PKAL Self-Study Questions

1. What progress, if any, toward institutional transformation was made prior to involvement in the PKAL LI initiative?

In this section, you may include

- Material from your application that addressed pre-LI efforts to achieve systemic improvement of undergraduate education on your campus,
- Activities in which team and other faculty members were involved to promote change in your institution, or
- Information about involvement in PKAL activities prior to the LI initiative.

Prior to involvement in the PKAL LI project, WSU had begun a two-year "visioning" process, designed to elucidate strategies by which to transform the university at all levels. This process was motivated by realities of decreasing state support for higher education, and the recognition that students would increasingly bear the cost of their education. In an effort to offer "more" (quality, value, opportunity) for "more" money, the visioning process was born.

The “New University,” as the process was initially termed, was designed intentionally to maximize involvement of faculty, staff, students, administrators, and community members. Year 1 began with study groups focused upon the four areas
- Program Excellence/Quality
- Services and Student Support
- Business/Community Partner Development
- Philanthropy
(www.winona.edu/newuniversity/studygroups.html).

In the second year, these groups evolved into implementation groups in
- Academic Initiatives
- Campus Activities Coordination
- Experiential Learning Institute
- Integrated Academic Services
- Wellness
- WSU-Rochester Center Multicultural Learning Initiative
- Technology/Portals
- Linking Community to Learning
(www.winona.edu/newuniversity/implementationgroups/impl_steering.htm).

The two-year process, which had been renamed the “Winona Experience” by the end of year 2, also included a round of internal grants for innovative pilot projects and gave rise to several “learning communities” centered on the focus of many of the implementation groups. Participation amongst faculty predictably ranged from those who chaired study and/or implementation groups to those who knew essentially nothing about the “New University” throughout the process.

A second major transformational process underway prior to WSU participation in PKAL is in regards to science laboratory facilities. Construction had begun on a new science laboratory
building, with a building budget of $30 million. The new science building now provides exciting improvements for a wide range of wet-labs, as well as new classroom and student work spaces. Additionally, planning for a major renovation ($11 million) of the existing sciences building, Pasteur Hall, had begun prior to PKAL at WSU. Renovation of Pasteur Hall has allowed for conversion of previous 1960’s style lab spaces to dry labs, classrooms, office/prep areas, and student study/work spaces. Additionally, the entire sciences complex, with spaces and laboratories capable of supporting 21st century scientific investigations and education, is now connected by a grand atrium area, a rock wall illustrating the local and regional geology visible in the bluffs, and featuring flooring inlaid with a topographical map of the local Mississippi River region, an array of symbols representative of all the empirical and deductive sciences, and a replica of the original northern hemisphere star chart. The latest addition to the complex is a 450 pound, spun sterling silver model of a water molecule, which now hangs nearby the atrium glass wall, capturing both art and science in a multitude of reflected images and shadows.

A final transformational process underway prior to PKAL was the beginning of a major change of personnel and reorganization of function in administration, starting with the resignation of President Darrell Krueger. At the time of application to PKAL, President Judith A. Ramaley had begun her administration and marshaled in the next levels of change, starting with a re-naming of the “Winona Experience” to “Learning for the 21st Century” (or “L21” as it is known in shortened version). Part of the rationale for the third renaming of an ongoing transformational process was to avoid branding of the innovations to apply only to Winona and to further expand the work to consider the meaning of an educated person and the role of educational institutes in the 21st century. Soon after her inauguration, President Ramaley also introduced plans for the reorganization of WSU administration, positioning the institution to be more effective, intentional, and direct in realizing its mission through daily practice and strategic planning.

In addition to the above transformational processes, there were several other areas of activity that aligned directly with the PKAL vision in place. For instance, there is a previously developed interdisciplinary program in Environmental Science within the college. This collaborative project between the Biology, Chemistry, and Geoscience Departments created a new major option in each department. It provides a common two-year curriculum for all majors, who then choose a disciplinary specialty. Students concentrate coursework in one of the three disciplines, and then undertake a research project and senior seminar that requires both application of their disciplinary expertise within the interdisciplinary framework and also communication of their work with students from the other disciplines.

Similarly, development had begun on an interdisciplinary Investigative Science program for pre-service elementary education majors. This program represents collaboration between faculty in the department of Education and faculty in Biology, Chemistry, Geoscience and Physics. The project has resulted in the creation of two new interdisciplinary courses, that will eventually be required of all elementary education majors, both designed to deliberately integrate professional education coursework within the students’ natural science general-education requirements. The courses are directed at teaching students rigorous, interdisciplinary science using materials readily available to elementary teachers, and building student confidence and pedagogical content knowledge for science teaching.
Undergraduate research has been an area of previous and ever-increasing activity. There have been, and continue to be, a variety of departmental independent studies, internships, practicums, and capstone projects completed by students. Through a university research and travel grant program, students are able to receive some support for research supplies and travel which either is important for the project itself or is to present the results at a professional conference. College centers, such as the Large River Studies Center (LRSC), the Southeast Minnesota Analytical Service (SEMAS), the Software Testing and Development Lab, the Southeastern Minnesota Water Resources Center (WRC), and the Composite Materials Technology Center (COMTEC), continue to employ students who collaborate on projects serving the greater Winona region. Many of these projects turn into research studies conducted jointly by students and faculty. In further support of undergraduate research, the college hosts an annual symposium showcasing student research. The Annual Winona Computer Science Undergraduate Research Symposium presented a similar opportunity for students in Computer Science and is hosted jointly by WSU and St. Mary’s University. Additionally, college departments continue to host seminar series, allowing undergraduates a venue for presentation of their research to both peers and faculty.

One of the main challenges in preparing this report is trying to identify attribution of efforts to PKAL versus those that arose as a result of L21 (New University/Winona Experience) institutional transformation efforts. In many instances it’s something of a chicken and egg issue, but one that very likely points to how well integrated college PKAL initiatives are in the fabric of our WSU institutional mission and vision. Prying these apart is, in such regard, both impossible and unnecessary. On the other hand, it seems relevant to attempt delineation of those changes resulting from PKAL participation, partly in recognition of the investment the institution has made in that participation.

2. What are the vision and signs of success?

Please include your current vision. Many PKAL LI teams revised their visions at a PKAL LI seminar.

If applicable, please include parts of your articulated vision that describe desired changes in student learning.

As a basis, the College of Science and Engineering seeks to align with and contribute to the university mission: “A community of learners improving our world.” Building upon this is the goal to nurture, within the community, the habits of mind that enable a purposeful application of knowledge toward solution of complex interdisciplinary problems facing a rapidly changing 21st century global society. To reach such a goal, faculty must be supported as they (re)discover their passion(s), collaboratively develop a college environment necessary to stimulate student engagement at all levels, focus less of their attention on bottom-line budget concerns (FTE and seat time), and join in efforts toward commonly shared college and university goals. To be successful, it is also necessary to establish more effective means of assessment and build a culture of evidence throughout the college and university. Additionally important is the support of departments and individuals toward developing a college and university affinity that supersedes their departmental affinity and a movement from the “scarcity mentality” to a more collective mentality that views issues in a context beyond departmental boundaries.
Included in this vision for the college is, essentially, a culture change, requiring an open and ongoing dialogue between faculty, staff, students and administration that fosters and builds upon existing collaborative and trusting environments. It requires the involvement of faculty in direct leadership roles to further the academic agenda and the collegiate atmosphere.

Resulting from meetings in Baltimore, San Antonio, Madison, and Kansas City, WSU team participants have specifically developed various aspects of the broad vision described above. Beginning with work in Baltimore, the vision for a research-rich WSU statement has gone through some evolution into the current: “Establish a research-rich learning environment that is integrated into the curriculum at all levels and that is accessible, valued, embraced, rewarded, and celebrated by the WSU community.” The San Antonio focus on Science for All has resulted in a current draft-form articulation of this important area to eventually become incorporated within the vision at WSU. From participation in Madison, there is a statement involving interdisciplinary programs, also undergoing further development. Resulting from discussions in Kansas City, there are the beginnings of a vision for mechanisms for effective college-wide communication, also under current consideration.

a. Please provide the rationale and process through which you moved from the original vision to the present vision. How has reshaping your vision moved institutional transformation forward?

