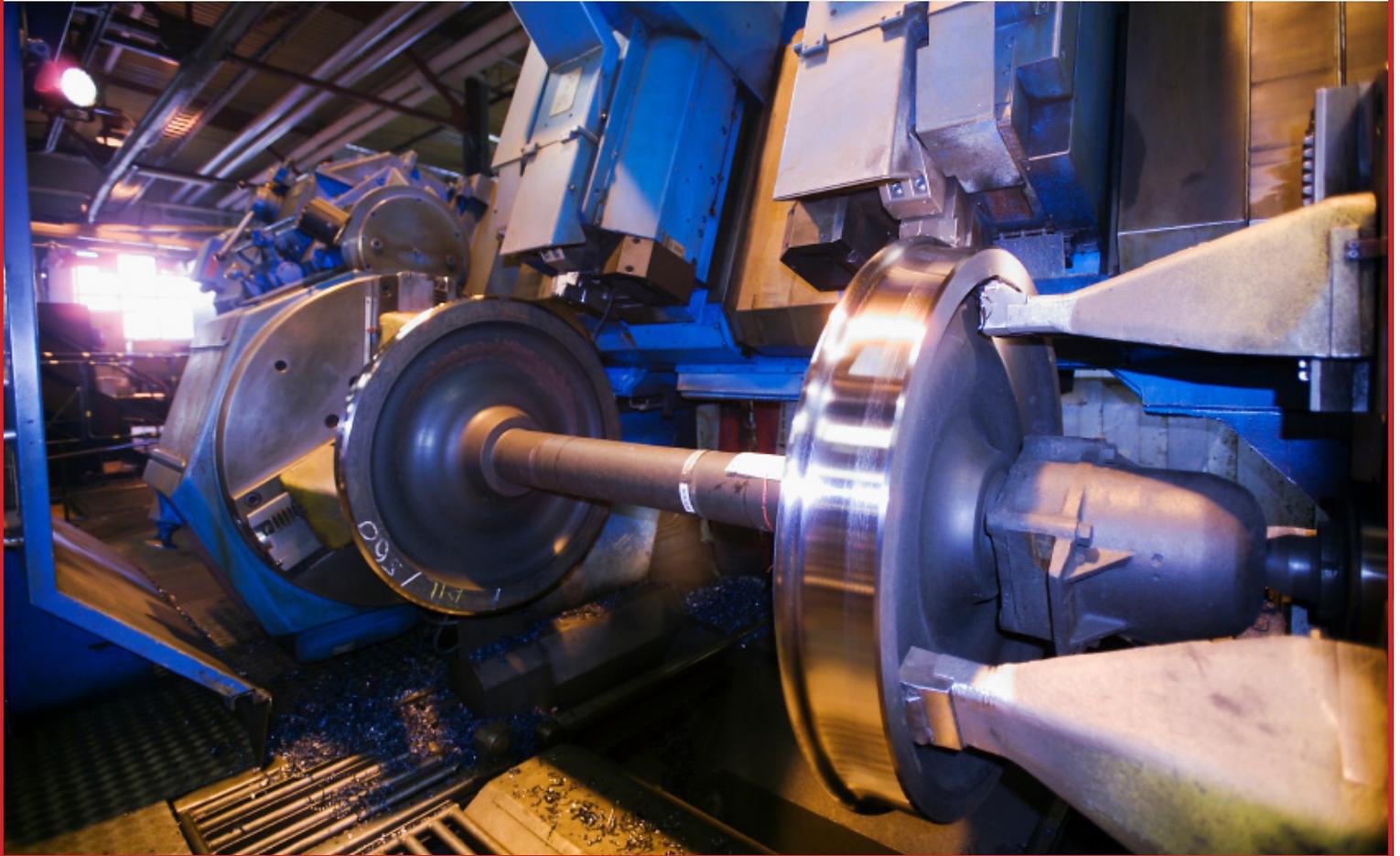


# METTE



## Improving Educational Outcomes in Manufacturing Engineering Technologist & Technician Education

### University of Wisconsin-Madison Research Team

Dr. L. Allen Phelps, principal investigator, [laphelps@wisc.edu](mailto:laphelps@wisc.edu)  
Dr. Xueli Wang, co-principal investigator, [xwang273@wisc.edu](mailto:xwang273@wisc.edu)  
Dr. Janet Washbon, co-principal investigator, [washbon@wisc.edu](mailto:washbon@wisc.edu)  
Dr. Amy Prevost, project manager, [aprevost@wisc.edu](mailto:aprevost@wisc.edu)  
Todd Lundberg, project assistant, [tlundberg@wisc.edu](mailto:tlundberg@wisc.edu)  
Hsun-yu Chan, project assistant, [hchan9@wisc.edu](mailto:hchan9@wisc.edu)

