

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

2001 SUMMER TRANSPORTATION INSTITUTE

UNIVERSITY OF MISSOURI-ROLLA
DEPARTMENT OF CIVIL ENGINEERING



FINAL REPORT

submitted by:

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ABSTRACT

The Transportation Institute in the Department of Civil Engineering at the University of Missouri-Rolla hosted its third U.S. Department of Transportation Summer Transportation Institute (STI). The goals of the Institutes Program are to (1) expose secondary school students to and allow them to participate in a series of academic and practical experiences designed to motivate them toward professions in the transportation industry, and (2) provide secondary school students with mathematics, science and technological enrichment to enable them to pursue a career in the transportation industry.

In concert with these STI goals and with UMR's unique strengths, the objectives of this effort were to provide an educational experience for high school students which explored a wide variety of aspects of the transportation industry and its role in our society. To that end, the STI curriculum provided educational opportunities for its students in critical areas of transportation, math and science, personal growth and computers. The sixteen eleventh and twelfth grade students who were chosen for the Program were exposed to university life, leadership and team building activities, a three credit college literature course, and a series of lectures, seminars, hands-on laboratories and field trips. The Institute was comprised of five weeks: Orientation, Highway, Air, Public and Intermodal Transportation weeks (see Appendix 3) and was headquartered at the Transportation Institute in the Civil Engineering's Butler-Carlton Building. Classes, however, were held in a variety of facilities across Campus.

The Federal Highway Administration's money was used as "seed" money to fund the Institute which cost more than twice the amount funded. The five week Institute was conducted by faculty, staff and students from the Department of Civil Engineering. Government agencies and private firms provided substantial support in funding, staff assistance and educational materials as well. See Appendix 10 for a complete list of sponsors.

Youths from across the State of Missouri were recruited. Email greetings, with program brochure and application attached, were sent to more than 1,000 high school counselors and 1,500 high school students who had indicated an interest in engineering. Several thousand letters and brochures were mailed to counselors across the State as well. The National Society of Black Engineers and local MODOT personnel were again asked to help to identify and recruit likely candidates. Eighteen applications were received and sixteen were accepted. Copies of the cover letter, brochure and application are provided in Appendix 1. Applicants were selected based upon their academic standing, recommendation letters, and their essays explaining their interest in transportation. The Project team assessed the applications and accepted the sixteen aforementioned applicants. The average grade point average of the chosen group was 3.47 on a 4.0 scale. Eight of the sixteen were twelfth graders, seven were eleventh graders, and one a tenth grader. There were seven African Americans, one asian, and eight caucasian students. Five of the students were women. The students represented the schools listed in Appendix 7.

INTERMODAL ADVISORY COMMITTEE

This year the Advisory Committee was used primarily to review the planned curriculum and to help identify speakers and arrange field trips. We have identified through the course of the Program two additional members for the Committee - representatives from Federal Aviation Administration, Ms. Stephanie Webb, and the trucking industry, Mr. Herb Schmidt, were asked to serve on future Committees. Current membership on the Committee is as follows:

<p>NAME: Sue Turner TITLE: Manager AFFILIATION: UMR Continuing Education Office 1870 Miners Circle Rolla, MO 65409</p>	<p>NAME: Robert T. Berry TITLE: Vice President AFFILIATION: Burns & McDonnell 1630 Des Peres Road St. Louis, MO 63131</p>
<p>NAME: Arthur Lieber TITLE: President AFFILIATION: Civitas Associates 232 N. Kingshighway, #2101 St. Louis, MO 63108</p>	<p>NAME: Glenn Smith TITLE: Civil Rights Officer AFFILIATION: Federal Highway Administration 209 Adams Street Jefferson City, MO 65101</p>
<p>NAME: Ray Purvis TITLE: Division Engineer AFFILIATION: MODOT R&T Division P.O. Box 270 Jefferson City, MO 65102</p>	<p>NAME: Sherrie Koechling-Andrae TITLE: Assistant Professor AFFILIATION: Lincoln University Department of Business & Economics 820 Chestnut St. Jefferson City, MO 65101</p>
<p>NAME: Gabrielle Mack TITLE: Vice President, Diversity AFFILIATION: Sverdrup Civil, Inc. 13723 Riverport Drive Maryland Heights, MO 63043</p>	<p>NAME: TITLE: AFFILIATION:</p>

PROGRAM OBJECTIVES

Strategic Plan

Goals

- To increase the workforce in the transportation sector
- To increase the presence of under-represented groups in the transportation workforce

Objectives

- To provide an educational experience for rising 11th and 12th grade high school students which explores all aspects of the transportation industry and its role in society.
- To provide students with tools they need to pursue careers in transportation and positive experiences that will encourage them to do so.