The WSU PKAL vision has remained essentially the same, although the language used to articulate it may have changed a bit. The College of Science and Engineering is still committed to providing meaningful and quality science, technology, engineering, and mathematics (STEM) education for all students; the goal is to provide learning opportunities that will prepare students to meet the challenges facing them as 21st century graduates. Participation in PKAL has provided a more crisp and succinct way to frame this: provide interdisciplinary, research-rich learning environments that ensure the success of all students, and that provide all students with challenging and meaningful STEM education. The intent is not only to increase the numbers of STEM majors within the College of Science and Engineering, but also to increase the scientific literacy of all students on campus. Included is the desire to create robust and rigorous learning environments for majors that help them connect science to socio-political concerns, and for non-majors that help them understand the value and critical need for scientific literacy.

The original vision resulted from a process of all college department chairs conveying the views and issues communicated during open discussions held in their respective departments. As participation in PKAL progressed, various parts of the vision were modified and/or clarified as more college faculty participation took place in PKAL meetings, college chairs discussions, and departmental conversations. This was introduced at WSU in parallel to ongoing efforts within L21. College vision statements as pertaining to research and interdisciplinary transformation were progressively considered toward an incorporation of input from more college faculty, as well as toward increased alignment and effect upon the ongoing L21 efforts. Such continual reshaping has served to (1) increase participation amongst college faculty, (2) allow for greater collaboration with those outside the college, (3) promote an experience where vision development is truly ongoing and has real consequence upon both strategic planning and day-to-
day decision-making, and (4) further embed L21 efforts within the college and, in turn, shape L21 efforts in response to college innovations.

Once an original form of the vision was developed, department chairs were responsible for communicating that statement throughout the college. Some were more successful in this than others, not necessarily owing to the effectiveness of the chair, but to the culture of faculty communication generally. At WSU, it is still possible for an individual faculty to detach and disregard messages communicated within the department, the college or within the university generally.

The vision was further communicated and refined within the College of Science and Engineering as faculty participated in the series of PKAL conferences held during the last academic year. Each team that participated in a PKAL conference articulated a vision statement focused on the conference topic (research, interdisciplinary programs, or science for all). These more focused efforts have provided multiple pathways for faculty to engage with the work as best suits their interests or expertise.

b. How widespread is your vision across campus?

The more general PKAL vision is roughly parallel to visions for transformation within L21 efforts. Therefore, this part of the vision is as widely professed as is that for L21. Within the college, there is yet a need to increase the level of inclusion in further development and implementation of a vision for STEM. Currently, there is also an ongoing effort within the college to further strengthen the collaborative atmosphere between natural sciences, engineering, computer science, and mathematics/statistics departments. Furthermore, the collaborative spirit between college departments, teacher preparatory programs, and the developing interdisciplinary and community collaborations is under continual nurturing.

At present, continuing development of PKAL visions specific to research, science for all, interdisciplinary programs, and college-wide communication, along with the corresponding PKAL meetings, is fairly well-known to about 1/3 of college faculty and to some faculty/administration in the Liberal Arts and Education Colleges. There are ongoing efforts to increase the level of participation and, subsequently, to move forward on the envisioned directions on an even greater scale throughout the college and university.

Collaborative progress has been further fostered with colleagues in the College of Liberal Arts by inviting their participation in PKAL conferences last year (specifically at the Interdisciplinary and the Science for All conferences). There is a core group of faculty in the Liberal Arts, supported by Dean Troy Paino (himself a PKAL participant), with great interest in promoting science. These faculty are moving ahead, engaging in interdisciplinary projects such as a “Drawing for the Sciences” class and an interdisciplinary Dance/Geoscience class that will focus on a consideration of time and motion (to be offered in Spring semester 2007). Others have developed and are teaching science-focused sections of disciplinary liberal arts classes. Examples include:
- English Professors Jim Armstrong and Chris Buttram teach a three-credit orientation section around the “Does Science Matter” program;
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- English Professor Rob Brault teaches the science of science fiction;
- Philosophy Professor Ed Slowik teaches the philosophy of science;
- Political Science Professor Darrell Downs teaches environmental policy.

c. Please describe activities that promote engagement of the entire campus with the vision including stories of how involvement of other people has reshaped the vision.

A significant WSU activity has been brought about due to a change in the previously organized “Consortium for Liberal Arts Promotion” to become the Consortium for Liberal Arts and Sciences Promotion” (from “CLAP” to “CLASP”). The consortium, started predominantly through the efforts of Jim Armstrong (English) and College of Liberal Arts Dean Troy Paino, hosts colloquia and seminar series around topics of common interest. Additionally, there are periodic informal gatherings, held outside of the normal university settings. This fall the seminar series topic was “Does Science Matter”, and presentations were developed by faculty from across campus to consider the question of how science matters in what they do. Given that the seminars are open to the public, and very well attended by faculty and students, including those from 1st year English classes, this represents important progress toward the Science for All vision. A number of seminar topics and presenters are, at least indirectly, attributable to participation in PKAL activities.

Another significant collection of activities has been due to the addition of a university-leased riverboat, the “River Explorer”, to classroom, laboratory, and meeting spaces available to WSU. In concert with a significant intersection of goals for Large River Studies Center and the WSU Center for Mississippi River Studies (CMRS), students have photographed the river, collected and analyzed thousands of water samples, learned modern dance on the boat, practiced music during class on sandbars, observed the overnight cycle of heavenly light, studied fluvial dynamics close up, camped on sandbars, and heard from agency and faculty experts on many aspects of the river while motoring gently along. WSU used the riverboat resource to sponsor educational trips with the Audubon Society, research groups, Project Wet (a terrific partnership of WSU science education faculty, area teachers and schools, the Fish and Wildlife Service, and many eager of fifth graders and girl scouts), and also hosted foreign academics, a few department meetings, Student Senate, and WSU retirees. Current coordinator, Drake Hokanson (Mass Communication), and CMRS steering committee members Mike Delong (Biology), Jeanne Franz (Chemistry), Ann Rethlefsen (Education), Todd Paddock (Sociology), Brian Aldrich (Sociology), Joe Mount (Library), and Jim Armstrong (English) have helped shape the vision into one which effectively combines the ideas of service learning, active learning, science for all, interdisciplinary programming, and undergraduate research. Given the proximity of WSU and the Mississippi River, these activities also serve to infuse the developing vision (and subsequent implementations) with a powerful sense of place and responsibility for maintaining and protecting our vulnerable natural resources.

Interdisciplinary courses developed around the themes of Arts for the Sciences curricula have experimented with the idea of bringing (1) ideas from the sciences into pieces created by non-science majors, (2) challenges for sciences majors to experience the creative process in artistry developed around the themes of their major programs, and (3) innovative approaches of incorporating sciences concepts in interpretive dance. Through a new course called “Drawing
for the Sciences”, Mary Coughlan (Art), Robin Richardson (Biology), and Cathy Summa (Geoscience Chair) introduced science majors to critical elements necessary to develop students’ drawing skills by working with scientific models. (Richardson and Summa helped as advisors and provided samples; Coughlin was the sole instructor for this course.) In another new course, “Earth’s Natural History”, students discovered important elements necessary to create works of art centered on topics in early earth evolution and challenged them to develop pieces motivated by the first developmental era of Earth’s history. This course was instructed by an interdisciplinary team formed by Bruno Borsari (Biology), Robin Richardson (Biology), Anne Plummer (Art), Mary Coughlan (Art), and Jennifer Anderson (Geoscience). During Spring 2007, Sharon Mansur (Theater & Dance) and Jennifer Anderson (Geoscience) will instruct a course in Theater & Dance on Interdisciplinary Connections, specifically considering aspects of time and movement from both disciplinary perspectives. These associations serve to expand participation in the vision and further broaden the scope to include ideas in the arts which innovatively inspire active learning.

