Midwestern State University

Quality Enhancement Plan
EURECA
2013

Midwestern State University
3410 Taft Blvd.
Wichita Falls, TX 76308

SACSCOC On-Site Visit:
April 9-11, 2013

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# TABLE OF CONTENTS

LETTER FROM DR. JESSE W. ROGERS AND DR. ROBERT E. CLARK .......................... i
CONTACT INFORMATION ...................................................................................... ii
EXECUTIVE SUMMARY ....................................................................................... iii

1. INTRODUCTION ................................................................................................. 1
2. THE QUEST FOR A QEP TOPIC .......................................................................... 2
   Soliciting Broad-based Input .............................................................................. 2
   Selecting the Topic .............................................................................................. 3
3. REFINING AND EXPANDING THE QEP TOPIC ................................................. 3
   An Emerging Theme ......................................................................................... 3
   Emerging Efforts ............................................................................................... 4
4. BUILDING ON AN EXISTING FOUNDATION .................................................... 5
   UGROW ............................................................................................................. 6
   COPLAC Membership ..................................................................................... 7
   Interdisciplinary Collaboration ....................................................................... 8
5. WHAT HAS BEEN DONE: BEST PRACTICES IN UNDERGRADUATE RESEARCH .............................................. 10
   Defining UR .................................................................................................. 10
   Implementing and Substantiating UR ............................................................. 11
   Institutional Constraints for Implementing a Successful Undergraduate Research Program .......................................................... 14
   Undergraduate Research Best Practices ......................................................... 15
6. IMPLEMENTATION AND ASSESSMENT ........................................................... 15
   Creating Opportunities for UR ....................................................................... 16
   The Purpose and Objectives of the QEP ......................................................... 18
   Assessing the QEP ......................................................................................... 20
   Action Steps .................................................................................................. 24
   Assessment Implementation and Continuous Improvement ..................... 28
7. MANAGEMENT PLAN/ORGANIZAITON —WHO DOES WHAT, FINANCIAL PLAN, AND BUDGET .......................................................... 29
   Personnel, Organization, and Management ................................................ 29
   Financial Plan ................................................................................................. 29
   Funding Sources ............................................................................................ 30
   Budget .......................................................................................................... 30
8. SUMMARY AND CONCLUSIONS ...................................................................... 31

REFERENCES .................................................................................................... 33
February 21, 2013

Dr. Michael Johnson
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Commission on Colleges
1866 Southern Lane
Decatur, GA 30033

Dear Dr. Johnson:

We are pleased to submit to you and your On-Site visitation team Midwestern State University’s QEP proposal: Enhancing Undergraduate Research Endeavors and Creative Activities (EURECA). This proposal reflects almost two years of work including input from all MSU constituencies and the work of a seventeen member committee charged with writing this proposal. We believe the focus on undergraduate research presents an opportunity for a paradigm shift in our student and faculty academic experience, aligns well with our Strategic Master Plan, and will add an important and exciting dimension to the scholarly environment at MSU.

We look forward to seeing you and the entire team April 9-11, 2013. There is no doubt that we will benefit from your assessment and advice.

Sincerely,

Jesse W. Rogers
President

Robert E. Clark
Vice President for Administration and Institutional Effectiveness
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Executive Summary

Undergraduate research has been a significant part of Midwestern State University’s culture for many years. The value of undergraduate research at MSU was reflected in a presentation by a recent recipient of The Hardin Scholar, MSU’s most prestigious undergraduate award. He commented:

During the summer of 2010, I participated in a research program at MSU, and this research experience allowed me to have a chance to represent my university at various places, including the Texas Capitol and the Texas Academy of Sciences. I believe this academic involvement provided the extra distinction for me to be recognized as a Hardin Scholar. For this reason, I would like to encourage you to participate in research.

This QEP is MSU’s plan to extend the existing foundations of undergraduate research that are already in place and set in motion a process to achieve the overarching goal: To enhance the opportunity for students to engage in research with faculty guidance. To accomplish that goal, MSU is proposing Enhancing Undergraduate Research Endeavors and Creative Activities (EURECA) as the program to forward this initiative.

The development of the QEP began early in 2010 with the appointment of a committee to initiate the process of selecting a topic for the QEP. The committee was comprised of 15 members representing a broad cross-section of the campus community, including the faculty, student body, administration, staff, alumni, and the MSU Board of Regents. The committee implemented two web-based surveys to ensure broad-based participation in the topic-selection process.

The results of the surveys did not reveal a clear mandate, so further steps were undertaken to identify and refine the QEP topic including additional discussions with faculty, students, and administrators. A convergence of several factors resulted in the selection of undergraduate research as the topic. MSU’s positive experience with the Undergraduate Research Opportunities and Summer Workshop (UGROW) suggested a viable model. In addition, success with several student research forums supported a QEP topic that incorporated a platform for research presentations. Further, the Council of Public Liberal Arts Colleges (COPLAC), of which MSU is a member university, was supporting undergraduate research as a valuable component of liberal arts education. A review of the literature also suggested that undergraduate research can be a very effective means of improving student recruitment, student engagement, and the development of critical thinking skills. Finally, undergraduate research was consistent with MSU’s
mission and the recommendations outlined in the Strategic Master Plan completed in June 2012.

The Office of Undergraduate Research was created in January 2013 to implement EURECA. Three objectives were identified: (1) Promote research collaboration between faculty and students, and between students and their peers both inside and from different disciplines, to enhance the educational experience, (2) Provide accessibility for all students to learn basic research skills, and (3) Provide students opportunities for improvement and implementation of visual, oral, and written communication skills through the vehicle of an Undergraduate Research Forum.

A number of mechanisms will be used to accomplish these objectives. Funding will be provided for research involving faculty and undergraduate students. The first call for proposals will be in late spring 2013. A mentoring framework will be put in place in which graduate students enrolled in a thesis course can submit proposals to mentor undergraduate students. This will create a mentoring process involving a faculty member, graduate student, and undergraduate student. Existing cores on research methods will be reviewed and new courses will be created to strengthen the preparation of undergraduate students in the foundations of research. Finally, an Undergraduate Research Forum for presenting research will be conducted each semester beginning in spring 2014.

The success of EURECA is assessed by a variety of measures: (1) faculty and students’ collaboration in research (measured by the number of proposals, presentations, publications, and creative works), (2) students’ perceptions of student-faculty interactions, and (3) students’ research, critical thinking, and communication skills. The QEP Assessment Team (AT) will conduct a comprehensive assessment of the program and provide recommendations for continuous improvement each year.

We believe that our QEP will enhance undergraduate education at MSU. It is an evidenced-based effort that has demonstrated efficacy elsewhere. Our experience with UGROW and history of undergraduate research indicates a fertile foundation for success. Finally, the QEP aligns with our mission as a liberal arts university and our Strategic Master Plan, ensuring an ongoing institutional commitment.
Enhancing Undergraduate Research Endeavors and Creative Activities (EURECA)

1. INTRODUCTION

The following is Midwestern State University’s (MSU) Quality Enhancement Plan (QEP) Proposal, which details our plan for enhancing opportunities for undergraduates to engage in research with faculty guidance. As a way of introduction, we begin with an illustration of the importance of undergraduate research (UR) at MSU from a student’s perspective.

At the spring 2012 annual Honors Banquet, the previous year’s recipient of MSU’s most prestigious undergraduate award, The Hardin Scholar, addressed the newly selected 2012 Hardin Scholar and the banquet’s audience with the following reflections:

…….I want to share what I believe allowed me to be selected as Hardin Scholar last year. I strongly believe that it was my research experience. During the summer of 2010, I participated in a research program at MSU, and this research experience allowed me to have a chance to represent my university at various places, including the Texas Capitol and the Texas Academy of Sciences. I believe this academic involvement provided the extra distinction for me to be recognized as a Hardin Scholar. For this reason, I would like to encourage you to participate in research. Not only will it provide academic distinction for you, but you will also learn a great deal from the experience. These programs will allow you, in many cases, to experience the career you plan to pursue. For me, this research opportunity was what changed my career goals. Initially, I had planned to become a physician, but through this research experience, I found my true interest in pure research. I want to become a scientist.

He went on to say:

I have to tell you, too, that I believe it (undergraduate research) also contributed to my being accepted to several good graduate programs with assistantships, including the offer I accepted to Duke University. I truly believe that had I not
participated in these research opportunities, I would not be standing before you tonight……

This senior undergraduate encapsulated in this address the value of UR as the topic for our QEP.

