

**Annual Report for Period:**07/2006 - 06/2007**Submitted on:** 06/01/2007**Principal Investigator:** Manning, Jean .**Award ID:** 0310321**Organization:** Langston University**Title:**

Langston's Integrated Network College for Science, Technology, Engineering and Mathematics

**Project Participants****Senior Personnel****Name:** Manning, Jean**Worked for more than 160 Hours:** Yes**Contribution to Project:****Name:** Coleman, John**Worked for more than 160 Hours:** Yes**Contribution to Project:****Name:** Goodman, Nathaniel**Worked for more than 160 Hours:** No**Contribution to Project:**

Nathaniel Goodman is not a CoPrincipal Investigator in this project. He is Director of Sponsored Programs.

**Name:** Barker, Shawn**Worked for more than 160 Hours:** Yes**Contribution to Project:**

Shawn Barker is the coordinator for the LINC Program.

**Post-doc****Graduate Student****Name:** Quinn, Byron**Worked for more than 160 Hours:** Yes**Contribution to Project:**

Mr. Quinn worked as a facilitator for Chemistry Colloquiums for the LINC Program

**Undergraduate Student****Name:** Howard, Christianna**Worked for more than 160 Hours:** Yes**Contribution to Project:**

Ms. Howard worked as an office and lab assistant @ \$7.00 per hour

**Name:** Martin, Tristan**Worked for more than 160 Hours:** Yes**Contribution to Project:**

Tristan Martin worked as a lab assistant for the LINC Program

**Name:** Anderson, Quincy**Worked for more than 160 Hours:** Yes**Contribution to Project:**

SI Leader \$1500 per semester

**Name:** Doss, Argenia

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

SI leader @ \$1500/ semester

**Name:** Harris, Steven

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

SI leader @ \$1500/semester

**Name:** Stevenson, Steven

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Office assistant \$7.00 per hour

**Name:** Carroll, Deidre

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

SI leader @ \$7.00 per hour

**Name:** Patterson, James

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

SI leader - paid from other source

**Name:** Burdex, Ashley

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

SI leader - paid through other source

**Name:** Evans, Marchonda

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

SI leader - paid through other source

**Name:** Booker, Sheree

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

S. Booker worked as a office and lab assistant.

**Name:** Wilson, Jeremiah

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

J. Wilson worked as a math tutor.

**Name:** Green, Ebby

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

E. Green worked as a math tutor.

**Name:** Finley, Christopher

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

C. Finley worked as a lab assistant.

**Name:** Greene, Cedric

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

C. Greene worked as a lab assistant.

**Name:** Harrison, Jamie

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

J. Harrison work as a lab assistant.

**Name:** Blythe, Derek

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

D. Blythe worked as a tutor.

**Name:** Culver, Ralph

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

R. Culver worked as tutor.

**Name:** Sykes, Alexander

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

A. Sykes worked as tutor.

**Name:** Williams, Nathan

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

N. Williams worked as tutor.

**Name:** Gebrehiwote, Makda

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

M. Gebrehiwote worked as tutor.

**Name:** Daniels, Antawan

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

A. Daniels worked as a lab assistant.

**Name:** Roseburr, Johnnie

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

J. Roseburr worked as a lab assistant.

**Name:** Watt, William

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

William Watt work as lab assistant for the LINC Program

**Name:** Vann, Kendra

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Kendra Vann assisted with office administration for the LINC Program

**Name:** Harvey, Desmond

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Desmond Harvey assisted with tutoring as well as office administration for the LINC Program

**Name:** Bennet, La'Chevraun

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

La'Chevraun Bennet worked as a research intern at LU for the LINC

**Name:** Bridgewater, Tony

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Tony Bridgewater worked as a lab assistant and tutor for the LINC Program

**Name:** Hawkins, Calvin

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Calvin Hawkins worked as a tutor for the LINC Program

**Name:** Wesson, Jessia

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Jessia Wesson worked as a research intern for the LINC Program

**Name:** Hawkins, Holly

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Holly Hawkins assisted the LINC coordinator with the LINC files and other office work responsibilities associated with the LINC project.

**Name:** Osei, Richard

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Richard Osei, a computer major, assisted the LINC program with computer technical assistance.

**Name:** Ekpo, Felicia

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Felicia Ekpo assisted with the LINC SI tutorial program in biology.

**Name:** Ivorie, Okonoboh

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Ivorie Okonoboh assisted the LINC program in the biology department with biology lab assistant responsibilities.

**Name:** Sandoval, Sabrina

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Sabrina Sandoval assisted the LINC program with the Instructional Instrumentation laboratory as well as laboratory maintenance in the Biochemistry and Organic laboratories.

**Name:** Edwards, Donchelle

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Donchelle Edwards assisted the LINC program with laboratory maintenance in the organic chemistry laboratory.

**Technician, Programmer**

**Name:** Johnson, Leander

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Mr. Johnson assists with computer and Web design programs. Part-time at \$2,500 per semester

**Name:** Kesete, Tesfai

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

T. Kesete helps coordinate the new instrumentaion laboratory.

#### Other Participant

**Name:** Stevenson, Bonita

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Bonita Stevenson was the program coordinator for LINC at a salary of \$30,000/ yr.

**Name:** Ealy, David

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

David Ealy performed in-kind recruiting services for LINC at various high schools throughout Oklahoma and US.

**Name:** Lewis, Sharon

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Dr. Lewis facilitated the trial course-enhancement colloquium for general chemistry II for the spring 2004 semester and serves as coordinator for the curriculum enhancement program for LINC. Her addendum fee was \$1500 per semester.

**Name:** Jones, Doris

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Doris Jones coordinated the supplementary instruction (SI) program for LINC and SURE-STEP collaboration for the spring semester 2004 and will continue for fall 2004. She was supported by EPscore for the spring semester and will be supported by LINC and Sure-Step in the fall. Her support is \$1500 per semester.

**Name:** Hill, Anthony

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

A. Hill facilitated the 'Preparation-for-success' Colloquium.

**Name:** Poudavood, Reza

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Dr. Poudavood will coordinate the efforts for faculty training and enhancement activities. LINC will support at \$1500 per semester.

**Name:** Chan, Douglas

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Dr. Chan will supervise the usage, upkeep and instructional efforts for the research instrumentation in the instructional laboratory. LINC will support at \$1500 per semester.

**Name:** Barker, Shawn

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Mr. Barker will mentor undergraduates in a summer researsch project @ \$2000

**Name:** Matand, Kanyard

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Dr. Matand mentors student in research - Paid through other funding.

**Name:** McMahon, Timothy

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Dr. McMahon mentors students in research activities - Paid through other funding.

**Name:** Williams, Robert

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Dr. Williams mentors students in research activities - paid by funding from other sources.

**Name:** Abraham, K.

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Dr. Abraham mentors students in research projects - paid through other sources.

**Name:** Benson, Bruce

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Mr. Benson is a university recruiter for LINC - inkind services

**Name:** Harkins, Rosemary

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Dr. Harkins, Chair Biology Department, is on the internal advisory board, TEAM

**Name:** Hedge, Clarence

**Worked for more than 160 Hours:** No

**Contribution to Project:**

Dr. Hedge, Chair of Technology department, is on the internal advisory board, TEAM

**Name:** Ro, In

**Worked for more than 160 Hours:** No

**Contribution to Project:**

Dr. RO is on the internal advisory board, TEAM

**Name:** Burns, Marvin

**Worked for more than 160 Hours:** No

**Contribution to Project:**

Dr. Burns, Dean of Agriculture & Research & Extension at LU, is on the internal advisory board, TEAM.

**Name:** Clark, Joan

**Worked for more than 160 Hours:** No

**Contribution to Project:**

Dr. Clark, Dean of HONORS Program, is on the internal advisory board, TEAM. She offers collaborative financial & personnel support.

**Name:** Williams, Sonya

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Dr. Williams, Director of UBEP, is on the internal advisory board, TEAM

**Name:** Carter, Craig

**Worked for more than 160 Hours:** No

**Contribution to Project:**

Dr. Carter, Director of Talent Search, is on the internal advisory board, TEAM

**Name:** Holloway, Ernest

**Worked for more than 160 Hours:** No

**Contribution to Project:**

Dr. Ernest Holloway, president of Langston University is chair of the external board, PAC. He brings outstanding vision and leadership to the LINC program.

**Name:** Dale, Louis

**Worked for more than 160 Hours:** No

**Contribution to Project:**

Dr. Dale is on the external advisory board, PAC.

His extensive experiences with large NSF projects & grants will bring enormous benefit to this advisory board.

**Name:** Mitchell, Earl

**Worked for more than 160 Hours:** No

**Contribution to Project:**

Dr. Mitchel, Professor, Biochemistry and Director of Oklahoma Alliance for Minority Participation (OKAMP) at Oklahoma State University, Stillwater, OK, is on the external advisory board, PAC. He offers experience in managing NSF programs and offers a collaboration with NSF-OKAMP.

**Name:** Nelson, Donna

**Worked for more than 160 Hours:** No

**Contribution to Project:**

Dr. Nelson, Professor, Organic Chemistry, University of Oklahoma, is on the external advisory board, PAC. She offers the opportunity for research internships for LINC faculty and students at OU.

**Name:** Barrick, Kirby

**Worked for more than 160 Hours:** No

**Contribution to Project:**

Dr. Barrick, Assoc Dean, Academic Program, University of Illinois, is on the external advisory board, PAC. He offers the opportunity for research internships for LINC faculty and students at U of I.

**Name:** Jones, Wayne

**Worked for more than 160 Hours:** No

**Contribution to Project:**

Dr. Jones, Director of Engineering at Tinker Air Force Base, OKC, Ok. will assist in obtaining internships at Tinker as well as give expert advise in his area.

**Name:** Ross, Richard

**Worked for more than 160 Hours:** No

**Contribution to Project:**

Dr. Ross, Dean, College of Agriculture, Iowa State University, is on the external advisory board, PAC. He offers the opportunity for research internships for LINC faculty and students at ISU.

**Name:** Lindsay, Donald

**Worked for more than 160 Hours:** No

**Contribution to Project:**

Dr. Lindsay, Assoc. Dean and Director of Academic Affairs, New Mexico State University, is on the external advisory board, PAC. He offers the opportunity for research internships for LINC students at NMSU.

**Name:** Bell, Paul

**Worked for more than 160 Hours:** No

**Contribution to Project:**

Dr. Bell is on the external advisory board, PAC.

**Name:** Mize, Dolores

**Worked for more than 160 Hours:** No

**Contribution to Project:**

Dr. Mize, Associate Vice-Chancellor for Oklahoma State Regents of Higher Education, is on the external advisory board, PAC. Dr. Mize manages all of the Board of Regent's academies for grades K-12 for the state of Oklahoma. She will offer various outreach opportunities among the K-12 population for the LINC program.

**Name:** Hayes, Rosmary

**Worked for more than 160 Hours:** No

**Contribution to Project:**

Rosemary Hayes is the external evaluator. LINC supports a rate of \$500/day.

**Name:** Bucki, Andrew

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Dr. A. Bucki facilitated the Calculus II Colloquium.

**Name:** Sivanesan, Sivalingam

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Dr. S. Sivanesan facilitated the Calculus I colloquium

**Name:** Wuliji, Tumen

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Dr. T. Wuliji facilitated the Biology II colloquium

**Name:** Wilson, Barbara

**Worked for more than 160 Hours:** Yes

**Contribution to Project:**

Ms. Wilson assisted the LINC Coordinator in data collection, communications and record keeping for the LINC Program.

**Research Experience for Undergraduates****Organizational Partners****Other Collaborators or Contacts**

Part I. 3. Have you had other collaborations or contacts?

NOTE: Exhibit I that is associated with this section is located at the end of the report.

At the outset, one of LINC's major strategies has been to provide strategic financial and developmental support to program participants in order to attract and maintain quality students to STEM disciplines. Financial support is key to our success because we continue to compete with larger universities that do not have as good a track record as Langston for graduating minority students in STEM disciplines. Langston wholeheartedly endorses LINC's efforts, and has supported collaborations with an array of programs that include financial, developmental, and recruiting resources. Langston has also provided collaborative support for recruiting and supplemental educational programs support.

We have also received support from the private sector. We Care Worldwide, Inc., a website hosting and development company that also does cause-marketing, is collaborating with us to provide hosted websites that support online mentoring and broad communications among LINC scholars and STEM students and professionals worldwide.

The synergy created by programs and people in our extensive collaborations are key to our surpassing the goals outlined in our grant application. We aimed to increase the number of minority STEM graduates who receive advanced degrees by 40%. So far, the increase in the number of STEM graduates who are firmly ensconced in advanced degree STEM programs has increased 110%. Although too soon to evaluate the awarding of advanced degrees, we're well on our way. (Exhibit VII-VIIa).



1. Funding Collaborations: Scholarship collaborations with NSF-OKAMP (Oklahoma Alliance Minority Program), Honors Program (LU), SMART Program (LU), NSF SURE STEP Program, and NASA-OU Collaboration. These financial collaborations expand the number of scholars in the LINC program.