Developments at WSU around the themes of research, science for all, and interdisciplinary collaborations have connected students and faculty in significant ways, as the following examples will illuminate. (The following list is, however, not exhaustive; there are others that exist within the college and throughout the university.)

- Given further outlet of the Research Community and WSU membership in the Council for Undergraduate Research, the introductory course in Organismal Diversity, instructed by Mike Delong and Robin Richardson (Biology), has continued to interact with and affect the developing vision at the same time as inspiring students to explore original research projects. Similar examples can be found in other college departments – faculty are locally redesigning introductory and sophomore-level courses to explicitly build students’ research skills.

- Terry Price (Mathematics Education) and Ann Rethlefson (Education) continue to investigate ways of blending research-based approaches to mathematics instruction with motivating interdisciplinary-based examples in the elementary education program. This model is based in part on the successful Investigative Science model developed by WSU Science faculty.

- Along with Ann MacDonald (WSU Leadership Institute Director, Outreach and Continuing Education) and Composites Consortium members Keith Laken and Larry Rupprecht (RTP Company, Winona), Beckry Abdel-Magid (Engineering Chair) has coordinated explorations of area nanosciences and nanotechnologies, as well as the investigation of potential collaborative composites projects to be taken on by the Consortium. Such interactions continue to shape the vision in ways which take advantage of recent recommendations concerning partnership with the Winona area composites industry (Southern Minnesota Initiative Foundation Report, June 2004).

- Fall semester (2006) undergraduate student research/travel proposals have been funded for projects in Chemistry (6), Engineering (2), Computer Science (1); these represent new student projects. The range of topics for these projects includes studies of wastewater treatment facilities and mayfly population control (supervised by Jeanne Franz, Chemistry),
student presentation of software engineering experiment tools at a professional conference (work supervised by Narayan Debnath, Computer Science), studies of gas fluctuations in area wetlands (supervised by Mark Engen, Chemistry), transmission electron microscopy of nano-tubes prior to their mixing with polymers (supervised by Fariborz Parsi, Engineering), and an implementation study for a composite materials bus shelter construction (supervised by Beckry Abdel-Magid, Engineering Chair). Ongoing projects will continue in these and other departments in the college with funds awarded in the spring semester. Additionally, a significant number of student research projects, capstone experiences, and internship opportunities are supported by faculty through arranged courses and independent studies.

- Examples of ongoing, internally/externally funded research include (1) potential effects of cranberry ingestion on diabetes and physical performance, Gary Kastello (Heath, Exercise, and Rehabilitative Sciences), Ted Wilson (Biology), Bruce Svingen (Chemistry), (2) equine herpes virus in area horse populations, Emanuel Brako (Biology), Alice Brako (Biology), Brant Deppa (Mathematics & Statistics Interim Chair), Town & Country Vets Clinic, (3) temporal dynamics of riverine food webs, Mike Delong (Biology), Jeff Anderson (Interim Dean), (4) Lean in Healthcare, Kimberlee Snyder (Management of Information Systems and Operations), Dan Rand (Mathematics & Statistics), (5) NASA Summer Research Institute, Richard Jarvinen (Mathematics & Statistics), (6) bioinformatics applications to micro-array analysis in the detection of cancer, Chi-Cheng Lin (Computer Science), Mingrui Zhang (Computer Science), Mayo Clinic Cancer Research, and (7) NSF funded flume laboratory, housed in the Geoscience Department. Through these types of works, the perceived boundaries of research collaborations continue to dissolve, toward greater impact of resulting contributions to both the respective field and general societal needs.

- Beginning in spring 2006, an interdisciplinary group, with evolving composition of faculty and administration, has worked on potential partnerships with area school districts, Minnesota State College Southeast Technical in Winona, Rochester Community and Technical College, and Normandale Community College through visits and recurring conversations. Resulting from various aspects of these conversations are recent grant proposals put forth to the National Science Foundation MSP, FIPSE, and STEP programs. Although these were not funded, the activity will continue for acquisition of funding and building partnerships towards reform in STEM teaching and learning and K-12 pre- and in-service teacher programming.

- Through an agreement with FEI Company, WSU will have access to a Beta Program Tabletop Scanning Electron Microscope (SEM). During the next year, college faculty will have full use of the SEM, along with further support from FEI, to develop and investigate educational applications for this miniature version of an electron microscope. Results, bugs, flaws, etc. will be reported to FEI. WSU will use this opportunity to collaborate in a variety of ways throughout the curriculum, developing partnerships with area school districts and higher education institutes, toward addressing the science for all agenda and potentially bring introductory research ideas into K-12 settings.

- During the past year, the college has matched funds provided through an agreement with the Upper Midwest Environmental Science Center (UMESC) in nearby La Crosse, WI. This
lab, operated by the United States Geological Survey, has subsequently played host to and major supporter of environmental research by WSU faculty and students.

Curricular and program development within the college, having both derived enthusiasm from and had impact upon various levels of the evolving college PKAL vision, includes (1) development of partnerships and accreditation for a Clinical Laboratory Science program at WSU, Ed Thompson (Biology Chair), Judith Loewen (Biology), Fran Ragsdale (Biology), (2) L21 studies of Community-based learning and Bioinformatics in the Computer Science curriculum, Sudharsan Iyengar (Computer Science), Chi-Cheng Lin (Computer Science), Mingrui Zhang (Computer Science), Mayo Clinic, (3) continuing implementation of an Investigative Science sequence for Elementary Education majors, and (4) incorporation of work presented at the United States Conference On Teaching Statistics (USCOTS) into the teaching of general, liberal arts Survey of Mathematics, Chris Malone and Nicole Williams (Mathematics & Statistics). The first two of these examples received funding from the Center for Integrated Health Science Education and Practice (CIHSEP), one of five Minnesota state-funded centers of excellence. The third began as a four-year, NASA and MnSCU CTL (Minnesota State Colleges and Universities Center for Teaching and Learning) funded project to approach the needs for inquiry-based science in K-5 teachers. Additionally, an Investigative Science Advisory Team has recently been formed from faculty across college departments toward guiding the next levels of implementation, scheduling, resource management, and other logistic details normally considered by a department structure. Parallel development additionally proceeds in concert with potential, alternative avenues for access as may be provided through new or existing higher education partnerships, notably through Rochester Community and Technical College, CIHSEP, and the University of Minnesota Center for Allied Health. With respect to the Computer Science program, item (2) above, significant curricular development received funding through a recent grant from Minnesota Campus Compact. Entitled “Community Component of Human Computer Interaction Program”, Joan Francioni and Tim Gegg-Harrison (Computer Science), the goal of this project was to initiate a community-based service component into the new Human-Computer Interaction track within the Applied Computer Science option.

Emerging travel studies programs have expanded the scope and potential impact contained within the college vision. College faculty have participated and served in leadership roles as several programs moved into fully implemented status, becoming connected to regular college courses in which students enroll for credit during participation in travel studies. These include (1) Pacific Challenge – New Zealand, Toby Dogwiler (Geoscience), (2) Costa Rica, Toby Dogwiler and Cathy Summa (Geoscience Chair), (3) Tanzania, John Nosek (Biology), and (4) New Orleans, Joan Francioni (Computer Science Chair). Other programs in consideration or continuing development include (1) Jamaica, Tim Gegg-Harrison and Mingrui Zhang (Computer Science), (2) St. Croix Culture Women’s and Gender Studies, Joan Francioni (Computer Science Chair), (3) Bangalore, Sudharsan Iyengar (Computer Science), (4) Chicago Engineering Conference and National Trade Show, Fariborz Parsi (Engineering); and (5) Ecuador, Cathy Summa (Geoscience Chair). Of these, the Ecuador and St. Croix programs have been approved and are accepting student applications. Several of these travel-study programs (specifically, the Pacific Challenge, Costa Rica, Ecuador, New Orleans, and St. Croix) are designed explicitly as interdisciplinary programs designed to further “science for all” goals.
d. To what extent do members of the team think their individual commitments and passions are reflected in the vision?

