

Program Progress Performance Report for University Transportation Centers



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- **Program Director (PD) Name, Title, and Contact Information**
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- **Recipient Organization**
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- **Reporting Period End Date**
June 30, 2017
- **Report Term or Frequency (annual, semi-annual, quarterly, other)**
Semi-annual
- **Signature of Submitting Official (signature shall be submitted in accordance with agency- specific instructions)**

A handwritten signature in black ink, appearing to be "L.R. Rilett", written over a horizontal line.

L.R. Rilett, Director, Mid-America Transportation Center

1. ACCOMPLISHMENTS

Several MATC-planned activities are underway. On the research side the Director has traveled to each partner to discuss the overarching five year program and the individual first year projects. The first year program solicitation and review, as discussed in the prospectus, is on-going. With respect to Education and Outreach activities:

MATC After-School Program - Road, Rails and Race Cars (RRRC):

MATC has continued to support the preparation and implementation efforts of the RRRC engineering after-school club for elementary and middle school students from January 2017 to June 2017. The June 2017 program is funded jointly by MATC and the Lincoln Public School Board.

2016-2017 Academic Year Programming:

2017 Academic Year Programming:

The spring semester portion of the 2016-2017 academic year of RRRC was implemented at six (6) sites from January through June: Culler Middle School, Lefler Middle School, Goodrich Middle School, Mickle Middle School, Park Middle School, and Dawes Middle School. All of these sites are located in Lincoln, NE. Each site offered the club one day per week. The spring semester portion of the 2016-2017 academic year of RRRC began January 2017 and ended April 2017, and was implemented at all six sites. The summer portion of the 2017-2018 academic year began June 5, and will run through July 5, and was implemented at four (4) sites: Dawes Middle School, Culler Middle School, Goodrich Middle School, and Park Middle School.

For the spring semester, RRRC at **Culler** Middle School was offered on Wednesdays from 3:10 p.m. to 4:00 p.m., beginning on January 25, 2017, and ending on April 26, 2017. A total of eleven (11) implementation dates were completed during the spring iteration, with the total attendance being 101 by 23 students. The typical weekly participation was approximately 10 students. The curriculum included activities under the topics of environmental sustainability, aerospace engineering, and various topics in physics such as motion and energy.

For **Culler's** summer program, RRRC was offered on Thursdays from 12:00 p.m. to 3:00 p.m., beginning June 8, 2017 and ending on June 29, 2017. A total of four (4) implementations dates were completed during the summer iteration, with the total attendance being 403 by 127 students. Weekly participation was approximately 95 students. The curriculum included activities under the topics of structural engineering, aerospace engineering, and motion.

For the spring semester, RRRC at **Dawes** Middle School was offered on Tuesdays from 3:30 p.m. to 4:30 p.m., beginning on January 10, 2017, and ending on April 25, 2017. A total of twelve (12) implementation dates were completed during the spring iteration, with the total attendance being 93 by 13 students. The typical weekly participation was approximately 8 students. The curriculum included activities under the

topics of environmental sustainability, aerospace engineering, and various topics in physics such as motion and energy.

For **Dawes's** summer program, RRRC was offered on Tuesdays from 12:00 p.m. to 12:50 p.m., beginning June 6, 2017 and ending on June 27, 2017. A total of four (4) implementation dates were completed during the summer iteration, with the total attendance being 149 by 45 students. Weekly participation was approximately 37 students. The curriculum included activities under the topics of structural engineering, aerospace engineering, and motion.

For the spring semester, RRRC at **Goodrich** Middle School was offered on Thursdays from 3:15 p.m. to 4:15 p.m., beginning on January 19, 2017, and ending on April 27, 2017. A total of twelve (12) implementation dates were completed during the spring iteration, with the total attendance being 120 by 28 students. The typical weekly participation was approximately 10 students. The curriculum included activities under the topics of environmental sustainability, aerospace engineering, and various topics in physics such as motion and energy.

For **Goodrich's** summer program, RRRC was offered on Mondays from 2:00 p.m. to 3:00 p.m., beginning June 5, 2017 and ending on June 26, 2017. A total of four (4) implementation dates were completed during the summer iteration, with the total attendance being 70 by 29 students. Weekly participation was approximately 20 students. The curriculum included activities under the topics of structural engineering, aerospace engineering, and motion.

