

**Internal Review Committee Rejoinder to
Science & Mathematics Division Memo
April 28, 2009**

Introduction

The Internal Review Committee (IRC) met on April 23, 2009, to draft a reply to Rick Badley's memo (hereafter referred to as the *memo*), dated April 7, 2009. The following committee members were present: Rodney Birch, Judy Dunham, Bill Ness, Lori Niles, and Russ Reglin. Prior to the meeting, Judy Dunham gave each committee member a copy of the *memo* and asked him or her to consider its contents.

Prior to discussing each bulleted item in the *memo*, the IRC members engaged in a general discussion about the Program Review Process and the outcome of this review. Below is a summary of these observations.

- First, different expectations about the structure of the self-study report (hereafter referred to as the *Report*) apparently exist. For example, the IRC assumed the text of the *Report* would reference all appendices that supported statements requiring evidence. The Science and Mathematics Division likely assumed the IRC committee members would search through the appendices for supportive information.
- Second, the IRC agreed that many of the criteria are difficult to interpret. In some cases misunderstandings between the contents of IRC's Response (the 26 page document) and the *Report* are semantic. For example, on page 3 of the *memo*, it appears the Science and Mathematics Division interpreted the word *community* to mean the *internal MNU community* rather than the *external community* as the IRC intended.
- Third, the members used the IRC Response written for European Nazarene College's Internal Review Process as a writing guide. Perhaps the committee should have referred to another Division's Response for structure and layout. The differences expressed in the *memo* and the IRC Response suggests opposing perspectives about the *stretch* required to meet national standards. When writing the Response, the IRC perceived the Higher Learning Commission (HLC) Criteria as difficult-to-meet national standards at the institutional level. Therefore, the committee worked from the assumption that these standards are even more difficult for individual divisions and departments within institutions of higher learning to address, given the limited resources of most academic divisions.

If a different perspective does exist between the IRC and the Science and Mathematics Division about the HLC standards, the Program Review Process at MidAmerica would benefit from a report template that lists the most important elements for each criterion relative to divisions and departments. This template would address the problem that a given IRC *expects too many examples of evidence for each criterion*.

- Fourth, the IRC committee agreed on the inherent difficulties of peer review at MidAmerica since many faculty have established deep personal friendships with each other across divisions and departments. The Program Review Process often strains these relationships, and as a result, the process may lack integrity and fragment the community. This process should promote healthy exchanges and supportive relationships between faculty and divisions/departments. The IRC believe that faculty and administrators need training on how to evaluate and conduct peer reviews.

The comments below are responses to the bulleted points in the *memo*.

Formal mission statement and related documents such as vision, values, goals, or outcomes

The IRC evaluated the Science and Mathematics Division by the terms and criteria used in the HLC Criterion 1. Based on the *memo*, the Science and Mathematics Division believe their objectives and the departmental goals stated in Appendix 8 are equivalent to HLC's terms of mission, vision, values, goals, and outcomes. To highlight the difficulties with semantics, the IRC did not interpret the term *goals* in Criterion 1 as strategic, such as those listed in Appendix 8. The IRC interpreted goals to describe the overarching intent of the Division *at the present time*, such as *to offer science and mathematics programs that prepare students for advanced professional degrees*.

It would be helpful if the administration would standardize terms. Apparently, there is no administrative directive for divisions and departments to have similar foundational statements, so the administration needs to clarify these requirements for the Program Review Process.

However, the IRC presented information in the Response about Criterion 1 to guide the development of the Science and Mathematics Division. The IRC encourages Division administrators and faculty to create a mission statement, using as examples the mission statements created by the Business, Education, Fine arts, Nursing, Religion, and Innovative Adult Education Divisions. The IRC believes that mission statements and related vision, values, goals, and outcomes empower divisions and strengthen their positions relative to budget requests and strategic planning.

Limited evidence of faculty qualifications

The IRC concedes that the Science and Mathematics Division provided information about faculty in Appendices 20 and 26.

Utilize only university documents for planning

The IRC reviewed the short- and long-term goals in Appendix 16. It appears that the university needs to standardize their expectations for strategic planning documents as well as the definition of terms. The IRC was looking for strategic planning documents that included aspects such a **mission**, from which **goals** are articulated, these **goals** tied to

strategies for achieving them, and an **action plan** based on the goals that includes **objectives** and **personnel responsibilities**. This document corresponds to various line items in a **budget spreadsheet** to ensure the feasibility of the strategic plans, resulting in a collection of planning documents that demonstrate the various aspects of strategic planning.

To creatively fund professional memberships

Several members of the IRC did not know that it is standard procedure at MNU to fund professional memberships of individual faculty. The statement was meant to note the Division's concerns and to affirm the need for supporting the professional development and work of the Science and Mathematics Division faculty.