Measurable Outcomes

Upon completion of the STI, students shall be able to:

- Apply knowledge of mathematics to simple transportation applications
 - Assessment tool:
 - Crash Cushion design lab
 - Standard:
 - At least 75% of students shall be able to understand and reproduce the calculations presented.
- Identify career alternatives in transportation
 - Assessment tools:
 - Exam
 - Standard:
 - At least 75% of students shall be able to list and describe at least 5 different career paths
- Have enthusiasm for the topics covered in the Institute
 - Assessment tool
 - Exit evaluations
 - Standard
 - The Institute shall receive an evaluation of at least 3.0 in the "Activities" section of course evaluations.
- Understand steps necessary to enter college
 - Assessment tool
 - Exam
 - Standard
 - At least 75% of students shall be able to list the general steps necessary for this
- Conduct research in a library and on the internet
 - Assessment tool
 - Internet egg hunt and Literature course
 - Standard
 - All students shall receive passing grades in each of these.

- Be more certain of their career choice vis a vis transportation
 - Assessment tool
 - Pre and Post test responses regarding career choice
 - Standard
 - Reduce the number of "unsure" responses by 50%..

Non-measurable outcomes

- Be able to identify the various transportation modes and their providers.
- Appreciate what is involved in the planning, design, construction and operation of transportation facilities.
- Understand the interactions among the various modes.
- Discuss the major environmental and social issues facing tomorrow's transportation professional.
- Student Evaluations of the UMR STI

PROGRAM FACULTY AND STAFF

Description of duties

Academic Aides

Ms. Lelia Flagg and Dr. Mohammad Qureshi served as academic aides and worked with the Director. They were assigned the following duties:

- Assured that speakers had what they needed to conduct lectures and laboratories,
- Assured program ran on-time
- Assured that vans and drivers were scheduled for field trips
- Attended field trips
- Resolved conflicts among attendees
- Set up laboratories and lab activities
- Assisted in academic instruction
- Aided in the implementation, evaluation and revision of the academic curriculum
- Organized resource material
- Assisted with coordination of field trips
- Supervised counselors
- Supervised and saw to the needs of attendees
- Acted in the absence of the Project Director

Counselors

We had two full time and two part time counselors' primary responsibilities were to drive vans on field trips. Their secondary responsibilities consisted of helping academic aides as needed. Counselors were George Daniel and Houda Jadi full time, and Tarik Clark and Amanda Withers, part time

Three former STI attendees returned to serve as mentors and counselors as well. Their primary duties were to:

- Help academic aides as needed.
- Attend sessions and field trips
- Assure that attendees are on-time to all events
- Serve as mentors to attendees

ENHANCEMENT

The several enhancement activities provided this year were meant to expand students' non-technical skills, such as leadership, taking responsibility for one's own actions, establishing directions in life, relating with others in teams and in other settings, and in developing organizational skills. They are:

- Introduction to the Seven Habits for Highly Effective People
- Ropes and Challenge Course
- Leadership Seminar
- Newsletter workshop
- Using the Library
- Using the Internet
- Introduction to College life
- Literature and Film (English 177)

Introduction to the Seven Habits for Highly Effective People

This activity was expanded from last year's modest beginning. It began with a three hour session introducing the concepts of paradigm shifts, being proactive and setting personal goals. Students were asked to write personal mission statements as homework - samples of which are provided in Appendix 6. A subsequent two hour session continued with discussions on developing good organizational skills and their importance, setting priorities, and the maturity continuum which flows from independence to interdependence. Several group and individual exercises were conducted during the session that supported the concepts under discussion (see Appendix 4). The final two hour session focussed on perhaps the most difficult habit, namely "Seek first to understand, then to be understood." Students were asked to state their position on the topics shown in Figure 1.