For the spring semester, RRRC at **Lefler** Middle School was offered on Mondays from 3:00 p.m. to 4:00 p.m., beginning on January 23, 2017, and ending on April 24, 2017. A total of ten (10) implementation dates were completed during the spring iteration, with the total attendance being 59 by 21 students. The typical weekly participation was approximately 7 students. The curriculum included activities under the topics of environmental sustainability, aerospace engineering, and various topics in physics such as motion and energy.

For the spring semester, RRRC at **Mickle** Middle School was offered on Wednesdays from 3:15 p.m. to 4:15 p.m., beginning on January 18, 2017, and ending on April 26, 2017. A total of twelve (12) implementation dates were completed during the spring iteration, with the total attendance being 108 by 30 students. The typical weekly participation was approximately 10 students. The curriculum included activities under the topics of Environmental Sustainability, Aerospace Engineering, and various topics in physics such as motion and energy.

For the spring semester, RRRC at **Park** Middle School was offered on Tuesdays from 3:30 p.m. to 4:30 p.m., beginning on January 10, 2017, and ending on April 25, 2017. A total of twelve (12) implementation dates were completed during the spring iteration, with the total attendance being 93 by 13 students. The typical weekly participation was approximately 8 students. The curriculum included activities under the topics of environmental sustainability, aerospace engineering, and various topics in physics such as motion and energy.

For **Park's** summer program, RRRC was offered on Wednesdays from 3:00 p.m. to 4:00 p.m., beginning June 14, 2017 and ending on July 5, 2017. A total of three (3) implementation dates were completed

during June 2017, with the total attendance being 40 by 26 students. Weekly participation was approximately 17 students. The curriculum included activities under the topics of structural engineering, aerospace engineering, and motion.

Additional RRRC tasks completed during the Spring 2017 semester included club promotion and recruitment at Culler Middle School, developing a curriculum schedules for both quarters, daily meetings with mentors to develop strategies and track progress of the lessons and activities, and communication with mentors, teachers, CLC staff, and NTC staff. Planning to expand the RRRC program to schools on the Santee Nation Reservation, Omaha Nation Reservation, and Winnebago Nation reservation began. Recruitment trips were made to schools on each reservation.

For Spring 2017 RRRC employed: one (1) graduate research assistant functioning as educational program coordinator, one (1) graduate research assistant focused on maintaining attendance records, updating social media, and maintaining the club's photo archive, five (5) returning teachers, one (1) new teacher, and six (6) new undergraduate engineering student mentors. On weekly average, each school had one (1) teacher and two (2) undergraduate engineering student mentors. For Summer 2017 RRRC employed the two (2) graduate research assistants previously mentioned, and one (1) teacher. In total, eighty-four (84) program days were completed during the spring and summer iteration, with the total attendance being 1,236 by 346 individual students.

MATC 2017 Scholars Program

The MATC Scholars Program is a three-day conference designed to promote graduate study among underrepresented groups and women in STEM fields, which is accomplished through targeted seminars, workshops, and networking opportunities. We are in the planning and registration stages for the next MATC Scholars Program that will be held September 27 – 30, 2017 in Lincoln, NE.

More information about the 2017 Scholars Program can be found at:

<http://matc.unl.edu/education/scholars-program-home.php>

NCIA/MATC Sovereign Native Youth STEM Leadership Academy

The 2017 NCIA/MATC Sovereign Native Youth STEM Leadership Academy is a six-day summer camp that provides Native students with the leadership skills to positively impact their tribal communities and shape their futures. We are currently in the final preparation stages for the academy that will be held July 16 – 21, 2017 on the University of Nebraska-Lincoln campus.

2. PRODUCTS

Publications, conference papers, and presentations:

Highlights of the Roads, Rails and Racecars After-School Program

https://www.facebook.com/STEMAfterSchoolProgram?ref_type=bookmark

Website(s) or other Internet site(s):

Currently, MATC maintains 5 online sites that distribute information utilizing the internet. Links to each site, as well as report period information, can be found below:

MATC Website

By clicking the following link, <http://matc.unl.edu>, you will be directed to MATC’s website. Below is highlighted information from Google Analytics about the website’s traffic from January 1, 2017 through June 30, 2017. By understanding and capitalizing this knowledge, we are able to make our homepage engaging, relevant, and resourceful to our viewers.