Uniformity of assessment measures within multiple sections of a course

The wording of the *Report* led to the IRC's confusion. On the bottom of page 22, the words "*Faculty members within each department self-determine student learning outcomes and create strategies and assignments to assist students in appropriately meeting these outcomes.*" It's the IRC's understanding that individual faculty members cannot determine stated departmental/division outcomes, so the IRC interpreted this practice as one that is outside of what is normally allowed in the Outcomes Assessment process at MNU.

Furthermore, the business of the IRC was to assess the strengths and weaknesses as revealed in the *Report*. The request that assignments and tests be placed in the *Report* was not meant to imply that the Division is not doing what they state on the data mastery sheets. Examples of tests and other assignments would substantiate *how* the requirements are being met. When Bill Ness developed the Self-Study Report for his department, these documents were deemed necessary by the Kansas Department of Education as substantive evidence of how, specifically, standards were being met. This information could appear in a separate appendix and would not add to the length of the *Report*. The evidence does not have to be exhaustive and usually involves pulling a few representative samples from already existing files.

These differences regarding the expected or standard content of Self-Study *Reports* further reveal the need to standardize the requirements for the Program Review Process. A simple list of essential evidence to include would clear up many of these differences of opinion.

Evidence that the Science and Mathematics Division evaluates its own teaching rests largely upon a written assertion that faculty participate in the standard MNU evaluation cycle

Suggestions in the IRC Response concerning faculty evaluation were meant to spur the Division forward in this area. All divisions are required to go through the standard university evaluation cycle, and the IRC concedes that it may be difficult to provide more than a written assertion of compliance without comprising privacy issues.

The main points of this section were not, however, to imply that Division faculty do not participate in the university cycle. Instead, the IRC suggests that the current cycle is not adequate at assessing performance and relies heavily on subjective measurements such as student evaluations. In addition, the present system does not seriously consider rewards for meritorious service, nor does it provide for any reliable assurance that intentional mentoring of new faculty takes place.

The call here is for the Division to consider initiating procedures above and beyond the University minimum. Please recall that the IRC stated the Division met the standards for Criteria 3. The IRC is not questioning if the Division has met the requirements for instructional competence, but simply offering ideas for possible ways to strengthen the Division. The IRC members considered their work on the committee an opportunity to make additional suggestions based on their experiences as faculty and administrators here at MNU.

Newly acquired lab equipment is currently underutilized and no formal means for assessing how well students are trained

First, the IRC was instructed to use commonly known information in their deliberations. Last fall during Faculty Assembly on October 27, 2008, there was a lengthy discussion when the new Forensic Chemistry and Biology majors were approved. This discussion referred to underutilized lab equipment. Second, the two references to the lab equipment on pages 25 and 30-31 of the *Report* indicate the benefits of and intention to use the equipment but do not state the extent to which it is presently used or how it is used to support learning and effective teaching. Once again, the IRC was searching for evidence that *Core Component 3D Learning resources support student learning and effective teaching* is met by the Science and Mathematics Division. Evidence reflecting the use of the lab equipment could be examples of lab assignments in an appendix.

The Self-Study mentions that Division funds seminar speakers each year, yet it's unclear under which category these fund appear.

The statement in the *memo* about hosting seminars with speakers who will apparently come to MNU and give free presentations is commendable. The IRC would also make the case that strong strategic planning tools would help to justify additional expenditures in this area.

Attendance at professional conferences

The statements in the IRC Response were not meant to blame Science and Mathematics Division faculty for not attending more conferences. Indeed, the IRC believe the Division may be underfunded in this area. The statement “only Rick Badley and Matt Sattley attended a professional conference in 2008 and Larry Haffey attended a conference in 2007” were meant to expand what the report already stated, to give supportive evidence for faculty to attend more professional conferences.

Ethical, legal, and moral responsibilities

The IRC acknowledged that ethical and legal issues are present in the Division's syllabi. The suggestion was to make the information more accessible to *all* students *all* the time

through admission handouts, a student handbook, documents posted on an Internet site, and/or a statement in the catalog.

The *Report* concedes that Nursing and Criminal Justice are most active in connecting with the community

This statement, on page 25 of the IRC Response should be changed to “The *Report* concedes that the disciplines of Nursing and Criminal Justice and General Education science students have the most access to the science labs.”

Finally, the IRC assures the Science and Mathematics Division faculty and administration that they will not discuss the contents of the Self-Study *Report*, the IRC Response, the Science and Mathematics *memo*, or this Rejoinder with the larger MNU community; therefore, this Program Review process should not damage the reputation of Science and Mathematics Division.

Internal Review of Science and Mathematics

Response to Self-Study Report March 24, 2009

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Submitted to:

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Submitted by the Internal Review Committee:

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Note on Process:

On November 1, 2008, Mark Ford distributed copies of the Science and Mathematics Division Self-Study Report (hereafter referred to as the *Report*) to the Chair of the Internal Review Committee (IRC), Judy Dunham. She distributed these copies to the committee members and instructed them to read the *Report* before the first meeting.