Given that part of the immediate challenge is to build mechanisms that provide better communication amongst faculty (individually, within departments, between departments, and between colleges), and between faculty and other constituencies (administration, staff, students), this item presents a difficult question to answer beyond speculation derived from amicable conversations. The extent to which team members see themselves and their interest reflected in the vision in some ways parallels the level of their individual engagement in the process. Even among college chairs, i.e., the WSU PKAL leadership team, it is quite likely that individual responses to this question would vary, perhaps significantly. During the site visit, these stories are sure to emerge.

The PKAL Leadership team, including the current Interim Dean of the College of Science and Engineering, is convinced of the importance for continuing and further establishing communication and college-wide/university-wide collaborations that are necessary to both develop and carry out much of the vision. The vision will also need a parallel nurturing of an atmosphere of open/respectful debate, strategic planning, and shared commitment. One element, not currently an explicit part of the vision, is the idea that to be truly effective, STEM programs must derive as much strength from the shear enthusiasm for discovery and the enjoyment of contribution to larger societal goals as they do from academic quality and promotion of the professional goals of students, faculty, and staff.

e. What is the relationship of the vision to the institutional mission?

The PKAL vision completely echoes the WSU mission. In fact, it contributes significantly to moving the institution toward the university mission in that it provides concrete means by which to continue progress on becoming “A community of learners improving our world”. As described above, it is, thus, difficult to separate activities that were stimulated solely by participation in the PKAL LI project from those that evolved as a result of ongoing L21 institutional transformation efforts.

f. What are your goals for translating your vision to reality?

(1) Effective communication: Continuing the work of team members during the latest meeting in Kansas City, one of the first goals shall be to further develop and institute a plan for improved communication throughout the college. The existing university climate is, paradoxically, one which is extremely connected through technology and, at the same time, prone to isolation due to a variety of factors including resultant information overload. The initial plan developed in Kansas City contained informal coffee/tea sessions hosted by the Interim Dean, web page/portal development with focus upon needs of a busy faculty audience for communicated items, and periodic college meetings with a format more directly promoting input as well as passing along information. Continuing development of these ideas will take place through discussions in college chairs’ meetings, some initial attempts at web communications/newsletters, and college meetings and other informal gatherings.
(2) Synergy with Existing University Efforts: Everything that is being done to promote L21 efforts equally promotes PKAL efforts, and visa versa. It is, therefore, reasonable to expect L21 funded projects will also work towards implementation of many parts of the college PKAL vision. Conversely, progression toward the PKAL vision will, indeed, have impact upon the progression of transformative work within the umbrella of L21.

(3) Culture: In essence, for the PKAL vision to become reality, a culture change must necessarily be achieved at WSU. Such a statement is likely true of any university in the country. Unfortunately, this isn’t something that can happen overnight, and like any deep change, is something that predictably encounters resistance, often from those who have not become engaged in and/or convinced of the value of the process. Resistance arises, in part, from concerns about allocation of scarce resources. Another significant source of resistance arises from a perception of change resulting in additional work demands. An example includes innovation resulting in student enrollment increases, which has not yet been matched by new faculty lines. There is also an increased demand for accountability, placing additional obligations on individuals and departments to demonstrate “learning” in ways not previously encountered.

3. Who is Involved?

There is involvement in PKAL at many levels of the institution. President Judith Ramaley and Academic Affairs Vice President Sally Johnstone have placed STEM initiatives in a prominent position within their agendas. Interim Associate Vice President Nancy Jannik, who was previously College Dean, continues to be involved both in a role of passing along historical perspectives as well as in her new role with university assessment and research. Associate Vice President Christine Quinn provides support and guidance for the growth of programs within the Rochester campus organization and also for connections through CIHSEP and the greater Rochester community.

Included within this Case Study report is a list of WSU participants in PKAL LI seminars. The list includes all current department chairs in the College of Science and Engineering (COSE), the Dean of the College of Liberal Arts, and several faculty/chairs from outside of science. Participants have brought ideas from PKAL back to their departments, and, thus, COSE departments are becoming increasingly involved as a result. Students engaged in research and those who have participated in specific STEM-related initiatives are involved while experiencing first-hand the principles of PKAL.

a. What are the roles of the different members of the PKAL leadership team? Please include specific names, titles, and roles. Please describe changes on the leadership team and their effects?

The PKAL leadership team consists of:

- Jeffrey Anderson, Interim Dean of the College of Science and Engineering
- Beckry Abdel-Magid, Professor and Chair, Department of Engineering
- Brant Deppa, Professor and Interim Chair, Department of Mathematics and Statistics
- Joan Francioni, Professor and Chair, Department of Computer Science
- Charla Miertschin, Professor and Chair, Department of Chemistry
- Richard Shields, Professor and Chair, Department of Physics
- Cathy Summa, Professor and Chair, Department of Geoscience
- Edward Thompson, Professor and Chair, Department of Biology

Two members of the leadership team are new or have changed roles. Jeff Anderson, originally chair of the Department of Mathematics & Statistics is now the Interim Dean of the college, and Brant Deppa is the current Interim Mathematics & Statistics Department chair. Nancy Jannik, who is the previous college Dean, is now Interim Associate Vice President of Graduate Studies, Assessment, and Research. These interim roles are part of an administrative reorganization plan, which has been intentionally designed to provide capacity necessary to achieve the WSU mission. It brings together offices, services, and functions that are complementary and benefit from closer alignment. It also more tightly focuses the scope of each vice presidential area to ensure that senior officers have a reasonable number of responsibilities, a portfolio of closely-related functions and programs, and a clear pathway for communication and interaction.

The leadership group has and will continue to work collaboratively on PKAL initiative. One of the new goals motivated from participation in the recent PKAL LI seminar in Kansas City is to develop effective means of communication and cooperation between departments and amongst faculty within the different departments in the COSE. Leadership team members will be working to facilitate this goal.

The Leadership Team also took responsibility for coordinating, preparing and writing this report.

b. What is the role of the PKAL leadership team on your campus?

The leadership team is composed of the current Interim Dean of the College and Science & Engineering and the seven department chairs in the college. These individuals are also leaders on several transformative efforts within L21 and throughout the university (many of which are described in other parts of this report). The role of the college chairs at WSU is largely one of facilitation – both of communication and of action – and as a support team for a wide variety of projects and efforts within individual departments. As leaders in the college, they have the opportunity to take a broader view and may also attempt to connect people, departments, and/or projects that will help move the various initiatives forward. The onus is on this group to address some of those issues that form the traditional stumbling blocks – issues such as load and accounting for resource use, working through some perhaps creative scheduling issues, or simply finding ways to make things happen that hadn’t, for whatever reason, happened in the past. The reactions and responses of the leadership team, as colleagues, must be thoughtful and considered, working together to model the changes that best serve the college, the university, and its students.
c. Who are the people and groups, beyond the leadership team, that are advancing change on your campus? Please think as broadly as possible to include faculty members, students, staff, senior administrators, admissions, student affairs, senior faculty members … How did involvement of these people and groups change over time? What roles do these groups or individuals play?

President Judith Ramaley and Vice President Sally Johnstone are ushering in an era of national connection with STEM issues, effective applications of technology to higher education, strategic planning that is driven by the college deans and chairs, and general challenges to the university establishment about what it means to be educated and how inform the various associations about the quantitative means for showing that we are successful (i.e., accountability and assessment).

Interim Associate Vice President for Graduate Studies, Assessment, and Research, Nancy Jannik has been involved with the PKAL initiative at WSU from the beginning. Her new academic position is designed to give important focus and coordination/collaboration to areas on campus of significant need for development (assessment), significant need for increased support (research/grants), and significant potential for further development and, hence, in need of careful academic direction (graduate studies).