Through effective leveraging of scholarship monies, LINC was able to expand its initial target of 12-15 new participants per year to 26 during its first year. At year 4, our total cohort base is 39 scholars. We maintained 26 cohorts for year-one, 39 cohorts for year-two and 43 cohorts for year-three. Bottom line, the impact of scholarship collaborations has been to expand LINC's impact, which translates to an increase in the number of students who achieve our grant's overall goals of increasing the number of underserved students who receive undergraduate and advanced degrees in STEM disciplines, and to increase the number of Langston's STEM graduates by 15% annually. See Exhibit I-LINC Cohort Scholars by Year.

## 2. Recruiting Collaborations

a). SURE-STEP Summer Bridge Program for prospective STEM majors:

This collaboration provides a pool of potentially qualified LINC scholars as well as developmental opportunities for existing LINC Scholars. It also serves as an outreach effort into the Oklahoma community. Program participants are 20 high school students scheduled to enter LU the following Fall term in a STEM curriculum. The program helps students to become acclimated to LU and LU's STEM offerings, as well as provides a \$1500 stipend. The LINC staff participates in this summer bridge program (sponsored by the NSF) by teaching Chemistry, Biology and Physical Science. LINC Scholars act as tutors and SI Student instructors. LINC's Director will serve as Sure-Step program Director during the Summer, 2007 term. This pool of students serves as a pool from which LINC scholarships may be offered for the Fall semester.

b) Langston University Department of Education: Recruitment Assistance LINC's collaborative recruiting effort with LU's Department of Education provides large-scale access to high school students throughout Oklahoma. Since the inception of LINC, over 30 different high schools and 6,000 high school students from various towns throughout Oklahoma participate. Most high schools that attend have collaborative programs with LU's Department of Education. LINC participates in a variety of large scale recruiting events that are sponsored by the Education department.

c) TALENT SEARCH: Recruitment Assistance LINC's collaboration with TALENT SEARCH provides recruitment services, as well as access to students who excel on the ACT test. Throughout the life of our LINC program, Talent Search has provided in-kind services that include recruiting personnel, service-learning tutorial opportunities for LINC participants, data bank of excelling ACT-testing participants, and other vehicles for recruitment.

## 3. Faculty Training Center and University Collaboration

This state-of-the-art facility provides in-kind training for the STEM faculty for the implementation and administration of technology in the classroom. Training activities include training in Computer Technology Integration, web CT, web Design, egrade, Visualization Techniques, Microsoft programs, etc.

Over 70% of STEM faculty has participated in training through this facility, an increase of over 44% prior to LINC. This increase is due in part to LINC's acquiring a computer specialist to assist in the training and project implementation process. LU continues to offer stipends to STEM faculty as an incentive to acquiring additional training in this area.

## 4. EPSCoR and LINC Collaboration for Supplemental Instruction

The 2006/2007 school term is the third full year of a LINC and EPSCoR collaboration to support LINC's Supplementary Instruction (SI), a curriculum enhancement program.

Background: SI is a program that focuses on historically difficult classes (e.g. Chemistry, Biology, Algebra, Calculus, etc.) and is active at 500 institutions across the US. The goals of SI are to improve student grades, reduce the attrition rate within those courses, and increase the graduation rates of students. It helps students to master course content while they develop and integrate learning and study strategies.

Dr. S. Williams, Biology Professor, obtained supplemental funding from EPSCoR to support the implementation of SI instruction. Dr. Williams and Dr. Alonzo Peterson, Mathematics Professor, are coordinators. The Assistant Coordinator is Dr. Betsy Showalter.

The impact of this collaboration on LINC performance for the 2006/2007 school sessions is documented in the 'Activities and Findings' Education category.

#### 5. We Care Worldwide, Inc. and LINC Collaboration for online communications

During late Fall, 2006 LINC teamed with We Care Worldwide, Inc., ([www.wecareworldwide.com](http://www.wecareworldwide.com)), to provide hosted websites that support online mentoring and broad communications among LINC scholars and STEM students and professionals worldwide. The peer and mentoring support is aimed at increasing retention and providing motivation for LINC scholars. This project is in the development stages, but is available now. Further details are provided in the 'Activities and Findings' Education category.

### Activities and Findings

#### **Research and Education Activities:**

Research and Education Activities:

NOTE: Exhibits I, II, III, IV, V, VI, VII, VIII, and IX associated with this section are located at the end of this section.

1. Describe the major research and education activities of the project.

Major education and research activities are listed by category.

#### EDUCATION CATEGORY:

In support of LINC's goal of increasing the number of underserved students who receive undergraduate and advanced degrees in STEM disciplines, and to increase the number of Langston's STEM graduates by 15% annually, LINC implemented a number of programs during the first three years of its grant period that are still in effect. A third program - Competency Performance Recordings for Learning (CPR for Learning) was introduced in the fourth year. All programs - Supplementary Instruction (SI), Curriculum Enhancement Colloquiums, and CPR for Learning directly support the Curriculum Enhancement Program element of our grant.

LINC's Curriculum Enhancement Program is designed to address pre-existing deficiencies of incoming STEM majors, incorporate preparation for nationally standardized testing into standard curriculum, ensure that students are motivated and well prepared for graduate school entry and program completion, enhance critical thinking and problem solving skills, and support personal and professional development. These programs are (1) Supplementary Instruction (SI); (2) Curriculum Enhancement Colloquiums in General Chemistry I & II; Biology I & II; Calculus I & II; Physics; and a Preparation-for-Success (PFS) Colloquium; and (3) Competency Performance Recordings for Learning (CPR for Learning).

#### 1. Curriculum Enhancement Elements:

- (a) Supplementary Instruction (SI) (A collaboration between LINC and EPSCoR for Curriculum Enhancement) (Exhibits II a-d)

Background on this program is documented in Part I, item # 7.

Supplementary Instruction (SI) courses help students to integrate learning and study strategies for STEM courses. Algebra, Chemistry I & II, Biology I & II, and Calculus I & II continue to be our focus. However, only selected SI courses are offered during a particular semester.

We have continually assessed the impact of this program since its inception in the Spring of 2004, and continually make changes to improve its impact.

Similar to the previous two years data, those students who regularly attended SI, earned grades one letter grade higher than their Non-SI counterparts. Those students who attended SI only immediately before a test did not earn an increase. In informal discussions, instructors report that SI is invaluable and plays an extremely important role in the comprehensive education of the students who struggle in mathematics and science. SI has become an integral part Langston University and its efforts to retain students who will positively impact our state and nation.

## Summary of Results Fall, 2006 and Spring 2007 sessions

This is Langston University's third full academic year of the Supplemental Instruction (SI) Program. Langston University implemented the Supplemental Instruction Program in the Spring of 2004. Classes targeted were College Algebra, and the Sciences (Biology I, Chemistry, Physical Science). This year's program consisted of ten SI leaders (Fall) and thirteen SI leaders (Spring), one coordinator, one SI Supervisor, one administrative assistant, and fifteen professors/ instructors. Sessions met 2-3 times a week at various times. Sessions were held in the Mathematics Building and the Sciences Building.

In the Sciences, 357 students were enrolled in classes where SI sessions were available during the Fall 2006 semester. During the Spring 2007 semester, 349 students had access to the Sciences SI sessions. SI was made available to 185 College Algebra students in Fall 2006 and 221 students in Spring 2007. During the Fall 2006 semester, SI was implemented in ten courses (Sciences 6 and College Algebra- 4). In the Spring 2007 semester SI was implemented in twelve courses (Sciences -5 and College Algebra-7).

### Sciences - Biology

Only about 10% of eligible students attended the Biology SI sessions during the Fall 2006 semester. The percentage of students receiving an 'ABC' or 'DFW' was almost identical between the SI Group (48%, 52% respectively) and the Non-SI Group (46%, 52% respectively). However, the grade point average (GPA) was almost a full letter grade difference. The mean GPA for the SI Group was 2.4 while the mean GPA for the Non-SI group was 1.5.

### Sciences- Chemistry

About 45% of the 68 Chemistry I students attended Chemistry SI sessions during the Fall 2006 semester. There was considerable difference in the number of students receiving 'ABC' and 'DFW' grades between the two groups. The Non-SI group had a 50% 'DFW' rate while the SI group reported only a 40% rate. Additionally, the Non-SI group had a 47% 'ABC' rate while the SI group reported an 'ABC' rate that was 13% higher at 60%. The mean GPA of the SI group was 2.1 while the mean GPA of the Non-SI group was 1.5.

### Sciences-Physical Science

Only about 8% of the Physical Science students regularly attended the Physical Science sessions. However, 50% of those regularly attending the SI session received an 'ABC' while only 24% of the Non-SI students received an 'ABC' grade. A disheartening 74% of Non-SI students received a 'DFW' grade.

More than 90% of these students chose not to attend SI sessions, even though it was offered to them.

### Mathematics-College Algebra

One hundred and eighty-five (185) College Algebra students were offered College Algebra SI during the Fall 2006 semester. Almost half (89) of these students attended SI sessions. The SI group earned a 60% 'ABC' grade rate compared to a 43% 'ABC' grade rate for the Non-SI group. Not surprisingly, the number of Non-SI students who received either an 'F' or 'W' (50%) was almost twice the percentage of that of the SI group (26%).

Exhibits II a-d depict SI's impact on grades during the Fall 2006. At the time of this report Spring 2007 grades were not yet collected.

#### (b) Curriculum Enhancement Colloquiums (Exhibits III a-d)

Colloquiums courses incorporate preparation for nationally standardized testing into standard curriculum.

Our curriculum enhancement program was implemented during the Spring 2004 semester with the launching of a trial General Chemistry II colloquium (CH 1501). Subsequently, curriculum enhancement colloquiums for Biology, Chemistry, and Physics courses were implemented.

During the Fall 2005 and Spring 2006 semesters, curriculum enhancement colloquiums for the biology, chemistry and mathematics departments were implemented for the Biology I & II, Chemistry I & II, and Calculus I & II. In addition, two (2) Preparation-for-Success (PFS) Colloquiums were implemented. LINC scholars are required to take STEM colloquium classes.

During the Fall 2006 Spring 2007 sessions, we continued colloquiums implemented earlier, and added Physics.

Our findings from our last session are that students who participated in colloquium course enhancements experienced a grade point average of at least 1 grade point higher than their counterparts who did not attend colloquiums. The differential was highest for chemistry, where those who attended the colloquium course enhancement achieved a g.p.a. 2.3 points higher than their counterparts who did not attend colloquiums. (See Exhibits III a-d).

(c) Competency Performance Recordings for Learning (CPR for Learning)

CPR for Learning was implemented during the Spring, 2006 session. The program is aimed at 'resuscitating' student's learning of the analytical process of problem solving; thus enhancing their problem solving skills as well as their understanding of core course concepts. CPR-L utilizes modern technologies to reinforce tried and proven learning processes. It has layered learning (multiple channels of learning) and iterative processes that utilize three (3) technologies (smartboard, wireless projector, and tablet pc) in concert with clearly articulated problem-solving rubrics. The technologies not only allow the deliverables to be more versatile and dynamic and administered to a larger population, they work to preserve adherence to the integrity of the overall process.

**BACKGROUND AND CONTEXT:** The intensity of the LINC program permitted Langston's STEM faculty to document what it has long recognized as systemic problems in STEM readiness, problems that must be addressed in order to achieve the University's as well as HBCU-UP desired objectives. One such problem is less than satisfactory performance on ACS (American Chemical Society) exams and other national benchmark exams that are tracked as a part of our course enhancement activities. Close scrutiny of classroom performance has uncovered what we believe to be the underlying cause of widespread poor performance on standardized tests an inability to work word problems and overall inadequate problem solving skills, and inability to focus on core concepts. Some of the most common problems can be summarized as follows:

1. Word problems appear to generate the greatest difficulty. Students attempt to work them without taking the time to understand underlying concepts; rather, they look for the quick answer and appear to be pleased to guess correctly rather than derive the answer from knowledge. Students perceived word problems as a means to ensure their less-than-satisfactory performance on tests. The test questions format of choice among students was multiple-choice.
2. Close scrutiny of how students prefer to solve problems can be described as 'plug and play.' They would peruse how a sample problem was solved, then usually with the aide of a calculator plug in numerical factors for the new problem in the same order as in the sample problem to derive an answer. If there were even small changes made to the way the question was posed, many students could not solve the problem. Moreover, they spent considerable time trying to learn the correct answer first, and then manipulate the numbers to produce that answer. Even students who exhibited a capacity for grasping difficult concepts often used the 'plug and play' technique to solve problems that demanded a much more in-depth analysis in order to understand and apply underlying concepts.
3. When studying, students seem to believe that they can concentrate with multiple auditory distractions music, chatter, games and therefore miss opportunities to fully engage in study. They seem unaware of the role a quiet environment (absence of music) plays in aiding the degree of concentration that is often required to thoroughly understand the concept and application of the problem.
4. Students have not been trained to sketch a 'visual representation' of a problem, and fail to write down anything, preferring to rely on memory. Therefore they fail to capitalize on an excellent tool for retaining concepts.
5. The process of reading and speaking a problem aloud is not commonly practiced, yet it adds to the conceptualization and learning process.
6. Students tend to be too impatient to spend the time necessary to work through the problem solving process, or to spend the time required to do repetitions necessary to cement learning.