The first IRC meeting was held on December 2, 2009, and all committee members attended this meeting. The committee discussed MNU's Program Review Plan, the timeframe for review, and the IRC's purpose and agenda. During the meeting IRC members discussed the contents of the *Report* and offered their initial observations, including its strengths and weaknesses. The committee chair assigned each member a Core Component and asked him or her to write a response to the Component by the end of January 2009.

Committee members sent an electronic copy of their section to Dr. Dunham and she created the first draft for the next meeting, which was held on January 29, 2009. At this meeting, the committee members shared their initial findings and discussed the reports major strengths and weaknesses. Members evaluated the appendices to verify the narrative.

On March 9, 2009, Judy Dunham sent the second draft of the report to each committee member. In addition, she sent an edited version to track the changes she made. She asked committee members to read and edit the report, create a list of strengths and weaknesses, and recommend another meeting, if they felt the need.

Based on suggestions offered by the committee, Dr. Dunham created a third draft of the document and sent it to two committee members for a final review. Using their suggestions, she revised the document (4th draft), printed five copies of the final document, and sent an electronic copy to Mark Ford on March 24, 2009.

CRITERION ONE: MISSION AND INTEGRITY

Criterion Statement: The Science and Mathematics Division operates with integrity to ensure the fulfillment of its mission through structures and processes that involve the board, administration, faculty, staff, and students.

The IRC finds that Criterion One does not meet the standard for a specific Divisional mission. While the *Report* states that the Division of Science and Mathematics utilizes the University's mission statement and publishes Division objectives, the IRC finds no formal Science and Math Division mission statement or related documents such as vision, values, goals or outcomes. Department goals for 2008 were included in the appendix. Specific recommendations for improvement are found in the narrative response of the IRC to each core component.

Core Component—1A. The Science and Mathematics Division's mission is clear and articulates publicly its commitments.

The IRC finds that the Science and Mathematics Division relies on the University mission statement rather than having a fully developed mission statement of its own specific to its Divisional disciplines. While the Division objectives (as published in the catalog) are recorded in its report, no clear statement synthesizing or reflecting the objectives has been articulated. There appears to be a lack of clarity regarding the application of terms used in Criterion One, which leaves the *Report* difficult to assess. The IRC recommends the development of a mission statement unique to the Division.

Core Component—1B. In its mission documents, The Science and Mathematics Division recognizes the diversity of its learners, other constituencies, and the greater society it serves.

The IRC finds that there is no specific recognition of diversity within the objectives of each major in the Division. The objectives address various constituencies within the student body (General Education and majors). The objectives also address the greater society (graduate and medical school, industry, and government) and the differing needs represented by these constituencies. The IRC recommends a mission statement that demonstrates the diversity inherent in the discipline, as well as in the society.

Core Component--1C. Understanding of and support for the mission pervade The Science and Mathematics Division.

The Division provides evidence that faculty and students support the mission of the University, but does not provide evidence that students and faculty are aware of a distinct Divisional mission. The Division does provide evidence that it cooperates with other Divisions' missions and with the mission of the University by providing supportive coursework across disciplines. The IRC recommends the development of a comprehensive mission statement that transparently links its values to that of the University-wide mission.

Core Component--1D. The governance and administrative structures of The Science and Mathematics Division promote effective leadership and support collaborative processes that enable The Science and Mathematics Division to fulfill its mission.

The IRC finds the Science and Mathematics Division offers evidence of collaborative administrative responsibilities, including participation in University committees and shared program management and advising responsibilities within the Division. There is evidence that curricular changes are pursued through collaborative processes, utilizing emails, phone calls, and

meetings. The Division makes use of embedded strategies such as the outcome assessment process and the annual review process. The IRC notes that there is limited evidence of faculty qualifications to carry out the responsibilities of each position. This evidence might include updated curriculum vitae and evidence of continuing professional development and contribution. The IRC recommends that the curriculum review process may be strengthened by using a more systematic or rotational approach.

Core Component--1E. The Science and Mathematics Division upholds and protects its integrity.

The IRC finds the overall evidence provided in this section relies on measures relative to the University's mission and policies. While the Report clearly shows that the Division follows university-wide policies, such as the formal grievance procedure, there is no Divisional mission statement, and the *Report* focuses on the ethical and spiritual components of the Division's service. The Division offers some evidence of connection to external constituencies, which mirrors its promises on MidAmerica's website (Appendix 4). It does not, however, address any evaluation or follow up policies relative to these external connections. The IRC notes the potential issue of unclear expectations specific to the Division, as well as unclear processes and procedures within the Division. For example, there is no advisory council that includes representatives from external constituencies to address integrity issues. Given the lack of clearly defined, measurable goals, it is hard to track the evidence presented. The IRC encourages the Division to develop a clear mission statement against which to measure the integrity of its performance.

CRITERION TWO: PREPARING FOR THE FUTURE

Criterion Statement: The Science and Mathematics Division allocation of resources and its processes for evaluation and planning demonstrate its capacity to fulfill its mission, improve the quality of its education, and respond to future challenges and opportunities.