Associate Vice President Christine Quinn, through her primary location at the Rochester campus, is leading university efforts to advance effective collaborations, addressing the needs of a very diverse population resident in the Rochester area. Additionally, she has been (and continues to be) instrumental throughout the proposal and implementation phases of CIHSEP, as well as serving a leadership role in developing collaborations with the new Center for Allied Health at the University of Minnesota. She provides connection of college efforts in bioinformatics, biostatistics, nanotechnology, health-related composite materials applications, Clinical Laboratory Sciences, and research residencies/internships directly to areas for significant contribution in societal health care needs and to agencies, such as Mayo Clinic, providing mutually beneficial opportunities.

There are several learning communities and groups who are involved in activities related to the mission and vision of PKAL on the WSU campus. Some examples of these are listed below:

Learning Communities

- Community Based Learning: The Service Learning and Civic Engagement Community of Practice meets regularly to discuss how service learning and civic engagement opportunities can be integrated into courses across the curriculum and into other student activities at WSU. This group has since evolved into a University Committee, and WSU has joined Campus Compact as a result of faculty interest and work. Computer Science Chairperson Joan Francioni has been actively involved in the Service-Learning/Civic Engagement Community of Practice. As part of this effort, she and another faculty member, Tamara Berg (Women’s Studies), developed a course on “New Orleans in the Aftermath of Hurricane Katrina” that was offered last spring and will be offered this coming spring semester. The course includes an alternative spring break trip to New Orleans, where students participate directly in the relief efforts there.
• First Year Experience: The First-Year Experience initiative is designed to provide an activity-rich, academically-supportive, learner-centered educational environment designed to help first-year students become part of “a community of learners dedicated to improving our world.” Much of the work undertaken as part of L21 is aimed at improving resources, teaching, retention, programming, advising, and wellness of/for WSU's first-year students. In sum, these "21st-Century" initiatives—including the common book, expanded academic assistance, the redesign of megasections, the learning portfolio, enhanced interdisciplinary experiences, and many others—will constitute a revolutionary redesign of the First-Year Experience at WSU.

• New Faculty Community of Practice (NFCoP): The NFCoP began last academic year as an L21 initiative designed to welcome and support new faculty as they joined the WSU community. It was also intended to develop a cadre of faculty who took a scholarly approach to their teaching practice, engaging them in a research project that explored some aspect of their practice. The group has become somewhat more formalized this year. It is facilitated by senior faculty, meets in alternate weeks during the fall semester, and will meet weekly during the spring semester. Cathy Summa (Geoscience Chair) and Jim Reineke (Education), currently serve as co-facilitators of the NFCoP. Current and past participants from the College of Science and Engineering include: Bruno Borsari (Biology), Nathan Moore (Physics), Jennifer Anderson (Geoscience), and Nicole Williams (Mathematics & Statistics) in 2005, and John Deming (Chemistry), Susan Beseler (Mathematics & Statistics), Tisha Hooks (Mathematics & Statistics), and Scott Segal (Biology) in 2006.

• Inclusive Excellence at WSU: The WSU Inclusive Excellence Initiative is designed to bring the university community together, recognizing that by embracing and celebrating differences, all involved are enriched. The Inclusive Excellence Learning Community is facilitated by Professors Joan Francioni (Computer Science Chair) and Cindy Killion (Mass Communication).

• Mississippi River Studies: Winona State University's Center for Mississippi River Studies (CMRS) is dedicated to creating greater understanding of the broad multi-faceted nature of the Mississippi River and the people and places it touches. CMRS hosts development, collaboration, and support for classes, as well as providing travel study opportunities, workshops, symposia, library collections, internships, jobs, research projects, publications, exhibits, and strong connections among students, faculty, river agencies, corporations, government, other universities, the Winona community, the state and the nation.

• Travel Studies: The travel study program at Winona State includes courses that WSU faculty teach at different sites (nationally and abroad) in order to take advantage of unique learning opportunities.

• Interdisciplinary initiatives: Interdisciplinary is used to describe an approach to learning and knowledge that integrates and benefits from the understanding and application of the approaches of different subjects and disciplines. Recognizing that the world is increasingly complex, but interconnected and interdependent, certain intellectual pursuits, therefore, need
to create new forms of collaboration and new ways to learn at the boundaries of disciplines. Many of the current initiatives are interdisciplinary, and the current plan is to start a learning community to address specific concerns and logistical issues of cross-departmental projects and classes.

• Sustainability: The Learning Community on Sustainability, initiated by Professors Larry Reuter and Bruno Borsari (Biology), began during spring semester 2006. The first meeting was organized to recruit participants and explore their level/desire to contribute to the effort of making WSU more sustainable. The direction that has been taken so far addresses primarily seminars, educational programs and curriculum.

• Student-Faculty Research and Capstone Experiences: The Research Learning Community is facilitated by Professor Mike Delong (Biology). This group grew from interests expressed during the work of the Academic Experiences Implementation group and from faculty participation in the PKAL Building Research-Rich Learning Environments Seminar. The current working definition of "research" at WSU: "Research is scholarly or artistic activity that enhances learning and teaching through the processes of inquiry or creativity".

L21/PKAL/University-wide Initiatives
(Many of these have been addressed elsewhere in this report and will not be expanded on here.)

• Brant Deppa and Chris Malone (Mathematics & Statistics) have been working on the establishment of a WSU Statistical Consulting Center, which is planned to open at the start of Spring Semester 2007. The center will provide statistical consulting for the Winona State community while providing statistics students with valuable hands-on experience in study design and data analysis.

• Investigative Science
• Art/Drawing/Dance for Science (3 different classes designed around a common interdisciplinary, science theme)
• Geoscience flume project
• Bioinformatics/Biosciences collaborations with Mayo Clinic, Olmstead Medical Center (Rochester, MN), and other Center for Integrated Health Science Education and Practice (CIHSEP) partners
• Water Resources Center (Geoscience) & Southeast Minnesota Analytical Services (Chemistry) both provide resource analysis, education, and outreach to the southern MN community.
• Upper Mississippi Environmental Sciences Center (UMESC) collaborations offer internship, research, and summer employment opportunities for students at the USGS office in La Crosse, WI.
• The 2008 North American Prairie Conference will be hosted at WSU in coordination with the WSU Sesquicentennial Celebration
• Tabletop Scanning Electron Microscope agreement with partner FEI Company, in which FEI has donated a tabletop instrument to the university, in return for curricular development in college disciplines
The Engineering department has partnered with MN Southeast Technical College and the Winona Airport to provide machine shop experience to students in ENGR 102, an introductory engineering course.

Interdisciplinary experiences for students interested in forensic science are provided through opportunities in introductory biology (Basics of Life course), where a murder mystery is staged, in Investigative Science, where students likewise identify a criminal based on soil analysis, and a new Forensics class in Chemistry, designed through discussions with Criminal Justice faculty concerning the scientific consideration of evidence. The Forensics class is open to all students seeking a natural science laboratory course as part of their University Studies requirements.

An all-university group recently redesigned student support services to an “Integrated Academic Services” model, in which students will find most services available at a one-stop shop, The model will be implemented within soon-to-be-renovated Maxwell Hall (target completion date in spring 2008).

d. Do you have senior administrative support? If so, how has it been demonstrated, e.g., attendance at PKAL and related workshops and events?

President Ramaley has been a PKAL attendee and is a member of many national STEM boards and advisory committees, including a number of regional industrial, educational boards as well. Vice President Johnstone is the past Executive Director of a telecommunication (i.e., technology) commission WCET. Interim Associate Vice President Jannik is the previous college Dean and was instrumental in building projects for the new Science Laboratory Center and the Pasteur renovation. Associate Vice President Quinn has been and continues to be supportive of developing increased collaboration between CIHSEP and the college, such as with Clinical Laboratory Sciences, Bioinformatics, and Mayo and other provider partnerships.

