Preparing Future Faculty for Effective Assessment of Student Learning: A Multi-faceted Approach at Michigan State University

INTRODUCTION

Assessment of student learning is a key activity to ensure student achievement and to maintain institutional accountability in undergraduate education. These goals are especially important for Michigan State University (MSU), a public, land-grant institution with a long-standing commitment to, therefore enrolling a very diverse student body academically, socially, culturally, and demographically. MSU is committed to foster learning by all students, and graduate students are key contributors to that goal. We assert that advancing graduate students’ expertise in assessment will benefit undergraduate education and contribute toward the success and excellence of graduate students as future faculty. MSU proposes a multi-faceted approach that will leverage current initiatives to enhance relationships between undergraduate student learning and the preparation of graduate students to become faculty members who excel at assessing student learning.

Our goal is to use MSU’s considerable infrastructure supporting professional development of teaching excellence to move purposefully towards a more cohesive University approach to the assessment of student learning by explicitly linking assessment to the disciplinary-specific preparation of graduate students as future faculty. To accomplish this, we will establish communities of practice (CoP) (Lave and Wenger, 1991; Wenger, 1998—Refs in Appendix A, pg 11) that include graduate student teaching assistants (TAs) and faculty in eight MSU colleges who will focus on the assessment of student learning. As the CoPs develop across colleges they will create the “MSU Assessment Network”. These intergenerational CoPs will integrate into existing programs to insure long-term sustainability of preparing graduate students with literature-based, hands-on, knowledge and practice of assessment. Specifically, the Assessment Network will focus on introductory prerequisite courses for majors (i.e., gateway courses to the disciplines) and non-major, general education courses.

We are committed to encouraging and supporting faculty and TAs to engage in educational work in ways in which many faculty engage in research: the research group is an intergenerational learning community with various complementary forms of expertise. The activities of our proposed Assessment Network will integrate with three well-established, high-engagement programs that have interconnected goals and that share intended competencies for graduate students. These will ensure longevity of the Network:

1) The Certification in College Teaching Programs (CCTP), established in 1997 as a partnership between the Graduate School and participating Colleges. http://grad.msu.edu/collegeteaching/ The CCTP requires that graduate students demonstrate competency in five areas (Appendix B, Pg 12): develop discipline-specific teaching strategies, create effective learning environments, incorporate technology into the classroom, assess student learning, and differentiate among the broad array of higher education institutional types and missions. The annual CCTP Institute will formally kick off student engagement in this project and will function as one of the CoP to support students. Participating colleges and their faculty design the required discipline-specific mentored experiences and partner with the Graduate School, Teaching Assistant Program (TAP, housed in the Graduate School), and Faculty and Organizational Development http://fod.msu.edu/. The final portfolio produced by each graduate
We will develop a set of rubrics for the assessment of student learning.

2) The NSF-funded CIRTL initiative launched nationally in 2003 [http://www.cirtl.net/](http://www.cirtl.net/) with MSU as an inaugural partner (UW-Madison is lead). The “FAST” Fellows program at MSU [http://grad.msu.edu/fast/](http://grad.msu.edu/fast/) focuses on the CIRTL pillars: diversity, teaching-as-research, and learning communities (Austin, et.al., 2009). Since 2006, 56 Fellows participated in the program and most have gone on to faculty positions. The MSU CIRTL Steering Committee (faculty, graduate students and postdocs) developed and is using a set of rubrics focused on assessment of student learning to plan and evaluate the mentored projects of the Fellows.

3) MSU’s NSF-funded I-cubed (Innovation through Institutional Integration) project, CAFFE [http://grad.msu.edu/caffe/](http://grad.msu.edu/caffe/) focuses on STEM graduate students and preparation for faculty careers. One of its hallmarks is “parallel mentoring” that links faculty mentoring for the academic and research expertise with that needed for career as a faculty member. The CAFFE “preparedness” survey of current Ph.D. students, graduates in faculty positions, and faculty mentors showed that students and graduates felt somewhat less prepared for faculty positions than their faculty mentors thought they were (Lyons and Ryan, 2010, unpublished). CAFFE is linked to our NSF-funded AGEP project that focuses on an inclusive set of graduate students preparing to be faculty [http://grad.msu.edu/agep/](http://grad.msu.edu/agep/). MSU has a successful AGEP learning community in place since 2007. Summative evaluation of the community is in preparation for dissemination to the Alliance member universities. CAFFE is also linked to our NSF-funded Science and Technology Center, BEACON [http://beacon-center.org/](http://beacon-center.org/), which has a strong professional development interest in preparing future faculty. CAFFE annually sponsors the cognitive science forum on current research about learning.

In addition to these programs for preparing future faculty, MSU has in place well-defined institutional learning goals and a set of global competencies for our undergraduate students (Appendix C, pg 13 and [http://undergrad.msu.edu/programs/ise](http://undergrad.msu.edu/programs/ise)). Faculty also developed a set of Quantitative Literacy Competencies ([http://acadgov.msu.edu/documents/QLFinalReport-1.pdf](http://acadgov.msu.edu/documents/QLFinalReport-1.pdf)) (see also Gilliland and Melfi bios Appendix D, pg 14) and writing competencies that are linked to institutional learning goals, drive instruction and curriculum development, and serve as the foundation for the assessment of student learning. In order to facilitate assessment of institutional learning outcomes, each of the institutional learning goals has associated criterion-referenced rubrics developed and used by faculty and staff across the disciplines (Appendix C, Pg 13 shows an example using the analytical thinking rubric).

**OVERALL OBJECTIVES AND DELIVERABLES**

We will use the University-wide communities of practice to

- **Expand the number of graduate students participating in the collegiate CCTPs** from approximately 50 to 150-200/year. These students will be recruited via the Assessment Network courses (see pg 5) in which the assessment of student learning will be a focused part of the teaching experience. Where appropriate, we will invite postdocs to join these activities, as the reality is that the entry into faculty positions in the biomedical sciences is generally from a postdoc, not directly from a Ph.D. program.

- **Develop a reliable framework for evaluating graduate student understanding and appropriate use of assessments** as part of the collegiate CCTPs, CIRTL, and CAFFE. The required mentored teaching experience for the CCTP will focus on assessment of student learning. The framework will provide graduate students with a tool to align their course
activities and assessment strategies with learning goals and objectives. Key to this process is aligning the institutional goals and competencies that focus on both low- and high-level cognitive skills with the goals and objectives of individual courses as appropriate. Participating faculty in the eight Colleges and disciplines will use the framework in the context of their courses and curricula.

- Establish cross-colleges intergenerational learning communities (CoP) with gateway and non-major courses as the foci for the assessment of student learning (see more below in the section Creating the Assessment Network). CIRTL and the residential college fellowship programs (pg 8) existing networks will join our university-level CoP.
- Engage in cross-collegiate and college-specific discussions on the promising practices for faculty to effectively mentor and prepare our current graduate students for careers as faculty. In our initial meetings to discuss this proposal, faculty shared their models and practices of assisting students in career and professional development. We intend to share the models across colleges and disciplines in order to refine and improve them, disseminate these cross MSU graduate programs, and eventually disseminate via CGS.

CREATING the MSU ASSESSMENT NETWORK

The specific contexts in which graduate students as teaching assistants (TAs) will learn about the assessment of student learning are MSU’s many on-going activities for the preparation of future faculty. This project will transform and enhance the basic understanding and use of the assessment of student learning already in place.