In response to these challenges, the CPR-L Process was constructed and added as a test curriculum enhancement to an Organic I and Physics I class. Each of the common problems observed (above) was addressed in the Process. Twelve (12) Designated rubrics were created to navigate the student to the proper procedure for analytically solving problems. Rubrics required Articulation of the problem to demonstrate a grasp of 'givens', 'unknowns', and what is being sought; Analysis and assessment of information and processes required to solve the problem; and Ascertaining a solution solving equations and/or correlating data to derive a conclusion. Collectively, the rubrics direct students to engage in a step by step analytical process, forcing them to revisit core course concepts; this reinforces understanding of these concepts within the context of an applied problem. Tablet PC's were used to fulfill a requirement to produce a video recording of the problem-solving process, forcing students toward solitude and focus, and to develop an appreciation for the number of iterations required to distill a succinct two-minute presentation. This step demanded that students engage in an iterative process that requires repetition after repetition for a distinct purpose:

deriving a concise and quality presentation. This process enhances learning & retention. Speaking aloud to make the recording presented additional learning and retention opportunities, as did the process of explaining the process to the computer, according to our students.

In the near future we will document the impact that this program is having on students' scholastic performance.

## 2. Additional educational enhancements:

### (1) Math Tutorials & enhanced teaching tool

(In-Kind collaboration with Langston University)

LU provides the following Math software:

Educo: tutorial

ALEX: Advanced software for Calculus

MAPLE V: Advanced math software

Mathematica: software tool

Educo continues to be an excellent tutorial offered by the Math Department. It enables students to become more proficient in algebra through self-paced learning. The project has developed into an online laboratory that has generous hours of accessibility. Students are able to electronically access tutorial assistance on a broad range of mathematical problems. It is also an excellent teaching & testing tool.

Case studies and best practices suggest that this and other education enhancements will impact the retention rate and performance of STEM students.

### (2) GRE Preparation (Collaboration with Langston University) (Exhibit VIII)

One of the primary predictors of how well undergraduate students will perform in graduate school is the preparation they received in their undergraduate curriculums. One of the primary measures of their potential success in graduate school is the Graduate Record Examination (GRE).

#### Background:

In 2002, Langston University issued an internal report on its students' GRE scores and readiness for graduate school. The report suggested that Langston University mathematics and science students who maintained a 3.2 GPA and scored at least 400/800 on each of the GRE core components were deemed competitive by several in-state graduate schools committees.

In the 1990's there was a strong internal push to get more minority students into science and mathematics graduate programs. During the 2001-2002 school year, Langston University purchased a test preparation package from the Kaplan Educational Center in Oklahoma City. The purpose of this test preparation package was to assist in the process of pinpointing some of the major weaknesses in its students' ability to test on the Graduate Record Examination (GRE).

The Kaplan GRE Preparation Course has been very effective in getting more minority students prepared for the GRE, hence, increasing their competitiveness for graduate school and/or professional schools. Since the implementation of the preparation course more than 90 minority students have participated. At least 50% of these students have been confirmed as having been admitted to or are currently attending graduate/professional schools throughout the United States. The majority of these students chose to attend graduate/professional schools here in Oklahoma.

During the 2006-2007 school session, we made a concerted effort to monitor the impact of intense GRE preparation on scores. Following are our findings.

#### Fall 2005 and Fall 2006 Cohort:

Thirty-eighty students participated in the F05-06 cohort. Nineteen of these students participated in the GRE Preparation Course more than once. Fifteen (15) males and twenty-three (23) females participated in this cohort. Of the fifteen males, fourteen (14) were black/African American and one was an American Indian. All twenty-three (23) females were black/African American.

The Kaplan Course Diagnostic Test revealed both encouraging and discouraging results. The mean overall scores for the diagnostics test were

465/800 (quantitative component). The minimum and maximum scores for this component were 250/800 and 710/800, respectively. The mean overall scores for the verbal component was 404/800. The minimum and maximum scores were 280/800 and 550/800, respectively.

About fifty percent (50%) of this F05-06 cohort actually took the GRE examination. The remaining students are scheduled to take the examination this year. The mean GRE quantitative component score was 523/800. This was a 26 point increase over the Kaplan diagnostic test. The mean GRE verbal component score was 385/800. This was a 20 point decrease when compared to the Kaplan diagnostics test.

Both males and females experienced a significant decline in their verbal scores relative to the Kaplan diagnostics test and the actual GRE examination. However, both groups realized a significant increase in their quantitative scores. In particular, African American females experienced a fifty-four (54) point increase from the Kaplan diagnostic to the actually GRE examination on the quantitative component. This is fantastic news for our state as we look to diversify our science and mathematics graduate programs and technical workforce.

Results show that the Kaplan GRE Preparation Course has had a positive effect in helping students, particularly females, increase their quantitative reasoning skills. Students reported that the preparation course not only taught them how to study for the GRE but also provided them with solid tips on answering seemingly difficult questions.

The course did not appear to have a similar effect on the students' verbal competences. An increased emphasis on students' verbal competences by both the University and the GRE preparation course instructors could potentially bring students' composite GRE scores up significantly and make them even more competitive when applying for graduate schools.

Exhibit VIII gives a more lucid picture of the mean scores of several different comparisons.

### (3) Hand-held PDAs (Personal Digital Assistance)

LINC scholars continue to utilize PDAs to demonstrate how technology assists learning, assist in their managing schedules and commitments, serve as a learning-assist tool in the PFS colloquiums and serve as a personal computer. This tool continues to be used to impact retention rates and performance of students in the LINC program.

### (4) Digital Village

Langston University developed an on-line community that links LINC students to a variety of resources, including STEM and LINC alums that are in STEM graduate programs or careers, and approved business and industry mentors. The sites, [www.linconline.org](http://www.linconline.org) and [www.linconlineblog.com](http://www.linconlineblog.com) are in the development stages, but already support blogging among STEM majors. When fully developed, these sites will support mentoring from LINC program graduates, and help students to expand their horizons by communicating with STEM majors around the globe. We anticipate that students will be able to receive insights from those who have already navigated graduate STEM study, and those insights will positively affect retention.

### (5) Faculty Education: Faculty Training

(A collaborative effort with Langston University)

Effective faculty is crucial to the success of all educational programs. LU is committed to support LINC by supporting faculty education in technology and new teaching methods. To this end LU's faculty training facility (FTC Center) and staff provide In-Kind training for STEM faculty in technology in the classroom.

This state-of-the-art facility provides in-kind training for the STEM faculty for the implementation and administration of technology in the classroom. Training activities include training in Computer Technology Integration, web CT, web Design, egrade, Visualization Techniques, Microsoft programs, etc.

70% of STEM faculty have participated in training through this facility, an increase of over 44% pre-LINC. This increase is due in part to LINC's acquiring a computer specialist to assist in the training and project implementation process. STEM faculty implemented these technology tools to enhance students' learning experiences.

Additionally, LINC supported Faculty travel to various training workshops. Others traveled to proposal evaluation workshops in the local area.

Developmental meetings and research forums included:

LS-OKAMP Annual Research Symposium. Stillwater. OK  
 UCO Research Day. Edmond, OK  
 64th Annual BKX/NIS Convention. Greensboro, N.C.

LU continues to offer stipends to STEM faculty as an incentive to acquiring additional training in this area.

#### (6) Education support: Mentoring

Although mentoring is embedded in special research programs, each LINC participant has been assigned a faculty mentor who is required to meet with assigned students bi-monthly.

Mentoring relationships can help to uncover potential problems before they become real issues, and assist in finding solutions to them. As a result, LINC scholars are more likely to meet or exceed requirements of the program as well as remain in STEM disciplines.

Each STEM department recommends STEM candidates for LINC and assigns mentors. Participating departments include Biology, Chemistry, Agriculture, Mathematics, and Computer Science.

Our latest assessment indicates that our mentoring program could be strengthened through a more robust process. We are currently working to implement such a process.

#### RESEARCH ACTIVITIES:

Student Research is one of LINC's strategies to improve the retention rate of STEM students. Through this experiential learning, students are exposed to challenging and exciting applications of 'book learning'.

LINC Research Internship collaboration. Some of the collaborative programs include the K-INBRE program at the University of Kansas at Lawrence, The INBRE program at the OU Health Sciences Center and Oklahoma State University, Stillwater, OK; the NSF Carver Project at the University of Arkansas, Fayetteville; the NSF-REU Program at Texas A & M at College Station; Indiana University, Bloomington, In; and the NSF-REU Program at North Texas HSC. Through these collaborations and with other entities 39 STEM students are participating in research internships during the 2007 summer session. Exhibit V provides details about the 2007 internships. Exhibits VII - VIIa show the progression of summer internship assignments for Pre/Post LINC: summers 2002, 2003, 2004, 2005, 2006 & 2007.

All research projects are expected to culminate with an oral and poster presentation.

#### 1. STEM Instructional Laboratory

Dr. Douglas Chan & Tesfai Kesette facilitate instruction.

The Instructional laboratory has acquired appropriate equipment and became operational during the summer 2004 session. Equipment includes: HPLC (high performance Liquid Chromatography), Infra Red Spectrophotometer, UV Spectrophotometer, Gas Chromatograph.

This STEM Instructional Laboratory is the base for introducing students to state-of-the-art laboratory equipment, and enhances tutoring and mentoring efforts. It also enhances student interaction and laboratory skills development. This state-of-the-art facility is anticipated to aid in our recruitment efforts.

#### 2. Research Conferences and Presentations (Exhibits V, VI, IX)

(a) 64th Annual BKX/NIS Convention. Greensboro, NC. March 14-18, 2007

LINC in collaboration with the NIS supported fourteen (14) STEM students' attendance at Beta Kappa Chi-NIS national convention. Eleven

students presented an oral or poster presentation. Derek Blythe won second place in oral competition in the mathematics division. Karole Blythe won second place for her oral presentation in the chemistry division.

Exhibit VI: Out-of-state Research Events. Attendees at out-of-state events.

(b) UCO Research Day. University of Central Oklahoma. April 6, 2007, Edmond, OK.

Research day was held at the University of Central Oklahoma, Edmond, OK for regional universities. LINC supported 39 participants. Each student presented a poster presentation.

(c) LS OKAMP Annual Research Symposium. Oklahoma State University. September 23, 2006. Stillwater. OK.

A Research Symposium was held at Oklahoma State University, Stillwater, OK for the NSF-OKAMP Program. LINC supported 28 STEM majors to attend this event. Each student presented an oral or poster presentation.

(d) Research Day at the capitol - March 22, 2007

Research day for undergraduate research papers was held at the Oklahoma state capitol during March 22, 2006. All schools in the state of Oklahoma were allowed to send a representative for the research competition. Nathan Williams, a LINC scholar, gave his poster presentation of his computer science/mathematics research project done at the Texas A & M University, College Station, TX.

3. GRE Kaplan Course. Langston University. Langston, OK.

17 Juniors and Seniors who had been enrolled in the course during the Fall 2006 semester participated. This is an ongoing event each Fall semester for STEM scholars. This course is a collaboration between EPSCoR and LINC...

#### ADDITIONAL DATA AND TRACKING:

Through SEIS data tracking and management system, LU collects data necessary to support our objectives.

Internal assessments of colloquiums are established. Teacher observations and student assessment forms are utilized. Assessments are done for all colloquium courses as well as for each SI session.

External Evaluation is in place. Dr. Rosemary Hayes, Director of The Center for Institutional Data Exchange and Analysis at the University of Oklahoma has been retained to complete appropriate Evaluation for each year of the program.

#### OTHER SALIENT POINTS:

During the four years (2000-2003) before the LU LINC program was established there were 19 LU STEM students entering advanced degree programs after graduation; nine(9) were MS/PhD programs. During the 2004-2007 period, after LINC's inauguration, thirty five(35) LU STEM students entered advanced degree programs. Nineteen (19) are MS/PhD programs. This reflects an 84% and well over 110 % increase respectively for these categories.

#### Findings:

Findings:

1. Describe major findings resulting from these activities.  
(Barriers, with anticipated solutions)

Although LINC is on target with most of its activities, we are making some adjustments based upon four (4) years of experience, as summarized below:



## (a) Curriculum Enhancement

The number of course -enhancement colloquiums outlined in the proposal appears to have been too aggressive for Langston's resources (8 for each of the five participating departments).

Our experiences thus far indicate that a more cautious approach of implementation of these courses is required. We have implemented Chemistry I & II, Biology I & II, Calculus I & II, and Physics. These departments (chemistry, biology & mathematics) contain the gate-keeping courses (as suggested by NSF) and they continue to be the initial focus.

Supplementary Instruction (SI) is a volunteer program; and some students do not attend on a regular basis. Last year we implemented a number of suggestions based on feedback from surveys completed by SI Instructors, SI Leaders.

Documentation (Exhibits II a-d) demonstrate that the SI program is having a positive impact on scholastic performance.

## Evaluation:

Our program is evaluated by an external evaluator. Two reports have been completed; a third and final report will be completed in the final year of the grant.

**Training and Development:**

Training and Development:

3. Describe the opportunities for training and development provided by your project.

Effective faculty is crucial to the success of all educational programs. LU is committed to support LINC by supporting faculty development and training as follows:

A. Technology in the Classroom Training (A collaborative effort with Langston University)

LU's faculty training facility and staff provide In-Kind training for STEM faculty for technology in the classroom.

Over 70% of STEM faculty have participated in training through this facility, an increase of over 44% pre-LINC. This increase is due in part to LINC's acquiring a computer specialist to assist in the training and project implementation process. STEM faculty implemented these technology tools to enhance students' learning experiences.