### Participating Technical Colleges

Fox Valley Technical College  
Milwaukee Area Technical College  
Moraine Park Technical College  
Waukesha County Technical College



**WISCONSIN**  
UNIVERSITY OF WISCONSIN-MADISON



**WCER**  
WISCONSIN CENTER FOR EDUCATION RESEARCH

METTE is housed within the Wisconsin Center for Education Research, University of Wisconsin-Madison and is sponsored by the National Science Foundation No.1104226

[mette.wceruw.org](http://mette.wceruw.org)

# Our Guiding Questions

## We are asking

- What individual and institutional factors are associated with optimal student outcomes?
- How can key METTE stakeholders use research data and findings to inform strategic program improvement decisions?



## Our goal is to

Improve student success in two-year college programs that prepare postsecondary students to enter employment in manufacturing as engineering technicians or transfer to baccalaureate programs in fields related to manufacturing.

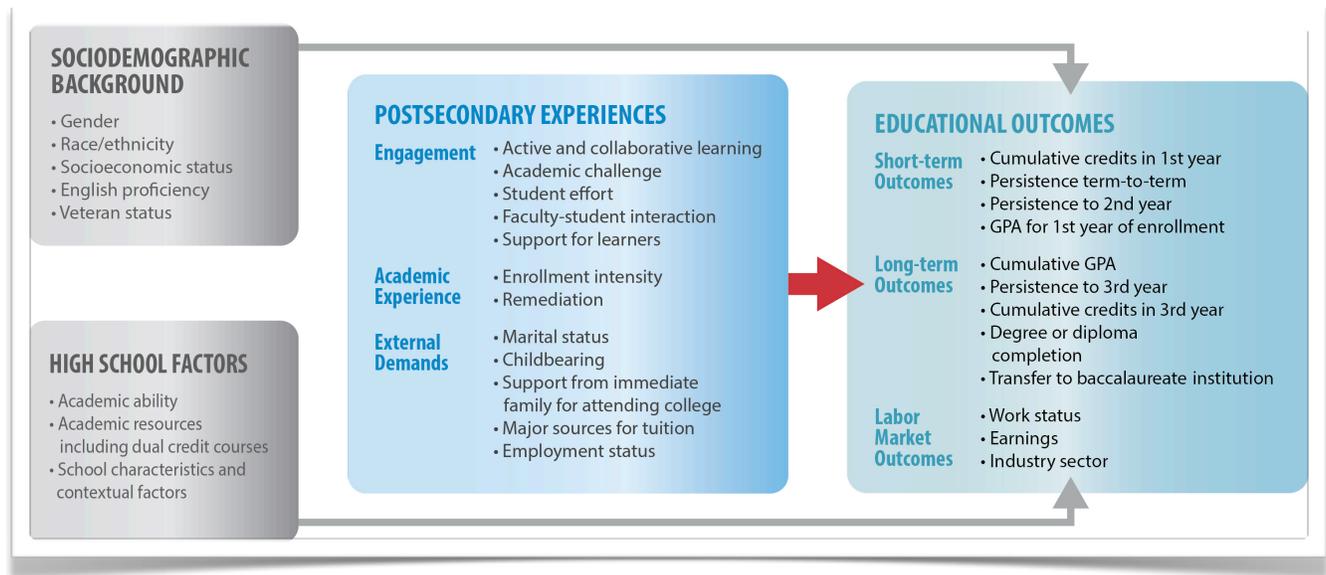


## We are looking at

- A baseline cohort of 392,617 students who entered Wisconsin technical colleges between academic year 05-06 and 12-13.
- 4,447 students from the 4 partner technical colleges, including students from oversampled METTE classes & other randomly sampled courses, completed the CCSSE survey in Spring 2012. 2,643 students were matched with administrative and transcript data (524 METTE students from 45 programs)
- METTE programs in 4 participating public, 2-year technical colleges in Wisconsin:  
Fox Valley Technical College,  
Milwaukee Area Technical College,  
Moraine Park Technical College, and  
Waukesha County Technical College