Participating graduate students will develop broad assessment skills as well as context-specific skills depending on the disciplinary courses that are part of our MSU Assessment Network. Graduate students will demonstrate the ability to

1. Develop learning outcomes that are written in measurable terms.
2. Align course-specific learning outcomes with the larger learning goals of the curriculum, the college and the institution.
3. Create guides/rubrics that will assist students in understanding performance expectations.
4. Create and implement learner-centered courses that maximize students’ ability to achieve the outcomes (See AAC&U; Kuh, 2008; Johnson et.al., 2006)
5. Develop a variety of different types of assessment tools, summative and formative, that are direct measures of student learning (Angelo and Cross, 1993)
6. Analyze assessment data and use it to revise and enhance learning outcomes, learning experiences, and assessment/evaluation practices.

As we prepare today’s graduate students to be successful faculty, we must also be mindful that we are preparing them for environments that will likely be different from their graduate programs at MSU (Golde and Dore, 2001). We will prepare our graduate students to think about the overall mission and goals of MSU, as well as the institutions in which they may become faculty, as this influences learning goals and assessment. Successfully understanding student learning means, in part, “walking the boundary” between one’s graduate program and the MSU undergraduate mission and goals, and being able to map disciplinary goals and outcomes to the institutional goals. We visualize this as moving between concentric circles, innermost being lesson/assignment goals, then moving outward toward course goals, program goals, university undergraduate learning goals, and, finally, the university mission.
The development of the MSU Assessment Network will occur over two years. The specific activities are briefly described below, followed by the list of participating courses, programs and mentored experiences.

YEAR ONE ACTIVITIES

Convene our faculty/student/administrative team (Appendix D, pg 14) to learn about the alignment framework by creating assignments for the gateway and other courses in their disciplines. Key to this effort will be writing goal and objectives for developing students’ higher-level cognitive skills as well as increasing student engagement in learning.

Establish graduate student (plus postdocs) and faculty groups that meet regularly as CoP to develop workshops, in which graduate students will eventually be co-presenters.

Convene the assessment and professional development advisory groups (Appendix D pg 14) with the general participant group to begin discussions of best practices in mentoring graduate students as future faculty (Wulff, et.al, 2004).

Create a scholarly basis for our work by continuing to conduct discipline-based research on teaching and learning and build further collaborations with cognitive science faculty (http://grad.msu.edu/events/events.aspx?id=112). Panelists (Appendix D pg 14) from an April 27, 2012 CAFFE-sponsored forum (>100 participated) agreed to present annually to faculty and to graduate students seeking the CCTPs and/or participating in these grant activities. The focus of the 2012 discussion was the current research in cognitive science that supports or questions the conclusions of influential publications (e.g, Donovan et.al. eds, 2000; Pellegrino et.al, eds, 2001; Handelsman, et al, 2007).

Support attendance of a faculty-graduate student team to an appropriate AAC&U meeting on assessment, (the Feb 28-March 2, 2013 in Boston, if possible). The partnering collegiate deans agreed to pay for a faculty member to attend. The Graduate School will support a TA from each college, and the Undergraduate and Graduate Deans will support faculty from the Residential Colleges. We found that structured attendance at a conference, that includes campus discussions within the conference venue, and a presentation/discussion to a larger campus audience later can be a significant learning opportunity to help implement best practices.

Establish disciplinary CoP that assist students (and faculty) in articulating learning outcomes, identifying assessment avenues for evaluating student learning, and modifying instruction to improve student learning in response to assessment results (Wenger, 1998).

Invite Dr. Terrel Rhodes (AAC&U) as a national expert in learning outcomes assessment and who has agreed to advise us during both years of this project to participate in trans-disciplinary convenings and disciplinary-based “slaminars” (one hour, very focused topics for lunch & learn opportunities and the method by which our STEM faculty explicitly asked to learn in our NSF I-cubed CAFFE initiative). See Appendices D pg 14 and E pg 24

Add a workshop session each semester to our usual career development/TA Program series focused on understanding the challenges of student learning assessment within larger institutional contexts). One session would also be added to the Certification in College Teaching Institute offered each spring.

Convene cross-disciplinary discussions (that include graduate students and postdocs) to improve our models and promising practices for the professional development of graduate students as future faculty, with a focus on assessment of student learning.

Develop the details in our research plan that will allow us to evaluate the impact of our activities (see Evaluation section pg 10)
YEAR TWO ACTIVITIES

Complete and implement the alignment framework designed to assess the graduate student knowledge, attitudes and skills for the assessment of student learning. Examine the portfolio evidence as part of the overall evaluation of our impact (See evaluation pg 10).

Work with Dr. Rhodes to assess our progress.

Dissemination of the Assessment Network will occur multiple ways: The assessment framework and evaluation data will be presented at the CGS meeting and in as many disciplinary society meetings as possible. In addition, we will prepare a short document on promising practices for effectively mentoring graduate students on assessment of student learning as part of preparing to be successful faculty, also disseminated at CGS and disciplinary society meetings. At MSU we will continue the cognitive science forum at MSU to integrate discipline-based research on assessment across the university.

COURSES in the ASSESSMENT NETWORK

The CoP: Our MSU Assessment Network targets individual courses. Faculty leaders for each course are noted. (Appendix D, pg 14) We will focus on “gateway” courses, defined as an introductory course that is critical to student persistence at MSU (i.e., introductory writing) and/or are demonstrated barriers to success for both science and non-science majors (i.e., math, general chemistry, and introductory life sciences). These courses are critical to undergraduate student academic success, engage large numbers of graduate teaching assistants, and are courses that graduate students are likely to teach as new faculty.

The College of Natural Science:

Biological Sciences involves two courses that constitute the introductory sequence for all life science majors as well as many psychology and engineering students. These courses are essential to developing a strong foundation for upper-level biology courses. Natural Science faculty and science educators from the College of Education developed conceptual frameworks and sets of competencies for students consistent with the AAAS Vision and Change report (2011). In progress is the development of assessment tools to evaluate student learning as a result of instructional innovation. Research-based professional development for TAs in the course provides substantive training in curriculum design and assessment. (Ebert-May, Long).

The Math Department teaches over 10,000 undergraduates every semester. On average 100 graduate Teaching Assistants play a significant role, teaching many different pre-calculus and calculus courses. All TAs go through an intense orientation program and are closely supervised during the year by experienced faculty and specialists. TAs run recitations and in some courses, they provide all of the instruction (e.g., MTH 124 Applied Calculus I, a very large course with 2,000+ students per semester). It is also a very challenging course to teach because the material includes many applications from other disciplines and students who take the course have very diverse backgrounds (e.g. business majors, biology majors, etc.). We believe that because of the diversity of the content and student population, MTH 124 can provide an ideal platform for TAs to learn more about assessment of student learning. One focus will be assessment of student learning from the online homework. (Sikorskii). Another focus will be to improve the teaching and learning of Calculus I (MTH 132 at MSU) and the success rate of
students. A new mentoring program, based on research on teaching and learning of calculus, and involves faculty members from mathematics, mathematics education, and a postdoc, begins this Fall. We expect approx. 20 TAs and several postdocs to participate. The calculus “bridge” examination will be the specific focus for the assessment of student learning. (Melfi)

The Department of Chemistry offers a two-semester General Chemistry lecture (CEM 141/142) and laboratory (CEM 161/162) sequence that serve 3500 (2500 in the labs) students. CEM 141 is the first science course taken by STEM majors. Consequently, student success in CEM 141 is critical to retention in science and engineering degree programs. Student outcomes in CEM 141 also impact the admission of students to the professional fields of medicine, dentistry, veterinary medicine, pharmacy, optometry, and nursing. It is also a prerequisite to required introductory biology and organic chemistry courses.

Teaching assistants play crucial roles in the operation of General Chemistry lecture and laboratory courses. General Chemistry lectures are large (~420 students in each lecture). Lecture TAs meet with groups of ~30 students in weekly recitations. These recitations are naturally suited to assessing student learning through discussion of content, real-time monitoring of student efforts on worksheets, and 5-minute essays. After initial training, TAs participate in weekly course-specific training. Assessment of student learning will be explicitly integrated into these weekly meetings for direct application in recitations and laboratories.