STEM faculty implemented this learning into its teaching methods during the Fall, 2004 term, and find that it enhances students' learning experiences.

B. Additional Training and Development

LINC continues to support Faculty travel to various training workshops. One professor traveled to Washington D.C. for two different QEM workshop for grant writing in Fall 2006. Others traveled to proposal evaluation workshops in the local area.

Developmental meetings and research forums included:

LS-OKAMP Annual Research Symposium. Stillwater. OK

UCO Research Day. Edmond, OK

64th Annual BKX/NIS Convention. Greensboro, NC

LU continues to offer stipends to STEM faculty as an incentive to acquiring additional training in this area.

LU's commitment to faculty training & development is in progress.

Student training and development activities are in the areas of 1) serving as SI Facilitators, 2) Mentoring during outreach activities, 3) receiving guidance from faculty mentors, 4) participating in research activities, and 5) PDA training.

1. Supplementary Instruction (SI) Facilitators. A collaboration between LINC and EPSCoR for Curriculum Enhancement) strategies.

Since the spring 2004-semester, trained LINC students facilitated SI sessions for courses in Algebra, Chemistry I & II, Biology I & II, and Calculus I & II. Further information is on page 4, under 'Research and Education Activities'.

## 2. Mentoring during outreach activities

LINC, in collaboration with Langston University, has a number of outreach forums wherein faculty and Scholars interact with the Oklahoma community in an effort to showcase the facility, LINC, and the value of pursuing STEM disciplines. Following is a list of major activities:

### (a) Recruiting events:

LINC collaborates with LU's Department of Education to reach over 30 different high schools and 6,000 high school students throughout Oklahoma. LU's recruiters distribute LINC's brochure and application, which feature a link to our website. LINC personnel attend High School Day activities.

### (b) SURE-STEP summer 2007 bridge program for perspective STEM majors.

LINC staff continues to participate in this NSF-sponsored program by teaching Chemistry and Physical Science, with LINC scholars serving as mentors. Student participants serve as a pool from which LINC scholarships may be offered for the Fall semester.

### (c) TALENT SEARCH

TALENT SEARCH provides In-Kind services that include a bank of high-performing ACT-test participants (over 500) for consideration by LINC. It also provides use of its recruiting personnel and service-learning tutorial opportunities. TALENT SEARCH has collaborative programs with over 30 high schools throughout Oklahoma.

## 3. Guidance from Mentors

Although mentoring is embedded in special research programs, each LINC participant has been assigned a faculty mentor who is required to meet with assigned student bi-monthly.

It is anticipated that mentoring relationships will uncover potential problems before they become real issues, and assist in finding solutions to them. As a result, LINC scholars are more likely to meet or exceed requirements of the program as well as remain in STEM disciplines.

Each STEM department recommends STEM candidates for LINC and assigns mentors. Participating departments include Biology, Chemistry, Agriculture, Technology, and Computer Science.

## 4. Research

Student Research is one of LINC's strategies to improve the retention rate of STEM students. Through this experiential learning, students are exposed to challenging and exciting applications of 'book learning.'

LINC has established a number of collaborations that provide these enriching experiences for LINC scholars. Specific arrangements for summer 2007 are contained in Exhibit IV: Internships.

### (a) STEM Instructional Laboratory

The Instructional laboratory has acquired appropriate equipment and has been operational since the summer 2004 session. Equipment includes: high performance Liquid Chromatography, Infra Red Spectrophotometer, UV Spectrophotometer, Gas Chromatograph.

This STEM Instructional Laboratory is the base for introducing students to state-of-the-art laboratory equipment, and enhance tutoring and mentoring efforts. It also enhances student interaction and laboratory skills development. It is anticipated that it will attract students who maybe on the borderline of attending a larger university because of access to state-of-the-art facilities.

### (b) Research Conferences and Presentations.

**Outreach Activities:**

Outreach Activities:

Describe outreach activities your project has undertaken.

LINC, in collaboration with Langston University, has a number of outreach forums wherein faculty and Scholars interact with the Oklahoma community in an effort to showcase the facility, LINC, and the value of pursuing STEM disciplines.

Recruiting event:

LINC collaborates with LU's Department of Education to reach over 30 different high schools and 6,000 high school students throughout Oklahoma. LU's recruiters distribute LINC's brochure and application, which features a link to our website. LINC personnel attend High School Day activities.

SURE-STEP Summer Bridge program for perspective STEM majors.

LINC staff participates in this NSF-sponsored program by teaching Chemistry and Physical Science. LINC scholars serve as mentors. This pool of students serve as a pool from which LINC scholarships may be offered for the Fall semester.

**TALENT SEARCH**

TALENT SEARCH provides In-Kind services that include a bank of high-performing ACT-test participants for consideration by LINC. It also provides use of its recruiting personnel and service-learning tutorial opportunities. TALENT Search has collaborative programs with over 30high schools throughout Oklahoma.

**Journal Publications****Books or Other One-time Publications**

John K. Coleman, "Langston's Integrated Network College for Science, Technology, Engineering & Mathematics \_ Brochure", (2004). Brochure, Published

Editor(s): N/A

Collection: N/A

Bibliography: N/A

John K. Coleman, "Competency Performance Recording (CPR) for Learning", (2006). White Paper, Published

Editor(s): N/A

Collection: N/A

Bibliography: N/A

**Web/Internet Site****URL(s):**

[www.lunet.edu/linc](http://www.lunet.edu/linc), [www.linonline.org](http://www.linonline.org), [www.cpr-casting.com](http://www.cpr-casting.com), [www.linonlineblog.com](http://www.linonlineblog.com)

**Description:**

III. Publication and Products

What have you published as a result of this work?

1. Internet Dissemination

LINC is utilizing current technology to effectively and efficiently disseminate information about its offerings. Our site is online at [www.lunet.edu/linc](http://www.lunet.edu/linc). From the site, Internet visitors can learn about LINC's program and philosophy, as well as access its application and brochure. A calendar of events keeps interested parties advised of upcoming special events.

Hardcopies of the brochure and application are also available at Langston's recruiting office and placed strategically throughout the university's physical facility. They were mailed to target high schools and organizations throughout Oklahoma.

### Other Specific Products

#### Contributions

##### **Contributions within Discipline:**

LINC has developed a process that successfully shepherds students through four years of STEM undergraduate study, through graduation and entering graduate school. Digital Village communications/mentoring and hands-on, on-site mentoring are elements of the LINC infrastructure that directly contribute to our success.

CPR for Learning has been instrumental in helping STEM students develop requisite problem solving skills critical to success in STEM disciplines.

##### **Contributions to Other Disciplines:**

##### **Contributions to Human Resource Development:**

##### **Contributions to Resources for Research and Education:**

##### 4. Contributions to Resources for Science and Technology:

STEM Instructional Laboratory

Dr. Douglas Chan will facilitate instruction.

The Instructional laboratory has acquired appropriate equipment and has been operational since the summer 2004 session. Equipment includes: HPLC (high performance Liquid Chromatography), Infra Red Spectrophotometer, UV Spectrophotometer, Gas Chromatograph.

This STEM Instructional Laboratory is the base for introducing students to state-of-the-art laboratory equipment, and enhances tutoring and mentoring efforts. It also enhances student interaction and laboratory skills development. It is anticipated that it will attract students who may be on the borderline of attending a larger university because of access to state-of-the-art facilities.

While acquisition of equipment is on schedule, an inordinate amount of time was required to scrutinize and assess the many proposed choices by numerous vendors presented during the lengthy open bid process.

##### **Contributions Beyond Science and Engineering:**

### Special Requirements

**Special reporting requirements:** None

**Change in Objectives or Scope:** None

**Unobligated funds:** less than 20 percent of current funds

**Animal, Human Subjects, Biohazards:** None

#### Categories for which nothing is reported:

Organizational Partners

Any Journal

Any Product

Contributions: To Any Other Disciplines

Contributions: To Any Human Resource Development

Contributions: To Any Beyond Science and Engineering

## EXHIBIT I

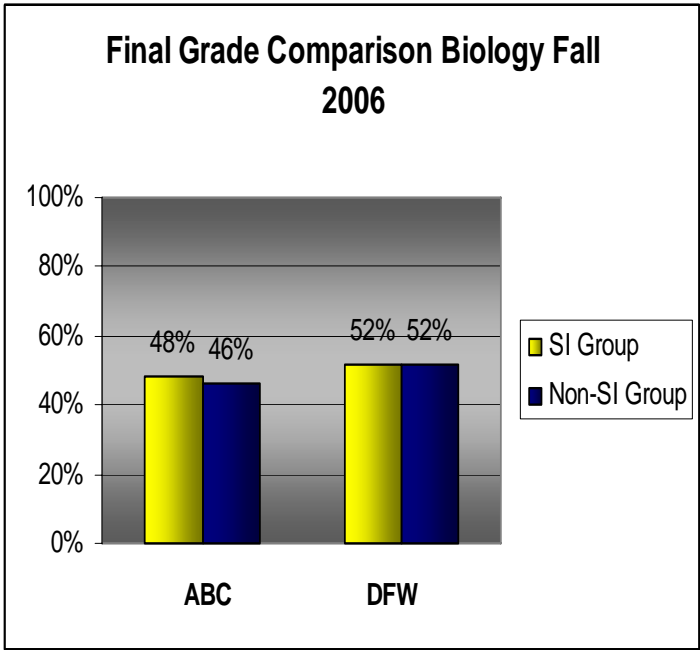
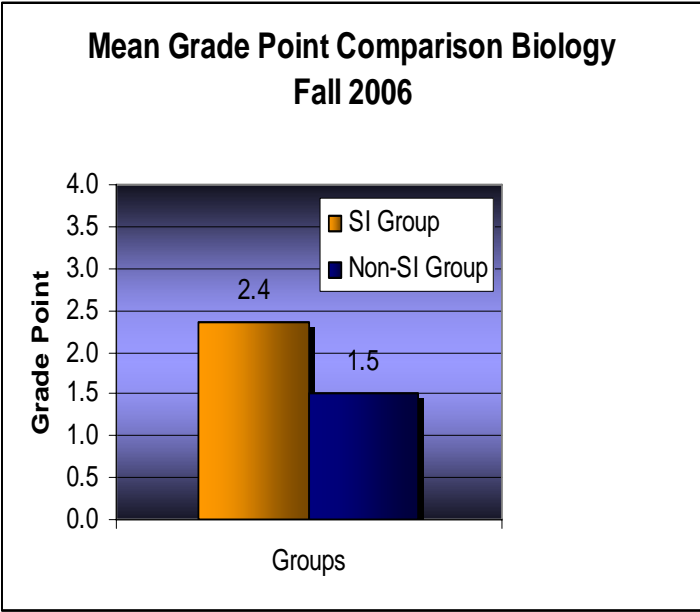
### LINC COHORT SCHOLARS 2003-2005

|    | YEAR-ONE, 2003-4      |                        | YEAR-TWO, 2004-5      |                                |
|----|-----------------------|------------------------|-----------------------|--------------------------------|
|    | NAME                  | Class/Major/Commentary | NAME                  | Class/Major/Commentary         |
| 1  | Anderson, Quincy      | So/Chem                | Anderson, Quincy      | So/Chem                        |
| 2  | Billingslea, Robert   | Sr./Comp Sci/Grad      | Blythe, Derek         | Fr/Math                        |
| 3  | Blythe, Derek         | Fr/Math                | Bolton, Tremella      | Fr/Bio                         |
| 4  | Booker, Sheree        | Jr/Bio                 | Booker, Sheree        | Sr/Bio/Graduated               |
| 5  | Buford, Joe           | Jr/Ag-Sci              | Bridgewater, Tony     | So/Chem                        |
| 6  | Burdex, Ashley        | So/Bio                 | Brison, Shanequah     | Jr/Comp Sci                    |
| 7  | Carrol, Deidre        | Sr/Chem/Grad           | Buford, Joe           | Sr/Ag-Sci/Graduated            |
| 8  | Charlot, Adrienne     | So/Bio                 | Burdex, Ashley        | Jr/Bio                         |
| 9  | Culver, Ralph         | Fr/Math                | Brumfield, Leethaniel | Fr/Bio                         |
| 10 | Davis, Mark           | Sr/Ag-Sci/Grad         | Carpenter, Christal   | Jr/Bio                         |
| 11 | Doss, Argenia         | Jr/Bio                 | Chandler, Jason       | Fr/Chem                        |
| 12 | Ekpo, Joy             | Sr/Bio/Grad            | Charlot, Adrienne     | Jo/Bio                         |
| 13 | Evans, Marchonda      | So/Math                | Crane, Domonick       | Fr/Math                        |
| 14 | Harris, Steven        | So/Chem                | Culver, Ralph         | So/Math                        |
| 15 | Harrison, Jamie       | So/Chem                | Doss, Argenia         | Sr/Bio/Graduated               |
| 16 | Harvey, Desmond       | So/Chem                | Evans, Marchonda      | Jr/Math/Transferred to Iowa Un |
| 17 | Johnson, Marcus Jr    | Sr/Comp Sci/Grad       | Gipson, Shannon       | So/Bio                         |
| 18 | Laws-Rodrequez, Jesse | So/Bio                 | Harris, Steven        | Jo/Chem                        |
| 19 | Majors, Contessa      | Fr/Bio                 | Harrison, Jamie       | Jo/Chem                        |
| 20 | Rider, Teremun        | Jr/Bio                 | Harvey, Desmond       | Jo/Chem                        |
| 21 | Roseburr, Johnnie     | So/Chem                | Hawkins, Calvin       | So/Chem                        |
| 22 | Sherman, Adrian       | Jr/Ag-Sci              | Holland, Davia        | So/Bio                         |
| 23 | Sykes, Alexandr       | So/Math                | Kimbell, Tamika       | So/Math                        |
| 24 | Tenner, David         | So/Bio                 | Laws-Rodrequez, Jesse | Jo/Bio                         |
| 25 | Walter, Deandre       | Jr/Comp Sci            | Loftis, Charles       | Fr/Chem                        |
| 26 | Washington, Aaron     | Fr/Bio                 | Majors, Contessa      | So/Bio                         |
| 27 |                       |                        | Ognibene, Cherie      | Fr/Bio                         |
| 28 |                       |                        | Releford, Quanetta    | Fr/Bio                         |
| 29 |                       |                        | Robinson, Monique     | So/Chem                        |
| 30 |                       |                        | Roseburr, Johnnie     | Jo/Chem                        |
| 31 |                       |                        | Rowland, Marquita     | Jr/Bio                         |
| 32 |                       |                        | Sherman, Adrian       | Sr/Ag-Sci/Graduated            |
| 33 |                       |                        | Sykes, Alexandr       | Jr/Math/Transferred to Kansas  |
| 34 |                       |                        | Tenner, David         | Jr/Bio                         |
| 35 |                       |                        | Terry, Danny          | Fr/Chem                        |
| 36 |                       |                        | Todd, Syndia          | So/Bio                         |
| 37 |                       |                        | Walter, Deandre       | Sr/Comp Sci                    |
| 38 |                       |                        | Washington, Aaron     | So/Bio                         |
| 39 |                       |                        | Williams, Nathan      | So/Comp Sci                    |
| 40 |                       |                        |                       |                                |
| 41 |                       |                        |                       |                                |
| 42 |                       |                        |                       |                                |
| 43 |                       |                        |                       |                                |
| 44 |                       |                        |                       |                                |
| 45 |                       |                        |                       |                                |
| 47 |                       |                        |                       |                                |
| 47 |                       |                        |                       |                                |