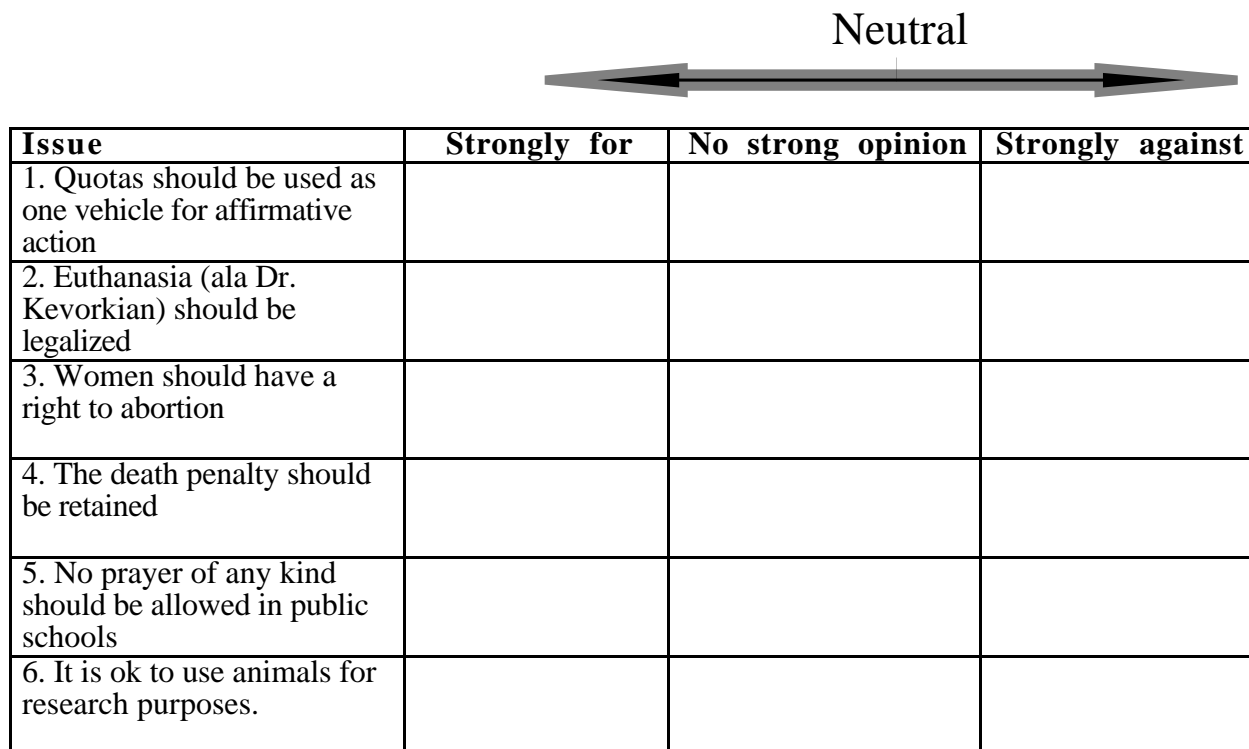


Figure 1. Questionnaire for Empathic Communication Exercise

The issues chosen for discussion were euthanasia and the death penalty based upon student responses. There were at least three students who were strongly for, and three strongly against each of these two topics. Additionally, there were at least three who had no strong opinion to serve as mediators. Students formed three groups: two groups for the discussion, for and against, and one group to referee. Each discussion group's charge was to convince the opposing group that it truly understood the opposing group's stand. The referee group was to assure that the discussants stayed on point. Where necessary, it provided reminders that the point of the exercise was to understand the others' views rather than win the debate. Very lively discussions ensued. The students' reactions were very positive and, as did last year's students, requested more such exercises. They seemed to gain a great deal from the experience and very much enjoyed the lively interactions.