### 2. THE QUEST FOR A QEP TOPIC

Early in the fall of 2010, the provost and the vice president for institutional effectiveness and enrollment management appointed a committee to begin the process of selecting a QEP topic as part of our reaffirmation effort with the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC). The QEP Topic Selection Committee consisted of 15 members drawn from various sectors of the campus community; including the faculty, student body, administration; staff, alumni, and the MSU Board of Regents (see **Attachment 1**).

**Soliciting Broad-based Input**

The QEP Topic Selection Committee met for the first time on October 3, 2010 and convened for a total of seven times between October 2010 and October 2011. Electronic communications and discussions were continuous throughout the time period. The committee determined that web-based surveys and conversations with constituents would be the best methods to ensure broad-based participation in the topic selection process. Two web-based surveys were developed and posted on the university website for feedback. The first survey asked the MSU community to identify three areas of student learning that needed to be improved or better developed at the university (see **Attachment 2**). The survey was open for participation from January to April 2011 and generated over 3,200 responses. It is significant to note that current students identified *real world experience* and *critical thinking skills* as the top two areas of student learning that needed to be improved. Further, of the remaining nine respondent groups, seven identified *critical thinking skills* as their first choice and the remaining two groups placed it second (see **Attachment 3**). Based on the initial survey, the committee developed three possible topic areas and concepts for adoption: a student forum series, a service learning initiative, and the creation of a children’s museum.

A second web-based survey was administered from May through the end of September 2011 for feedback on the three proposals developed by the committee;
the survey also provided a fourth response category, an open suggestion box for additional comments and suggestions (see Attachment 4). Results from this survey did not produce a clear mandate for any one of the three choices, with the votes being almost equally spread among them (see Attachment 5). Several respondents offered suggestions under the fourth open option, including several dealing with UR, such as requiring a research methods course in every major.

Selecting the Topic

The QEP Topic Selection Committee agreed that the next step was to reconcile the inconclusive survey results by refining the QEP topic. The committee deliberated at length on the feedback from the second survey and also consulted further with constituents. In particular, the committee recognized the thematic connection between the student forum and the recurring suggestion of undergraduate research. At the last meeting on October 6, 2011 the committee voted to recommend to the president that a student forum series be adopted as the topic for MSU’s QEP.

3. REFINING AND EXPANDING THE QEP TOPIC

From that October meeting, a series of discussions followed among campus constituents, including faculty, student leaders, and administrators, focusing on the student forum idea and its fit with MSU’s mission. Given the write-in comments from the surveys suggesting research, MSU’s long-time commitment to UR, as well as the success of various but discrete UR initiatives, a linkage between the student forum and UR became a natural direction for this institution.

An Emerging Theme

Early discussions considered how a partnership between a student forum and UR could lead to an academic cultural shift at MSU, resulting in the institutionalization of UR. The theme that repeatedly emerged from these discussions centered on the idea of combining various undergraduate research projects with a student forum which would provide a platform to showcase the results of the projects. MSU had already established a model that had been tested and proven: the Undergraduate Research Opportunities and Summer Workshop (UGROW) initiative in the College of Science and Mathematics (see Section 4). Additionally, an action plan created by a group of faculty as a requirement for participation in a National Science Foundation/Council on Undergraduate Research (NSF/CUR) grant offered through the Council of Public Liberal Arts Colleges (COPLAC) (see Section 4)
provided another foundation for building UR at MSU. Showcasing UR through an annual series of highly promoted, funded, and marketed student forums would signal an institutional commitment to student research. Additionally, linking the student forum proposal to existing UR efforts would result in an authentic, coherent, campus-wide initiative.

In January 2012, the vice president for administration and institutional effectiveness (VPAIE) was asked by the president to recommend a representative committee to begin writing the institution’s QEP proposal. A committee consisting of twelve faculty and two undergraduates was approved. Subsequently the director of the Office of Research and Sponsored Programs and a representative from the Office of Institutional Research and Assessment were added to the committee (see Attachment 6). The committee met for the first time on March 23, 2012.

Emerging Efforts

Several events in the spring of 2012 continued to propel the institution toward adopting UR, complemented by a student forum, as the QEP topic for MSU. The first was a Scholarship Colloquium sponsored and promoted by the university’s academic deans, which provided a half-day forum for the presentation of research by faculty, graduate students, and undergraduates. Although not on the same scale as is being considered for the current proposal, the colloquium did generate several ideas for designing a forum specifically for undergraduates. Those involved in planning and implementing the Scholarship Colloquium will serve as advocates and advisers to those involved in planning and producing an undergraduate research forum.

The second event, and part of the required NSF/CUR grant action plan, was the development and organization of a retreat focused on institutionalizing UR at MSU. The retreat, sponsored by the Office of the Provost and the Office of Administration and Institutional Effectiveness, took place on May 17, 2012. Using the CUR definition of undergraduate research, “an inquiry or investigation conducted by an undergraduate student that makes an original intellectual or creative contribution to the discipline” (CUR, 2012), the committee designed a program intended to support faculty who were interested in extending UR opportunities to their students, as well as increase participation from faculty across the university. The director of COPLAC and a former president of CUR were invited to be keynote speakers to kick off the program and participate in the day’s activities. All members of the QEP Proposal Committee, with the exception of one
who was presenting a paper at an international conference on research co-authored with an undergraduate, were in attendance, as well as all of the academic deans and representatives from every college (see Attachment 7).

Finally, from January through June 2012, MSU’s provost led an initiative to update MSU’s Strategic Master Plan. The process involved the distribution of two cycles of opened-ended questions to solicit faculty and staff input for the strategic plan. Six high-priority goals were identified based on patterns in respondents’ comments. Significantly, responses emphasized the need to strengthen student engagement, improve the development of critical thinking skills among students, and promote student-faculty connections. Thus, discussions about expanding the QEP topic aligned with the strategic direction identified through faculty and staff input.

Based on these various but consistent inputs and events, the QEP Proposal Committee finalized MSU’s QEP proposal topic for EURECA, an initiative that combines undergraduate research with an Undergraduate Research Forum (URF) for showcasing undergraduate research projects.

4. BUILDING ON AN EXISTING FOUNDATION

The QEP is aimed at making UR an institution-wide emphasis, but MSU has a long tradition of UR. Undergraduate research was present at MSU as early as the 1960's; faculty recall several examples of students engaged in research projects, often attached to projects with grant funding, with their major professors. As one senior faculty member recounted:

…..When I came to MSU in the early 1970’s, I remember meeting several colleagues in the sciences who were talking about the research going on in their areas involving not only graduate students but undergraduates as well. I recall that a Welch grant was supporting some undergraduate research in chemistry. I was teaching research methods that first semester and had students doing research proposals, so I expanded the opportunities for students to continue with their research proposals by actually doing the research the next semester by signing up for an independent study course, but I think I was one of only a few outside the hard sciences who were doing anything like this. Three of my students who were doing a group proposal came to me immediately and proposed going forward with their research. That was my first experience in doing this in that I was fresh out of my doctoral program and had never had the opportunity to do any kind of research as an undergraduate. These students ended up presenting their
research late that next spring at a regional conference. From that point on I was hooked and continued to work with undergraduates for many years as did several of my colleagues. Some of these students won regional awards and a couple even published in refereed journals before graduating.

Another faculty member commented:

We had some faculty doing some stuff like that in experimental psychology in the late 70’s and early 80’s after one of our faculty members set up a pretty rigorous process where students were creating research designs to collect data, analyzing those data, writing up research reports……the whole thing. We had quite a few majors, and it was a required course and there were no alternatives, so everybody had to take it. So, she went to a situation where they would only do a research proposal, and if they were really motivated and wanted to actually do the research, they could take an independent study the next semester, and the focus would be on those who really wanted to pursue the actual research. And this is what we were hoping for, that at least some of our majors got the opportunity to engage in research. And, we did have some who went on to present their research at professional meetings.

The history of UR at MSU includes many examples of students, primarily from science, technology, engineering, and math (STEM) fields, presenting papers at the Texas Academy of Science Annual Meetings and at meetings of the student section of the American Chemical Society; additionally, over the years, several undergraduates published their work before graduating.