**EXHIBIT 1-A**

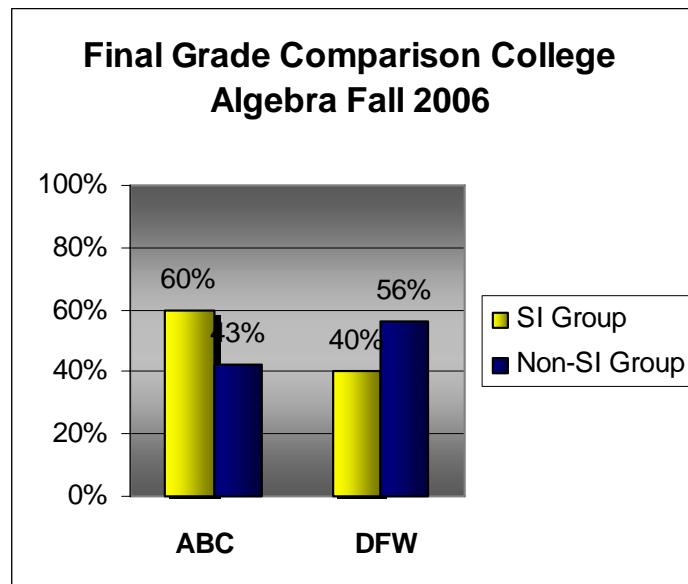
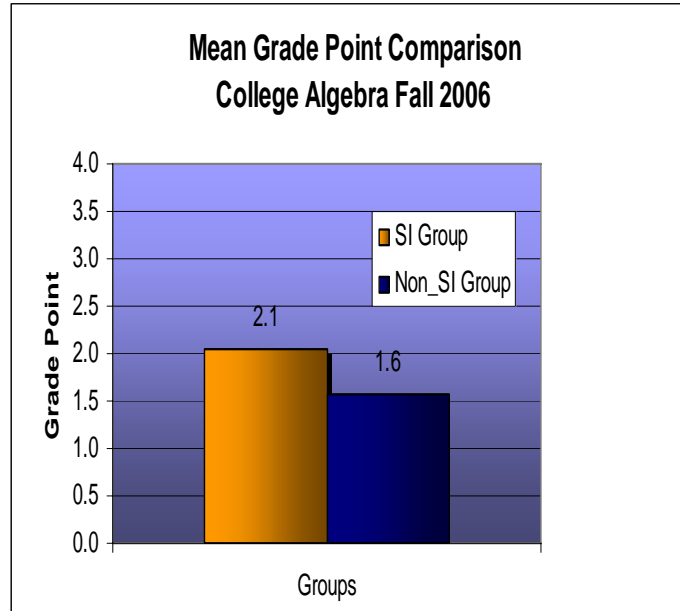
|    | <b>YEAR-THREE, 2005-6</b> |                               | <b>YEAR-FOUR, 2006-7</b> |                               |
|----|---------------------------|-------------------------------|--------------------------|-------------------------------|
|    | <b>NAME</b>               | <b>Class/Major/Commentary</b> | <b>NAME</b>              | <b>Class/Major/Commentary</b> |
| 1  | Anderson, Quincy          | Jr/Chem                       | Anderson, Quincy         | Sr/Chem/graduated             |
| 2  | Atkinson, Brittanie       | Fr/Bio                        | Atkinson, Brittanie      | Soph/Bio                      |
| 3  | Blocker, Tomica           | Soph/Bio                      | Blocker, Tomica          | Jr/ Bio                       |
| 4  | Blythe, Derek             | Jr/Math/Comp Sci              | Blythe, Derek            | Sr/Math/Comp Sci/graduated    |
| 5  | Blythe, Karole            | Fr/Chem                       | Blythe, Karole           | Soph/Chem                     |
| 6  | Burdex, Ashley            | Sr/Bio/ grad program          | Bradford, Amber          | Soph/Bio                      |
| 7  | Charlot, Adrienne         | Sr/Bio/graduated              | Bridgewater, Tony        | Sr/Chem/graduated             |
| 8  | Culver, Ralph             | Jr/Math/Comp Sci              | Brumfield, Leethaniel    | Jr/Bio                        |
| 9  | Gipson, Shannon           | Jr/Bio                        | Chandler, Jason          | Jr/Chem                       |
| 10 | Crane, Domonick           | So/Math                       | Clemons, Brandon         | Sr/Comp Sci                   |
| 11 | Bradford, Amber           | Fr/Bio                        | Crane, Domonick          | Jr/Math                       |
| 12 | Harris, Steven            | Sr/Chem/grad program          | Culver, Ralph            | Sr/Math/Comp Sci/graduated    |
| 13 | Harrison, Jamie           | Sr/Chem/ grad program         | Ekpo, Felicia            | Soph/Bio                      |
| 14 | Harvey, Desmond           | Sr/Chem/ grad program         | Gipson, Shannon          | Sr/Bio/graduated              |
| 15 | Hawkins, Calvin           | Jr/Chem                       | Hawkins, Calvin          | Sr/Chem                       |
| 16 | Ekpo, Felicia             | Fr/ Bio                       | Holland, Davia           | Sr/Bio                        |
| 17 | Majors, Contessa          | Jr/Bio                        | Kimbell, Tamika          | Sr/Comp Sci/graduated         |
| 18 | Holland, Davia            | Jr/Bio                        | Loftis, Charles          | Jr/Chem                       |
| 19 | Roseburr, Johnnie         | Sr/ Chem/ graduates Fall 06   | Majors, Contessa         | Sr/Bio                        |
| 20 | Harrison, Corey           | Fr/ Chem                      | Martin, David            | Jr/Math                       |
| 21 | Tenner, David             | Sr/ Bio/graduated             | Ognibene, Cherie         | Jr/Bio                        |
| 22 | Thomas, Victoria          | Fr/Bio                        | Price, Via`Ney           | Jr/Bio                        |
| 23 | Washington, Aaron         | Jr/Bio                        | Robinson, Monique        | Sr/Chem/graduated             |
| 24 | Bridgewater, Tony         | Jr/Chem                       | Roseburr, Johnnie        | Sr/Chem/graduated             |
| 25 | Brison, Shanequah         | Sr/Comp Sci/grad school       | Ross, Kariel             | Sr/Bio                        |
| 26 | Brumfield, Leethaniel     | Soph/Bio                      | Terry, Danny             | Jr/Chem                       |
| 27 | Carpenter, Christal       | Sr/Bio/grad program           | Thomas, Victoria         | Soph/Bio                      |
| 28 | Chandler, Jason           | Soph/Chem                     | Todd, Syndia             | Sr/Bio/graduated              |
| 29 | Kimbell, Tamika           | Jr/Comp Sci                   | Vann, Kendra             | Soph/Chem                     |
| 30 | Loftis, Charles           | Soph/Chem                     | Washington, Aaron        | Sr/Bio/graduated              |
| 31 | Ognibene, Cherie          | Soph/Bio                      | Williams, Nathan         | Sr/Comp Sci/graduated         |
| 32 | Releford, Quanetta        | Soph/Bio/Trans to UCO         | Osei, Richard            | Jr/Comp Sci                   |
| 33 | Robinson, Monique         | Jr/Chem                       | Dedmond, Braylon         | Soph/Chem                     |
| 34 | Rowland, Marquita         | Sr/Bio/grad program           | Broulette, Merrill       | Soph/Chem                     |
| 35 | Terry, Danny              | Soph/Chem                     | Braggs, Kirk             | Soph/Chem                     |
| 36 | Todd, Syndia              | Jr/Bio                        | Anderson, Richard        | Soph/Chem                     |
| 37 | Williams, Nathan          | Jr/Comp Sci                   | Bailey, Marshal          | Fresh/ Bio                    |
| 38 | Vann, Kendra              | Fr/Chem                       | Henderson, Samuel        | Fresh/Bio                     |
| 39 | Clemons, Brandon          | Jr/Comp Sci                   | Sandoval, Armida         | Sr/Chem                       |
| 40 | Price, Via`Ney            | Soph/ Bio                     |                          |                               |
| 41 | Ross, Kariel              | Jr/ Bio                       |                          |                               |
| 42 |                           |                               |                          |                               |
| 43 |                           |                               |                          |                               |
| 44 |                           |                               |                          |                               |
| 45 |                           |                               |                          |                               |
| 47 |                           |                               |                          |                               |
| 47 |                           |                               |                          |                               |

**Exhibit IIa: SI Results  
Biology: Fall 2006**

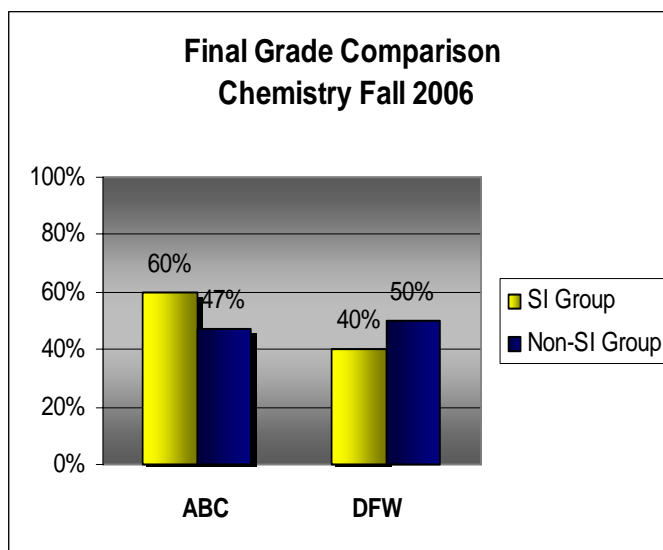
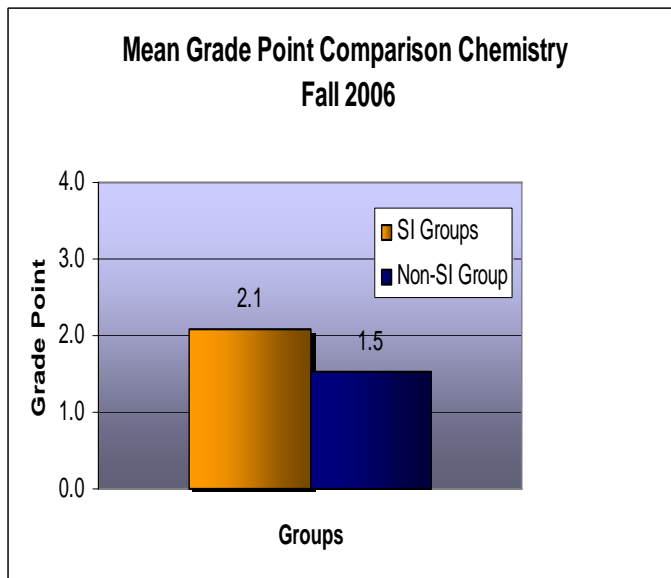