Chemistry faculty will also share with the Assessment Network a pilot program/course designed to improve student learning and success. Faced with a growing number of students who are not successful in CEM 141 as first-semester freshmen, the Chemistry faculty began to explore ways to improve student success in CEM 141 and retention of students in STEM degree programs. Connection to math course enrollment/timing and the development of a transitional chemistry course “Atoms, Molecules, and Reactions” are intended to help students build a solid foundation in basic chemical concepts before tackling CEM 141. This transitional course (Fall 2013) will be taught using a “flipped classroom model” where students will use online resources to prepare for face-to-face meetings in a computer classroom. During face-to-face meetings, students will work on problems and engage in discussion of chemistry content. The TAs involved in this course will be full partners with the instructor in assessing student understanding of material and intervening as necessary. The course is in partnership with the Charles Drew Science Scholars Program (http://drewlab.msu.edu/), which is one of MSU’s Living & Learning Communities providing academic and social support to students pursuing degree programs in the College of Natural Science. Many participants are members of groups that are under-represented in science and engineering degree programs and related professions. (Cooper, Pollack, Posey)

The College of Arts and Letters

Faculty will focus on the foundational role played by facility in written expression for educational and career achievement. MSU’s required First-Year Writing Program (Tier I Writing and the Preparation for College Writing Course that some students take as a prerequisite) has a vision and learning outcomes that articulate with the University Mission, with institutional undergraduate learning outcomes, and with best practices in the discipline. Our institutional data show that First-Year Writing should be considered a “gateway” course as it is useful in predicting student success. Using this Program as a model for integrated learning assessment, we will hold workshops so that other programs on campus can develop resources tailored to their own goals and constraints that will help their graduate students understand and assess student learning more fully and more effectively as well as to assess student learning within the internal and external contexts that affect those programs. (deJoy, Hart-Davidson)
The College of Social Science  
Faculty and the Associate Dean for Graduate Education established a Teaching Committee that meets regularly to provide a stronger and more cohesive assessment component to their CCTP. They are designing modules that all graduate students in the CCTP program will be required to complete with a specific emphasis on assessment of student learning. This will be offered at the College level by the Teaching Certification leader for all participants with the students further developing the strategies at the disciplinary level. This model is an effective way to assist graduate students with their understanding of the “how” and “why” of designing a syllabus, creating effective exams, and creative use of technology as a part of pedagogical training that undergirds the approaches to the assessment of student learning.

One specific course will be Economics 201, Introduction to Microeconomics, which is a large enrollment (>600 per section, 2 sections/Fall semester), gateway course for economics, business, and agricultural, food and resource economics majors. The TAs will have the opportunity to observe and discuss assessment of student learning in the context of a large class. They will be able to engage with other TAs, to learn about assessment across the discipline. (Ballard)

Political science will focus on the role of graduate students who lead discussions and provide instruction during discussion sections for PLS200: Introduction to Political Science and PLS201: Introduction to Methods of Political Analysis, the two gateway courses for the major. In PLS200, graduate students will focus on incorporating research-supported strategies for promoting student discussion about topics in political science and how to encourage students to make connections between course content and contemporary political events. This includes a special focus on how to address sensitive topics in a way that respects a wide range of viewpoints. In PLS201 an additional emphasis will be placed on using learning teams to engage students in exercises involving all aspects of political analysis (i.e., the gathering, analyzing, and presentation of political science data). (Black)

General Education courses across Social Sciences, Humanities, and Natural Sciences  
While not gateway courses, the MSU general education, “Integrative Studies” program is a series of courses that focus on developing students’ abilities to more deeply understand ways of knowing in the Social Sciences, Humanities, and Natural Sciences. These 3 core Centers are collaborating to map the institutional learning goals and global competencies (http://global.undergrad.msu.edu/userfiles/file/LLG__GC_combined_table.pdf) to the programmatic assessment of student learning. A post-doctoral research associate (McCallum) assists the Centers to develop and implement tools to assess student learning in Integrative Studies, both at the programmatic- and course-based levels. Graduate students will have an opportunity to learn about assessment of student learning for non-majors. For the natural sciences, linking the natural and physical sciences general education efforts to the CIRTL FAST program, will give graduate students an opportunity to work with the faculty teaching courses overseen by the 3 Centers. (Kidwell, Ording, Summerhill)

As an example in the Social Sciences, two economics professors teach The Social Science of Sports. They incorporated two teaching innovations in the class to enhance active learning and provide assessment of learning – the extensive use of personal response devices and inclusion of a writing assignment. These techniques are used to assess learning within individual lectures or course segments and to assess learning over the full course. The written assignment
has been an important innovation because students work in two-person teams and because the assignment is to write an opinion-editorial rather than a traditional research paper. The teaching innovations provide experience to the graduate students who are actively involved in both components. The TAs are provided both a model for how a large class can be handled effectively and practical, hands-on experience in working with some of those techniques to assess learning. (Fisher, Liedholm)

The College of Engineering

Assessment of student learning outcomes has been a key element of engineering accreditation since 1998, when ABET (www.abet.org) accreditation criteria were implemented to address evidence-based program improvement. In the MSU College of Engineering, outcomes assessment and continuous improvement have been standard practice both for faculty and their graduate assistants. For example, 15 TAs in EGR 100, the introductory engineering course for all 1200 first-year engineering students, are trained in rubric-based evaluation of student homework and projects. A recently instituted engineering graduate level course, Foundations of Engineering Education (EGR 811), includes assessment and rubric development as integral to instructional design (Wiggins & McTighe, 2006). Finally, we are developing a framework for establishing collaborative teams of engineering and education graduate students to use engineering classrooms as “laboratories” for engineering education research projects. Unique to this effort is that graduate students are prepared as future faculty by incorporating education research directly into their disciplinary Ph.D. research programs.

We will build upon these efforts by instituting a program for further developing the EGR 100 TAs as future faculty. The program will consist of a one-credit mentored seminar / workshop series for the TAs in which they will learn about instructional design, including assessments and associated rubrics. As a group, the TAs will then design and implement a two-week laboratory experience for EGR 100, including the instruction and assessments based upon the course objectives. At the completion of the laboratory experience, the TAs will evaluate the outcomes and recommend revisions to their instructional design and assessments. We will then assess the quality of instructional design, assessments and rubrics, providing feedback to the TAs as part of the one-credit seminar. The one-credit seminar will provide transcriptable evidence of the TAs’ experience. Finally, we will track the TAs into their subsequent careers. (Briedis, Sticklen, Urban-Lurain, Walton)

The College of Communication Arts and Sciences will focus on serious game design and its application to assessment of learning. Games can capitalize on intrinsic motivation because they challenge learners to process information and apply it to a context that is both educational and entertaining. The College of Communication Arts & Sciences is developing a pilot project that aims to train graduate students on the role technology can play in learning assessment as it relates to interactive gaming principles. Graduate students will focus on connections between gaming and assessment principles and their integration as a strategy to measure student learning and also be introduced to some fundamental technological tools to facilitate effective and innovative assessment of learning objectives. (Silk, Winn)

MSU Residential Colleges with disciplinary links to Natural Science, Social Science, and Arts and Humanities

These Colleges focus primarily on undergraduate education, and, thus, offer graduate students from across MSU an opportunity to learn about and conduct original research on
teaching and learning within a small, liberal arts living-learning communities that prioritize excellence in undergraduate education. Fellowship programs, funded by the Graduate School, focus on arts and humanities (Residential College in Arts and Humanities (RCAH) http://rcah.msu.edu/fellows and http://ncsue.msu.edu/research/graduatefellowsprogram.aspx) and on international relations and interdisciplinary studies undergraduates, (James Madison College http://grad.msu.edu/iit/). Lyman Briggs College (natural sciences) links to CIRTL activities. Example: in collaboration with RCAH faculty, fellows conduct research projects that assess a range of curricular, instructional, and programmatic initiatives. These experiences more closely mimic the experiences in 4 year colleges in which our MSU graduate students often become faculty. These residential college graduate student and faculty groups meet together once a year for graduate students to present their student learning assessment projects. (Bosse, Campa, Hunt, Millenbah, O’Shea, Tremonte)

We expect that the cross-collegiate CoP discussions among the residential colleges, the core liberal learning colleges, the engineering college with its professional accreditation focused on student learning, and the Lilly Fellows (see next section) will enhance faculty and graduate student learning about the assessment of student learning.

