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## English Studies + STEM: Envisioning a 21st Century Curriculum

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WESTERN MICHIGAN  
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# English Studies + STEM: Envisioning a 21<sup>st</sup> Century Curriculum

Dr. Gwen Athene Tarbox, Department of English, ALA 2013-2014



## The STEM to STEAM Movement

In 2013, the American Academy of Arts & Sciences established a commission to study the importance of integrating the STEM fields and the humanities in K-12 and higher education environments. The resulting report, entitled *The Heart of the Matter*, concluded that:

“Scientific advances have been critical to the extraordinary achievements of the past century, and we must continue to invest in basic and applied research in the biological and physical sciences. But...we must recognize that all disciplines are essential for the inventiveness, competitiveness, security, and personal fulfillment of the American public...**The humanities remind us where we have been and help us envision where we are going**” (9).

The term **STEAM**, which is featured in *The Heart of the Matter*, refers to adding “art,” broadly conceived, into the STEM curriculum.

In response to this call to action, my Academic Leadership Academy project poses these questions:

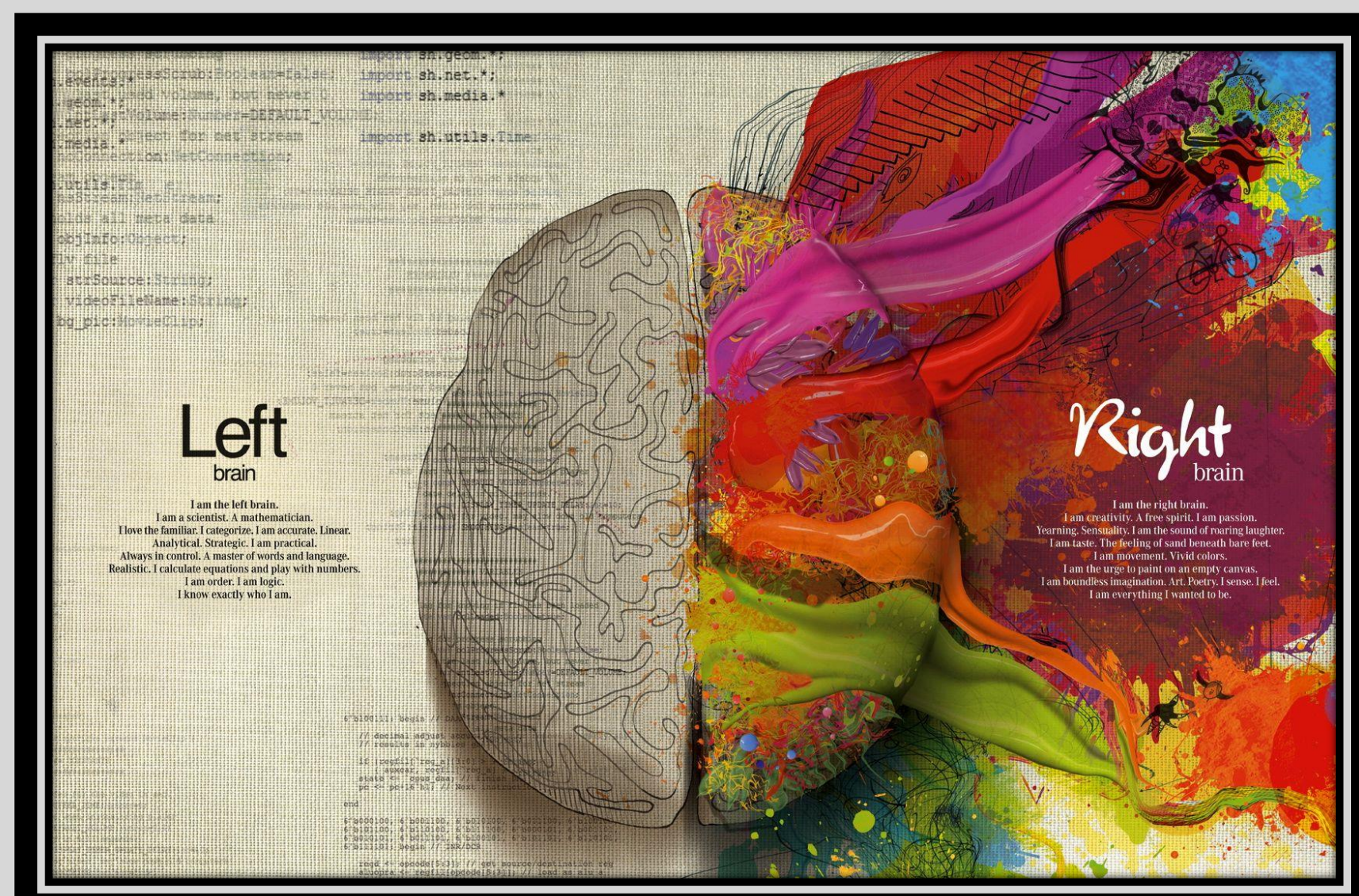
✓What can the WMU English Department do to enhance its involvement in preparing WMU undergraduates to take both the STEM fields and the humanities into account as they pursue careers in a variety of disciplines?