MSU’s foundation of UR likewise includes examples of faculty in the fine arts working with students to produce creative works which could then be showcased and critiqued at state, regional, and national levels. However, while UR has historically been occurring at MSU, it has been limited to only a few colleges across the campus. However, there has never been any concerted institutional effort to encourage or support research opportunities for undergraduates, or to implement a campus-wide forum for sharing the results of their projects.

**UGROW**

The campus culture began to change in 2004 with the advent of an idea for a one month summer undergraduate research program. Inspired by an annual fall semester one-day event for junior high girls (titled: Math, Science & U), this summer program was the brainchild of Dr. Magaly Rincón-Zachary, a faculty
member in biology. She began with the premise that, if MSU wanted to attract these and other students, the university should begin a concerted effort to get undergraduates involved in research. Several students had approached her over the years seeking opportunities to be involved in research, and while she had involved a few in some of her projects, she found limited opportunities for students to engage in faculty-guided research efforts. Moreover, there was no discernible campus-wide conversation about UR happening.

Motivated by student interest, Dr. Rincón-Zachary decided to take the initiative, and the UGROW (Undergraduate Research Opportunities and Summer Workshop) program was started. One of the university’s vice presidents approved her request for start-up money, which funded stipends for four undergraduates and four faculty for the first program in the summer of 2005. For two years, UGROW remained a summer undergraduate research program for students in biology, chemistry, computer science, geosciences, mathematics, and physics. Beginning in the summer of 2007, UGROW expanded to include engineering students and faculty. Until the summer of 2011, UGROW remained confined to the STEM fields. During its first six years, several students in these fields presented papers at the Texas Academy of Sciences Annual Meetings and the student section of the American Chemical Society and in other forums. Additionally, student work was accepted for publication. By the summer of 2012, UGROW had expanded from four students and faculty to 18 students, selected for participation from three colleges, and more than 25 faculty members participating. UGROW has clearly marked a significant development in UR at MSU (see Attachment 8), but other factors, specifically MSU’s COPLAC (Council of Public Liberal Arts Colleges) membership and interdisciplinary collaboration, have influenced this development as well.

**COPLAC Membership**

In June 2006, MSU was accepted for membership into COPLAC. The current membership of this organization consists of 27 colleges across the United States, with one member in Canada (see Attachment 9); MSU is the only member from Texas. COPLAC membership is consistent with MSU’s mission and status as a liberal arts institution, which is designated in the Texas Higher Education Code description of MSU (see Attachment 10).

Beginning in early 2009 under the leadership of a new director, COPLAC turned major attention to UR and created a bi-annual online journal, Metamorphosis, which offers opportunities for undergraduates from COPLAC member institutions
to publish their research. The director thought the journal idea added value to the COPLAC membership and signaled its member institutions’ commitment to UR. Once the journal went live, member institutions were encouraged to create evaluation processes for reviewing UR reports and activities, as well as submitting research papers. In *Metamorphosis*’ first year of existence, an MSU undergraduate from the sociology program published an article based on her research.

COPLAC’s increased commitment to UR developed out of faculty summer institutes, where participants from many member campuses, including MSU, talked informally about possible initiatives in UR. These discussions led to COPLAC’s application for a NSF/CUR grant in 2010. COPLAC was one of only three state systems/consortia to receive an “Institutionalizing UR” grant in 2011. This grant allowed COPLAC to gather almost 100 faculty members in STEM disciplines from 23 member campuses (MSU included) in Asheville, North Carolina in the summer of 2010, and to send team leaders to the annual COPLAC meeting at University of Virginia-Wise in the summer of 2012. Each participating institution was required to prepare an action plan for institutionalizing UR on its campus. MSU’s plan was developed by a team of faculty and submitted to COPLAC in November 2011.

The end of the NSF/CUR grant in June 2012 coincided with COPLAC’s designation as an official Association of American Colleges and Universities (AAC&U) Leap “State,” with a special project focus on improving and expanding research opportunities for undergraduates from member institutions. The NSF/CUR grant also leveraged a two-year $150,000 Teagle Foundation Grant, which promotes research partnerships between students and faculty from different COPLAC institutions, facilitating UR across campuses in order to connect students with faculty who offer expertise in an area not available at the student’s home institution. MSU has one student in the first cohort of Teagle Research Scholars, who is being mentored by a faculty member at another COPLAC institution and is studying French literature. The hope is that student-faculty connections will also foster research opportunities across COPLAC institutions.

**Interdisciplinary Collaboration**

In addition to joining COPLAC and participating in its UR initiatives, the past few years have witnessed other key events in the growth of UR on the MSU campus. An interdisciplinary collaboration between fine arts and engineering represents just one example. During the 2010 academic year, Mr. Brandon Smith, an assistant professor of theatre, wrote *Bandersnatch*, an original play inspired by Lewis
Carroll’s poem “Jabberwocky.” The play called for giant articulated puppets whose actions would be controlled by a person or persons inside the puppet. To address the challenge, the theatre professor received a $5,000 MSU Research Grant calling for a collaborative effort involving theatre and engineering students (see video clip on flash drive and Attachment 11). The project began with a presentation by Mr. Smith to a mechanisms course taught by Dr. Sheldon Wang and offered by the McCoy School of Engineering during the spring semester of 2011. This collaboration continued in the 2011 UGROW program and then into the fall, when Smith worked with 20 volunteer theatre majors and several engineering students (one was a UGROW student) on a premier production of the play.

The interdisciplinary collaborative effort continued throughout the construction and rehearsal period, culminating in an on-campus production of the play in November 2011. As a participating entry at the state level of the American College Theatre Festival (ACTF), the play was adjudicated by two ACTF respondents, who recommended it for the Region VI ACTF Festival in Norman, Oklahoma; Bandersnatch was one of six plays selected from the states of Arkansas, Louisiana, Missouri, New Mexico, Oklahoma, and Texas for this regional competition. At the Region VI Festival in 2012, the participating engineering students won a special award from the United States Institute of Theatre Technology and also delivered a presentation at the organization’s national convention in California later that spring. The production itself won a national citation for the “Distinguished Production of a New Work” from the Kennedy Center for Performing Arts.

In spring 2012, several undergraduates and their faculty mentors described their collaborative work in a session of the MSU Faculty Forum (see Attachment 12). They discussed the extensive research that was required to create the cadre of puppets, as well as the critical thinking that went into developing these large scale articulated puppets with humans inside; they also described their difficulties in creating costumes, problems with lighting, and the challenges of dealing with the many failures that occurred before the successes that followed. At the COPLAC Annual Conference (summer 2012), the UGROW director, two faculty mentors, and four students presented their experience and the interdisciplinary work that resulted in the award-winning production. Commenting on the collaborative research process, a faculty member not associated with the above project noted:

I think that some believe that undergraduate research hardly ever pans out to be anything useful especially because the undergraduates in some situations
are given free rein to do their own thing, not to coattail on existing projects. But sometimes, and I think this is a part of good mentoring, you don’t tell them what to do at each step, because they don’t learn, they are just like little machines, just doing grunt work. I think that in order for skilled learning like that to take place, you have to discover the skills on your own and to discover what works and what doesn’t. You have to make mistakes, and you are not going to make mistakes if somebody is telling you what to do at every step. We give our students every chance to make lots of mistakes, because that is part of the learning that sticks.

Commenting further he said:

They need the opportunity to come up with stuff on their own and make those mistakes…..even if they are working on some of my research. And you say well you know, I learned how to do research by first doing it poorly, and there is nothing like experiencing the failure on your own to learn a lesson. You gotta learn by trial and error. I mean I still get manuscripts back from reviewers and they ask why I didn’t do this or do that. But you learn from that and undergraduates will benefit from that kind of mentoring for sure.

The expansion of UGROW, membership in COPLAC, and the interdisciplinary collaboration between the theatre and engineering students clearly indicate a growing interest in and commitment to UR. These factors, as well as discussions in the MSU Faculty Senate and Student Government Association regarding the need for opportunities to develop strong critical thinking skills and real world experience, have informed the process of researching and finalizing MSU’s QEP topic.