**Additional Institutional Assets for Success:**

The MSU Teaching Assistant Program [http://tap.msu.edu/] is more than 20 years old. It offers a comprehensive array of orientations, workshops, individual consultations, and other support for MSU’s more than 1200 TAs.

The Graduate Employees Union (letter in Appendix E Page 23) supports this effort and their pedagogy committee members will join the CoP.

Career Success: [http://grad.vudat.msu.edu/] and its foundational program Planning, Resilience, Engagement, Professionalism (PREP), the Graduate School’s career and professional development model, [http://grad.msu.edu/prep/] are the fundamental programs in support of the CCPTs. Conceived in 2006, these programs now offer both face-to-face workshops and activities with a web-based interface to support graduate student career planning. An electronic portfolio framework is available as part of Career Success.

“ELI Review”, developed at MSU, is a web-based service for coordinating peer response and evaluating peer review activity in writing. Eli provides teachers with real-time information in order to facilitate formative interventions that are evidence-based. By aligning peer response criteria with course learning goals, teachers can quickly understand where students are performing well and those who need help. More about Eli at [http://elireview.com](http://elireview.com)

The Lilly Teaching Fellows Program, now in its 22nd year, is intended to advance the University’s continuing efforts to support and promote excellence in teaching and learning. A cohort of six-seven pre-tenure faculty engage in a year-long exploration of the robust scholarship on effective practices in University teaching. The Lilly Teaching Fellows Program is designed to support Fellows who will become future faculty leaders and models for their peers, as well as to inspire a broad range of faculty at all ranks to pursue excellence in teaching. Lilly Fellows produce an individual scholarship of teaching and learning (SoTL) project on their teaching with support of a faculty mentor. This program is sponsored by the Office of Faculty and Organizational Development ([http://fod.msu.edu/](http://fod.msu.edu/)) in the Office of the Provost.

**Evaluation of outcomes of the initiatives proposed in this grant:**

Dr. Ann Marie Ryan, Industrial/Organizational Psychology, is the evaluator for this grant. She is currently the internal evaluator for our NSF-funded CAFFE grant. We plan both
formative and summative evaluation using both qualitative and quantitative methods for this project. Our external evaluator for CAFFE, Dr. John Seeley, FERA (www.feraonline.com), will provide consultation to Dr. Ryan. We would plan for formative evaluation early in this project since the timeline is short.

Our framework for evaluation is to examine changes in four components: attitudes, knowledge, skills and later, course-level impacts. We will start and end with a short survey to assess changes in attitudes and knowledge of how to assess student learning -- this could be within the ongoing CAFFE “preparedness” surveys with some small set of additional items (pre- and post-surveys). For course-level effects, we plan a random sample survey of undergrads taught by those who participate in this grant. This would likely occur as early in year 1 as possible and again in year 2 or post grant. We will use the Learning and Studying Questionnaire to survey students’ experience in the course (Entwhistle, 2003).

Working within the CCTPs, we will evaluate knowledge of and skill development as part of the required portfolios and the alignment framework that will be designed as one of the objectives for this grant. The TAs will provide direct evidence in their teaching portfolio that they can design higher-cognitive level student learning goals and create assessments that are aligned with the institutional goals and course goals (e.g., Ebert-May et al 2010). We will analyze the alignment of goals and assessments using cognitive levels in Bloom's Taxonomy of Educational Objectives (Anderson and Krathwohl, 2001). We will compare existing portfolio descriptions of assessments of student learning to those developed using the framework. In addition, graduate students will include an initial assessment they developed and explain its strengths/weaknesses in the context of student responses. Then they will revise the assessment and compare the accompanying student data to the initial assessment. Graduate student thinking (in writing) about the assessment that is paired with the actual assessment is a powerful way to help them refine and reflect on their beliefs about assessment. Both evaluation strategies will enable us to compare graduate students' progress over time and across disciplines.

Long-term Data
We will collect the placement data and experiences of students and will continue this process into the future, as we already have in place a robust database to collect and store graduate student placement data (CAFFE, FAST, AGEP all track student outcomes) for all our doctoral students. MSU has a robust database for all MSU Ph.D. graduates. In addition, we are also the repository for the FIRST IV postdocs longitudinal career data (see Prof. Ebert-May, Appendix D pg 14).

Grant Management Plan
Deans Klomparens and Estry (Appendix D) will co-convene the meetings of the faculty and graduate student advisory groups, as well as the MSU CoP—MSU Assessment Network. We expect to enlist faculty co-conveners of the MSU CoP in year one. Each college is already a partner in the Certification in College Teaching Program. Collegiate Deans agree to support the trip to AAC&U and the projects/courses defined as the foci of TA professional development (Appendix E, pg. 22) The Graduate School will continue to run the CCTP Institute each spring, with a renewed focus on assessment of student learning with evidence in the teaching portfolio. The Graduate School will manage the budget (Appendix F, pg 25) and the required reports.
APPENDIX A--REFERENCES


APPENDIX B
CERTIFICATION IN COLLEGE TEACHING: MOVING THROUGH THE PROGRAM

Submit application to College

PROGRAM COMPONENTS

Course Work

Foundations for Professional Development

Mentored Teaching Experience

Teaching Portfolio

COMPETENCIES

CORE COMPETENCY 1: Developing Discipline-Related Teaching Strategies
CORE COMPETENCY 2: Creating Effective Learning Environments
CORE COMPETENCY 3: Incorporating Technology in the Classroom
CORE COMPETENCY 5: Assessing Student Learning
Reflections and Integration

HOW TO

Discipline-related or other approved course on teaching
Dept., college, TAP, Grad School, Lilly workshops
Seminars in Instructional Technology
Dept., College, Grad School workshops
Workshops and project design and assessment by student and mentor
Web portfolio or use Career Success portfolio tool careersuccess.msu.edu
Submit final materials for approval to College Graduate Associate Dean
Final Approval, The Graduate
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<td>Analytical Thinking</td>
<td>Acquires, analyzes, and evaluates information from multiple sources</td>
<td>Understands the complexity and interconnectedness of global processes—such as environment, trade, and human health—and is able to critically analyze them, as well as compare and contrast them across different cultures and contexts.</td>
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The MSU graduate uses ways of knowing from mathematics, natural sciences, social sciences, humanities, and arts to access information and critically analyzes complex material in order to evaluate evidence, construct reasoned arguments, and communicate inferences and conclusion.