The IRC finds that Criterion Two does not meet the standard for fulfilling the Science and Math Division's mission, for improving the quality of its education, and for responding to future challenges and opportunities. While there is a worthwhile effort to create a new Forensic Science major and update Computer Science curriculum, and laudable work in the outcomes assessment process, the *Report* does not express a strategic vision to guide the Division's future. This insufficient planning and evaluation process could be the result of the lack of a Division mission, vision, values, goals, and priorities.

Core Component—2A. The Science and Mathematics Division realistically prepares for a future shaped by multiple societal and economic trends.

The narrative portion of the *Report* indicates documents used for planning are annual reports, the "Next Steps" document, the annual budget reports, and class scheduling documents. The updated Computer Science major and science lab equipment and plans for the Forensic Science major demonstrate attention to environmental scanning. However, there is no evidence of how the Division plans to function in a multicultural society. Incorporating both history and change is limited to hiring faculty and annual performance reviews.

The IRC notes the potential significance of the implementation of the Forensic Science major this academic year (2008-2009). There is no evidence that the science lab equipment obtained by federal grant monies is used, although the implementation of technology by the Science and Math Division is to be commended. A website maintained by the Biology

department with approximately 11,000 files along with extensive use of Blackboard technology provides supportive opportunities to students seeking information via electronic databases.

Overall, the IRC has concerns about the lack of comprehensive strategic planning and vision. The *Report* indicates that the Science and Math Division utilize only University documents for planning purposes. These instruments are not sufficient to cast and implement a greater vision for the Division. After the Divisional mission, vision, values, goals, and priorities are in place, the IRC recommends that the Science and Math Division faculty fully prepare for the future by reviewing the individual departmental goals and prioritizing and categorizing them into a workable plan. The strategic plan should include innovative action steps that include the development of resources and allocations to the various programs. As Division personnel tackle these plans, they will be able to examine whether or not they achieve the Division's strategic planning goals.

Core Component—2B. The Science and Mathematics Division/program's resource base supports its educational programs and its plans for maintaining and strengthening their quality in the future.

The *Report* provides evidence for strengthening the Division's resource base in several areas. The science and computer lab equipment has been updated, in part through a federal grant; the Division initiated a "Science Pioneers Scholarship," and they intentionally provide for the education of faculty without terminal degrees. Expanding on the points above, the IRC notes the following issues concerning resource allocation.

Professional development of faculty is difficult. Memberships, conference travel, and copies printed in the Metz computer lab were funded by budgets outside of the Division until recently. The IRC understands that cuts to current budgets make adequate funding and full

participation in professional endeavors fiscally difficult. Administrators will need to use webinars and other cost-effective professional development measures. In addition, they will need to creatively fund professional memberships. In attempts to intentionally utilize its human resources, the IRC notes the Division encourages faculty participation in campus faculty development sessions, yet these sessions are usually not discipline specific. The IRC recommends a greater effort to communicate the results of faculty accomplishments during sabbaticals as a way for all faculty to benefit from one another's professional leave.

The IRC understands that MNU's science facilities are the smallest of any Nazarene schools, thus making lab scheduling for student access extremely difficult. Consequently, seeking creative and effective ways for resource development and allocation should be a high priority. In addition, the IRC strongly encourages specific and consistent use of the recently purchased DNA technology by federal grant monies by both internal constituencies and creative partnerships with external constituencies.

Core Component—2C. The Science and Mathematics Division/program's ongoing evaluation and assessment processes provide reliable evidence of institutional effectiveness that clearly informs strategies for continuous improvement.

The *Report* mentions that the Division has received numerous awards for its outcomes assessment efforts. Records of evaluation and assessment procedures in the form of data mastery sheets for each noted outcome, evaluation forms for each major, and Division meeting minutes are appended material. Teacher education programs in the Division are fully accredited through the state of Kansas as well as NCATE. The IRC commends the Division's administrators and faculty for their laudable efforts, which include preparing students to successfully pass national exams, produce exemplary senior projects, and integrate their Christian principles into the

science disciplines. The IRC notes that the Science and Mathematics objectives are also the assessment outcomes. They recommend clarifying and consistently using the same terms in all program areas.

Core Component—2D. All levels of planning align with the organization’s mission, thereby enhancing its capacity to fulfill that mission.

Although the Division demonstrates effort to keep planning aligned with the University’s mission and a list of program goals in the appendix, there is no evidence of a coordinated planning process. To reiterate, the first step would be to develop a Division mission statement that includes a vision, values, goals, and outcomes. Then a coordinated planning process centered on the mission of the Science and Mathematics Division can be engaged. The IRC notes that the standard suggests that budgeting priorities should be linked to the Division’s mission.

The *Report* includes evidence to suggest an awareness of relationships between educational quality and learning. It highlights efforts to keep the Metz computer lab up to date by replacing computers every four to five years. The IRC also commends the Science and Math Division for their purposeful hiring of faculty who emphasize personal and collaborative research as a means of providing students greater research opportunities.