5. WHAT HAS BEEN DONE: BEST PRACTICES IN UNDERGRADUATE RESEARCH

Defining UR

A review of the literature and best practices was conducted to assist in the expansion of university-wide opportunities for the successful growth of UR. First, a working definition of undergraduate research that would encompass the work of students in all six of the university’s academic colleges was developed, discussed, vetted, and accepted by the QEP Proposal Committee (see Attachment 13). In developing this definition of undergraduate research, examples of definitions were reviewed (see Council on Undergraduate Research, 2012, Heinemann, 2008) and
discussed, and then discussions on how best to tailor a definition consistent with MSU’s mission followed. This working definition is as follows:

*Undergraduate research is an inquiry or investigation conducted by one or more undergraduate students, with faculty guidance, that attempts to make an intellectual, creative, or applied contribution to one or more disciplines.*

**Implementing and Sustaining UR**

Next, the *Characteristics of Excellence in Undergraduate Research (COEUR)* (Hensel, 2012) was consulted. The COEUR document brings together over 30 years of expertise on recommended best practices for implementing and sustaining effective undergraduate research programs. COEUR recommendations provided a framework for the development of our QEP. Published literature suggests that undergraduate research: (1) promotes faculty mentor-student partnerships, (2) engages students in active learning, (3) promotes inquiry, discovery, and creativity, (4) enhances and refines students’ critical thinking skills, and (5) promotes and supports faculty scholarship with student learning. A discussion of each of the five attributes follows.

*Undergraduate research promotes faculty mentor-student partnerships.* A key element to student learning is the relationship faculty members develop with their students in and outside the classroom. UR is an excellent vehicle for promoting faculty mentor-student partnerships. The published literature and anecdotal evidence indicate that institutions where faculty members provide high-quality undergraduate research experiences for their students have a higher degree of faculty satisfaction and student retention rates (Chubin & Ward, 2009; Osborn & Karukstis, 2009; Malachowski, 2011). The benefits for both students and faculty scholars are numerous.

While anecdotal, individual accounts of faculty and student collaborations (case studies) reveal the full extent to which UR may impact the professional and academic careers of all involved (see for example Lewis et al., in review). Faculty may initially perceive UR with some skepticism; they may worry that participation in an undergraduate research program will count “merely” as a service activity, despite the considerable time commitment required to mentor young researchers. Additionally, perceived financial constraints may hinder faculty participation (Zydney, A., Bennett, J., Shahid, A., & Bauer, K., 2002). However, faculty members who commit to UR and participate in multiple experiences have been reported to find their career trajectories positively shaped by their experience (Young, 2008).
At MSU, a specific example involves Dr. Dale McDonald, a faculty member in the McCoy School of Engineering. Several iterations of participation in multidisciplinary student-faculty research efforts led to three achievements: (1) collaboration with undergraduate students and a faculty member in biology, Dr. Michael Shipley, resulted in the development of the MSU population dynamics laboratory, (2) collaboration with an undergraduate investigator led to a joint peer-reviewed publication and a presentation by Dr. McDonald at an international conference, and (3) the publication of an additional refereed journal article by Dr. McDonald. The subject of the publications (population dynamics) falls outside each of the investigators’ traditional areas of expertise but was inspired through observation of others’ multidisciplinary collaborative efforts (Lewis et al., in review).

**Undergraduate research engages students in active learning.** UR, as defined by CUR (Rowlett et al., 2012), engages students in active learning. The freedom and opportunity to move beyond traditional interactions between faculty and students (lecture delivery) has been shown in the literature to promote “high impact” (Ambos, 2012, p. 46) learning experiences. CUR’s definition of UR is inclusive of all disciplines, mindful of the differing manner in which significant contributions to a particular field may manifest. An example of such an opportunity is MSU’s Dalquest Desert Research Site, a 3,000 acre site located in Presidio and Brewster counties in the Big Bend Region of West Texas, an incredibly remote area that is sixty seven road miles from the nearest town. Students, both graduate and undergraduate, regularly have the opportunity to accompany faculty to this site to work on research projects (see Attachment 14). At the February 2013 meeting of the MSU Board of Regents, an announcement was made that money to build a permanent research facility had been donated. It is anticipated that construction will get underway before the end of this academic year (see Attachment 15).

**Undergraduate research promotes inquiry, discovery, and creativity.** Additional positive benefits of undergraduate research including inquiry, discovery, and creativity are well documented in the literature (Osborn & Karukstis, 2009). Kuh (2008) listed research as significant among endeavors that have a high-impact on student learning. Students who engage in research report that, subsequent to participating in summer research programs and/or in classroom-based research, they better understand knowledge presented in class and are able to formulate questions that demonstrate high-order intellectual curiosity (inquiry) (Harrison, Dunbar, Ratmansky, Boyd, & Lopatto, 2011). Likewise, their creativity and critical thinking skills are elevated (Lapatto, 2004a, 2004b, 2007). In a research-rich environment (e.g., classroom-based research, summer research programs, etc.), students are more likely to discover new knowledge or to create something,
such as a robot, a painting, a play, or an algorithm (Lewis et al., in review).

For example, students who participated in the Genomics Education Partnership at Washington University in St. Louis (2012) made significant contributions to the discipline by engaging in inquiry, discovery, and creative activities demonstrated by their peer-reviewed publications (Shaffer et al., 2010; Slawson et al., 2006). These students reported a high degree of satisfaction and an increased interest for scientific research endeavors as a result of their participation in the Genomics Education Partnership project (Harrison et al., 2011).

We have obtained similar results in our own institution with undergraduates involved in the summer research program, UGROW. UGROW students report a high degree of satisfaction for having participated in the summer program and an increased interest for going into advanced graduate programs. Some have co-authored peer-reviewed research articles (Shao, Thomas, Han, & Hansen, 2010; Staples & Hood, 2008) and many have participated in professional conferences and competitions.

**Undergraduate research enhances and refines students’ critical thinking skills.** To think critically, one has to first identify and then evaluate the factors that influence decision-making. Individuals who think critically have the ability to analyze all the evidence available before making a decision. They also have the ability to accurately communicate their beliefs, based on the outcome of the analysis.

Undergraduate research develops and affirms the students’ critical thinking skills in ways that traditional courses do not. Research assists students in conceptualizing the application of basic principles with which they sometimes struggle in the classroom. Further, the research process frequently requires students to frame a question, collect and analyze evidence, and present conclusions, all elements of critical thinking. It also reinforces knowledge presented in the classroom. Surveys have shown that students who participate in UR are more capable of thinking logically and analytically (Ishiyama, 2002; Lopatto, 2004a; Seymour et al., 2004). Other surveys reveal that alumni who participated in some form of research experience feel their data collection and communication skills have improved as a result (Bauer & Bennett, 2003).

**Undergraduate research promotes and supports faculty scholarship with student learning.** A successful UR program is strengthened by a campus mission and culture that include institutional commitment to a scholarly faculty. A focus on UR can create synergies that strengthen scholarship among faculty. This commitment can be supported through startup funding, faculty load credit for
undergraduate research supervision, reassigned time for tasks related to research, professional development opportunities, and other related activities and structures (Hensel, 2012). Resources devoted to providing support for faculty’s time spent on undergraduate research are especially needed. An analysis of research productivity of natural sciences faculty at primarily undergraduate institutions (PUIs) found that over 80% of responses to the question “What are the major barriers to the performance of research at your institution?” focused on lack of time caused by multiple demands on PUI institution faculty (Karukstis, 2003, p. 2). However, when that time is created and it involves undergraduates’ help, faculty find value in it. In a study of science and engineering faculty working in an extensive undergraduate research program at a mid-size university, about two-thirds of faculty who supervised undergraduates in their research reported student contributions to the research as “important” or “very important,” and about three-fourths of faculty reported that undergraduates “sometimes influenced their own thinking about the research project” (Zydney, Bennett, Shahid, & Bauer, 2002, p. 292). Therefore, institutional support benefits not only students but also the faculty.

More broadly, UR could help MSU achieve goals set forth in our strategic plan: “Increase the quality of education provided to students to ensure they have essential competencies to contribute to society, embark on or advance in chosen careers, and engage in life-long learning” and “Increase the number and quality of students admitted to and retained in graduate and undergraduate programs” (see Attachment 16).

Based on the most recent available data reported to COPLAC for MSU and other COPLAC institutions (Council of Public Liberal Arts Colleges, 2011), MSU’s 6-year graduation rate for the entering fall 2005 cohort was 35%, compared to the COPLAC average of 53% for the same cohort. Freshman-to-sophomore retention rates for first-time, full-time students (fall 2010 cohort who returned in fall 2011) illustrate similar differences: 68% for MSU students compared to 76% for all COPLAC institutions. We believe that institutionalizing UR will help MSU retain and graduate a larger percentage of its students.