- Acquires, analyzes, and evaluates information from multiple sources
- Synthesizes and applies the information within and across disciplines
- Identifies and applies, as appropriate, quantitative methods for defining and responding to problems
- Identifies the credibility, use and misuse of scientific, humanistic and artistic methods

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<td>Acquires, analyzes, and evaluates information from multiple sources</td>
<td>Seeks information from basic types of sources with minimal regard for relevance or quality.</td>
<td>Retrieves information from a limited range of sources and identifies biases, strengths, and weaknesses within those sources.</td>
<td>Designs and implements effective strategies to find relevant sources based on purpose. Critiques biases, strengths, and weaknesses of information sources.</td>
<td>Uses analysis to defend information choices and reach original conclusions.</td>
</tr>
<tr>
<td>Synthesizes and applies information within and across disciplines</td>
<td>Recognizes multiple perspectives among sources of information.</td>
<td>Identifies how information can be conceptualized differently within various disciplines.</td>
<td>Examines and integrates relevant information sources from multiple disciplinary perspectives.</td>
<td>Creates a defensible, compelling work using multiple disciplinary perspectives.</td>
</tr>
<tr>
<td>Identifies and applies, as appropriate, quantitative methods for defining and responding to problems</td>
<td>Recognizes the need for and performs basic quantitative methods.</td>
<td>Identifies a range of quantitative methods and employs them to make judgments.</td>
<td>Selects quantitative methods for making sound judgments and drawing plausible conclusions based on the situation.</td>
<td>Critiques biases, strengths, and weaknesses of quantitative approaches to reflect on conclusions and propose responses to a situation.</td>
</tr>
<tr>
<td>Identifies the credibility, use and misuse of scientific, humanistic and artistic methods</td>
<td>Recognizes a range of inquiry methods and acknowledges that they can be misused.</td>
<td>Describes the effective use of methods and identifies their misuse in a given contexts.</td>
<td>Judges if methods are credible and ethical in given contexts.</td>
<td>Selects inquiry methods ethically and with an understanding of the consequences of their misuse.</td>
</tr>
</tbody>
</table>
APPENDIX D

PARTICIPANTS: Forty-two faculty and three staff members agree to be part of this project—supervising courses and participating in the Community of Practice Assessment Network. Graduate students and postdocs have not yet been recruited. Each provided her/his own paragraph stating expertise and interest/role as a commitment to participate in lieu of a set of individual letters (which each will provide if needed).

These individuals have assessment of student learning expertise and agree to serve in an advisory capacity:

Dr. Terrel Rhodes, AAC&U agreed to be an external consultant for this project. From the AAC&U website http://www.aacu.org/press_room/experts/TerrelRhodes.cfm: “Dr. Rhodes is currently Vice President for the Office of Quality, Curriculum and Assessment at the Association of American Colleges and Universities (AAC&U) where he focuses on the quality of undergraduate education, access, general education, and assessment of student learning”. See letter Appendix E, pg. 24.

Nancy C. DeJoy is an Associate Professor in the Department of Writing, Rhetoric, and American Cultures within the College of Arts and Letters. She developed and implemented the learning outcomes for first-year writing at MSU, creating an approach that integrates those outcomes with the University mission and the undergraduate learning goals. She has also been a leader in the development and implementation of the institution’s undergraduate learning goals and assessment rubrics; she is currently co-directing a project to gauge faculty and student reactions to and use of those rubrics. She is also consulting with web designers to create a context rich, interactive website members of the community can use as they customize the ways that they engage and assess undergraduate learning in their units.

Dr. Diane Ebert-May is a University Distinguished Professor in the Department of Plant Biology. She provides international leadership for discipline-based biology education research that integrates life sciences and cognitive science. Ebert-May leads FIRST IV (Faculty Institutes for Reforming Science Teaching, an NSF-funded professional development program to help 200 postdoctoral scholars create and teach, with mentoring and support, their first introductory biology course in preparation for their future academic positions. She is an expert on assessment of teaching and student learning and professional development of faculty, graduate students and postdoctoral fellows.

Dr. James Fairweather, Educational Administration. Dr. Fairweather is a co-PI on AAU’s national effort to reform the first two years of undergraduate STEM teaching.

Kelly Funk received her Ph.D. from The Ohio State University in Educational Policy and Leadership. As the Director of Academic Assessment, Program Review, and Accreditation at Michigan State University, Kelly spends much of her time helping the campus community grapple with and answer the questions: What do we do? Why do we do it? How do we know it's successful? She is a consultant-evaluator for the Higher Learning Commission and has served on many accreditation site visit teams for the HLC as well as the Western Association of Colleges and Schools. She mentors in both the Higher Learning Commission’s Assessment Workshop and the Assessment Academy, an intensive workshop experience in which institutional teams work on assessment projects over a four year span of time. In this capacity she has worked with a wide variety of institutional teams, assisting them with designing assessment projects ranging from specific departmental outcomes to the more ineffable values, attitudes and "ways of being" reflected in institutional missions.
Dr. Donna Green: (MSU’s Faculty and Org Development) As a faculty member at the University of Windsor Dr Green co-authored a book entitled *Prior Learning Assessment and Recognition: The Learning Outcomes-Based Approach – A Handbook* (Innerd, Wilfred, Donna Green, Shelagh Towson, and Monica Collins (1998). An outgrowth of this in-depth analysis of assessment and learning outcomes was the delivery of workshops to develop learning outcomes at several universities. Additionally, at Davenport University, she leads workshops with faculty to develop program outcomes and identify methods to assess the outcomes. She is also a consultant evaluator for the ten year PEAQ reaccreditation reviews and as a systems appraiser for the AQIP reaccreditation process analysis of and feedback on assessment, especially of student learning, has been required for all reviews (via Higher Learning Commission).

Dr. Dennis Gilliland, Professor, Statistics and Probability/College of Natural Science. In working to assess the quantitative literacy of in-coming and attending students at Michigan State University, the research team of which I am a member has developed, validated, applied, and published three assessment instruments. I hope to integrate the research and experience gained by this into the training of teaching assistants in the large courses that I teach, training that will address assessment challenges. www.stt.msu.edu/~gilliland

These two individuals have expertise in the professional development of graduate students and early career faculty and agree to serve in an advisory capacity:

Dr. Ann Austin, Educational Administration will serve on our advisory committee. Dr. Austin was one of the original architects of the Certification in College Teaching Program. Dr. Austin is a Professor of Higher, Adult, and Lifelong Education at MSU Her research concerns faculty careers and professional development, the academic workplace, and organizational change in higher education, with particular focus on doctoral education, preparing future faculty, and reform in STEM education. Dr. Austin is a Co-P.I. of the Center for the Integration of Research, Teaching, and Learning (CIRTL), a multi-institutional National Science Foundation Center committed to preparing future faculty in the STEM fields as excellent teachers as well as strong researchers. She also was the Co-P.I. of a study entitled “The Development of Graduate Students as Teaching Scholars,” funded by the Spencer Foundation and the Pew Charitable Trusts. Her publications relevant to doctoral education and preparing future faculty include several books and her major chapter entitled “Reform efforts in STEM doctoral education: Strengthening preparation for scholarly careers” was published in *Higher Education: Handbook of Theory and Research, Vol. 25* (2010).

Dr. Melissa McDaniels has over twenty years of experience in graduate student and faculty development, undergraduate and graduate teaching and learning, and organizational change. Dr. McDaniels currently directs Michigan State University’s National Science Foundation ADVANCE grant. In addition to her current role, Dr. McDaniels was co-PI on two internal grants at Northeastern University ($120,000) and led the institution in developing rubrics for undergraduate learning outcomes assessment in both the academic and experiential learning contexts. As a researcher at Michigan State University's Center for the Scholarship of Teaching, she worked closely with colleagues at the Carnegie Foundation for the Advancement of Teaching to promote scholarly investigation of faculty teaching practice (and student learning) at Michigan State. Her expertise on classroom assessment of student learning was sought by colleagues at Nelson Mandela University (South Africa) where she led a faculty workshop on classroom assessment techniques. She has published in national and international publications, including College Teaching and New Directions for Institutional Research.

Dr. Erik Altmann, Department of Psychology develops simulation models of attention and episodic memory. https://www.msu.edu/~ema/cv.htm

Dr. Kimberly Fenn is in the Cognition and Cognitive Neuroscience program in the Department of Psychology. Her research focuses broadly on learning and memory with a special emphasis on memory consolidation processes that occur during sleep. She is interested in how different types of encoding affect subsequent offline processing and in understanding ways in which consolidation processes may be improved or enhanced.