The *Report* suggests that Division personnel communicate face-to-face with professors from other institutions and in professional meetings, including the pre-med conference at the University of Kansas. Since the university now has new travel limitations, the IRC is concerned about adequate dialogue with external constituents in the future. Perhaps faculty could take advantage of electronic communication tools to build bridges with external constituencies.

The Division's effort to communicate with alumni is noted and the IRC commends these efforts. The IRC challenges the Division's administrators and faculty to develop accurate current and projected levels of budgets required to achieve its preferred future in our diverse, complex, global, and technological world and to utilize technology to facilitate professional communication and collaboration within the scientific community. The IRC believes this purposeful planning will assist the Division in fulfilling its mission.

CRITERION THREE: STUDENT LEARNING AND EFFECTIVE TEACHING

Criterion Statement: The Science and Mathematics Division provides evidence of student learning and teaching effectiveness that demonstrates it is fulfilling its educational mission.

The IRC finds that the Science & Mathematics Division meets the standard for student learning and teaching effectiveness. *The Report* presents evidence that the faculty are highly effective at meeting their student learning objectives/outcomes. The Division provides multiple indicators of their technical expertise and willingness to go the extra mile to provide a quality learning experience for their students. Suggestions to the existing *Report* involve providing enhanced documentation to further verify verbal assertions and more detailed examples of work in progress. In a few instances, the IRC suggests implementing more intentional procedures to address specific areas of weakness.

Core Component—3A. The Science and Mathematics Divisions goals for student learning outcomes are clearly stated for each educational program and make effective assessment possible.

The Science & Mathematics Division has provided ample evidence that a variety of direct and indirect assessments are used to determine the success of the program's learning outcomes. However, the exact nature of some of these assessments is not evident. Nowhere in the *Report* and its appendices is there a section containing rubrics or other specific information on the expectations that underlie the various assessments presently administered. The IRC recommends adding rubrics, assignment descriptions, and sample tests that correlate with the assessments listed on data mastery sheets in Appendix 16. This information is particularly needed as all data mastery sheets use percentage scoring, rather than listing of specific skills learned, as the criterion for success. The general descriptions of assessments provided on data

mastery sheets offer no concrete information regarding skills addressed in assignments or specific content and/or skills measured on the various exams, thus leaving reviewers with a lack of content-specific information as to what the Division requires of its students.

Although *the Report* indicates that each instructor independently constructs his or her own assessment tools, the IRC suggests that information be added to the Report to indicate cooperation between individual department instructors to ensure uniformity of assessment measures within multiple sections of a course. Also, while standards may originate independently, the IRC advises that the various departments within the Science & Mathematics Division build consensus on the nature, quality, and consistency of assessments presently implemented.

Core Component—3B. The Science and Mathematics Division values and supports effective teaching.

Background information in Appendix 20 concerning Science and Mathematics faculty credentials indicates that a highly skilled and competent coterie of instructors inhabit this Division. As stated previously, the Division self-reports that a shortage of funding for professional development conference travel has had a dire effect on their professional development in recent years. The IRC recommends that the Division more aggressively pursue alternative avenues toward professional development such as online instruction and satellite or web-based conferencing. Some form of in-house instruction involving peers teaching peers on selected subjects might also be considered as an alternative to cost-prohibitive travel.

Evidence that the Science & Mathematics Division evaluates its own teaching rests largely upon a written assertion that all Division faculty members participate in the standard

MNU faculty evaluation cycle. The IRC notes that no actual documents are included to substantiate this assertion. We further note that there is no indication of consequences of poor evaluations or of rewards for particularly meritorious ones. Some indication of how evaluations are utilized either to improve inadequate pedagogy or to reward superior teaching would strengthen this section of the *Report*. Particularly, the matter of recognition of effective teaching is not specifically addressed in the *Report* and raises questions as to whether any such formal or substantive recognition exists. Also, evidence that intentional mentoring of younger faculty members by more experienced ones takes place, either by way of examples or Divisional policy procedures, could be added to support the statement in the *Report* that such mentoring indeed takes place.

The IRC finds that most of the items cited in the *Report* as evidence of the Division providing support to improve pedagogy are university-wide or individual initiatives, not, in fact, Divisional in origin. It is advised that the Division be more intentional in identifying and prioritizing areas of need in professional development and that a statement of intention to initiate a process for identifying and meeting such needs be included in the *Report*.

The IRC commends the Division on its initiatives in the use of technology and its acquisition of new lab equipment. The committee would, however, like to see more indication that the new lab equipment is presently in use, or that there are existing plans in place for its future implementation in the curriculum.

Core Component—3C. The Science and Mathematics Division creates effective learning environments.

The list of changes implemented as a result of outcome assessments that appears on page 29 of the *Report* provides substantive evidence that the Division is utilizing such results to address student needs and improve pedagogy. The IRC recommends that this list be referenced when addressing the question of how assessment results inform improvements in curriculum, etc. that appears earlier in the report on page 26.