**Institutional Constraints for Implementing a Successful Undergraduate Research Program.** Creating a successful campus-wide UR program presents many challenges. Some believe undergraduates cannot engage in authentic research. Our own experience, as well as that of others, debunks such a belief, but institutional constraints must be understood and addressed.

Institutional culture could impede progress implementing UR programs
Among the high impact practices to facilitate the culture change: are (1) strategic planning, (2) developing connections among different initiatives and individuals, (3) identifying and empowering talent across campus, (4) leadership commitment and administrative support, (5) reward systems, and (6) mentoring. We believe that our QEP will change our institutional culture in such a way that our students' learning experience will be transformational and add tremendous value to their degrees. Just as importantly, our faculty, staff, and community at large will reap the benefits of a well-prepared citizenry.

**Undergraduate Research Best Practices**

Rowlett, Blockus, & Larson (2012) summarized best practices that secure high quality undergraduate research programs:

- Creating a campus culture that values and rewards UR
- Securing commitment and support from upper administrators
- Aligning UR with the institution’s mission and strategic plan
- Providing appropriate resources (financial, physical facilities, fundraising, etc.) to support and maintain an effective UR program
- Recruiting scholarly faculty committed to creating research opportunities for undergraduates
- Motivating campus-wide participation of all disciplines
- Integrating UR with other high-impact engaging and learning opportunities such as service learning initiatives to develop community-based research projects, study abroad, leadership programs, etc.
- Gaining administrative and budgetary support
- Granting faculty load credit for supervising UR
- Recognizing involvement in UR in the tenure and promotion guidelines
- Establishing a UR office
- Acquiring sufficient library resources
- Promoting research accomplishments
- Celebrating UR through a student symposium

**6. IMPLEMENTATION AND ASSESSMENT**

We provide a discussion of the process by which the QEP will be implemented and assessed in this section. We begin with a discussion of how we will create opportunities for UR and continue with a detailed account of the assessment methodology and action steps.
Creating Opportunities for UR

MSU’s QEP, EURECA, focuses on UR as a means of enhancing the traditional learning environment with experiential learning that contributes to the development of critical thinking skills, improves student retention, and strengthens faculty scholarship. EURECA will provide opportunities for students and faculty to form partnerships and engage in inquiry, discovery, and creative or applied activities within a shared discipline or in an interdisciplinary environment. An interactive shared learning environment is central to enhancing the educational experience for all of our students. Further, it places MSU in a strategic position to model a strong UR program at a liberal arts institution.

MSU combines the strength of classroom instruction with field experiences that allow for strong academic majors, a solid general education core, excellent professional development, cutting-edge technology, and high success in its graduates. These combined factors enable the development of EURECA and support the process of student selection and assessing the outcome of UR. This enterprise is viewed as significant in the current higher education climate and anticipates future learning needs and protocols which prepare students to meet the challenges of an ever changing global landscape.

An important component of successfully implementing the QEP is ensuring adequate opportunities for students to participate in research education and research activities. Such opportunities will be provided in several ways.

**Utilize existing course materials.** First, MSU currently offers several courses that teach research methods in various disciplines. These courses have generated curricula on the process of inquiry, such as identifying research questions, selecting a research purpose, conducting a literature review, determining a research methodology, collecting and analyzing data, and interpreting the findings. These courses will be used as a foundation for students selected to participate in EURECA projects (see Attachment 17).

**Develop new courses.** Second, to bolster opportunities for research education and UR, changes to the core curriculum are in progress. This is a fortuitous planning process that resulted from recent rulings by the Texas Higher Education Coordinating Board (THECB) relative to core size in public institutions in Texas. To accommodate these rulings, MSU is in the process of revising its core curriculum. One of the proposals being considered is that all students will be required to take one 3-hour course from a section of the core curriculum labeled *Undergraduate Inquiry & Creativity*. As originally designed, this course option is intended to provide students, under faculty supervision, the opportunity to create,
inquire, discover, or conduct research. Students will be expected to complete a project, creative piece of work, or research study. Initial course options will include courses that are currently in the core as well as courses designed specifically for this course option from the various disciplines across campus. It will be important to have a variety of course options for students to select from, as the intent is to facilitate student involvement in research and other creative endeavors that are of interest to them. Courses currently in the development stage include interdisciplinary science, visual rhetoric, website design, and acting for non-majors. The committee is actively seeking course options from all disciplines across campus. For future inclusion, an introductory research course, created and taught by faculty from multiple disciplines, would be a valuable addition as a course offering for students. Discussions are continuing on this option, and it is expected that a final decision will be reached before the end of summer 2013. In addition, three faculty members who have participated in UGROW have designed a non-credit interdisciplinary introduction to the research process course that will be piloted in fall 2013.

**Build on UGROW.** Third, MSU will build upon the existing UGROW program as a basis for undertaking a larger UR program. UGROW is an undergraduate research program that selects faculty research proposals that focus on undergraduate involvement. The implementation process connects an interested student with a faculty research program and facilitates guidance to initiate, complete, and disseminate the findings. Such projects provide an integration of academic learning, close association with a faculty mentor, student engagement in critical thinking, and a synthesis of research findings. EURECA will add a component to this existing research program: of presenting the research in an Undergraduate Research Forum (URF).

MSU will be expanding the summertime UGROW model to the fall and spring semesters by offering students and faculty the opportunity to apply for research funding. Additionally, incoming freshmen may apply for funding to engage in various levels of research planning and training that must happen before an actual research project can be conducted. Expanding funding will be a part of our recruiting efforts for new students, with the goal of creating opportunities for first year students to begin research as soon as they set foot on the MSU campus. The hope is that students will want to continue their involvement in research and eventually receive a top tier stipend to conduct research and present in the URF.

**Involve graduate students.** Fourth, a pivotal feature of EURECA will be to involve MSU graduate students as mentors. Graduate students enrolled in thesis-
based graduate programs can submit proposals to mentor undergraduates. In this case, the most basic model will be a three-way partnership as illustrated below.

We are already seeing examples of this form of mentoring as indicated by the following comments from a department chair.

Undergraduates have asked to be involved in faculty research in our department for quite some time, but the faculty were often more inclined to use graduate students for that purpose. We recently decided to try and accommodate more undergraduate research assistants by encouraging graduate students doing thesis research to plan their projects so as to include one or two undergraduate research assistants. This has worked out well for everyone. The graduate theses are better because of the additional help the graduate students get from undergraduate assistants; the undergraduates get valuable exposure to research; the faculty benefit because the thesis research they are directing often contributes to their research programs and is of the higher quality needed to facilitate publication.

The Purpose and Objectives of the QEP

EURECA will provide opportunities, incentives, and a system that supports faculty and students in a cooperative research process. Our choice of this topic reflects our intention to create a richer learning environment for our students and teaching environment for our faculty. Through EURECA, students and faculty will build connections to other individuals across disciplines and within their fields of study, expand knowledge, be exposed to techniques and technology, and gain “hands-on” experience.
To achieve this overall purpose, the proposal committee formulated one goal that captures the intent of EURECA and is inclusive of traditional, applied, and creative research endeavors. The foundation of EURECA is the overarching goal to “enhance the opportunity for students to engage in research with faculty guidance.” To operationalize this goal, the committee then referred to recent research and best practices. Based on *Characteristics of Excellence in Undergraduate Research* (CUR, 2012) three characteristics were identified that address our overall goal: mentorship, accessibility, and dissemination. With these characteristics in mind, three objectives were formulated as follows:

- **Objective 1 (O1) Mentorship:** Promote research collaboration between faculty and students both within discipline and from different disciplines, to enhance the educational experience.
- **Objective 2 (O2) Accessibility:** Provide accessibility for all students to learn basic research skills.
- **Objective 3 (O3) Dissemination:** Provide students opportunities for improvement and implementation of visual, oral, and written communication skills through the vehicle of a URF.