Dr. Zach Hambrick, Department of Psychology, work focuses on individual differences in basic cognitive abilities and their role in complex cognition and expert performance. He is interested in the question of whether experts are "born" or "made."

Dr Susan Ravizza, Department of Psychology, research program assesses the neural and cognitive mechanisms by which people remember important information while ignoring distracting information.

Dr. Kelly Mix, Counseling, Ed Psych, and Spec Ed (College of Education), focuses on the development of math concepts and numeracy in young children. Current projects address the role of concrete models in supporting math learning, and the relation of spatial ability to mathematical cognition and learning.

Principal Investigator:

Karen L. Klomparens, Professor of Plant Biology and Dean of the Graduate School, Associate Provost for Graduate Education since 1997. Prior to becoming Assistant Dean for Graduate Student Welfare in 1994, Dr. Klomparens was on a Fulbright-supported sabbatical at the University of Cambridge. The Graduate School developed a FIPSE (U.S. Dept of Ed) and Hewlett Foundation supported program on “Setting Expectations and Resolving Conflicts in Graduate Education” that is the topic of a 2008 CGS monograph. Currently the Graduate School operates an NSF-funded AGEP grant and an I-cubed grant focused on future faculty. Dean Klomparens served a 2-year term as the Chair of the Big Ten (CIC) graduate deans group, 3 years on the Exec Committee and 5 years on the Board of Directors for the CGS, 2 years on the Professional Science Master’s Board of Directors, 2 years of service on the GRE Board, 2 years on the Exec Committee of the Association of Graduate Schools (AAU).

Working with Klomparens as a co-leader of the activities:

Dr. Douglas Estry, Dean of Undergraduate Studies. Dr. Estry is a Professor of Pathobiology and Diagnostic Investigation. In his role as Undergrad Dean and Associate Provost for Undergraduate Education, Dr. Estry is responsible for overseeing university-level undergraduate initiatives that support and enhance the undergraduate experience; for providing direction to a number of university-wide programs that serve undergraduate students, and coordinating the development and implementation of academic policies and procedures related to undergraduate education. He works closely with such units as Student Life, Residence Life, Housing, Career Services, etc. to facilitate initiatives focused on enhancing curricular and co-curricular learning opportunities. He served as the Graduate Associate Dean in Natural Science prior to his current appointment.
Disciplinary faculty and other administrative partners: these individuals agreed to commit time and effort towards the projects outlined in this proposal. Each provided her/his own paragraph stating expertise and interest/role in lieu of a set of individual letters (which they will provide if needed)

Dr. DeBrenna LaFa Agbényiga, Associate Professor in the School of Social Work with a joint appointment in the Department of Human Development and Family Studies, and the Associate Dean for Graduate Studies and Inclusion in the College of Social Science. She has led initiatives in the School of Social Work to improve doctoral education and teaching in the domestic and international setting. As the Associate Dean for Graduate Studies in the College of Social Science, she oversees the College Teaching Certification Program. Recently, she created a committee to assess the status of the Teaching Certification Program and she is currently guiding the changes to the program with a strong emphasis on student learning assessment. A primarily emphasis of the revised College of Social Science Teaching Certification Program will include assessment learning modules that will be required for all participating graduates students that will be supplemented at the department level with disciplinary specific aspects.

Dr. Charles L. Ballard is a Professor in the Department of Economics, and Director of the State of the State Survey. He has won numerous teaching awards, most recently the College of Social Science Outstanding Teacher Award in 2007. He has taught over 20,000 students in introductory microeconomics. He used data from this course to assess the determinants of student success. This led to publications, co-authored with one of his former graduate students, in Journal of Economic Education (2004) and Feminist Economics (2005).

Dr. Ryan Black is Assistant Professor of Political Science in the College of Social Science. He is a Lilly Teaching Fellow for the 2012-13 academic year (see page 9). His Lilly project will examine the usage of data visualization techniques as a way to enhance undergraduate student engagement with and learning of quantitative results from political science research.

Dr. Joanna Bosse, Assistant Professor of Ethnomusicology with a joint appointment in the Residential College in the Arts and Humanities (RCAH) and the College of Music, and Director of the Graduate Fellows Program in the RCAH, an undergraduate, interdisciplinary residential college. The RCAH Fellows Program features professional development for graduate students in the Arts, Humanities, and Social Sciences, involving them in SoTL-based research projects on the assessment of student learning and curricular initiatives in collaboration with RCAH faculty. Bosse received a Lilly Teaching Fellow (see page 9) in support of her work on a performance-based pedagogy for teaching and assessing student learning in the area of cultural competency.

Dr. Daina Briedis, Chemical Engineering and Material Science. Dr. Briedis role in the college is as Assistant Dean of Student Advancement and Program Assessment. She collaborates closely with CEER (see Sticklen below) both in research and in the role she has in program assessment. Engineering just completed a massive review of their first-year programs including both those students who persisted in engineering and those who left (but are still at MSU). She has long-term experience with ABET as a volunteer in multiple capacities and has also been heavily involved in the American Society for Engineering Education.

Dr. Henry (Rique) Campa, III, Associate Dean, Graduate School and Professor of Wildlife Ecology, Dept of Fisheries and Wildlife (http://www.fw.msu.edu/~campa/index.htm). Dr. Campa is a Co-PI on the NSF-funded CIRTL grant investigating the preparation of STEM doctoral students for academic careers and as such directs the CIRTL-related activities at MSU including the FAST (Future Academic Scholars in Teaching) Fellowship Program (http://grad.msu.edu/fast/). As an Associate Dean in the Graduate School and Co-PI of the CIRTL project, Dr. Campa is interested in enhancing the preparation of doctoral
students to assess teaching and learning in the classroom and thereby better prepare the next generation of academic professionals and enhancing STEM education.

**Dr. Melanie Cooper** will join the faculty of Michigan State University as the Lappan-Phillips Professor of Chemistry in January 2013. Her research focuses on improving teaching and learning in large enrollment general and organic chemistry courses. She has developed and assessed the impact of evidence-driven, research-based curricula, and has also developed technology-based formative assessment systems. She is a Fellow of the AAAS and was a member of the inaugural class of Fellows of the American Chemical Society. She has received a number of teaching awards including the 2010-2011 Society for College Science Teachers Outstanding Undergraduate Science Teacher Award (OUSTA).

**Dr. William Hart-Davidson** is Associate Professor in the Department of Writing, Rhetoric & American Cultures and Director of the Rhetoric & Writing Graduate Program at Michigan State. He is also co-director of the Writing in Digital Environments Research Center.

**Dr. Ronald Fisher** is Professor of Economics and Adjunct Professor of Accounting and Information Systems. He served as Dean of the Honors College (1996-2007), as Chairperson of the Department of Economics (1988-1992), and currently is also Special Visiting Professor at Zhongnan University of Economics and Law in Wuhan, China. For the past six years he has developed and taught, jointly with Carl Liedholm, a general studies class about the social science of sports. For this class, he and Professor Liedholm have integrated a number of techniques, unusual for a large introductory general studies class, to encourage active learning and provide mechanisms to monitor student performance.

**Dr. Constance C. T. Hunt**, Associate Professor, James Madison College is the co-director with Dr. Colleen Tremonte of the Interdisciplinary Inquiry and Teaching (IIT) Graduate Fellowship program, which begins its fifth year. In this program, faculty mentor a diverse group of graduate students as they reflect on and enact interdisciplinary approaches to undergraduate teaching and learning, with a particular focus on assessment of student learning as the integral facet in that process.