We have support in terms of WSU funding for PKAL attendance and L21 initiatives, although L21 support was in place prior to PKAL. Significant university funds were made available for teams of 8-14 WSU participants to each PKAL meeting. The leadership team is concerned about long-term support for many of the initiatives being piloted; to continue these and to expand beyond such efforts will require a combination of reallocation and long-term university support. Administration is currently developing a strategic-budget model in which these and other concerns are being considered.

e. Since members of the PKAL Inquiry Task Force are coming to campus, who do you recommend that we talk to during the visit?

Senior administration, including vice presidents of Finance, Advancement, and Student Services; Deans Council; the seven College of Science and Engineering Chairs and Departments. Additionally, we suggest hosting “reunion meetings” of each of the teams that participated in specific PKAL meetings, which would further enable participation by faculty from the College of Liberal Arts.

Any of the individuals listed within this report may provide useful perspectives regarding the relationship of PKAL to their contributions to the WSU mission. It would likely also be useful
to host several open meetings to solicit feedback from smaller groups of faculty and staff, both college and university wide. Finally, we suggest meeting with students who are engaged in research or in interdisciplinary courses/programs. This will allow a picture of what the student experience is like as a result of our efforts.

4. What sustainable and meaningful changes are in place?

What sustainable, meaningful, documented changes are in place to enable your institution to realize your vision?

a. What are the documented changes in curriculum requirements?

As noted earlier, WSU was in the 2nd year of a university-wide process of discussions and pilot projects, regarding potential directions for transformation of the university, prior to application for acceptance as a PKAL leadership institute. Many of the resultant curricular changes are compatible with the LI initiative and were accelerated due to PKAL involvement. These include a BA major in Geoscience which intentionally integrates geoscience with any other discipline a student chooses, continuing development of a Clinical Laboratory Science Program in Biology, and four curricular tracks in Computer Science: computer information systems, bioinformatics, geographic information technology, and human computer interactions. Departmental requirements for "capstone" research projects have also been significantly strengthened. The departments of Chemistry, Geoscience, Physics, and Biology have also continued to develop their collaborative program in Investigative Science for primary Education majors. The Geoscience department has additionally changed its introductory course requirement to enable students to enter the major from any of its broad survey courses. (Previously, students were required to complete a physical geology course; now, students can take any introductory level course – astronomy, oceanography, meteorology, natural disasters, earth resources, etc.) This change was implemented specifically to open the major to a greater number of students and is aligned with the “science for all” initiative.

b. What are documented changes in requirements for inquiry-based and project-based research experiences?

Changes in requirements for inquiry-based and project-based research experiences are components of the curricular changes noted in 4a. The Investigative Science program for Education majors has been specifically developed to provide these to a population of students who have historically had few opportunities for these experiences. The Basics of Life course for Biology majors has been redesigned to incorporate a "crime scene investigation" approach to its laboratories, and the Chemistry department has instituted a Forensic chemistry course. The Thermodynamics and Statistical Physics course now incorporates research-based projects. The cooperative Environmental Science majors among the Geoscience, Biology, and Chemistry departments continue to increase the inquiry-based laboratory activities. The Statistics major has added a capstone requirement, and this requirement is also under development for Mathematics majors. Winona State University continues to offer small research and travel grants for which undergraduate students may apply.
c. What are the number of faculty members offering learning experiences that incorporate inquiry, projects, and research?

Nearly all faculty members in the College of Science and Engineering offer such learning experiences through either their classroom and/or laboratory exercises or their student capstone research projects as noted in 4a and 4b above. A significant increase was made possible by the new Science Laboratory Center which opened a couple of years ago, and L21 initiatives have provided resources to enable faculty to accomplish this objective. For the past year, the notices of vacancy for all new faculty positions have included criteria that the new faculty members are expected to engage in undergraduate student research projects.

d. Are there documented changes in assessing student learning?

For many years, Winona State University has held an Assessment Day during spring semester in which classes are cancelled so that students and departments/programs may engage in assessment activities. While some of these are university-wide, each department will also be conducting surveys of their major students. Although these also predate the university's involvement in PKAL LI, the departments of Engineering and Geoscience use more formal assessments of student learning.

e. Are there documented changes in assessing capabilities of graduates?

This is an area in which Winona State University has made only modest progress. The department of Engineering sends surveys on how its educational objectives were met to its graduates, and the department of Geoscience requests feedback from employers and graduate advisors. However, both of these predate the LI initiative. Numerous discussions have occurred in the past year among chairs of the College of Science and Engineering on better ways for allowing access to institutional databases, enabling further contact with graduates and assessment; additional progress is anticipated in the coming year.

f. To what extent has the project made connections between the espoused vision and the contemplated sustainable and meaningful changes?

The Vision of Success addresses the need for helping students put knowledge into action, enabling them to adapt to new technologies and problems, constructing new ways to apply what they learn, and connecting this knowledge outside of their major fields. A number of changes have resulted which are hoped to be sustainable. In direct response to the PKAL initiative on increasing undergraduate research, a group of faculty have been meeting to discuss how research opportunities can be incorporated and integrated into meeting these goals. For the past two years, the faculty have organized a Spring symposium for undergraduate research in which students have the opportunity to present their projects to both the university and the public, working to break down disciplinary boundaries. There is current interest in adding an opportunity for a comparable university-wide symposium.

The Vision of Success also addresses a need for the university community to support both faculty and students in transforming the educational process. There is obviously still a lot to do
toward this, given that WSU joined the PKAL community only a year ago, but there has already been some progress. Approximately a year ago the university began a Leadership for the 21st Century initiative for faculty, staff, and administrators to address issues of transformative change. During the spring semester of 2006, this group addressed issues of educational collaboration, and, in early December of 2006, met again to address indicators for change and engagement in "smart change". Having the strong support of both WSU administration and the Minnesota State Colleges and Universities (MnSCU) system, this initiative will continue to bring members of our community together to advance the process.

**g. Are there changes in approaches to faculty development?**

We are moving away from a traditional emphasis on faculty development and are instead adopting a scholarly approach to institutional change, curricular development, assessment, and institutional engagement in community life. As this pattern grows stronger, faculty development is becoming a by-product of the way we approach our responsibilities as educators, rather than an end in itself. The university has instituted New Faculty Community of Practice (discussed previously) to provide support and professional development opportunities, aligned with WSU's L21 initiative, for newly hired faculty. The College of Science and Engineering also held a college-wide discussion in October of 2005 to present our PKAL initiatives to all faculty and staff of the college and to identify ways in which these can be incorporated into the college mission and activities.

**h. Did changes now in place differ from anticipated changes? If so, how and why?**

The primary differences from anticipated changes and those that have occurred have primarily been in the pace of progress. Transformative change is difficult for any organization, and universities have their own unique set of associated issues. However, as long as we continue to view this as an ongoing, evolutionary process rather than an end result, we will continue to improve.

5. What strategies and actions are being employed to bring about sustainable and meaningful changes?

NOTE: Thoughtful, comprehensive responses to the questions in section 5 are crucial toward our inquiry in the process of institutional transformation.

**a. How did implemented strategies differ from the proposed (from your application or participation in PKAL LI seminars) strategies? Why?**

Participants at PKAL meetings developed implementation strategies under the themes and topics discussed at these meetings. Upon returning to campus, participant groups did some work to implement these strategies. However college-wide discussion of these strategies and further implementation planning took place mostly amongst the participants or in smaller groups of faculty. Periodic reporting took place at college chairs’ meetings as well. There was an all-college meeting held in October 2005 at which participants from the Kansas City “Learning” meeting and the Baltimore “Research” meeting shared their ideas. While this meeting generated
broader discussion and interest, there were some faculty who expressed frustration about making change without providing additional money. Unfortunately, this sentiment, and ensuing diminished collegiality, gained support as the session proceeded. This was, perhaps, an indication that college-wide discussion were yet premature without additional maturation of the ideas and strategies developed through PKAL.