✓How can English Department faculty work with colleagues across the university to encourage STEAM initiatives?

## Rethinking the English Major: Respecting Traditions/Supporting Innovation

Over the last 2 decades, English departments have experienced a change in mission, especially as the traditional liberal arts education curriculum has altered to afford students the opportunity to take more courses that directly relate to specific STEM field vocations.

While the WMU English Department faculty recognizes the value of teaching English literature and language, as well as creative writing and rhetoric and pedagogy, to those students who wish to specialize in these areas, it also understands the importance of incorporating new subject matter and emphases into its curriculum.



Dr. Maria Gigante, WMU Department of English, with Mr. Kenneth Chang, Science Reporter for *The New York Times* at his WMU Center for the Humanities talk, Spring 2014

## STEAM Working Group – WMU Center for the Humanities

In Spring 2014, Dr. Gigante and I wrote a proposal for a WMU Center for the Humanities grant to establish a STEAM Working Group. We asked Dr. Steve Malcolm, Professor of Biological Sciences and Dr. Jocelyn Steinke, Professor of Communication, to join us as organizers. The grant was awarded in April 2014 for implementation in Fall 2014.

The STEAM Working Group will address these topics:

- ✓ **Session One: Defining STEAM**
  - ✓ At the first meeting, participants will develop a working definition of STEAM as it applies in a higher education environment. Facilitators will lead the group in establishing a homework assignment for the next meeting: reading about a successful STEAM initiative at a peer or aspirational university.
- ✓ **Session Two: Learning About STEAM Initiatives in Higher Education**
  - ✓ In addition to sharing information on successful STEAM initiatives undertaken at other universities, participants will listen to a short presentation by a faculty member from a university in the region who has lead a STEAM initiative on his or her campus.
- ✓ **Session Three: Developing a STEAM Initiative at WMU**
  - ✓ The working group will discuss possible STEAM initiatives at WMU and decide upon one to pursue. A guest from OVPR will assist the working group on applying for external and internal funding related to the initiative.
- ✓ **Session Four: Creating a WMU STEAM Action Plan**
  - ✓ For its final session the STEAM working group will develop an action plan for its initiative and determine whether the group should continue to meet.

## Developing Achievable Goals

In 2013, the department appointed me and **Dr. Maria Gigante**, a rhetoric and writing studies assistant professor who specializes in science writing, to explore ways we could enhance our curriculum to benefit WMU students interested in pursuing STEM careers and to encourage English majors to explore STEM connections to their work in the humanities.

Our goal was to identify the gaps in our ability to engage in the STEAM movement and to produce achievable goals to address those gaps.

Our **resulting goals** include:

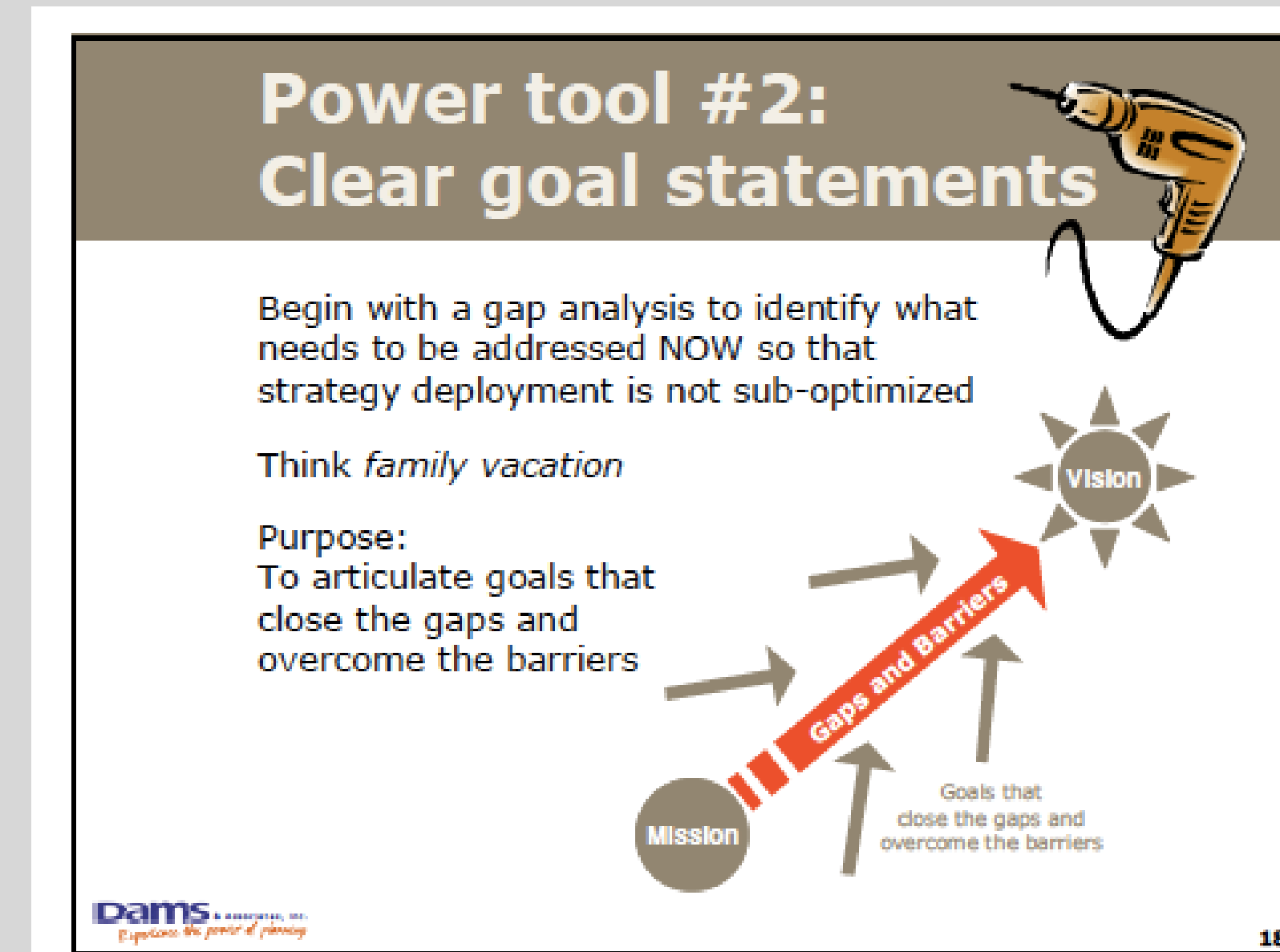
- ✓ Reaching out to faculty from across the university to build STEAM partnerships
- ✓ Increasing the number of course offerings that focus on the relationship between STEM and the humanities