**Dr. Kirk S. Kidwell** has substantial experience in undergraduate general education, both as Interim Director of the Center for Integrative Studies in the Arts and Humanities (CIS-AH)—the arts and humanities component of MSU's general education curriculum—and as an instructor of first-year writing and humanities courses. Dr. Kidwell was previously the Assistant Director of CIS-AH from 2005-2010. Dr. Kidwell has served on a number of institutional initiatives, working groups, and committees focused on promoting teaching excellence, fostering quality student learning, and enhancing the student experience at MSU, and he is the CIS-AH representative to the University Committee on Liberal Learning (of which he served as chair in 2011-2012). Dr. Kidwell is also a member of the MSU team chosen to participate in the "General Education for a Global Century" project sponsored by the Association of American Colleges and Universities. In addition, he has helped to found and lead faculty learning communities focused on blended and online teaching and learning, the first-year experience, and integrative teaching and learning.

**Dr. Joseph Krajcik**, CREATE for STEM, College of Natural Science and the College of Education directs the CREATE for STEM Institute (Collaborative Research in Education, Assessment, and Teaching Environments for the fields of Science, Technology, Engineering, and Mathematics). The goals of CREATE are to improve teaching and learning in the STEM disciplines for students from grades K-16 through research and development efforts.

**Dr Carl Liedholm** is a Professor of Economics in the College of Social Science. He has taught and worked with graduate students in the large introductory courses in Economics for many years. His studies comparing the effectiveness of online and live learning outcomes and examining the learning resources used by students have been published in such journals as the American Economic Review.
Dr. Tammy M. Long is Assistant Professor in the Department of Plant Biology. Her research is directed at investigating how students develop conceptual understanding in the life sciences, particularly when learning with visual information. She is currently PI of two NSF-funded projects in discipline-based education research, including one that explores long-term, curricular-level impacts resulting from introductory biology reform. Importantly, this study also evaluates impacts of reform on graduate student Teaching Assistants in terms of their perceptions about teaching and performance in the classroom.

Dr. Carmen M. McCallum is a post-doctoral research associate in the Integrative Studies program. She will assist the Centers to develop and implement learning outcomes assessment tools to assess student learning at both the programmatic- and course-based levels. Dr. McCallum’s research explores how underrepresented students pursue and persist through Ph.D. programs.

Dr. Vincent Melfi is Associate Professor of Statistics and Probability in the College of Natural Science and Director of the Program in Mathematics Education in the Colleges of Natural Science and Education. Dr. Melfi co-directs the Quantitative Literacy (QL) Project at MSU which has developed, validated, applied, and published three assessment instruments, with work ongoing on developing an assessment for higher-level QL skills. He also is directing a professional development experience for Mathematics TAs that is focused on the teaching and learning of calculus.

Dr. Kelly F. Millenbah is the Associate Dean for Lyman Briggs College and an Associate Professor in the Department of Fisheries and Wildlife, College of Agriculture and Natural Resources. Millenbah is a scholar of natural resources education with a focus on 1) teaching and learning within the classroom, 2) curricular design and development, and 3) recruitment and retention of students in the sciences. In addition to her research agenda, Millenbah is actively involved in many teaching and learning activities across campus and recently served as a facilitator for MSU’s Learning Outcomes Assessment, Institutional Liberal Learning Goals Rubric Committee.

Dr. Brian O'Shea is an Assistant professor of Physics and Astronomy, with a joint appointment between Lyman Briggs College and the Department of Physics and Astronomy. As the official advisor of 3 PhD students and informal advisor to many graduate students in MSU's astrophysics PhD program, he has a deep interest in preparing graduate students for faculty careers. Dr. O'Shea is a former Lilly Teaching Fellow and is active in physics education research. His CV can be found at http://www.pa.msu.edu/~osheabr/bwoshea_cv.pdf, and his publications can be found at http://www.pa.msu.edu/~osheabr/bwoshea_papers_talks.pdf.

Dr. Gabriel Ording, Associate Professor in the Department of Entomology and the Director of the Center for Integrative Studies in General Sciences (CISGS) at MSU. CISGS faculty oversee a large collection of introductory science courses, many of which are solely instructed by graduate student teaching assistants (TAs). For the success of CISGS, it is essential that we improve upon and develop additional opportunities for our TAs for training and professional development in all aspects of teaching and assessment of student learning.

Dr. Amy Pollock, Acting Director of General Chemistry. In addition to teaching several lectures each semester, she oversees curricula for the General Chemistry lecture and laboratory courses, homework and recitation assignments, pre-lab assignments, and common exams. Dr. Pollock supervises 15–20 teaching assistants in the lecture courses and 27–32 teaching assistants in the laboratory courses each semester. She was selected to participate in MSU's Walter and Pauline Adams Academy for Instructional Excellence and Innovation in 2010–2011. Dr. Pollock is also the co-author with Paul Hunter of a general chemistry textbook, Chemistry, Volumes I and II (McGraw-Hill: Boston, 2010).
Dr. Lynmarie Posey, Associate Professor and Faculty Liaison for Undergraduate Affairs in the Department of Chemistry. She teaches regularly in the General Chemistry program and is concerned about the impact of student success in General Chemistry on the retention of students in STEM disciplines. She is developing the curriculum and online materials for the transitional chemistry course “Atoms, Molecules, and Reactions” and will be teaching the course in Fall 2013.

Dr. Pavel Sikorskii is the Executive Associate Undergraduate Director in the Mathematics Department at Michigan State University. His main responsibility is coordinating all aspects of the undergraduate mathematics program at MSU including pre-calculus courses. For over a decade, he has taught and supervised most of the undergraduate level mathematics courses from Intermediate Algebra to senior level courses at MSU. Dr. Sikorskii is actively involved in training and supervising TAs who work in the Mathematics Department.

Dr. Kami J. Silk, Associate Dean of Graduate Studies, College of Communication Arts & Sciences. As a former Lilly Teaching Fellow, recipient of the Teacher-Scholar award, and Director of the Master’s Program in Health & Risk Communication, Dr. Silk is interested in novel strategies that help improve graduate student teacher training and ways to increase undergraduate student learning and assessment. She will work with game design expert, Brian Winn, to develop and implement a training session related to serious game design and learning assessment for graduate teaching assistants at MSU.

Dr. Jon Sticklen, Director of the Center for Engineering Education Research, College of Engineering (CEER) has a strong interest in the proposed project. Because of ABET mandates, engineering as an academic discipline is required to develop systematic processes for instructional data collection, analysis of the data for assessment, and instructional program improvement. That background places the College of Engineering in general in a position of having experience with evidenced-based instruction. But part of CEER's mandate in our College is to encourage direct instructor participation in evidenced-based instruction within their classrooms. The key element that CEER personnel bring to the table is experience with discipline-based educational research and an expanding awareness of the importance of institutional change at the program and college level. CV is at http://egr.msu.edu/~sticklen

Dr. Thomas Summerhill is Associate Dean for Academic and Student Affairs in the College of Social Science, Associate Professor of History, and former Director of the Center for Integrative Studies in Social Science. Dr. Summerhill has been actively engaged for the past five years in College and University initiatives to develop competency-based learning, pedagogical innovation, and student learning assessment. These include leadership of the Teaching Innovation Program in the Center for Integrative Studies; an active role on MSU’s AAC&U Shared Futures team, the APUE’s ad hoc committee on global learning and general education, and the University Committee on Liberal Learning. In the College, he is presently completing a major revision of the College requirements for the bachelor’s degree that will align the curriculum with College research strengths and the University’s Liberal Learning Goals.

Dr. Colleen M. Tremonte is a Professor in James Madison at Michigan State University, a Fellow in the Carnegie Academy of Teaching and Learning (2000), and the founding Director of the Interdisciplinary Inquiry and Teaching (IIT) Graduate Fellowship Program at MSU [http://grad.msu.edu/iit/]. The primary goal of IIT program is to enrich the professional development experience of graduate students by placing them within an undergraduate teaching unit and to engage in structured discussions on pedagogy and practice, including course design and assessment of student learning. The program is framed within the scholarship of teaching and learning. Tremonte’s most recent publication in this area is “Cartographies: Graduate Education, SOTL, and the Third Space” (forthcoming, 2012).