Some of the strategies developed at PKAL conferences were implemented with support from the L21 program. These include increased undergraduate research activities, and development of an interdisciplinary course in nano-science and engineering. Other activities, which required no additional L21 funding, were implemented as schedules and interest allowed. These activities ranged from the development of the CLASP “Does Science Matter” seminar series to things such as “common office hours” held by faculty groups in an effort to stimulate interdisciplinary conversations.

Perhaps the biggest factor contributing to the existing pace of progress has been the addition of other demands on faculty time. Faculty who are interested in reform and transformation simply feel overwhelmed by the scope of interests in PKAL and L21 work, the increasing calls for accountability in higher education (resulting in university studies – a.k.a. general education - assessment and course re-approval process, program reviews, and extensive teacher-licensure reporting requirements), sometimes conflicting demands of student research that require individualized attention alongside growing introductory-level class sizes, in addition to “normal” faculty workload. It becomes difficult to work on the intellectual and educational priorities in the face of periodic reporting demands.

b. What strategies are now in place to promote sustainability and institutionalization? What actions have been employed to support these strategies?

There is currently a scattering of structures in place to promote sustainability and institutionalization. However, there are likely better and more effective ways to move initiatives from pilot stage to fully implemented. Resource issues, culture issues, and implementation of some strategies are all under discussion at present during the college program review process. A beneficial exercise in parallel to program reviews (currently being completed in 6 of 7 college departments) will be to consider strategies for future development, to further promote a collaborative environment toward a common vision for the college, including inter-college collaborations, and align college efforts with the university Presidential work-plan.

A continuing collective priority is to establish the college chairs’ group as a center of communication and deliberation on strategic planning, including college hiring plans, budget and resource prioritization and allocation, and consideration of new directions for college initiatives and outreach. The chairs’ group may serve as a sounding board for initiatives that fall within the aegis of multiple college departments and can promote the consideration/decision making necessary to implement, and potentially institutionalize, successful innovations. Current work to sustain and institutionalize the Investigative Science courses is one example of this process.

Communication is paramount to promoting and sustaining a collaborative environment between college departments, as well as for installing and maintaining the successful results of innovative
approaches. During the recent Kansas City PKAL meeting, the WSU team developed a college communication plan, which will continue to be an important focus of attention for the college chairs’ group, with chairs carrying the discussion to each department for faculty input.

c. What strategies are in place to identify and develop leadership within the institution? What actions have been employed to support these strategies?

One strategy has been the development of focus groups, such as the undergraduate research group, the colleges of liberal arts and science promotion (CLASP) group, and the interdisciplinary nano-science and engineering group, and allowing leadership to emerge within each group. However, there is an expressed desire for more availability of internal resources in support of the leadership that has emerged within these groups, towards conscious management of an environment where emerging leaders are otherwise mostly absorbing the additional responsibilities into their normal load.

Through L21 granting cycles, WSU develops leaders within the faculty through innovations toward scholarship both in and out of the classroom. In the latest cycle of funding, the College of Science and Engineering had a significant percentage of total funded projects. This has spilled over into faculty seeking CIHSEP, NSF, and other external funding. Through various college projects, such as assessment strategies implementation, renovation project management, program review revision studies, engaged learning initiatives, college research symposium organization, etc., leadership is further developed amongst college department chairs as they lead informal task forces.

WSU piloted a “Leadership Academy” during the last academic year; membership was derived from all campus constituencies and partner institutions. The topic of discussion was identified by President Ramaley (to jump-start the process in its inaugural session) who challenged the group to develop strategies to support, improve, and implement transfer policies that served WSU and its partners. Ed Thompson (Biology Chair) and Cathy Summa (Geoscience Chair) participated in this first academy. Jeffrey Anderson (Interim Dean) was a member of the second such Leadership Academy during Fall 2006. The topic considered by the second academy, which was selected by the group itself, was advising programs and practices for students in various types of transition, e.g., new students, international students, transfers, change of major.

d. Which strategies do you think have been most effective? What evidence and reasoning support your evaluation?

A process of well-planned, appropriately timed, widely inclusive, open discussion and debate has, by far, lead to the most effective results. The evidence for an effective strategy would be that it gives rise to a “stable” decision in the sense that the resulting decision survives most future questions/challenges in essentially the same or amended format. Additional evidence is provided by the amount of faculty buy-in in the result and number of faculty wanting to be directly involved in a new venture. It is on this point where the sustainability question becomes answered, as new courses or programs survive retirements and changes in personnel (or even department structures). Still more evidence of an effective strategy is the degree to which the decisions rendered successfully address economic realities bearing upon the particular situation.
The Learning Community model that evolved as part of the L21 planning process shows potential for lasting success, in part based on the strength and cohesiveness of the individual group. The Learning Community examples outlined in our response to question 3c illustrate the current successes of this model at WSU. PKAL groups have similarly formed around topics of the various conferences attended, but, with the exception of the research group, have met less formally and yet driven substantial progress on interdisciplinary and science for all work (as described elsewhere).

Ultimately, a strategy, which has been most effective, is one of determining, supporting, developing, and celebrating faculty and student passions for learning, original discovery, application, and service to the community. Regarding L21, the evidence for success of such a strategy is in the volume of proposals for various rounds of grant cycles. Additional evidence may be inferred from increased participation and enthusiasm for the college symposium, wherein student research projects are showcased.

e. Were any strategies unsuccessful? If so, what, how, and why?

Due to the newness of strategies, it is mostly premature to comment on those which are unsuccessful. Beyond regular conversations amongst college chairs, which were continued within departments in varying degree, development of visions at the various PKAL meetings were not followed-up on a regular basis throughout the college (for a variety of reasons, some of which were discussed previously). Thus, the impact and implementation of these have remained largely within small groups formed by PKAL participants. Despite college chairs promoting PKAL participation within departments, there are still faculty who either do not know what PKAL is all about (as mentioned previously, it’s still possible for faculty to remain largely unaware of college and/or university initiatives) or would have liked to attend a PKAL event but did not know how to become involved (dependent upon the success of communication by department chairs). Some chairs took the approach of asking specific faculty to participate, while others opened the opportunity to all departmental members.

6. What strategies and actions are being employed for faculty and staff development?

NOTE: Thoughtful, comprehensive responses to the questions in section 6 are crucial toward our inquiry in the process of institutional transformation.

   a. What strategies are being employed to promote faculty and staff development? What actions have been employed to support these strategies?

University-wide L21 and Leadership Development efforts are providing funding and continuing scholarly growth on a variety of issues, such as engagement and partnership development. Faculty participation in conferences, workshops, and colloquia have also been supported by the university. For example, faculty were supported to attend a Greater Expectations conference, a national AASCU meeting, and a recent Spellings Commission Colloquium. Additionally, the university has provided funding for continued participation in PKAL.
As part of the L21 transformational process, WSU has developed a New Faculty Community of Practice (NFCoP), designed to introduce new faculty to the latest educational research on effective teaching and to the scholarship of teaching and learning (SoTL). Participation in the NFCoP is open to all new probationary faculty at WSU, and the initiative is in its second year. The NFCoP meets formally on a weekly basis during the spring semester and faculty participants are reassigned from 3 s.h. teaching to participate in the program. College faculty participating in this program have been widely involved in college and university initiatives, including serving as speakers in the CLASP “Does Science Matter” colloquium series and developing interdisciplinary learning opportunities for students.

Faculty development at WSU is directed by a team of faculty appointed by the Faculty Senate. Their activities are largely focused on providing one-time workshops offered during the weeks prior to the start of the fall and spring semester. These events have been offered less regularly, as of late, and have had varying degrees of attendance. As part of the L21 process, a proposal for a revised, university-wide professional development program has emerged that focused on providing longer term, sustained and topical or thematic development opportunities in which faculty could choose to participate (learning communities). This is the basis from which the New Faculty Community of Practice emerged. Several other groups evolved through this process (around service learning, research, wellness, etc.).

b. Which strategies do you think have been most effective? What evidence and reasoning support your evaluation?