Ropes and Challenge Course

The Ropes and Challenge Course at the Universal Challenge Center in Salem, MO provides a set of training tools meant to promote human development through Experiential (Adventure) Education. The tools include group problem-solving games and initiatives, low elements (1-2 feet from the ground), and high elements (30-40 feet up). These activities and physical challenges are used as metaphors to promote development. The Universal Challenge Center has one of the largest and best equipped courses in the Nation featuring state of the art construction and nationally established safety standards. Its accredited staff is experienced in outdoor education, human development, and group dynamics. STI students were unable to experience all of the activities given the limited time frame available (1 evening versus several days) but did receive some valuable highlights of the Course. The UCC Ropes Course tested personal courage, teamwork, and group support as the students faced challenges involving climbing and traversing obstacles high in the air. We hope that students were left with lasting impressions of their experiences that they can draw upon to meet future challenges. The activities are not merely physical challenges, but metaphors for the issues we all face in our personal and professional lives. The course consists of several challenges on which students actually experienced the need to trust team members. Activities included:

- Burma Bridge. A quick climb up the pole, then across the cable and back before descending back to the ground.
- Multi-Vine Traverse. With memories of Tarzan, participants crossed this bridge using only one cable for their feet and a series of "vines" hanging from an overhead cable. Balance and concentration were required to traverse this challenge!
- Cat Walk / Balance Beam. Walking across a fallen log 30 feet above the ground.
- Flying Fox Zip Line After climbing to the take-off platform, participants were secured to a pulley that carried them the length of Zip Canyon.
- The Rock Climb A vertical climb using "rock" hand and foot-holds is both a physical and mental challenge. Strength, coordination, and strategy were needed to meet this element.

An excellent experience for these young people.

Leadership Seminar

This one hour seminar was led by Ms. Lelia Flagg, one of the STI counselors and a PhD candidate at UMR. She holds a professional engineering license, teaches engineering ethics at UMR and spent several years counseling students prior to joining the Civil Engineering Department. The session was an open discussion among the students regarding what skills constitute good leadership and how one goes about acquiring those skills. It also served as an ice breaker for the students.

Newsletter workshop

Ms. Rebecca Frisbee, Manager of UMR's Publications Department, provided a half day workshop consisting of lecture and hands on exercises in the design and creation of technical newsletters using Adobe Pagemaker. The workshop included graphic design techniques, good writing practices and layout design. Students were required to create a newsletter reporting on each week's activities.

Using the Library

Ms. Laurenda Blau, a UMR librarian, introduced students to the use of the University library. She provided a tour of the facility and a tutorial on how to find information.

Using the Internet

A two hour workshop on the creation of HTML documents taught students the rudimentaries of coding in HTML. Each student created his or her own web site using HTML code.

Introduction to College life

Students from UMR's Minority Engineering program met with STI students and, while entertaining them with chemistry "magic tricks" provided them with an overview of campus life. Counselors from UMR admissions office told students how to apply to college, what to look for when applying, and financial aid and how to qualify and apply for it. UMR students later gave the STI students a tour of campus.

Literature and Film (English 177)

Students were introduced to the joys and rigors of a genuine college course. Dr. Larry Vonalt, an English professor at UMR, taught this three credit course specifically for the STI program.

SPORTS AND RECREATION PROGRAM

UMR's Multipurpose Facility has an olympic-size swimming pool and full facilities for tennis, weight lifting, basketball, etc. Students were provided with several free evenings during which many availed themselves of these facilities.

Rolla's Fourth of July celebration. Several students chose to remain in Rolla during the July 4th holiday. Those that did attended this small town fair/carnival that is held at the Rolla Lions Club Park annually during the week of July 4.

Movies. Students were provided with passes to the local movie theatre. They took advantage of a rare free evening to see The Fast and the Furious and Scary Movie 2.

Pizza at Pizzeria Due. While in Chicago, students were introduced to the joys of genuine Chicago-style pizza. Although some felt that this style pizza is like "eating soup with bread in it" most enjoyed the experience. The group was able to dine al-fresco.

Vacating in Chicago. Students were given a free afternoon on Saturday. Some spent their time at the Chicago zoo, some at the beach and others shopping on Chicago's famous Michigan Avenue.

White Sox versus the Red Sox. All but one student attended the ball game at Comisky Park. The Red Sox won - much to the chagrin of most of the students. After the game was a karaoke contest followed by fireworks. The evening culminated with the bus driver entering a long narrow road to enter Chicago State University's campus parking. We found that this particular gate gets locked at 10 PM and so we could not enter. Students enjoyed the spectacle of Drs. Spring and Qureshi (the latter with red vest and glow stick in hand) directing traffic on busy 95th Street so that the bus could back out.