Mark Urban-Lurain, Ph.D. Associate Professor, Center for Engineering Education Research, Undergraduate Studies Office. www.msu.edu/~urban/cv.htm Dr. Urban-Lurain’s teaching and research is on undergraduate STEM education, with a focus on using technology to improve assessment,
particularly in large enrollment courses. He is on the steering committee for the Future Academic Scholars in Teaching (FAST) fellowship program and mentors STEM Ph.D. students in their Teaching as Research (TAR) scholarship projects.

S. Patrick Walton is the Director of the College of Engineering CoRe Experience, Michigan State University's program for first-year engineering students, and an Associate Professor in the Department of Chemical Engineering and Materials Science. The CoRe Experience employs a number of graduate TAs from a variety of engineering disciplines, many of whom will consider careers in academia. These students will directly benefit, and the undergraduates they teach will indirectly benefit, from having the improved understanding of instructional design and assessment that the proposed activities would provide.

Dr. Brian Winn, Associate Professor, Department of Telecommunications, Information Studies, and Media, Co-Director of the Games for Entertainment and Learning (GEL) Lab, and a Principal Investigator in the Communication Technology Lab at Michigan State University. Winn designs, creates, and researches award-winning creative interactive media design, including game design, digital game-based learning and interactive health communication. His expertise is in designing engaging serious games that balancing learning, pedagogical, and gameplay objectives He is an Apple Distinguished Educator, Lilly Teaching Fellow in 2005, and coordinates the Michigan Chapter of the International Game Developers Association. Winn will work with Dr. Silk to develop and implement training that joins his expertise with assessment. See more at: [http://gel.msu.edu/winn/](http://gel.msu.edu/winn/)

Dr. Thomas F. Wolff, Ph.D., P.E., Associate Dean for Undergraduate Studies, College of Engineering. As Associate Dean, has direct responsibility for promoting the education and retention of several thousand engineering students, and direct responsibility for early engineering courses, academic advising, and related activities. MSU’s first year engineering courses serve over 1000 students per year and is their first experience with the expectations of innovation, teamwork, hands-on design, presentation and technical communication.
APPENDIX E—Letters of Support

We enthusiastically support the objectives and activities in the proposal “Preparing Future Faculty to Assess Student Learning: A Multi-faceted Approach at Michigan State University”. Assessment of student learning is an important effort in each of our colleges as it provides the feedback needed to continue to improve undergraduate education at MSU. Likewise, this focus on preparing our current graduate students to understand and use learning assessment will both improve their success as future faculty and help improve undergraduate education at MSU. The core college deans pledge financial support for faculty member travel as part of the faculty-student team to attend an AAC&U conference on assessment of student learning. Residential college faculty will be supported by the Dean of Undergraduate Studies. Graduate student travel will be supported by the Dean of the Graduate School.

Undergraduate Education, Dean Douglas Estry

College of Arts and Letters, Dean Karin Wurst

College of Communication Arts and Sciences, Dean Pamela Whitten

College of Engineering, Dean Satish Udpa

College of Natural Science, Dean R. James Kirkpatrick

College of Social Science, Dean Marietta Baba

Residential College of Arts and Humanities, Dean Stephen Esquith

James Madison College (Residential), Dean Sherman Garnett

Lyman Briggs College (Residential--STEM), Dean Elizabeth Simmons

Elizabeth H Simmons
August 31, 2012

To Whom It May Concern:

The Graduate Employees Union at Michigan State University represents more than 1200 graduate teaching assistants. We enthusiastically endorse and support this effort. Our members are very interested in student learning assessment and look forward to working with faculty to develop and use skills in this area. Not only are we interested in student learning assessment to help us become better teachers at MSU, but we believe these efforts and our involvement will help prepare us to be competitive as we search for faculty positions.

In our negotiations with the University, we were quite happy to agree to language regarding the professional development of teaching assistants. We believe the proposed program will greatly enhance the professional development opportunities already provided to teaching assistants on campus. Furthermore, the inclusion of faculty in the program will help underscore the idea that the skills being learned will be useful throughout our members’ careers.

Members of our GEU Pedagogy Committee plan to serve on the advisory committee for this effort. We believe we have a lot to offer to the discussions because we are also learners in our own graduate programs, as well as teachers of MSU undergraduates. Likewise, many of our members look forward to participating in the workshops and disciplinary specific programs proposed, as well as in the Certification in College Teaching programs that will be a central part of this effort.

Sincerely,

Daniel Clark
President, Graduate Employees Union
September 4, 2012

Karen L. Klomparsens
Dean of the Graduate School & Assistant Provost for Graduate Education
Michigan State University
110 Linton Hall
East Lansing, MI 48824

Dear Klomparsens:

It is with great pleasure that I accept your generous invitation to become a part of the Preparing Future Faculty for Effective Assessment of Student Learning: A Multi-faceted Approach project. Your project is a rare, integrated approach to systematically prepare future faculty for the primary role we all have played in our professional careers, i.e. teaching students, whether they be undergraduate or graduate students. The design of the project is impressive, bringing together multiple avenues for contributions from all types of faculty and academic and student support staff across the Michigan State University campus, as well as an array of resources and useful pedagogies that enhance student learning.

I look forward to both contributing to this innovative initiative and to learning from its participants and leaders as we collaborate to advance student liberal learning and faculty effectiveness, building on the research and practices that support intellectual and institutional success for students and faculty.

Sincerely,

Terrel L. Rhodes, Vice President
Association of American Colleges and Universities
1818 R Street, NW
Washington, D.C. 20009
202-387-3760, ext. 807
Rhodes@aacu.org
**APPENDIX F--BUDGET**

Council of Graduate Schools

Preparing Future Faculty for Effective Assessment of Student Learning

Budget Proposal

<table>
<thead>
<tr>
<th>Personnel</th>
<th>MSU Commitment over 2 years</th>
<th>Year 1</th>
<th>Year 2</th>
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<tr>
<td><strong>Salaries and Benefits</strong></td>
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<td></td>
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</tr>
<tr>
<td>Evaluation GA for Dr. Ryan - Level II Stipend ($450), 1/4 time, FS, SS, US</td>
<td>$24,075.80</td>
<td>$11,860</td>
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<td>Project Pay Graduate Student Co-presenters at &quot;Slaminars&quot;</td>
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<td>Consultant - Dr. Rhodes (Travel only)</td>
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<td>$0</td>
<td>$0</td>
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<tr>
<td><strong>Total Personnel</strong></td>
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<td><strong>$11,860</strong></td>
<td><strong>$12,216</strong></td>
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<tr>
<th>Travel</th>
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<tr>
<td>8 Grad Students at AAC&amp;U Conference</td>
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<tr>
<td>College Support for 8 faculty</td>
<td></td>
<td></td>
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<tr>
<td>K. Klomparens travel to AAC&amp;U Conference</td>
<td>$1,500</td>
<td></td>
<td></td>
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<tr>
<td>Travel for Dr. Rhodes 3 collegiate &quot;Slaminars&quot; and 1 convening /year (in same trip)</td>
<td>$4,500</td>
<td>$4,000</td>
<td></td>
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</tbody>
</table>

| Meeting Expenses | | | |
| On Campus Cross-College Covenings | 4*$1000 | $4,000 | $4,000 |

| Publications, Disseminations | | | |
| Website and Brochures on framework for assessment of student learning for Teaching Portfolios | | $2,000 | |

| Other Direct Costs | | | |
| Assessment Books/Supplies for Certification in College Teaching Institute | | $3,140 | $2,784 |

| Total | **$56,076** | **$25,000** | **$25,000** |