University support, including financial support, for faculty attendance at conferences, workshops, and colloquia has shown some success as evidenced by different approaches and innovations discussed throughout the university community. Similarly, university funding of PKAL attendance has returned a different level of discussion to the university concerning reform, sustainability, shared vision development, undergraduate research initiatives, leadership, interdisciplinary programming, etc.

Feedback received from discussions with new faculty supports the success of the New Faculty program. The seminars are on pertinent topics, such as university engagement, promotion/tenure, and scholarship of teaching and learning. New faculty who have participated in the New Faculty group in the past two years have been widely engaged in L21 initiatives, and new college faculty have been enthusiastically engaged in PKAL efforts. As one example, new faculty (participants in the New Faculty program) comprised 38% of the speakers in the “Does Science Matter Series”; there was no representation from the cohort of faculty hired in the year prior to the start of the new faculty program. Additionally, a member of the new faculty group served on the “Does Science Matter” organizational team.

The difficulty in scheduling college PKAL/vision events, in light of busy faculty schedules, was a topic of much discussion at PKAL in Kansas City. Resolution of the matter at WSU is yet ongoing.
c. Are faculty members thinking and acting differently about their roles as leaders? If so, how? What events prompted these changes? What are stories of individual growth and development as leaders?

The perception is yes. Faculty are talking more about the themes that were raised at various PKAL events last year. There is greater discussion about teaching, undergraduate research and so on. Some groups have more actively established themselves as on-going committees. For instance, the research group has expanded into an all-university committee. While the core of that group was founded prior to our participation in PKAL, it was re-energized as a result of participation in the Baltimore meeting. The “Science for All” meeting in San Antonio contributed to the development of a lecture series entitled “Does Science Matter?” Professors from across campus (from Liberal Arts, Business, Science, and Education) gave a series of lectures on the topic.

Along with Interim Dean Anderson, the chairs’ group continues to work towards being more deliberative, participating in the decision-making process on college-level issues, such as strategic planning, resource allocation, and contributing to a college hiring plan. This work is really in its infancy, but has potential to significantly change the tenor of college chairs meetings and progress in the college. President Ramaley has been supportive of developing leadership at all levels within the institution and the furthering of shared vision and decision-making.

d. Are people approaching teaching and learning differently? If so, what prompted these changes?

There is a growing trend to approach the study of teaching and learning as more scholarship/research in nature. This has been promoted via philosophies increasingly communicated by new, emerging, and seasoned leaders campus-wide. During the previous academic year, the Professional Development initiative issued an RFP for projects from faculty at all levels on the scholarship of teaching and learning. (This unfortunately did result in conflict raised by faculty who chose to remain detached from ongoing L21 efforts.) The changes that are occurring tend to be spearheaded by individual faculty members who have participated in PKAL meetings during the past year or who are actively engaged in L21 efforts. However, there is strong evidence to suggest other faculty who have undergone change due to simply the influence of PKAL/L21 innovative work. We additionally acknowledge change that has come about amongst faculty due to reasons we are not able to identify at this time.

7. Individual Stories

What change have you seen or been involved in creating, as a result of the PKAL initiative? Examples include: changes in your individual work; specific course design; curricular changes; etc.

Most of the individual stories have been included above. In this final section, a synopsis of the report, along with explanatory notes on its preparation and other information not completely addressed previously, is provided. Essentially, this is our collective story.
At Winona State University, the PKAL initiatives of a research-rich environment, promotion of interdisciplinary endeavors, use of technology to create effective and efficient learning environments, and efforts to foster an appreciation of science by all students, permeates our educational efforts. Prior to involvement with PKAL, the university had begun a journey to transform itself into a university that prepares individuals for life, work, and leadership in a rapidly changing, competitive, and complex global society. This effort involved faculty, staff, students, and administration examining our current status and dreaming about what the best practices could and should be.

The WSU L21 transformative effort has coincided with WSU involvement in PKAL. Administrative support being key, the faculty of the College of Science & Engineering have seized the opportunity to promote and validate efforts already underway and to attempt tangible changes in the fabric of our university. Efforts have not stopped at the college boundary, as inclusive approaches now reach out to colleagues in other colleges, exposing them to the PKAL initiatives in which they have participated. New collaborations have been borne that promote learning across colleges. For example, a Student-Faculty Research Capstone Experiences Learning Community began meeting on campus after the Baltimore meeting.

Upon return from the San Antonio PKAL meeting, faculty participants advertised and met with students during common group office hours designed to promote and expose science to more students. This also fostered a greater community among faculty. Several innovative efforts were made under the umbrella of the interdisciplinary initiative. Courses which brought the arts and sciences together were offered. New courses were designed to expose students at all levels to enticing scientific topics. At the department level, PKAL initiatives will certainly find influence as the STEM departments progress through five-year program reviews and look to assess and revise curricula.

Given that L21 and PKAL have co-existed at WSU for just over a year, it is difficult to separate innovations due exclusively to PKAL. In that PKAL continues to promote development of shared vision, effective communication, and distributed leadership, it has been instrumental in providing an atmosphere where initiatives (some from L21, some from PKAL) have had adequate opportunity to be piloted and then implemented on a more long term basis. That same atmosphere has provided the means to build support amongst faculty and promote direct consideration of issues such as economics necessary for sustainability.

Through this development, the college has implemented several new courses/curriculum, such as Arts/Drawing for the Sciences and the interdisciplinary Science/Dance course, begun steps to institutionalize previously piloted initiatives, such as Investigative Science and Environmental Science, and started down the road to building processes for college-wide strategic planning, appropriate allocation/utilization of resources, meaningful program review/assessment, and exploration of ways to support further directions for which faculty are passionate (such as service learning, student research, interdisciplinary course development, applied research).

Some final comments are necessary to provide a complete context within which the present case study was prepared and wherein the College of Science & Engineering continues to further establish a commonality of realized vision throughout faculty, staff, students, and administration.
at WSU. College chairs requested and coordinated input from their respective departments. The resulting material was combined with input gathered from participants of PKAL workshops and from a variety of available WSU reports on L21 projects and so forth.

Predictably, faculty were not entirely enthusiastic about providing information for one more report. There are currently a number of reporting, assessment, and accreditation requirements placed upon faculty time, many seen as bureaucratic rather than academic in nature. In completion at this time is an extensive, university-wide report required by the Minnesota Board of Teachers upon which rests the ability for WSU to deliver teaching degrees that may be licensed. As part of Higher Learning Commission requests, WSU continues with assessments of all University Studies (a.k.a. General Education) categories and courses. Within the college, the Department of Engineering recently completed its ABET accreditation process, and the remaining 6 College Departments all have program reviews in preparation. It is worth noting here that WSU has also adopted a new program review process, more closely aligned with Higher Learning Commission standards. It appears to be generally believed amongst faculty that the time needed for such reporting is better put towards building and maintaining new STEM environments at WSU. Thus, a great challenge for the immediate future, likely included in the aegis of college communication, is to approach the need for more efficient, academically useful means of assessment, reporting, etc.

The contents of the submitted report, while providing informative and illustrative examples for consideration, is surely incomplete. However, responsibility for such omissions, where they occur, shall not be borne by an “author” of this report. In the same collaborative spirit that is important to the vigor of many department and college initiatives, authorship of a college report must be viewed as equally collaborative. Where perceived breaks in communication and inclusion have occurred, these serve to provide examples of what is yet left to be approached. If a group or individual is inspired to come forward as a result of present lack of inclusion of their respective work, that may, indeed, be seen as further success of the exercise of PKAL Case Study Report preparation, Site Visit, and the continuing process of collective vision development, experimentation, implementation, and institutionalization.

Ultimately, the report is both a reflection of successes toward sustained reform in STEM at WSU and is, indirectly, a chronicle of ongoing efforts to expand upon the enthusiasm and talents throughout the college toward building a community, unified in common vision and in a true environment of collegiality.