Visits: 10,977	Page views: 18,796	Pages per visit: 1.71	Average visit duration: 01:09
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Slideshare

Our total views have increased by 1,049 since our last metric. This increase has expanded our global reach; the top 5 countries that viewed our presentations during the time period were: the United States, Myanmar, Russian Federation, Germany, and Israel. Below you will find a snapshot of MATC’s SlideShare activity and the link to view the page.

<http://www.slideshare.net/matcRegion7UTC/presentations/>

Views: 3,292	Downloads: 86	Social Shares: 2
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Facebook

The Mid-America Transportation Center (MATC) Facebook page has the following statistics and can be viewed by clicking on the link below.

<https://www.facebook.com/pages/Mid-America-Transportation-Center-MATC/141238439284182>

Views: 184	Likes: 15	Reach: 4,722	Total Countries: 31	Total Languages: 15
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Twitter

The Mid-America Transportation Center’s Twitter handle is @MATCNews. The page can be viewed by clicking the following link: <http://twitter.ie/MATCNews>. The highlighted numbers for MATC’s Twitter activity can be seen below.

New Followers: 8	Tweet Impressions: 3,942	Profile Visits: 664	Tweets: 14
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YouTube

MATC’s YouTube feed can be viewed by clicking the following link: http://www.youtube.com/user/midamericatrans?feature=results_main. This site will feature one participating Region 7 university per quarter.

New Videos: 0	Views: 4,880	Minutes Watched: 10,159
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3. PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS

What other organizations have been involved as partners?

During the current reporting period, the Mid-America Transportation Center worked with 12 unique organizations to develop the research, education, and technology transfer activities that are currently underway at the center. Each organization and its location is listed below, along with information describing the specific area or capacity in which the respective organization is committed to supporting the center. For more detailed information on how each organization is working with the center, please email the MATC program coordinator, Shelly Cutsor, at mcutsor2@unl.edu.

MATC Program Affiliation	Organization Name	City	State	CO	Financial Support	In-Kind Support	Contribution Facilities	Collaborative Research	Personnel Exchanges
Intern Program (UNL)	City of Lincoln: Materials Division	Lincoln	NE	USA			X		X
Roads, Rails and Race Cars After-School Program	Culler Middle School	Lincoln	NE	USA		X			
Intern Program (UNL)	Iteris, Inc.	Lincoln	NE	USA			X		X
Scholars Program	JPID Consulting	Baton-Rouge	LA	USA					X
Roads, Rails and Race Cars After-School Program	Lefler Middle School	Lincoln	NE	USA		X			
Roads, Rails and Race Cars After-School Program	Mickle Middle School	Lincoln	NE	USA		X			
Intern Program (UNL)	Olsson Associates, Inc.	Omaha	NE	USA			X		X
Intern Program (UNL)	Olsson Associates, Inc.	Lincoln	NE	USA			X		X
Intern Program (UNL)	City of Omaha Public Works Department	Omaha	NE	USA			X		X
Roads, Rails and Race Cars	Goodrich Middle School	Lincoln	NE	USA		X			
Roads, Rails and Race Cars	Dawes Middle School	Lincoln	NE	USA		X			
Roads, Rails and Race Cars	Park Middle School	Lincoln	NE	USA		X			

The Mid-America Transportation Center worked with numerous individuals at each of the organizations listed above. To contact individuals at any of the organizations, please email Shelly Cutsor at mcutsor2@unl.edu.

4. IMPACT

What is the impact on the development of the principal discipline(s) of the program?

Activities conducted during the current reporting period are expected to have an impact upon the transportation engineering discipline in the future.

What is the impact on society beyond science and technology?

We anticipate that all K-12 students who participated in the after-school programs and Summer Institute program will significantly benefit from their experiences. The interdisciplinary projects completed during program activities bolstered students' conceptual and practical skills in science,

technology, engineering, and mathematics. By the time many students reach high school, they have formed ideas about their academic competence in STEM subjects, often deciding that those subjects are not for them. Involvement in the Roads, Rails and Race Cars club encouraged students to reconfigure their expectations of math and science and extend their interest beyond classroom experiences.

5. CHANGES/PROBLEMS

There are no changes or problems to report.

6. SPECIAL REPORTING REQUIREMENTS

There is nothing to report.