**Exhibit IIb: SI Results  
College Algebra: Fall 2006**



**Exhibit IIc: SI Results  
Chemistry: Fall 2006**



**Exhibit II: SI Results  
Physical Science: Fall 2006**

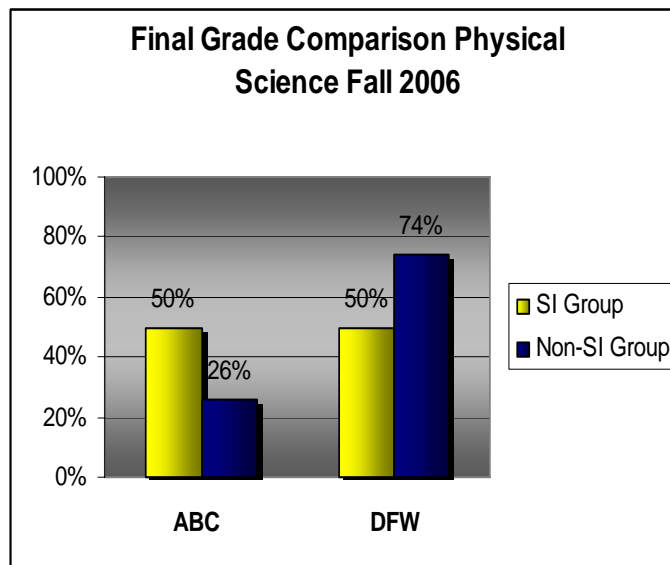
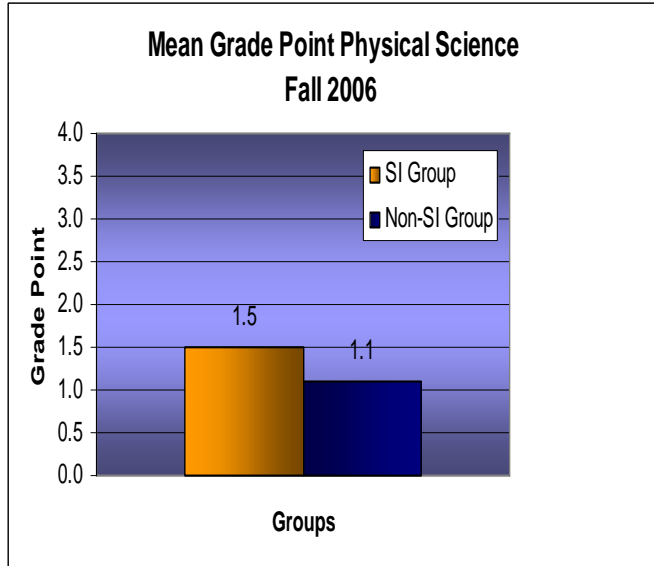


Exhibit III-a: Impact of Colloquium Course Enhancements on GPA:  
Spring & Fall Semesters 2006/2007

Calculus

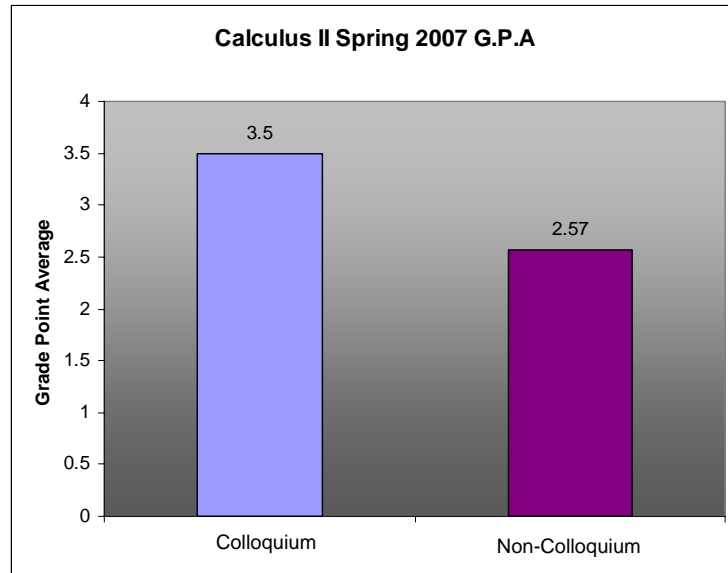
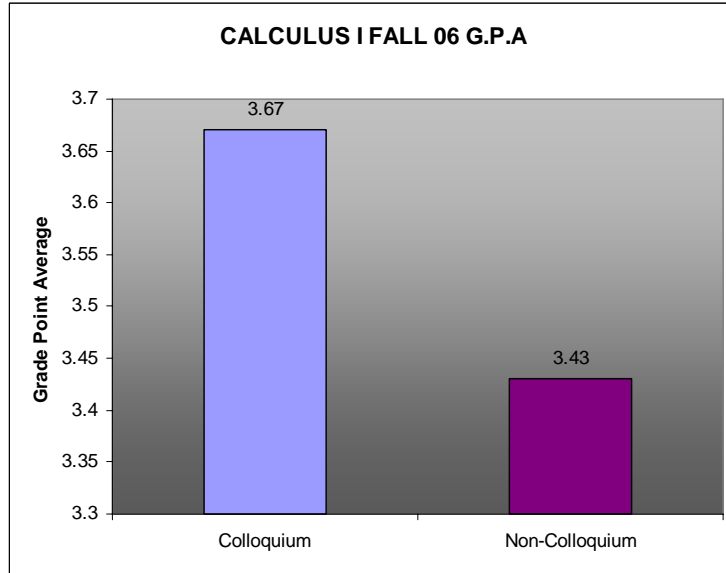


Exhibit III-b: Impact of Colloquium Course Enhancements on GPA:  
Fall Semesters 2006

Biology

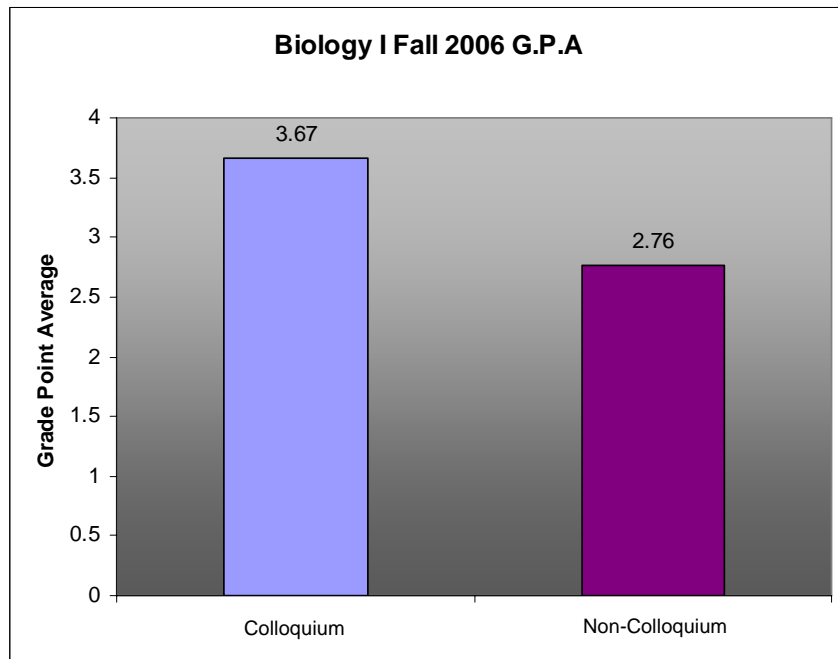


Exhibit III-c: Impact of Colloquium Course Enhancements on GPA:  
Spring & Fall Semesters 2006/2007

Chemistry

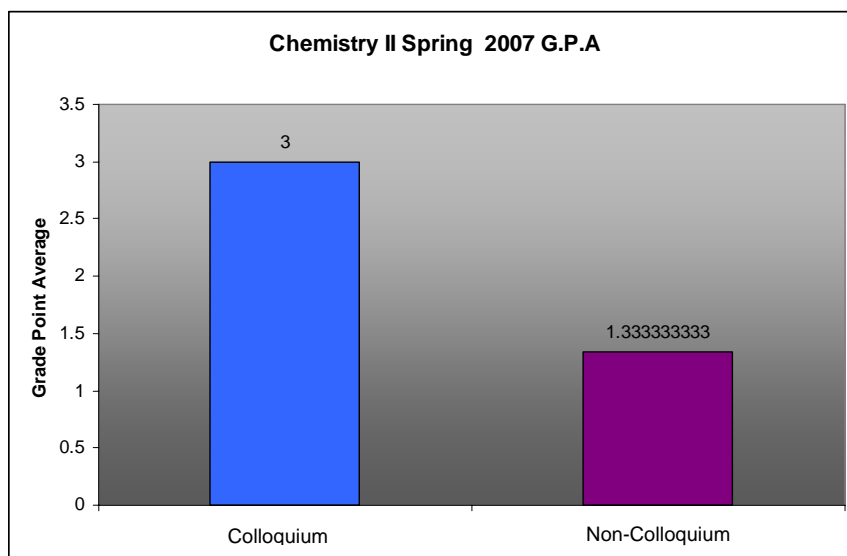
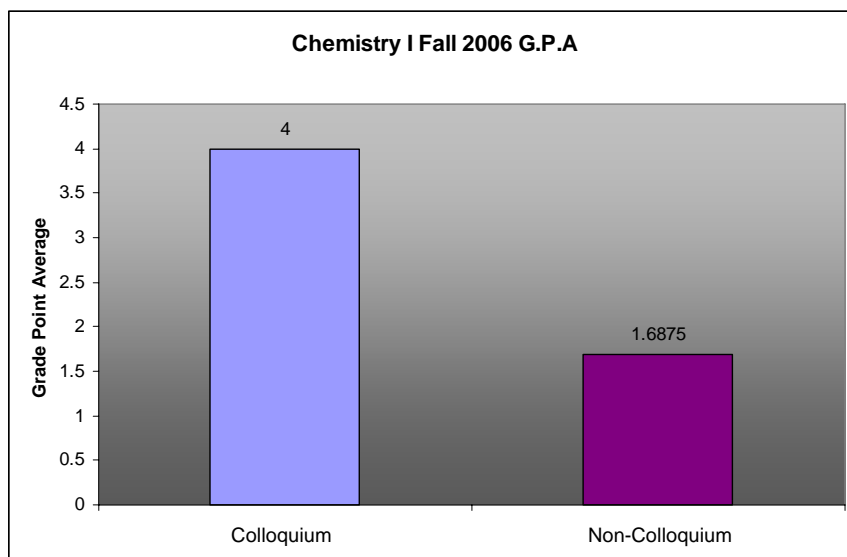


Exhibit III-d: Impact of Colloquium Course Enhancements on GPA:  
Fall Semesters 2006