## Our model of student success



## Data we use

- I. Quantitative data (updated once a year). Our data sharing agreement with the WTCS state office provides a periodically updated data set which employs a stable surrogate student ID number. This ID number informs questions about student progress and outcomes from the following state-level education and labor market data systems:
  - A. Client Reporting System and Graduate Follow-Up Survey from WTCS
  - B. National Student Clearinghouse
  - C. Quarterly Census of Employment and Wages from the Wisconsin Department of Workforce Development
  - D. Wisconsin Knowledge and Concepts Examination (10<sup>th</sup>-grade test scores) from the Wisconsin Department of Public Instruction's Longitudinal Data System
  - E. Community College Survey of Student Engagement (CCSSE)
- II. Qualitative (ongoing)
  - A. Transcripts from in-depth interviews and focus groups with student, METTE program faculty and other key stakeholders.
  - B. Agendas and summary notes from the Local Leadership Team and Networked Improvement Community meetings in the 4 partner colleges



# Research to Date

## **Aspiration & Enrollment in STEM Fields**

Students in Manufacturing and Other STEM Fields at Two-Year Colleges: An Exploration of Aspirations and Enrollment (Spring 2012)

From a national sample of 2002 high school graduates, we found:

- Students who described themselves as being in both the academic & occupational tracks in high school were more likely to enroll in manufacturing programs instead of other STEM fields.
- Having at least one advanced placement (AP) math credit in high school was associated with 70.3% (girls) or 25.8% (boys) more likely to aspire to manufacturing fields, and 44.2% (girls) and 7.6% (boys) more likely to actually enroll in manufacturing fields at two-year colleges.

Download the full report at: <http://goo.gl/eVWK8C>

## **Student Success in Technical Colleges**

Jobbing Out: A Preliminary Analysis of Student Attrition in METTE Programs in Wisconsin (September, 2013)

From a 3-year sample of METTE students at one technical college:

- Leavers (i.e., students who left technical college without completing a degree or diploma) were about half as likely to pass two-thirds of their Fall semester courses as were persisters, and even less likely to pass two-thirds of their Spring semester courses.
- Leavers are more likely than year-to-year persisters to avoid taking required math courses and to have failed at least one math course than are those who persist to the next year. They are also more likely to avoid completing all their general education requirements.

Download the research brief at: <http://goo.gl/UwdpID>

The Influence of Dual Enrollment and Early Academic Momentum on Two-Year Technical College Student Success (AERA, April, 2013)

For recent high school grads who attended one of the technical colleges in Wisconsin in 09-10 academic year, we found that:

- Summer enrollment in 2009 is the strongest predictor of future educational success: Students who took summer courses were 19% more likely to be retained at the 4<sup>th</sup> term or to graduate earlier than their counterparts.
- Students who experienced delayed entry to college were 6% less likely to be retained or graduate at the 4th term

Download the research brief at: <http://goo.gl/Zu9fXQ>

The Role of Interaction with Faculty and Peers in the Academic Achievement of Two-Year Technical College Students in Manufacturing (CSCC, April, 2013)

By looking at 833 students in manufacturing programs from 4 public two-year technical colleges in Wisconsin, we found:

- Faculty-student interaction showing general interest in learning, but not interaction prompted by curricular demand, was significantly and positively associated with GPA.
- Age emerged as a significant predictor of GPA, with older reporting higher GPA compared to their younger counterparts.

## **Post-Two Year College Aspirations**

### Transfer Expectations of Community College Students: Does Socialization Matter? (CSCC, April, 2013)

Using data from 3,709 students in manufacturing programs from 4 public two-year technical colleges in Wisconsin, we found:

- The time the student spends providing care for their dependents and students whose primary tuition source comes from employers are negatively associated with transfer expectations.
- Having participated in a community-based project and greater perceived support from college are related to increased transfer expectations.
- Students in manufacturing, business, industry, along with undecided students do not have lower transfer expectations as compared to students in liberal arts/university transfer programs.