PROGRAM EVALUATION

Meaningful evaluation requires revisiting the outcomes established as part of the Program's Strategic Plan. The following discussion provides an evaluation of those outcomes along with an assessment of this year's student evaluations.

Measurable Outcomes Results

One assessment tool that was planned for use was the pre and post test which was administered to students at the beginning and end of the program. We are unable to use several of the questions on the tests because the second test was not taken seriously by the students. On the first day of the program, everyone is serious and wanting to make good impressions. So, the pre-tests were well done and taken seriously. The second to the last day of the program students have become comfortable in their surroundings, feel that they have less to prove and are ready for some fun - after a very demanding five weeks. Consequently, the post test was not taken seriously. Where possible and appropriate the tests are used to gain insight into program effectiveness, but they are used with caution.

Apply knowledge of mathematics to simple transportation applications

Following an interactive lecture about mathematical models (see slides in Appendix 4), students were introduced to the formulation and application of math models. They designed a steel wire adequate to hold their own weight. In this way, they were introduced to the safety versus efficiency dichotomy faced in design. Following this lecture session, students were given the Crash Cushion laboratory materials provided in Appendix 4. Each group was to do the appropriate calculations and design paper crash cushions that would prevent an egg placed in the design vehicle from breaking. Fourteen of the sixteen participants understood the problem and were able to complete (correctly) the necessary computations to solve the problem. The TRAC Program encouraged the students to apply concepts from math and physics in establishing locations of physical objects, designing bridges and vehicles as well.

It was hoped that in the process of learning these skills that students would also gain an understanding of the role of math and physics in transportation design and analysis. In addition to homework and frequent admonitions from presenters who stressed the necessity of math and science, there were many examples on field trips and in video presentations that accented the need for math and science. In all of these sessions, students participated in "real world" applications of the math and physics content that they learn in school - thus, it is hoped, providing them with this "better understanding" described above. **MET.**

Identify career alternatives in transportation

A session titled "The Transportation Profession" provided an introduction to careers in transportation. The Curriculum further provided repeated exposure to a variety of career paths via classroom presentations, field trips, videos and exploration of the Internet.

Nine of the eleven respondents were able to name five or more career alternatives in transportation on the previously mentioned pre and post tests. Additionally, the nature and quality of the responses changed. Pre-test responses tended to be more general and of a nature that a layperson would name. The post-test responses indicate a deeper knowledge of the alternatives. Within the limits of the post-test as explained above, this measure was **MET.**

Have enthusiasm for the topics covered in the Institute

Responses to the "Activities" category in the Course Evaluations averaged 3.5 out of 4.0. **MET.**

Understand steps necessary to enter college

None of the respondents gave a well thought out response on the post test. Partly for reasons described above, partly due to the way the question was asked, and finally - and most importantly - due to possibly insufficient content provided in the program on this topic. Representatives from admissions spoke to the students as did existing UMR students but we (STI staff) need to be more specific about exactly what we want them to say, and to provide more exercises (perhaps searching on the internet for answers to questions posed - taken from a website such as www.collegeboard.com). **NOT MET.**

Conduct research in a library and on the internet

All students taking the Literature course for credit received passing grades. Nine of the ten submitting responses to the "Egg Hunt" homework did adequate work on the assignment. This means that only 56% of students were willing or able to complete the assignment. Several complained about the length of the homework. This will be re-examined for next year's program. The more substantive part of this outcome, namely the literature course, was **MET.**

Number of changes from uncertainty about career choice.

The number of students responding "unsure" to the question regarding their level of interest in a career in transportation were 5 on the pre-test and 1 on the post test - a reduction of 80%. Of course, many became certain that they would NOT want to enter careers in transportation but nevertheless, we feel that this is also a positive outcome. **MET.**

The several objectives described in the Strategic Plan that are not readily measurable are discussed below. No quantifiable measures were identified to assess the attainment of these.

Non-measurable Outcomes Results

Be able to identify the various transportation modes and their providers.

A different mode of transportation was introduced in a three hour session at the beginning of each week, thus aiding in the identification of separate transportation modes. In future, questions on the pre and post tests will be more carefully crafted so that this item can be measured.

Appreciate what is involved in the planning, design, construction and operation of transportation facilities.