Physics

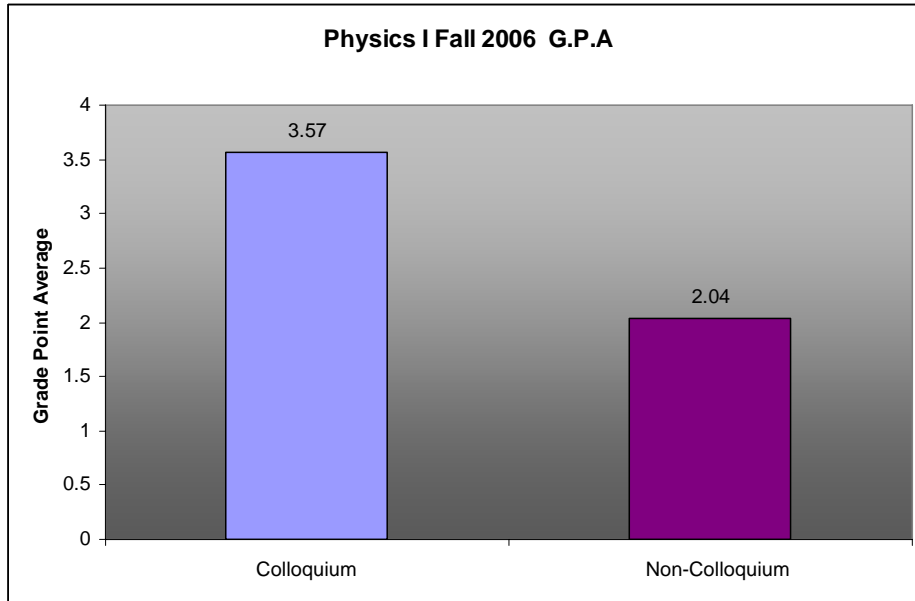


Exhibit IV

2007 SUMMER INTERNSHIPS

|    | NAME                  | AFFILIATION                                     |
|----|-----------------------|---|
| 1  | ANDERSON, RICHARD     | UNIVERSITY OF OKLAHOMA<br>HEALTH SCIENCE CENTER |
| 2  | ASMAMAW, TSEDENIA     | UNIVERSITY OF KANSAS                            |
| 3  | ATKINSON, BRITTANI    | UNIVERSITY OF KANSAS                            |
| 4  | BLOCKER, TOMICA       | UNIVERSITY OF ARKANSAS                          |
| 5  | BLYTHE, KAROLE        | UNIVERSITY OF ARKANSAS                          |
| 6  | BOWIE, MILICENT       | UNIVERSITY OF KANSAS                            |
| 7  | BRADFORD, AMBER       | UNIVERSITY OF OKLAHOMA<br>HEALTH SCIENCE CENTER |
| 8  | BRAGGS, KIRK          | UNIVERSITY OF OKLAHOMA<br>HEALTH SCIENCE CENTER |
| 9  | BRIDGEWATER, TONY     | OKLAHOMA STATE UNIVERSITY                       |
| 10 | BROULLETTE, MERRIL    | INDIANA UNIVERSITY                              |
| 11 | BRUMFIELD, LEETHANIEL | VANDERBILT UNIVERSITY                           |
| 12 | CALDWELL, KENTA       | INDIANA UNIVERSITY                              |
| 13 | CHANDLER, JASON       | UNIVERSITY OF ARKANSAS                          |
| 14 | COCHRAN, JUSTIN       | SCEP EXPERIENCE, OK                             |
| 15 | COOPER, SAMANTHA      | DOT, OKC  |
| 16 | DANIELS, DAVON        | CSI, ARLINGTON, TX                              |
| 17 | DUCKER, RODERICK      | USDA, MINESOTA                                  |
| 18 | EKPO, FELICIA         | UNIVERSITY OF ARKANSAS                          |
| 19 | HADDOX, BRANDON       | USDA, OKC                                       |
| 20 | HAWKINS, CALVIN       | CALIFORNIA INSTITUTE OF<br>TECHNOLOGY           |
| 21 | JENKINS, JENNIFER     | USDA, GUTHRIE, OK                               |
| 22 | JOHNSON, BRITTANIE    | DUKE UNIVERSITY                                 |
| 23 | LANE, ERIC            | USDA, MUSKOGEE, OK                              |
| 24 | LOFTIS, CHARLES       | UNIVERSITY OF ARKANSAS                          |
| 25 | MARTIN, DAVID         | IOWA STATE UNIVERSITY                           |
| 26 | OGNIBENE, CHERIE      | UNIVERSITY OF OKLAHOMA<br>HEALTH SCIENCE CENTER |
| 27 | OKONOBOH, IVORIE      | UNIVERSITY OF KANSAS                            |
| 28 | OSEI, RICHARD         | CARNEGIE MELLON UNIVERSITY                      |
| 29 | PRICE, VIA'PRICE      | UNIVERSITY OF OKLAHOMA<br>HEALTH SCIENCE CENTER |
| 30 | ROSS, KARIEL          | LANGSTON UNIVERSITY                             |
| 31 | SELLERS, CHRISTIAN    | UNIVERSITY OF IOWA                              |
| 32 | STOUT, CYNTHIA        | USDA, WASHINGTON, D.C                           |
| 33 | STOUT, MARK           | USDA, WASHINGTON, D.C                           |
| 34 | SUNER, EDDIE          | USDA, DENVER, CO                                |
| 35 | TAYLOR, EDDIE         | USDA, ELRENO, OK                                |
| 36 | TERRY, DANNY          | GEORGIA INSTITUTE OF<br>TECHNOLOGY              |
| 37 | THOMAS, VICTORIA      | UNIVERSITY OF NORTH TEXAS                       |
| 38 | VANN, KENDRA          | UNIVERSITY OF COLORADO                          |
| 39 | WOOD, DANIEL          | USDA, INDIANA                                   |
|    |                       |   |



**EXHIBIT V**

**OUT-OF STATE PRESENTATIONS, & GRAD-PREVIEW  
SUPPORTED BY LINC**

**64<sup>th</sup> ANNUAL BKX/NIS CONVENTION  
NORTH CAROLINA A & T UNIVERSITY MARCH 14-18, 2007  
GREENSBORO, NORTH CAROLINA**

| <u>PARTICIPANTS</u> | <u>PRESENTATION</u>    |
|---------------------|------------------------|
| CHERIE OGNIBENE     | ORAL                   |
| TOMICA BLOCKER      | ORAL                   |
| KAROLE BLYTHE       | ORAL(WON SECOND PLACE) |
| BRITTANIE ATKINSON  | ORAL                   |
| KARIEL ROSS         | ORAL                   |
| FELICIA EKPO        | POSTER                 |
| JASON CHANDLER      | POSTER                 |
| TONY BRIDGEWATER    | POSTER                 |
| DEREK BLYTHE        | ORAL(WON SECOND PLACE) |
| CONTESSA MAJORS     | ORAL                   |
| VIA'NEY PRICE       | WORKSHOP               |
| CALVIN HAWKINS      | ORAL                   |
| KENTA CALDWELL      | WORKSHOP               |
| RALPH CULVER        | WORKSHOP               |

MENTORS: John K. Coleman  
Shawn Barker

| <u>PARTICIPANTS</u>  | <u>WORKSHOPS &amp; PRESENTATIONS</u>  | <u>DATE</u>          |
|----------------------|---------------------------------------|----------------------|
| CALVIN HAWKINS       | CAL TECH GRAD SCHOOL PREVIEW          | November 1-3, 2006   |
| LEETHANIEL BRUMFIELD | BERKLEY EDGE                          | October, 12-15, 2006 |
| LEETHANIEL BRUMFIELD | USC (CALIFORNIA) CSWUG 2007 WORKSHOP  | January, 3-10, 2007  |
| TOMICA BLOCKER       | OKLSAMP LOS ANGELES, CALCIFORNIA      | April 11-14, 2007    |
| JASON CHANDLER       | MOUNTAIN STATES ALLIANCE (ARIZONIA)   | April 23-24, 2007    |
| DANNY TERRY          | NORFOLK STATE UNIVERSITY GRAD PREVIEW | Jan 26, 2007         |
| NATHAN WILLIAMS      | RESEARCH DAY AT THE CAPITOL, OKC      | March 22, 2007       |
| NATHAN WILLIAMS      | IOWA STATE UNIVERSITY GRAD PREVIEW    | February 8-9 2007    |
| DEREK BLYTHE         | IOWA STATE UNIVERSITY GRAD PREVIEW    | February 8-9 2007    |
| RALPH CULVER         | IOWA STATE UNIVERSITY GRAD PREVIEW    | February 8-9 2007    |

## EXHIBIT VI

**8<sup>th</sup> ANNUAL OKLAHOMA RESEARCH DAY  
(EPSCoR, INBRE & OCAST Funded)  
University of Central Oklahoma, Edmond, OK  
April 6, 2007**

| <b>NAME</b>             | <b>PRESENTATION</b> |
|-------------------------|---------------------|
| 1 ABRAHAM,KJ            | ABSTRACT            |
| 2 ANDERSON,QUINCY       | ABSTRACT            |
| 3 ANIMUT, GETACHEW      | ABSTRACT            |
| 4 ATKINSON, BRITTANIE   | ABSTRACT            |
| 5 BLOCKER, TOMICA       | ABSTRACT            |
| 6 BLYTHE, KAROLE        | ABSTRACT            |
| 7 BLYTHE, DEREK         | ABSTRACT            |
| 8 BRIDGEWATER, TONY     | ABSTRACT            |
| 9 BRUMFIELD, LEETHANIEL | ABSTRACT            |
| 10 CHANDLER, CHAWNTAYE  | ABSTRACT            |
| 11 CHANDLER, JASON      | ABSTRACT            |
| 12 CHEN, SEAN           | ABSTRACT            |
| 13 DETWEILER, GLENN     | ABSTRACT            |
| 14 DUGGER, ALEXIS       | ABSTRACT            |
| 15 EKPO, FELICIA        | ABSTRACT            |
| 16 GIPSON, SHANNON      | ABSTRACT            |
| 17 GIPSON,TERRY         | ABSTRACT            |
| 18 GOETSCH, ARTHUR      | ABSTRACT            |
| 19 HAWKINS, CALVIN      | ABSTRACT            |
| 20 HOLLAND, DAVIA       | ABSTRACT            |
| 21 KEBEDEE, BIZUAYEHU   | ABSTRACT            |
| 22 KEBEDEE, WONDWESSEN  | ABSTRACT            |
| 23 KPELI, GEORGE        | ABSTRACT            |
| 24 MAJORS, CONTESSA     | ABSTRACT            |
| 25 MERKEL, ROGER        | ABSTRACT            |
| 26 OGNIBENE, CHERIE     | ABSTRACT            |
| 27 PATRA, AMLAN         | ABSTRACT            |
| 28 POLLARD, VENECEA     | ABSTRACT            |
| 29 PUCHALA, RYSZARD     | ABSTRACT            |
| 30 ROBINSON, MONIQUE    | ABSTRACT            |
| 31 ROSS, KARIEL         | ABSTRACT            |
| 32 ROVAI, MARISTELA     | ABSTRACT            |
| 33 SAHLU,TILAHUN        | ABSTRACT            |
| 34 SANDAVOL, SABRINA    | ABSTRACT            |
| 35 TERRY, DANNY         | ABSTRACT            |
| 36 TODD, SYNDIA         | ABSTRACT            |
| 37 TIAKO,PIERRE         | ABSTRACT            |
| 38 WILLIAMS, NATHAN     | ABSTRACT            |
| 39 ZENG,STEVE           | ABSTRACT            |

## EXHIBIT VII

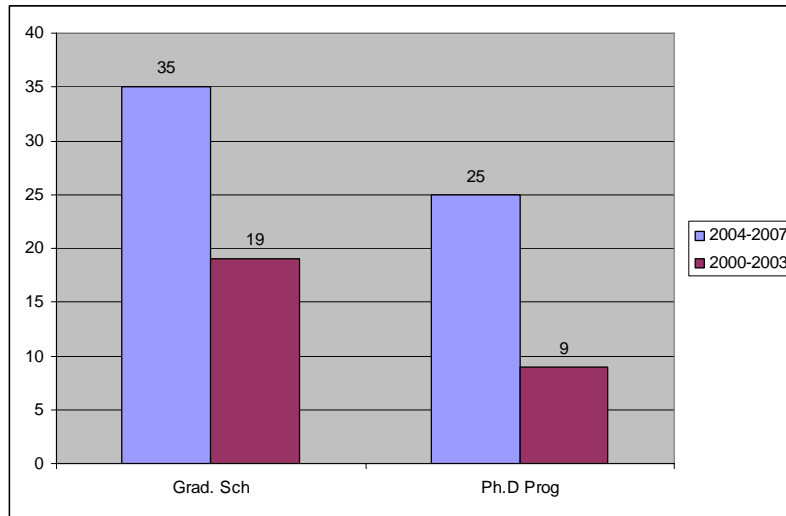
## STEM GRADUATES ENTERING GRADUATE PROGRAMS SINCE 2000