The IRC commends the Division of Science & Mathematics for their flexibility and sacrifice in providing early morning lab sessions to meet the needs of student athletes and other students with complicated or overly full schedules. The committee finds, however, that the needs of students with poor academic skills or students arriving with less than adequate backgrounds in science methodology and lab techniques are not directly addressed. This standard stresses that the science and mathematics environment should support all learners.

The committee suggests that the Division consider intentionally mentoring poorly prepared students. Procedures for identifying them early in the educational process and offering them enhanced assistance could become a standard procedure. These students could be paired with more accomplished students, participate in remedial tutoring through Kresge, and complete on-line tutorials. These remedial measures could be adopted as policy, particularly for all courses involving labs. The IRC recognizes that the Science & Mathematics Division thoroughly prepares its students for success in the post-graduate world, as evidenced by outstanding test results and hiring rates, but the committee would like to see more evidence of efforts toward students with shortcomings at the entry level.

Core Component—3D. The Science and Mathematics Divisions learning resources support student learning and effective teaching.

The IRC finds that the Science and Mathematics Division is exemplary in utilizing classroom technology and acquiring improved lab equipment. The committee finds, however, that newly acquired equipment is currently underutilized, and there is no presently existing formal means described for assessing how well students are trained on various laboratory apparatuses. The IRC suggests that a formal evaluation process be adopted to measure student skills with lab equipment, ensuring that every student demonstrates proficiency with the various lab tools utilized in his or her field of study. This assessment could be administered online and/or by lab student workers.

CRITERION FOUR: ACQUISITION, DISCOVERY, AND APPLICATION OF KNOWLEDGE

Criterion Statement: The Science and Mathematics Division promotes a life of learning for its faculty, administration, staff, and students by fostering and supporting inquiry, creativity, practice, and social responsibility in ways consistent with its mission.

The IRC finds that the Science & Mathematics Division minimally meets the standard for acquisition, discovery, and application of knowledge. Although the *Report* stresses the Division's investment in the deep learning process and successful initial undergraduate preparation, opportunities for students and faculty to learn primarily occur in formal classroom and laboratory settings, and the *Report* does not produce convincing evidence that the global, diverse issues are regularly addressed in these settings. In other words, the bridge between formal learning and sustained lifelong learning is short and narrow, but it is in place.

Core Component—4A. The Science and Mathematics Division demonstrates, through the actions of its administrators, students, faculty, and staff, that it values a life of learning.

The *Report* provides modest evidence to show that it values a life of learning for administrators, students, faculty, and staff, documenting the following evidence. The Division allocated approximately 10% of the 2008-09 budget (\$10,056) for “Departmental Scholarship,” “Travel/Food,” “Books/Periodicals,” and “Membership Dues” (Appendix 22). Although the *Report* mentions that the Division funds seminar speakers each year, it's unclear under which category these funds appear.

Appendices 21 and 25 document attendance at professional meetings. It appears only Rick Badley (local) and Matt Sattley (St. Louis) attended a professional conference in 2008, and only Larry Haffey attended a conference in 2007 (local). (Although Matt Sattley attended several

conferences in 2007, he was not at MNU.) To their credit, math faculty accompany students to the annual Math Expo held at Rockhurst University each year.

In terms of scholarship, the *Report* cites a student scholarship award and the use of plaques hung in the hallway to recognize outstanding students. Matt Sattley and Justin Stace, the newest members of the faculty, have instituted student research programs in Biology and Chemistry.

As is the case with every department/division on campus, resources, such as books, journals, and electronic research databases, are available through library allocations. It's noteworthy that four faculty are currently in doctoral programs. In addition, several faculty from the Science and Mathematics Division participate in MNU's faculty development activities. The lab schedule does overlap with some of these activities, making attendance difficult for some faculty members.

Core Component—4B. The Science and Mathematics Division demonstrates that acquisition of a breadth of knowledge and skills and the exercise of intellectual inquiry are integral to its education programs.

The *Report* presents several examples that pertain to this standard and builds the strongest case for breadth of knowledge and skills through two pieces of evidence. First, many Division graduates continue in graduate education programs, such as medical school. Second, each major includes substantial General Education requirements and assesses students' knowledge using both direct (Senior Comprehensive Exam) and indirect, i.e., MCAT and DAT, forms of assessment. Appropriately, the *Report* cites MNU's Internal Review Process, NCATE, and KSDE accreditations as ensuring that the relationship between its mission and programs is intact (Recall that there is no mission statement for the Division).

There are several areas of confirmation for this standard noticeably lacking in the *Report*. First, it does not address the attitudes and skills for a life of learning in a diverse society. The Medical Careers Club is the only linkage between curricular and co-curricular activities that may support inquiry, practice, creativity, and social responsibility. Although one learning objective addresses “continuing interest in ecological concerns,” the *Report* does not cite an avenue for faculty and students to expand and develop lifelong learning interests and inquiry in this area. Additional information about this standard, perhaps a summary of responses from interviews with program graduates, could provide supportive information for this standard.

Core Component—4C. The Science and Mathematics Division assesses the usefulness of its curricula to students who will live and work in a global, diverse, and technological society.