Specific student learning outcomes, as well as assessment methods and performance criteria, were identified for each objective. The Student Learning Outcomes (SLOs) are as follows (see Table 1 for the complete assessment framework):

- **SLO 1:** Students will develop collaborative skills in research by participating in research with peers and faculty both inside and outside their designated discipline.
- **SLO 2:** Students will have positive perceptions of student-faculty interactions.
- **SLO 3:** Students will critically analyze research outcomes and become good consumers of research.
- **SLO 4:** Students will identify the sequential steps in the research process and the roles each investigator may have.
- **SLO 5:** Students will examine research ethics and understand how they apply in work and life.
- **SLO 6:** Students will communicate their research findings through written work, creative presentations, and/or oral presentations via the URF or another appropriate venue.
- **SLO 7:** Students will demonstrate critical thinking skills through the application of the research process and communication of results.
Assessing the QEP

We will assess our QEP to evaluate the extent to which students achieve the intended student learning outcomes (SLOs). Assessment can showcase the effectiveness of a plan in terms of what works and supports student learning outcomes, and it can help to delineate what does not work by identifying opportunities for strengthening the plan. MSU will assess EURECA’s effectiveness by measuring SLOs that emphasize research, particularly collaborative research, communication skills (both written and oral through the URF), positive perceptions of student-faculty interactions, and critical thinking skills.

Table 1 illustrates our plan of assessment using a logic model. This table details the goal, objectives, SLOs, assessments, and performance criteria which will be used to assess the effectiveness of EURECA.
<table>
<thead>
<tr>
<th>Goal</th>
<th>Objectives (O)</th>
<th>Student Learning Outcomes (SLO)</th>
<th>Assessment (A)</th>
<th>Performance Criteria (PC)</th>
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<tr>
<td><strong>Enhance opportunity for students to engage in research with faculty guidance</strong></td>
<td><strong>O1:</strong> (Mentorship) Promote research collaboration between faculty and students both within discipline and from different disciplines, to enhance the educational experience.</td>
<td><strong>SLO 1:</strong> Students will develop collaborative skills in research by participating in research with peers and faculty both inside and outside their designated discipline.</td>
<td><strong>A1:</strong> Track the number of faculty proposals, collaborations, and involvement (within discipline and interdisciplinary) each year. <strong>A2:</strong> Track student proposals for presentation, publication, or other creative works as well as attendance of the forum. <strong>A3:</strong> Track NSSE question 7d regarding student research with faculty.</td>
<td><strong>PC 1:</strong> Benchmark from UGROW participation <strong>PC 2:</strong> Benchmark from Scholarship Colloquium data <strong>PC 3:</strong> Benchmark historically targeting a year-to-year increase</td>
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<td><strong>SLO 2:</strong> Students will have positive perceptions of student-faculty interactions.</td>
<td><strong>A4:</strong> Adaptation of SURE survey</td>
<td><strong>PC 3:</strong> 5% higher than non-participants</td>
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<td><strong>O2:</strong> (Accessibility) Provide accessibility for all students to learn basic research skills.</td>
<td><strong>SLO 3:</strong> Students will critically analyze research outcomes and become good consumers of research. <strong>SLO 4:</strong> Students will identify the sequential steps in the research process and the roles each investigator may have.</td>
<td><strong>A4:</strong> Adaptation of SURE survey <strong>A5:</strong> Documentation of faculty completed formal evaluations of student manuscripts and/or oral presentations (adaptation of AAC&amp;U rubrics).</td>
<td><strong>PC 3:</strong> 5% higher than non-participants <strong>PC 4:</strong> Evaluation form with Likert scale and set level at 3 on a 5 point with 5 being best</td>
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<td><strong>SLO 5:</strong> Students will examine research ethics and understand how they apply in work and life.</td>
<td><strong>A6:</strong> Documentation of student participation in the IRB process as a part of their research project. <strong>A7:</strong> Documentation of student completion of a “research ethics” module.</td>
<td><strong>PC 5:</strong> 100% of applicable projects satisfactory completion of course where ethics was covered and evaluated</td>
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<td><strong>O3:</strong> (Dissemination) Provide students opportunities for improvement and implementation of visual, oral, and written communication skills through the vehicle of a URF.</td>
<td><strong>SLO 6:</strong> Students will communicate their research findings through written work, creative presentations, and/or oral presentations via the Undergraduate Research Forum (URF) or another appropriate venue. <strong>SLO 7:</strong> Students will demonstrate critical thinking skills through the application of the research process and communication of results.</td>
<td><strong>A8:</strong> Evaluation rubrics that assess critical thinking skills (faculty evaluation of students’ research projects) (adaptation of AAC&amp;U rubric). <strong>A9:</strong> Rubric for assessing those projects presented at the Undergraduate Research Forum (adaptation of AAC&amp;U rubrics) <strong>A10:</strong> Track the number of works accepted for visual, oral, or written presentation.</td>
<td><strong>PC 6:</strong> Eval. form with Likert scale and set level at 3 on a 5 point with 5 being best <strong>PC 6:</strong> Eval. form with Likert scale and set level at 3 on a 5 point with 5 being best 5% of works will be accepted for external visual, oral, or written presentation.</td>
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Assessment Plan

The new Office of Undergraduate Research, opened in January 2013, will be responsible for implementing and reporting on the assessments. Assessment of EURECA will be measured directly and indirectly. An overview of how each objective will be assessed is presented here.

Objective 1: (O1) (Mentorship) Promote research collaboration between faculty and students both within discipline and from different disciplines, to enhance the educational experience.

As indicated in Table 1, SLO 1 will be assessed by tracking the number of faculty-student proposals, collaborations, and involvement (within discipline and interdisciplinary) each year. MSU will also monitor student proposals for funding, presentations, publications, or other creative works, as well as attendance at one of the two annual URFs.

Another means of tracking will be to count the number of students participating in either the fall or spring semester URF. A forum will not capture all of the students who might have engaged in other research projects or creative works. This provides a systematic means of identifying an exceptional engagement level or accomplishment on campus.

MSU will also use Item 7d from the National Survey of Student Engagement’s (NSSE) The College Student Report. Item 7d, which asks students whether or not they have engaged in a research project under the direction of a faculty member, will shed light on the extent of research engagement on campus that may not be captured through other measures.

To assess whether students have positive perceptions of student-faculty interactions, MSU will rely upon student evaluations of their undergraduate research experiences, using an adaptation of the Survey of Undergraduate Research Experiences (SURE). This survey consists of 44 items, including demographic variables, learning gains, and evaluation of aspects of summer programs and is comprehensive in assessing student perceptions of their research experience with faculty mentors (Lopatto, 2007).

Objective 2: (O2) (Accessibility) Provide accessibility for all students to learn basic research skills.

The SURE also assesses learning gains that are directly correlated with other student learning outcomes including “understanding of the research process,” “skill in the interpretation of results,” and “the ability to analyze data.” In addition to
using an adaptive version of SURE to assess the students’ ability to analyze critically research outcomes and become good consumers of research, faculty will evaluate student research activity, student manuscripts, and/or oral presentations via adapted AAC&U rubrics.

An email follow-up survey will be administered nine months later. “The follow-up survey is similar to the main survey, with the addition of three questions regarding the effect of the undergraduate research experience on subsequent behavior in courses in the same field as the research experience” (Lopatto 2007, p. 299). The follow-up survey will ask if students continued their research experience in subsequent semesters, how they communicated their research results to others, and how their research experience affected their subsequent course experience in the same department as that of their research experience.

Students’ examination of research ethics and how they apply in life and work is an important student learning outcome. During the research process, students will learn about the obligation to act ethically through attention to ethical standards for the treatment of human subjects and by, submitting a research proposal to the university’s Institutional Review Board (IRB) when appropriate. Students receiving full stipends will need documentation of having completed and passed a “research ethics” module in a course. The module will cover essential guidelines such as the following:

- Research should cause no harm to subjects.
- Participation in research should be voluntary, and therefore, subjects must give their informed consent to participate in the research.
- Researchers should disclose fully their identity.
- Anonymity or confidentiality must be maintained for individual research participants unless it is voluntarily and explicitly waived.
- The benefits of a research project should outweigh any foreseeable risks.

Objective 3: (O3) (Dissemination) Provide students opportunities for improvement and implementation of visual, oral, and written communications skills through the vehicle of a URF.

Students will be required to communicate their research findings through written work, creative presentations, or oral presentations. In meeting this objective, students may produce research projects that are ultimately published in an academic journal. There are several journals that publish undergraduate research, including the COPLAC journal, *Metamorphosis*. Students may communicate their findings through presentations at discipline-specific conferences or other
appropriate forums outside the university. Additionally, students may present their work through performances, exhibits, or other forms of communication. Student/faculty teams will be required to present their research projects, including creative works, in either the fall or spring semester URF. Critical thinking skills will be assessed by faculty using AAC&U rubrics and completing formal evaluations of student manuscripts and/or oral presentations or other creative presentations.