| Name                    | Major/Year Graduate | University Affiliate                                      | Degree Program |
|-------------------------|---------------------|---|----------------|
| 1. Fitzgerald, Latricia | Chemistry/Sp'00     | Meharry Graduate School, Nashville, Tn                    | PhD            |
| 2. Woods, Tracie        | Biology/Sp'00       | OSU, Tulsa, OK  | MD             |
| 3. Lee, Chris           | Biology/ Sp'00      | UCO/Forensics/Edmond, OK                                  | MS             |
| 4. James, Alfred        | Comp-Sci/Sp'01      | OSU/Comp-Sci/Stillwater, OK                               | MS             |
| 5. Guy, Shalonda        | Ag-Sci/Sp'01        | Univ of Ark/Soil Sc/Fayetteville, AK.                     | MS             |
| 6. Graham, Dianca       | Biology/Sp'01       | OUHSC/GPIBS Program, OKC, OK                              | PhD            |
| 7. Harris, Terraina     | Biology/Sp'02       | OUHSC/School of Public Health, OKC, OK                    | MS             |
| 8. Pinkney, LaTanya     | Biology/Sp'02       | LU School of Physical Therapy, Langston, OK               | DPT            |
| 9. Taite, Ashley        | Biology/Sp'02       | LU School of Physical Therapy, Langston, OK               | DPT            |
| 10. Hornbeak, Daquanat  | Chemistry/Sp'02     | Howard University of Dentistry, Wash, DC                  | DDS            |
| 11. Mayes, Brandon      | Biology/Sp'02       | LU School of Physical Therapy, Langston, OK               | DPT            |
| 12. Trotter, Barry      | Chemistry/Sp'02     | Johns Hopkins, Baltimore, MD.                             | MS             |
| 13. Hughes, Curtrina    | Biology/Sp'03       | KUMC, Kansas City, KS                                     | MD             |
| 14. Matthews, Camelia   | Biology/Sp'03       | Touro University of San Francisco, San Francisco, CA      | PA./MPH        |
| 15. Denton, Kristen     | Biology/Sp'03       | OSU, School of Veterinarian Medicine, Stillwater, OK      | DVM            |
| 16. Depona, Theophilus  | Ag-Sci/Sp'03        | University of Arizona/Computation Biology, Phoenix, AZ    | PhD            |
| 17. Hutcherson, Tiffany | Chemistry/Sp'03     | University of Nebraska Pharmacy Program                   | Pharm.D        |
| 18. Johnson, Leander    | Comp-Sci/Sp'03      | Oklahoma State Univ, Stillwater, OK                       | PhD            |
| 19. Daniels, Antawan    | Chemistry/Sp'04     | Univ. of Tenn after Post-Back at Univ of Ok               | PhD            |
| 20. Patterson, James    | Biology/Sp'04       | OUHSC/GPIBS Program (Accepted)                            | PhD            |
| 21. Carroll, Deidre     | Chemistry/Sp'04     | University of Tennessee, Dept. of Chemistry, Nashville    | PhD            |
| 22. Ross, DeAndre       | Biology/Sp'04       | Duke University Biomedical Sciences Program-Postbac.      | PhD            |
| 23. Terrell, Nina       | Biology/Sp'04       | LU, School of Physical Therapy, Langston, OK              | DPT            |
| 24. Hill, Thomas        | Biology/Sp'04       | LU, School of Physical Therapy, Langston, OK              | DPT            |
| 25. Barrett, Courtney   | Biology/Sp'04       | OUHSC, School of Dentistry, OKC, OK                       | DDS            |
| 26. *Peal, Lila         | Biology/Sp'04       | OSU, Dept. of Biochemistry, Stillwater, OK                | PhD            |
| 27. *Harris, Victor     | Biology/Sp'04       | University of Alabama, Nutritional Physiology, Huntsville | PhD            |
| 28. Davis, Mark III     | Ag-Sci/Sp'04        | University of South Dakota, School of Law, Bismarck,SD    | JD             |
| 29. *Singleton, Nicole  | Ag-Sci/Sp'04        | Toxicology/ Oklahoma State University                     | PhD            |
| 30. Miller, Nichole     | Biology/Sp'-5       | UNT HSC, Fort Worth, TX                                   | PhD            |
| 31. *Sherman, Adrian    | Ag-Sci/Sp'05        | OSU, Stillwater, OK                                       | PhD            |
| 32. Buford, Joe         | Ag-Sci/Sp'05        | Kansas State University, Manhattan, KS (Spring'06)        | PhD            |
| 33. Doss, Argenia       | Biology/Sp'05       | KUMC, Interdisciplinary Biomed.Sci.Program, Kansas        | PhD            |
| 34. Morris, Tiffany     | Biology/Sp'05       | LU, School of Physical Therapy, Langston, OK              | DPT            |
| 35. Street, Theran      | Biology/Sp'05       | LU, School of Physical Therapy, Langston, OK              | DPT            |
| 36. Booker, Sheree      | Biology/Sp'05       | Hampton University, School of Pharmacy, Hampton, VA       | Pharm.D        |
| 37. Ekpo, Joy           | Biology/Sp'05       | OSU DO School of Medicine, Tulsa, OK                      | DO/PhD         |
| 38. Burdex, Ashley      | Biology/Sp'06       | OSU DO School of Medicine, Tulsa, OK                      | DO             |
| 39. Carpenter, Christal | Biology/Sp'06       | Kansas State University                                   | MS/PhD         |
| 40. *Rowland, Maraquita | Biology/Sp'06       | Oklahoma University, Norman, OK                           | PhD            |
| 41. *Harris, Steven     | Chemistry/Sp'06     | Oklahoma University, Norman, OK                           | PhD            |
| 42. *Harvey, Desmond    | Chemistry/Sp'06     | Oklahoma University, Norman, OK                           | PhD            |
| 43. *Wallace, T'Aire    | Bio/Chem/Sp'06      | Bio/PhD Program/Univ. of Oklahoma, Post-Back              | PhD            |
| 44. Harrison, Jamie     | Chemistry/Sp'06     | University of Alabama, Biochemistry, Huntsville, AL       | PhD            |
| 45. Brison, Shanequah   | Comp-Sci/Sp'06      | Computer Science/OCU Univ.                                | MS/PhD         |
| 46. William, Damon      | Biology/Sp'06       | LU School of Physical Therapy, Langston, OK               | DPT            |
| 47. Sabrina, Sandavol   | Chemistry/Sp'07     | California State University, Fresno, CA                   | MS             |
| 48. Derek, Blythe       | Mathematics/Sp'07   | Iowa State University, Ames, Iowa                         | PhD            |
| 49. Ralph, Culver       | Mathematics/Sp'07   | Iowa State University, Ames, Iowa                         | PhD            |
| 50. Nathan, Williams    | Mathematics/Sp'07   | Iowa State University, Ames, Iowa                         | PhD            |
| 51. Contessa, Majors    | Biology/Sp'07       | Iowa State University, Ames, Iowa                         | PhD            |
| 52. Fisher, Bobby       | Biology/Sp'07       | University of North Texas, Denton, Texas                  | PhD            |
| 53. Elise, Griffin      | Biology/Sp'07       | Oklahoma State University                                 | MD             |

\*These eight students received the NSF-LSAMP Bride-To-The-Doctorate Scholarship to attend a Ph.D. Program.

## EXHIBIT VII-A

### PRE/POST LINC STATISTICS: 1) STEM GRADS ENTERING GRADUATE SCHOOL, 2) GRADS ENETERING MS/PH.D PROGRAMS



During the four years (2000-2003) before the LU LINC program was established there were 19 LU STEM students entering advanced degree programs after graduation; nine(9) were MS/PhD programs. During the 2004-2007 period, after LINC's inauguration, thirty five(35) LU STEM students entered advanced degree programs. Nineteen (19) are MS/PhD programs. This reflects an 84% and well over 110 % increase respectively for these categories.

## EXHIBIT VII-B

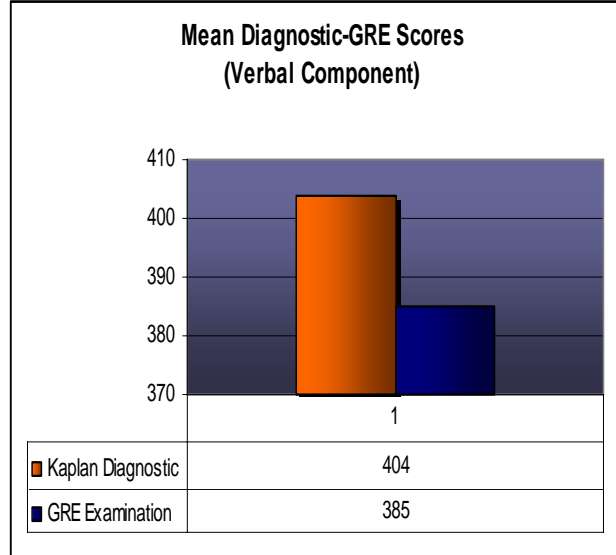
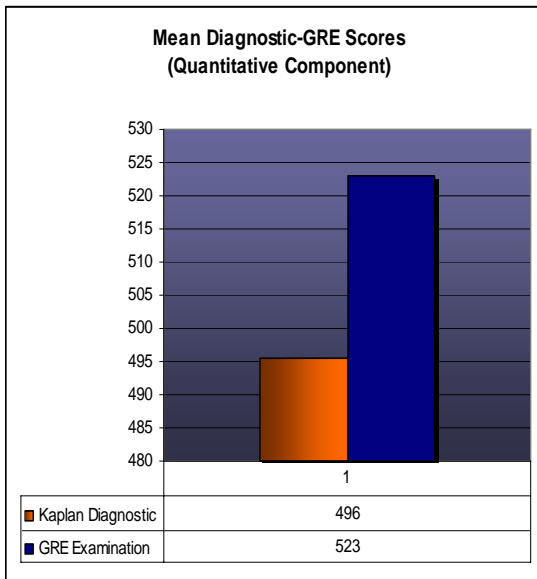
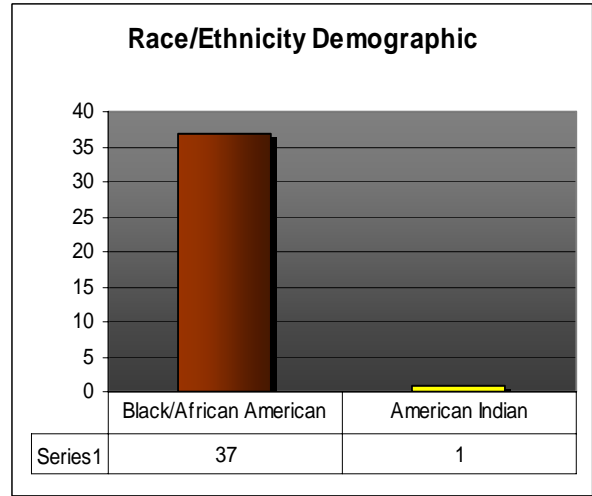
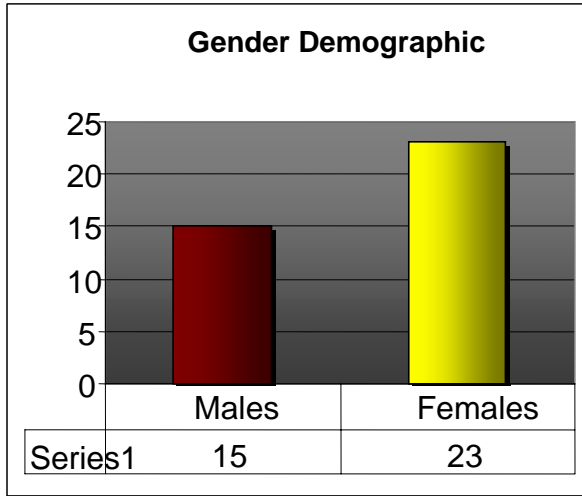
### PRE/POST LINC STATISTICS: SUMMER INTERNSHIPS

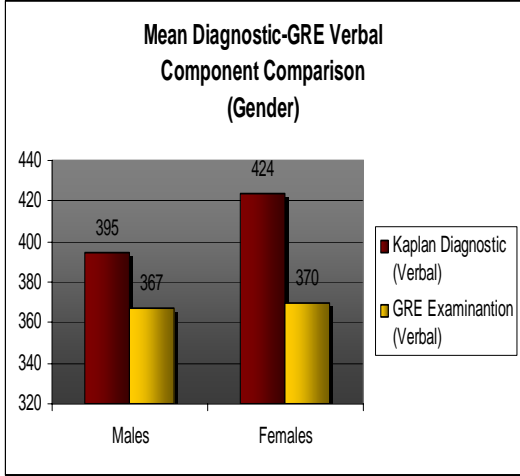
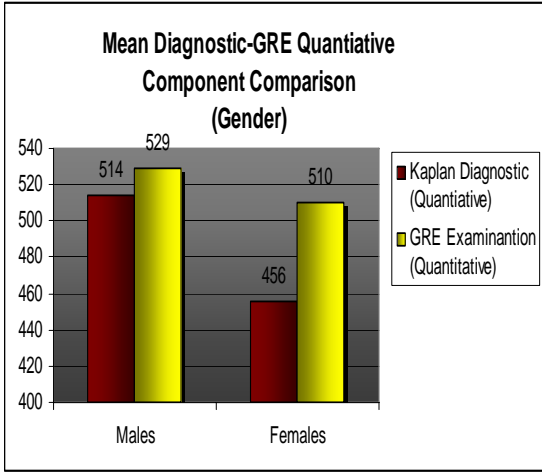


During the four years (2000-2003) before the LU LINC program LU STEM students averaged 5 student per year participating in research internships. During the 2004-2007 period, after LINC's inauguration, 151 LU STEM students participated in research internships. This reflects well over a 600% increase.

## Exhibit VIII

### GRE COURSE PREPARATION IMPACT





**EXHIBIT IX**

**12<sup>th</sup> ANNUAL RESEARCH SYMPOSIUM  
SATURDAY, SEPTEMBER 23, 2006  
LOUIS STOKES ALLIANCE  
FOR MINORITY PARTICIPATION IN  
SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS  
(OK-LSAMP)  
OKLAHOMA STATE UNIVERSITY, STILLWATER, OK.**

|    | <b>NAME</b>           | <b>PRESENTATION</b> |
|----|-----------------------|---------------------|
| 1  | ATKINSON, BRITTANIE   | ORAL                |
| 2  | BAILEY, MARSHAL       | SEMINAR             |
| 3  | BLOCKER, TOMICA       | SEMINAR             |
| 4  | BLYTHE, KAROLE        | SEMINAR             |
| 5  | BRUMFIELD, LEETHANIEL | POSTER              |
| 6  | CHANDLER, JASON       | POSTER              |
| 7  | EKPO, FELICIA         | ORAL                |
| 8  | GIPSON, SHANNON       | ORAL                |
| 9  | HARRIS, JAMILA        | SEMINAR             |
| 10 | HAWKINS, CALVIN       | SEMINAR             |
| 11 | HENDERSON, ALEX       | SEMINAR             |
| 12 | HUDSPETH, BRANDON     | SEMINAR             |
| 13 | HUGHES, TAMARA        | SEMINAR             |
| 14 | KEBEDEE, BIZUAYEHU    | ORAL                |
| 15 | KEBEDEE, WONDWESSEN   | POSTER              |
| 16 | KPELI, GEORGE         | SEMINAR             |
| 17 | MAJORS, CONTESSA      | SEMINAR             |
| 18 | NICHOLS, SHABREE      | ORAL                |
| 19 | OGNIBENE, CHERIE      | ORAL                |
| 20 | OKONOBOH, IVORIE      | SEMINAR             |
| 21 | PRICE, VIANEY         | SEMINAR             |
| 22 | ROSS, KARIEL          | POSTER              |
| 23 | SMITH, ERICA          | SEMINAR             |
| 24 | TERRY, DANNY          | ORAL                |
| 25 | TODD, SYNDIA          | ORAL                |
| 26 | TUMA, KATIE           | SEMINAR             |
| 27 | VANN, KENDRA          | SEMINAR             |
| 28 | WILLIAMS, NATHAN      | ORAL                |