## Course Offerings Project

In Fall 2013, I chaired an ad hoc committee on developing STEAM initiatives in the Department of English. In addition to studying other English departments' STEAM projects, our committee recommended establishing a number of courses around these topics: digital writing, science writing, and medicine and literature. As a result, the following courses are or will be taught in 2014 and 2015:

- ✓ **English 4060: Writing for Social Media, Dr. Maria Gigante (Fall 2014)**
  - ✓ Students will participate in different online social networks and critically examine them to explore the available means of persuasion in digital forums. Issues that are central to this course include how identity and ethos are negotiated in social media networks, and how knowledge is made, accepted, and distributed.
- ✓ **ENGL 3060: Rhetoric, Writing, and Culture: Writing in the Sciences, Dr. Maria Gigante (Spring 2015)**
  - ✓ This is a writing course designed specifically for science majors who want to learn how scientists construct arguments for their peers and for non-expert publics. Students will learn to critically analyze scholarship in their fields and to create their own projects through various media.
- ✓ **ENGL 4100, Special Topics: Medicine and Literature, (tentative date: Fall 2015)**
  - ✓ Designed as a venue to introduce humanities and science students to depictions of illness, the practice of medicine, and ethnic issues surrounding these topics as they appear in Western literature over the last three centuries.

## From Gaps to Goals to Change



The slide from Peter C. Dams' presentation that inspired my ALA Project.

While all of the ALA sessions were informative and helpful, I found that Peter C. Dams' workshops on systems theory provided me with the practical tools necessary to address our department's curricular evolution. Dr. Dams encouraged me to identify **gaps** in our current curriculum and in our engagement with STEM departments, to establish achievable **goals** designed to address those gaps, and to seek **feedback** regarding our projects so that our department remains continuously engaged in making its STEAM collaborations and course offerings a part of our culture.

✓ In Spring 2015 and Fall 2015, I will work with Dr. Gigante to gauge student enrollment and satisfaction with our STEAM course offerings, with the goal of exploring the development of an English minor in Science, Literature, and Culture.

✓ In addition to the working group and curricular initiatives, I will endeavor to connect WMU's Department of English to HASTAC, an international organization designed to bring scholars from every discipline together to create a common set of practices for integrating creative, scholarly, and technological approaches to problem solving.

✓ In Spring 2013, I attended the Annual HASTAC Conference in Toronto, Ontario, where I learned about how creative writing programs at the University of Southern California and at the University of Maryland-Baltimore are enabling graduate students to create and to publish short stories, novels, and poems within digitized environments. I hope to work with my colleagues to explore this sort of writing instruction at WMU.



Here I am posing with one of our undergraduates who has gone on to follow a STEAM career: Staci Layne Stutsman (WMU '11), is now earning her doctorate in media studies at Syracuse University and is serving as a HASTAC blogger on STEAM issues. Our department hopes to enable many more of our students to follow Staci's example.