These concepts were introduced at the beginning of each week in the introductory panel discussions. They were then developed using the subsequent site visits each week. At several site visits the STI students were shown plans and told how long the planning and design periods existed prior to the construction phase. The scope of details necessary for the successful operation of airports, traffic flow, highway safety, and waterways were highlighted by many of the field trips.

Understand the interactions among the various modes.

The last week's theme was intermodal transportation. The prime focus of the Chicago field trip was on intermodal activities. Students were provided a tour of Regional Transportation Authority (RTA) facilities (which include light rail, heavy rail and bus modes) and were provided tours of the Chicago Transit Authority's operations and control centers, a transit station and a transit "yard" by Dr. John Allen, Senior Transit Analyst for the RTA and Dr. Mark Pitstick, Program Manager for RTA. Students were also provided a one hour tour of the 388 acre Corwith Intermodal Facility (the second most productive in the Nation).

Speakers in panel sessions and field trips stimulated discussions on the issues and logistics associated with intermodal operation. Comparisons were also made to give students an idea of the relative benefits and costs of hauling freight by rail, water, road and air. A tour of Consolidated Freight Inc. (among the top five trucking companies in the U.S.) by company president and CEO, Mr. Herb Schmidt provided a dynamic culmination to the week. Mr. Schmidt provided STI students with a two hour lecture/discussion on the trucking industry, the logistics of getting products to market and technological advances in the industry. After lunch (which he provided),

he gave them a tour of the Joplin facility which highlighted operations and dispatch, security, and technologies.

Discuss the major environmental and social issues facing tomorrow's transportation professional. In St. Louis, the proposed expansions of the Metrolink, The Municipal Airport, and several highway projects presented fertile ground for several presenters to discuss these issues. The panel discussions and visits to Burns and McDonnell and Sverdrup also provided discussions of these sorts of issues.

Understand the need for sustainable development.

At several points during the Institute, speakers alluded to this and its importance. A presentation by Mr. Arthur Lieber, Director of Civitas, on the history and planned development in the Central West End of St. Louis effectively demonstrated the need for a master plan and discussed issues specifically related to sustainable development.

Student Evaluations of the UMR STI

This year's results were compared to last year's in an effort to determine areas in which the Institute has improved. As the evaluation summary in Appendix 9 shows, the Program experienced significant improvement in three sub areas: quality of speakers' responses, friendliness and helpfulness of staff. All general areas improved significantly over 2000 (improved areas are shown in boldface in Table 9.2). One variable showed a significant worsening: the food in the dining hall. UMR recently changed contractors for food services at the University which may explain this.

MARKETING

The Project Director met with representatives from UMR admissions and with Ms. Sue Turner who heads UMR Extension Office in October 2000 to discuss a marketing strategy. It was decided to follow a three pronged approach: brochures were mailed to several thousand high school counselors in Missouri and to selected others (such as the National Society of Black Engineers and local MoDOT personnel who again helped to identify and recruit likely candidates); electronic brochures and applications were emailed to an additional 1,000 counselors and 1,500 students who had expressed interest in engineering; admissions people spoke to students and counselors while recruiting for UMR; and, finally, the Director called select counselors in the St. Louis region and asked for help in identifying likely candidates for the Program. A copy of the brochure and of a one page briefing summary, prepared for the admissions folks, are provided in Appendix 11.

CLOSING PROGRAM

The week ended with the closing luncheon to which all parents, students, faculty, staff, advisory committee members and dignitaries were invited. More than 60 people attended. The Program began before lunch with welcoming comments from Gary Spring, STI Director, Robert Mitchell, Dean of Engineering, on behalf of the University, Allen Masuda, Missouri Division Administrator, on behalf of FHWA and Ms. Retta Taylor, TRAC Coordinator, on behalf of Missouri Department of Transportation. Each speaker urged the students to use the information they have gained from and their experiences during the Institute in positive ways. Their comments were followed by a slide presentation detailing the five weeks for parents, and lunch.