Action Steps

**Timeline.** The timeline for implementing EURECA will begin in the spring of 2013 with the appointment of a director of undergraduate research and with the announcement of and call for proposals late in the spring of 2013. The selection process will be completed by mid-August with the awarding of the first stipends for fall 2013. By the end of 2017, the goal is to have 20 faculty-student research teams conducting research in each fall and spring semester, eighteen teams in the summer, and a cadre of other undergraduates, including freshmen, who will be involved in some aspect of the research enterprise. The attached timeline provides an overview of the activities that are to occur each semester (see Table 2).
<table>
<thead>
<tr>
<th>Calendar Year Semester</th>
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<td>Spring</td>
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<td>SACS review of QEP</td>
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<td>Educate campus about QEP</td>
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<td>Advertise and promote QEP</td>
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<td>Develop proposal selection process and put out call for Fall research proposals</td>
<td>Begin work on Spring research projects</td>
<td>Begin work on Spring research projects</td>
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<td>Plan and advertise URF</td>
<td>Collect and analyze data (from spring and summer projects and the Fall URF) and adjust as necessary</td>
<td>Call for Summer research proposals (end of Spring)</td>
<td>Plan and advertise Spring URF</td>
<td>Collect and analyze data (from spring and summer projects and the Fall URF) and adjust as necessary</td>
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<td>Call for Summer research proposals (end of Spring)</td>
<td>Selection of Summer research proposals and pairing of faculty with students</td>
<td>Call for Summer research proposals (end of Spring)</td>
<td>Selection of Summer research proposals and pairing of faculty with students</td>
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<td>Hold URF (for fall work)</td>
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<td>Advertise and promote QEP</td>
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<td>Continue call for proposals (end of Summer)</td>
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<td>Selection of Fall research proposals and pairing of faculty with students</td>
<td>Begin work on Summer research projects</td>
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<td>Collect and analyze data (from fall projects and the Spring URF) and adjust as necessary</td>
<td>Call for Fall research proposals (end of Summer)</td>
<td>Plan and advertise Spring URF</td>
<td>Collect and analyze data (from fall projects and the Spring URF) and adjust as necessary</td>
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<td>Fall</td>
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<td>Finalize evaluation rubrics and data collection processes</td>
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<td>Call for Spring research proposals (end of Fall)</td>
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<td>Selection of Spring research proposals and pairing of faculty with students</td>
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<td>Hold URF (for Spring and Summer projects)</td>
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</table>
**Promotion of QEP.** Implementation of our QEP will begin in late spring and early summer of 2013 with advertisement and promotion of EURECA. Specific messages developed for administration, faculty, staff, and students will explain the QEP, describe opportunities to participate, and provide a timeline. Joint faculty-student research projects will be promoted through emails to faculty and students, use of the university portal, an article in the student newspaper, distribution of materials in the six colleges, promotional posters, and dedication of a webpage that can be accessed from the MSU homepage. This webpage will provide all necessary information about the QEP and serve as a place for ongoing information about EURECA and application forms. Near the end of the spring semester, a campus-wide meeting will be held to fully present the QEP process to the campus community with the centerpiece of awarding student stipends for fall 2013.

**Process for submitting research proposals.** During the spring 2013 semester, two committees will be appointed: (1) the QEP Assessment Team (AT), chaired by the VPAIE, will be charged with developing a plan for engaging all of the assessments presented earlier, and (2) the UR Advisory Committee (AC), chaired by the new director of undergraduate research, will begin to develop the application process, as well as a rubric for evaluating and selecting faculty and student research proposals. The format, criteria, and process for submitting proposals will be e-mailed to all faculty and students and posted on the QEP website. Students will also be contacted via the MSU portal. The call for research proposals will begin near the end of the spring 2013 semester and will continue into the first summer session. During this time, the AC will develop further the process and criteria for selecting faculty proposals and students to participate in EURECA.

Concurrently with the AC activities, the AT will be refining further the rubrics for assessing critical thinking skills, oral and written communication skills, and other aspects of our assessment model. The rubrics will be based on the AAC&U value rubrics.

Selection of proposals to be funded and teaming of faculty with undergraduate students to conduct fall 2013 research will occur in the summer 2013. The selection of faculty proposals will be made by the AC and announced to the university community. Once selected, the faculty research topics will be listed and described briefly on the EURECA/QEP website. Participating faculty will present their research projects to students in a research proposal forum. Students will rank their first, second, and third preferences for working on faculty projects. The AC will pair faculty with students, announce stipend amounts, and facilitate initial
meetings for work to begin. The AC will also evaluate and award funding to selected students who are proposing beginning work in research.

Participating faculty will receive stipends of $1,000 for their work with one or two students and an additional $500 if the faculty mentors a third student. Graduate students will receive a $500 stipend and mentor only one student. Selected students who are more advanced academically and/or in the research process will receive stipends of up to $2,000. Other students who want to begin working in research may receive lesser stipends as seed money to encourage them to become involved in beginning research projects. These proposals will be evaluated and awarded by the AC. In addition, travel money, up to $800 will be available to support students whose research is accepted for presentation at a professional conference or another forum away from the MSU campus.

In future semesters, the call for proposals will occur in the spring and summer for fall, in the fall for spring, and in the spring for summer research projects. The AC will consider, on a limited basis, projects that will extend beyond one long semester.

_**Undergraduate Research Forum (URF).**_ In addition to the opportunities for faculty and students to submit their work for publication and presentation in various venues, the URF will be a major culminating experience of their research projects. The AC will be the driving force for implementing the forums. All students will be required to present in the first scheduled forum following the completion of their research. These presentations will employ a variety of modalities based on the type of research, ranging from oral podium presentations to poster sessions to performances/demonstrations as well as other emerging possibilities. The URF will occur in both the fall and spring semesters beginning in spring 2014. These events will be formally marketed and open to the campus community and Wichita Falls area, with the hope of extending invitations to campuses (four-year, community colleges, and high schools) in MSU’s region. At the end of each forum, the top three presentations will be announced, as judged by a panel of faculty and students. Students awarded for the top three presentations will receive travel money to attend a conference, a cash award, or another award type as determined by the AC. In addition, a plenary speaker, selected on a rotating basis to represent a program in each of the six colleges, will be the keynote speaker in at least one of the URFs each year. The selection of each speaker and invitation will be the responsibility of the AC.

The planning and advertising for the first URF, which will take place in mid to late spring 2014, will begin in late fall 2013 and continue into the spring 2014.
semester. As indicated, the AC will be responsible for all aspects of the URF, including making all arrangements for the on-campus venue in which to hold the forum, creation of the program, organization of the event, and the selection and invitation of the keynote speaker. The advertisement and promotion will begin with an e-mail announcement to the campus community as well as through the portal. Posters will be printed and disseminated across campus and in the Wichita Falls community. On campus and local media outlets will be used to publicize the event. Special invitations will be sent to area dignitaries, benefactors, and community leaders.

Assessment Implementation and Continuous Improvement

Initially, the AT will develop action plans to detail the timelines and parties responsible for the creation of rubrics, data collection processes, data analysis, and the procedures for making improvements and adjustments as necessary based on analyses. It is anticipated that this work will be completed and in place by the start of the fall 2013 semester (see Table 2).

Data will be collected annually from four areas of the QEP program: (1) the proposal, (2) selection and pairing process, (3) the actual research work, and (4) the URF. As noted above, data from other student research activities will be collected from an attitudinal survey adapted from the SURE and CURE survey instruments and from NSSE question 7d.

Data also will be collected on the number of faculty proposals, and interdisciplinary collaboration will be tabulated. Regarding the research process, data will be collected from faculty evaluations of students to assess critical thinking skills; student completion of an ethics module; student participation in the IRB process (where applicable); and student proposals for presentation, publication, or other creative works at professional conferences. From the URF, data will be gathered regarding the presentations and attendance at the forum, the number of faculty-completed formal evaluations of student manuscripts, and/or oral presentations/or creative presentations (adapted from AAC&U rubrics), and results from the audience evaluations of projects presented at the forum (adapted from AAC&U rubrics). The attitudinal survey will generate data on student perceptions of student-faculty interactions and their perceptions of their research, critical thinking, presentation, and communication skills. It will also capture overall attitude and perceptions of the experience. Question 7d of the NSSE survey, which is administered every other year, is relevant to our QEP and will be analyzed along with these other data.
Based on analysis of these data, the report will include recommendations for adjustments to be made to the relevant parts of EURECA with the overarching goals of: (1) improving student and faculty experiences, and (2) expanding the program further to enhance opportunities for students to engage in research with faculty guidance.

