-based communication in classroom activities and assignments.

**2. Expected Results:** Increase the number of students passing MAT 104.

**3. Evaluation Procedure(s):**

Computer assignments, student grades, and course evaluations.

**4. Use of Evaluation Results:**

Revise the course as needed based on results from student grades and course evaluations.

## ADDENDIX

### **Objectives for College Algebra (MAT 104):**

1. Simplify algebraic expressions.
2. Solve and graph linear and quadratic equations and inequalities.
3. Solve applied problems.
4. Describe and define a function.
5. Find the equation for a linear function satisfying given conditions.
6. Identify the domain and range.
7. Find the intercepts, sketch the graph and compute the inverse of a function.
8. Simplify exponential and logarithmic expressions and solve equations.
9. Solve systems of equations.

### **Rubric for Scoring Student Learning Outcome 3:**

- |   |  |
|---|--|
| 5 | demonstrates knowledge of all main ideas; ideas are carefully explained, applied, extended, and appropriate connections made |
| 4 | demonstrates knowledge of most of main ideas   |
| 3 | demonstrates knowledge of some main ideas  |
| 2 | demonstrates little knowledge of main ideas, disconnected ideas, or idea does not apply to article                           |
| 1 | demonstrates no understanding of main ideas  |
| 0 | no response  |

Note: Mistakes in grammar and spelling will be applied to each level.

Table of results of Survey of Graduates

Statement	% 5	% 4	% 3	% 2	% 1	Mean	Median
1	89%	11%	0	0	0	4.89	5
2	56%	44%	0	0	0	4.56	5
3	100%	0	0	0	0	5	5
4	56%	33%	11%	0	0	4.44	5
5	44.5%	44.5 %	11%	0	0	4.33	4
6	56%	44%	0	0	0	4.56	5
7	78%	22%	0	0	0	4.78	5

### Survey Mathematics Education Graduates

Directions: Please help us evaluate our BSE program by responding to each of the following questions.

How well did DSU prepare you? Rate each (5 is high, 1 is low)

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1. Competency in mathematics  | 1 | 2 | 3 | 4 | 5 |
| 2. Ability to assess student progress.                                      | 1 | 2 | 3 | 4 | 5 |
| 3. Effective use of teaching strategies                                     | 1 | 2 | 3 | 4 | 5 |
| 4. Effective use of classroom management                                    | 1 | 2 | 3 | 4 | 5 |
| 5. Competency with technology   | 1 | 2 | 3 | 4 | 5 |
| 6. Ability to plan for student diversity                                    | 1 | 2 | 3 | 4 | 5 |
| 7. Desire for continued learning in mathematics and other areas of interest | 1 | 2 | 3 | 4 | 5 |

What skills or mathematics topics are emphasized in your teaching that DSU could have better prepared you to use?

Other comments?

### Summary of Comments

What skills or mathematics topics are emphasized in your teaching that DSU could have better prepared you to use?

I feel that the education end of the course work is well organized and informative. The core math curriculum needs work. It was difficult to see in the core math classes how to teach or explain key issues. I think that several of the professors have great knowledge in their field and can explain the information for math majors or persons that are going to work in a math related field but they were not good at showing relevance or application for classroom use. If this sounds strange or disjointed please send an email to me and I will try and elaborate.

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I am actually not teaching now. After teaching for a few months, I discovered that was not the route I wanted to take. However, I wanted to implement more technology in my teaching methods. Technology is changing so fast, therefore it is very difficult to keep up-to-date. I am not a fan of overhead projectors, so I wish we could have learned a little more on how to teach using a computer and projector screen. Now my professors use a computer along with the SmartBoard software, which I believe is very effective.

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I found myself in the middle school classroom having to teach very basic math (i.e. Least Common Multiple, converting fractions into percents, etc.). All my classes at DSU taught me very advanced math. I had a hard time figuring out how to effectively teach the “easy stuff”. There should be another class designed (or maybe included in the Methods class) on how to teach middle school math. I believe we need to know how to do Calculus III, but I also needed to know how to effectively teach solving two-step equations. (The summer math institute I attended DSU helped a lot, but the other students I graduated with did not receive the same instruction. More of the ideas shared in the institute should be included in the undergraduate curriculum.)

Also, there should be more on classroom management in our Methods class. It was BREIFLY touched on in the weeks before student teaching (by the Education Dept.), but not effectively taught.

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I believe the professors at DSU covered all the topics emphasized in my teaching.

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While at DSU a great deal of emphasis was placed on creatively integrating lessons that engage students hands-on. I found that part of my development especially rewarding and continue to do those things today. While an undergraduate, we really did not have very much experience to go by and made lessons for an imaginary classroom so, needless to say, a lot of the things we came up with may have worked in theory, but not in practice. Personally, I would have benefited more from talking with another teacher that had been working in the field for at least 4 years and was the same gender as I am. I say this because female teachers have a different rapport with children. As a male teacher, you are expected to handle situations differently and I just wish I had someone to clarify those things to me before I became a teacher. I would even suggest that during the student teaching semester that each teacher, especially the male teachers, have dual mentors—A content mentor and then a lead-teacher mentor that could coach him on how to handle daily conflicts in the school, managing a class room, the hallways, and assist with school leadership. As a male teacher in a field dominated by women, I am always called on whenever a student is becoming unruly, when there is an event where large groups of students have to be managed, to drive school buses, watch over study halls, and to break up fights. All the while, your skills of structure and discipline are called into play. None of this has anything to do with teaching math, but the skills that a teacher learns here will directly effect how well he teaches math because it determines how well he will manage his classroom. I actually believe that understanding how to structure a classroom and how to discipline appropriately is even more important than content knowledge because without structure, who will I be teaching?

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Students with Learning disabilities

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I could have used more training in dealing with administrators and in motivating un-concerned students.

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Focusing more on MCT & SATP State testing, to help new teachers really see what they will be getting into, so it won't be such a culture shock to them.

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**Other comments?**

I feel that the mathematics professors at DSU are highly trained and very efficient teachers. They are always ready to help when I needed help. Choosing DSU was one of the best decisions I have ever made and fully believe that I am a great teacher

because of the education and training I received at DSU.

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Even though I am not a teacher now, I am back for an engineering degree at the University of Tennessee. I was out of school for 3 years when I made the decision to go back to school. My math skills were a little rusty, but I have retained a good bit of my math education from Delta State. I believe Delta State unknowingly prepared me very well for this degree in Civil Engineering. The math department at Delta State is excellent.

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As a student-teacher, I would have gained a great deal more from talking with a variety of different math teachers from other schools, not just my mentor. If a group of student teachers could actually see a video of classroom instruction from several real teachers from different schools and then discuss that video with that teacher or someone qualified to help with the interpretation of the video, the student-teacher can see other effective strategies in teaching and find ways of incorporating that into his teaching philosophy.

All things considered, like any profession, I have learned a great deal through trial-and-error but most of the things that I have learned points back to things I learned while in the DSU teacher education program. Through discussion with numerous teachers from across the state, I have learned other things that we did not discuss. For example, through workshops I've learned the importance of timing everything so that each class meeting is completely filled with learning and engaging activity. This timing has given my classes structure that it's never had and kids are learning a tremendous amount of material. Just by giving a teacher a simple structure such as, OPENING—10 minutes, WORKTIME—20 minutes, and CLOSING—10 minutes, can give him the structure that he needs to start an effective teaching career.

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I am very proud of the education I received at DSU!

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Overall, my experience at DSU was wonderful. The Math Dept. prepared me VERY well for teaching. I attribute my success in the classroom to the outstanding math faculty at DSU.