The Annual Awards Ceremony was held following lunch. Certificates of completion, a STI T-Shirt and a class year book (created by the students) were given to all attendees who successfully completed the five weeks. Special commemorative plaques were awarded for the following:

- Best Newsletter Award. Given to the Newsletter team of students whose newsletter contained the best aesthetics, writing and outstanding reporting. Winners were: Terry Brietzke, Jeff Lang, JR Kessler and Brian Lange.
- Best Overall Reporter Award. Given to the student who demonstrated the best writing style and attention to detail in his or her reporting. Winner was: Terry Brietzke
- Best Technical Reporter Award. Given to the student who provided the most thorough coverage of technical topics. Winner was: Adam Wallace.
- Certificates of Appreciation. Given to the three student mentors: Jonna Gibbs, Dwayne Bogle and Yana Conner.

Closing comments by Dr. Spring included expressions of appreciation to the STI sponsors, Advisory Committee and staff. He gave a special thanks to parents for taking the initiative to involve their children in the STI , and appealed to the students to use their experiences at the Institute when making career decisions and to keep in contact with him as they proceed in making their decisions. The luncheon adjourned at 2:00 PM.

CONCLUSIONS AND RECOMMENDATIONS

This year's STI at UMR was the most successful yet. Students were more serious, of a higher caliber and more diverse than in previous years. They were also more demanding. The Program included several new and/or improved activities, such as the sessions on math modeling, crash cushion design, Seven Habits, and, of course the field trips to Chicago and Joplin. For the first time an effort was made to establish formal program goals and to evaluate them subject to a set of related criteria. Based upon the outcomes of this evaluation effort, the following changes will be considered for future STIs:

- Develop pre and post tests that involve exclusively multiple choice questions. It is hoped that this will make it more likely for students to complete the exams and will provide more quantifiable results as well.
- Hold the post test at the beginning of the fifth week in an effort to have students take the exam more seriously.
- Schedule the college course for two full days in the week leaving the remainder of the week for STI activities. Short blocks of time were problematic for scheduling field trips.
- Improve communications with parents regarding amounts of money students will need for various activities. The Chicago trip was not as enjoyable for some students since they were not adequately prepared financially to pay for meals and other non-program activities.
- Work more closely with the Advisory Committee in establishing an improved strategic plan and curriculum. This year the Committee mainly served as a review board for the curriculum and a resource for arranging for speakers and field trips. The Program would benefit from a more fundamental role for the Committee.

PRELIMINARY FINANCIAL REPORT

CATEGORY	REQUESTED		CIES MATCH		UMR MATCH		OTHER MATCH	
	BUDGET	EXPENDED*	BUDGET	EXPENDED*	BUDGET	EXPENDED*	BUDGET	EXPENDED*
PERSONNEL	\$ 23,902	\$ 26,197	\$ 1,000	\$ -	\$ -	\$ -	\$ -	\$ -
FRINGES	\$ 4,280	\$ 3,681	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -
INDIRECT	\$ -	\$ -	\$ 5,132	\$ 5,178	\$ 24,060	\$ 24,199	\$ -	\$ -
SUPPLIES & MATERIALS	\$ 1,225	\$ 1,013	\$ 1,000	\$ 882	\$ -	\$ -	\$ -	\$ -
CONTRACTUAL SERVICES	\$ 6,825	\$ 6,220	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TRAVEL	\$ 3,000	\$ 795	\$ 2,000	\$ 1,224	\$ -	\$ -	\$ -	\$ 2,990
EQUIPMENT	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TUITION & FEES	\$ 2,268	\$ 2,566	\$ 5,768	\$ 7,853	\$ -	\$ -	\$ -	\$ 2,500
STIPENDS	\$ 2,500	\$ 2,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOTALS	\$44,000	\$ 42,472	\$ 15,000	\$ 15,137	\$ 24,060	\$ 24,199	\$ -	\$ 5,490

APPENDIX LIST

- Appendix 1. Application Package (15 pages)
- Appendix 2. Student Handbook (7 pages)
- Appendix 3. Curriculum Description (26 pages)
- Appendix 4. Course Materials (53 pages)
- Appendix 5. Closing Program (2 pages)
- Appendix 6. Samples of Student Work (11 pages)
- Appendix 7. List of Participants (2 pages)
- Appendix 8. Demographic Summary Sheet (1 page)
- Appendix 9. Evaluation Materials (4 pages)
- Appendix 10. Sponsors (1 page)
- Appendix 11. Marketing Materials (9 pages)
- Appendix 12. Preliminary Financial Report