7. MANAGEMENT PLAN/ORGANIZATION—WHO DOES WHAT, FINANCIAL PLAN, AND BUDGET

Personnel, Organization, and Management

MSU is committed to the goals set forth in EURECA and to the necessary financial resources to ensure the success of the program. The budget for the QEP and its subsequent assessment will be the responsibility of the VPAIE with assistance from the AT. He will be responsible for appointing and chairing the committee, which will be charged with overseeing the assessment process of the QEP and for any changes in the program over the next five years.

The newly named director of undergraduate research for the university, Dr. Magaly Rincón-Zachary, has been a leader in undergraduate research for many years and her efforts will be directly coordinated with the VPAIE. She will chair the AC and coordinate the daily operations of UR campus-wide, including the planning and marketing of the URF series. She will also serve as the primary fiscal agent of the Office of Undergraduate Research, and work with the VPAIE to provide oversight to all aspects of the QEP including expenditures. Additional input will come from faculty and student members of the two committees named earlier. Appointments to the AT and the AC will occur before the end of the 2013 spring semester.

Financial Plan

The financial plan for EURECA was developed by examining current collaborative structures at the institution. MSU has in place undergraduate involvement in a summer research program (i.e., UGROW) and other faculty-student collaborations (e.g., Honors Program and Scholarship Colloquium). The current financial plan and budget used the current rate of expenditures for similar endeavors and is designed to meet the student learning outcomes (SLOs) outlined in the Assessment Plan of the QEP (see Table 3).

In order to fully implement our QEP successfully, an operating budget containing sufficient financial resources will be allocated annually with specific fiscal outcomes evaluated annually. The budget will be administered by the VPAIE, and
end-of-the year financial reports will be submitted with a goal of at least 90% of the budget expended, indicating that student and faculty are involved at a sustainable rate. In addition to this direct measure of expenditures, additional information will be collected by the AT to measure sufficiency and maximize efficiency. These indirect measures will serve as a mechanism for overseeing the expenditures and become part of the decision-making structure for current and future budgets. At a minimum, they will include the following reports:

- Summaries of all EURECA funded activities at the end of each semester.
- An accounting from the MSU Business Office detailing of all transactions related to EURECA, including direct and indirect costs.
- Annual summaries of all EURECA funded activities.
- Survey data received from all stakeholders rating the level and appropriateness of institutional funding.

These activities will be coordinated between the Office of Institutional Research and Assessment and the director of undergraduate research working closely with the AC. All reports will be audited by the MSU Business Office.

**Funding Sources**

The initial EURECA plan requires new funding which will be drawn from currently budgeted funds. In order to sustain the project additional funds will be drawn from the President’s Excellence Circle Annual Drive, the MSU Charitable Trust, the MSU Foundation, the Redwine Trust, and the MSU Endowment.

**Budget**

The total projected budget for EURECA is $1,392,520 over a 5-year period. The personnel budget consists of a director of undergraduate research (.5 FTE) and support staff consisting of a .5 FTE student assistant. Other personnel costs (faculty mentors) are proportionally distributed using the following formula: Faculty with 1-2 students earn $1,000, 3+ students equals $1,500 with a cap of $58,000 annually. The majority of the funds, $95,000 per year, will be spent directly on the students who are involved. The budget is based upon an ambitious goal of approximately 42 students for the first year with some increase in funding in the second and third years and leveling off in years four and five. With a proposed tier system in stipend allocation as discussed earlier and a maximum stipend of $2,000 per semester, the possibility for growth in the number of faculty and student participants involved in UR activities is anticipated.
The summary budget as shown below is representative of the commitment of the institution. It was developed using ambitious yet reasonable student involvement numbers and resources in today’s fiscal climate. It was also developed with the understanding that review and adjustments will be made with ample oversight, stakeholder input, and transparency.

### Table 3.
Midwestern State University QEP 5-Year Budget

<table>
<thead>
<tr>
<th>Budget Term</th>
<th>Year 1 2013-14</th>
<th>Year 2 2014-15</th>
<th>Year 3 2015-16</th>
<th>Year 4 2016-17</th>
<th>Year 5 2018-19</th>
<th>Total</th>
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<td><strong>Program Director (1/2 time)</strong></td>
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<td>9-month</td>
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<td><strong>Student Research Stipends (up to $2000 per student)</strong></td>
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<tr>
<td>Fall</td>
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<td>Spring</td>
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<td>$40,000</td>
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<td>Summer</td>
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<td>$36,000</td>
<td>$36,000</td>
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<td><strong>Faculty Mentor Stipends ($1000 per mentor)</strong></td>
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<td>$58,000</td>
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<td><strong>Graduate Student Mentor Stipends ($500 per mentor)</strong></td>
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<td><strong>Student Travel and Professional Development</strong></td>
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<td>$19,000</td>
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<td>CUR Membership</td>
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<td>Student Forums (2 per year)</td>
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<td>$13,000</td>
<td>$14,000</td>
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<td>Miscellaneous Expenditures</td>
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<td>$5,000</td>
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<tr>
<td><strong>Total</strong></td>
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<td>$295,106</td>
<td>$302,704</td>
<td>$305,332</td>
<td>$1,407,520</td>
</tr>
</tbody>
</table>

### 8. SUMMARY AND CONCLUSIONS

Selection of UR as the central theme and the URF as the delivery model of MSU’s QEP resulted in and is reflected by a comprehensive statement defining such research efforts. The statement adopted by MSU, “Undergraduate research is an inquiry or investigation conducted by one or more undergraduate students, with faculty guidance, that attempts to make an intellectual, creative, or applied contribution to one or more disciplines,” is consistent with our mission and may be embraced by all six colleges. Additionally, this definition of UR is consistent
with best practices documented in the literature, which have proven successful in providing a transformative educational experience. Ultimately, our choice of this QEP reflects the campus community’s belief that undergraduate research: (1) promotes faculty mentor and student partnerships, (2) allows students to engage in active learning, (3) promotes inquiry, discovery, and creativity, (4) enhances and refines students’ critical thinking skills, and (5) supports faculty scholarship while enhancing student learning.

With UR as a foundation, we presented evidence that illustrates the impact of faculty mentor and student partnerships on the academic experience of both parties. Such collaborations stimulate inquiry, discovery, and creativity as the student confronts a new experience or an open question. Additionally, the partnership may alter the very career trajectory of the faculty mentor (Zydney, Bennett, Shahid, & Bauer, 2002; Lewis et al., in review) as well as a student’s chosen major. The literature strongly supports UR as a mechanism to augment traditional lecture delivery with experiential and/or high impact learning experiences (Ambos, 2012). Such heightened learning enhances students’ critical thinking skills, reinforces knowledge presented in the classroom, and illuminates fundamental principles that may be quite abstract. The logical outcome of EURECA is the alignment of faculty scholarship with engaged student learning, ensuring that best practices are communicated from one academic generation to the next.

Given the totality of support from the published literature, the undergraduate research experiences that exist currently at MSU, and the opportunity for a paradigm shift in the student and faculty academic experience, the proposed QEP is apt and well timed. Implementation will affect deeply and positively the student and faculty academic experience, add a new and invigorating dimension to the scholarly environment at MSU, and prove a worthwhile investment of the resources necessary to implement and sustain this endeavor.

Finally, our QEP aligns well with MSU’s Strategic Master Plan. Student engagement and research are among the priorities within the plan. In addition, MSU’s on-campus experience is identified as a strength that, combined with online resources, strengthens a student’s educational experience. A recent comment posted by Jeff Selingo (2013) reinforces this. He points out that, even as online education is increasing, students’ on-campus experience will remain a critical component of higher education as students continue to seek access to mentors and experiential learning. Our QEP will not only be a significant element of a positive on-campus experience for students, but will contribute to MSU’s overall mission.
References


Lewis, M., McDonald, D., Owen, J., Rincon, M., & Smith, B. (in review). We grow UGROW: A model for undergraduate research at public liberal arts institutions.