Developing leaders in Math and Science for a multicultural world appears to be one of the Division’s weakest areas. The *Report* mentions that General Education curriculum, teacher education courses and accompanying field experiences address curricular concerns related to a global, diverse, and technological society. The *Report* cites the NCATE review as a way to test the currency and relevancy of courses, yet this review only covers the teacher education majors in Science and Mathematics. The *Report* also states that activities such as mission trips and local church activities are counted as co-curricular activities not sponsored by the Division, but there is no explanation of how these activities are linked to science.

The IRC concludes that two areas need to be addressed. First, curriculum that addresses living and working in global, diverse societies should appear in upper Division, as well as lower Division and General Education courses. The IRC recognizes the benefits of the courses titled Environmental Science and Environmental Stewardship and encourages administrators and

faculty to include a global, diverse issues and concerns strand in all coursework. No doubt the textbooks and materials in the math and science majors address these concerns. Often the real world problems presented in the context of global issues generate students' curiosity.

Second, although the *Report* cites "environmental scanning" as a means of assessment and Division personnel do successfully prepare students for graduate school and employment in a number of professional fields, the administrators and faculty should develop and administer survey instruments for alumni, employers, and other constituencies to assess the currency and utility of the curriculum. This information, in addition to the informal and formal evaluations from the Computer Science internship and the student teaching experiences will offer valuable advice for ensuring that the curriculum prepares students to participate in a global, diverse workforce and society.

Core Component—4D. The Science and Mathematics Division provides support to ensure that faculty, students, and staff acquire, discover, and apply knowledge responsibly.

The *Report* briefly mentions statements addressing academic integrity in course syllabi and in the Student Handbook. The CHEM 3202 syllabus includes laboratory rules and COMP 3203 Social and Professional Issues most likely covers ethical and legal information related to the use of the Internet. Since a great deal of the coursework and lab requirements in the Science and Mathematics Division require the ethical and responsible use of knowledge, proper handling and use of science equipment, and the ethical use of computers, the IRC believes that this Division should invest energy and time into preparing written documentation of ethical and procedural conduct for its research and instructional activities. Students in these majors should gain an early and complete understanding of the Division's commitment to the ethical, legal, and

moral responsibilities associated with these areas of study. Indeed, the Division of Science and Mathematics should lead the University in this area.

CRITERION FIVE: ENGAGEMENT AND SERVICE

Criterion Statement: As called for by its mission, the Science and Mathematics Division identifies its constituencies and serves them in ways both value.

The IRC finds that the Science & Mathematics Division does not meet the standard for engagement and service. Although the IRC believes that Division administrators and faculty highly value their internal constituencies, the *Report* does not include evidence that they have highly valued and nurtured relationships with external constituencies nor does it indicate how the Division has analyzed its capacity to serve in the broader community. The IRC does recognize, however, the Institutional Goals 2007-08 in Appendix 8 that relate to the external community.

Core Component—5A. The Science and Mathematics Division learns from the constituencies it serves and analyzes its capacity to serve their needs and expectations.

Summaries of the Report's responses for this standard are described below. The *Report* covered most of these responses in previous sections so they will be covered briefly in this section. First, the Division derives its mission from the mission statement of the University; therefore curriculum, faculty, and various resources are directed toward fulfilling Divisional objectives that have been shaped by the University's mission. Second, the Division acknowledges that it focuses on a constituency made up of majors in its various academic programs, other academic areas that it services, and the General Education core requirements. Third, it identifies certain external constituencies including business and industry, graduate schools, medical schools, applicable learned societies and K-12 educational units.

To summarize the above statements, the Division appears to impact external constituencies by supporting outreach programs of other academic Divisions of the University. *The Report* asserts that a wide range of courses and programs are offered to meet the need of

these internal and external constituencies. Finally, an important visionary statement declares that all Divisional courses are “taught through the lens of a Christian faith.”

The Report gives numerous examples of periodic scanning or surveying these constituencies and their communities in order to adequately understand and provide for their particular academic needs. The Division acknowledges that its primary effort is focused on internal constituencies and at present the Division does not focus on outreach programs to external agencies. There are possibilities for outreach through the Kansas State Bioscience Center and the Johnson County Crime Lab and Olathe Northwest High School (with the addition of the Forensics Science program).

The IRC notes an overall concern about ties with external constituencies. As stated previously, the Division works from a mission defined by the institution rather than a mission statement shaped by the particular disciplines and Divisional faculty. The lack of a Divisional mission statement is a foundational concern because the Division lacks direction on what structures and processes to use and external constituencies to nurture. Strong mission and vision statements would provide much-needed direction.

As stated in Core Component 4, the *Report* does not mention surveys or analysis tools that address external constituencies. The relationships with external constituencies seem tenuous, informal, and voluntary, rather than programmatic and intentional. Since this Division is involved in preparing future teachers and graduate students, surveys and outreach programs concerned with the needs of private Christian K-12 schools and Christian universities would be a worthwhile endeavor. Since the number of Science and Math majors is small, Divisional faculty should visit off campus sites to talk with prospective students in events such as “Science Fairs” or other Division-related events. Moreover, the Divisional response to the issue of diversity lacks clarity

and specific emphasis. A well-developed Divisional brochure could be one consideration for this core component.

Core Component—5B. The Science and Mathematics Division has the capacity and commitment to engage with its identified constituencies and communities.

The Division of Science and Mathematics connects with the internal communities it serves. As with many of the academic Divisions at the University, this Division encourages its faculty to be available for student contact by keeping of regular office hours. They also feature the “hands on” approach in numerous laboratory experiences. However, it appears that there is little *community building* beyond the classroom or conference format. For example, a faculty-student Junior Retreat for majors (similar to the one initiated by the Religion Division) or group trips to local science events and speakers may a viable option for this Division.

The faculty connects with their external constituencies by attending meetings offered by schools of medicine, computer companies, and other business resources. Also, the Division of Science and Mathematics encourages students to attend local and regional conferences addressing the various disciplines addressed by course offerings within the Division. The IRC would like to know what percent of the Division’s students have the opportunity to experience learning through attendance of professional meetings and what intentional efforts are made to support students in this pursuit.

The IRC applauds the decision of the Division to “begin to study the social and economic problems of local and metro communities and ways MNU can assist” noted in Appendix 8. These connections will increase the Division’s local visibility, motivate potential and current students, build more comprehensive and balanced programs, and strengthen the lifelong learning bridge.

The IRC notes that the Division is limited to the extent that it is dependent on the university's yearly budget for support of its academic program, yet contact with external constituencies does not always require a heavy investment in financial resources. The IRC supports the Division's planning process and projection of future services as outlined in Appendix 8. The IRC suggests that the administration and faculty design additional actions or activities for achieving these goals, with the idea that community resources may strengthen its programs.

Core Component—5C. The Science and Mathematics Division demonstrates its responsiveness to those constituencies that depend on it for service.

The *Report* presents one collaborative venture between the Biology Department and elementary and middle school students. It also states that a venture with the Au Sable Institute of Environmental Studies has not produced any students in the last few years.

The IRC is mindful of the significant Divisional concern relative to the transfer of academic credits into this University, since the primary purpose of the Science and Mathematics Division is to offer a rigorous curriculum. The IRC is also concerned with the reference to the quality of credit that this University is willing to accept.

The Division admits that there is currently no formal attempt to conduct co-curricular activities or joint ventures with external communities. This state raises the issue of *ownership* of the University's mission by the Olathe community. Both the Division and the University would benefit from a survey that would seek to understand the "felt needs" of the Olathe community that could be met by this particular academic Division, especially related to the integration of science and faith. While the Division may not have partnerships or contractual arrangements with external constituencies, seeking to understand and connect with community concerns would

enhance its ownership of the University's mission.

Core Component—5D. Internal and external constituencies value the services the Science and Mathematics Division provides.

The *Report* states that the Division attempts to evaluate its impact by relying on the University's assessment and the General Education assessment programs. Again, there are no formal evaluations for external constituencies. Verbal feedback appears to be the mode of evaluation for all off campus agencies. The major illustrations of service to the community offered in the *Report* relate to service projects and church-related activities, primarily completed by the faculty. Of the seventeen service activities noted, sixteen were church-related and only one was community-related.

The Report does stress that Division graduates are sought after by local area employers which include both business and educational institutions. There are occasional campus visits from persons representing area businesses. The *Report* concedes that the disciplines of Nursing and Criminal Justice have been the most active in connecting with the community.

Limited campus facilities and the small number of faculty who connect with external constituencies are real problems. The IRC commends the Division members for maintaining deep commitments to their local congregations, yet these obligations and service to a large degree do not address the criterion.

In summary, the Division is doing a commendable job serving internal constituencies. However, the administration and faculty appear to lack the strategies and understandings needed to generate strong interest in their programs outside the University.

SUMMARY

Strengths:

- Success at delivering Science, Math, and Computer Science content
- Enthusiasm and involvement with developing new uses for technology
- Success at procuring lab equipment via grants
- Preparation of students for successfully passing external, formal exams, entering professional graduate education, and procuring jobs after graduation

Areas of Concern:

- Lack of a Division-specific mission statement
- Lack of specific strategic planning for resource utilization and program development
- Need for more intentional strategies for incorporating issues of global thinking and diversity into coursework
- Need to engage more with external constituencies
- Need for discipline-specific professional development

Opportunities for Improvement:

- Develop a Division-specific mission statement, vision, values, goals, and outcomes
- Develop strategic plans for resource utilization and development
- Utilize alternative means to cost-prohibitive travel to maintain professional development and engagement
- Look for ways to be more intentionally involved in the greater community
- Provide rubrics and assessments utilized in courses as evidence of coherent learning measures
- Implement intentional strategies for maximizing learning among diverse student population with particular attention to low-achieving students