Program Level Assessment Report for 2012-2013

PROGRAM NAME, DEGREE NAME (e.g. Organizational Leadership, B.S.): Biomedical Sciences Ph.D. Program

COLLEGE in which PROGRAM is housed: CoSM

REPORT PREPARED by: Mill W. Miller, PhD

A. ACTIONS TAKEN TO IMPROVE STUDENT LEARNING

What actions did you take in 2012-2013, based on previous assessment findings, to improve student learning in your program? (Refer back to plans indicated in “Response to Assessment Findings “ in 2011-2012 Assessment Report.)

I had not studied this document until beginning this assessment and therefore took no actions as a consequence of this report. I was appointed Director July 1, 2013, essentially after the reporting period. I do not know what, if any actions, the previous Director took as a consequence of the previous assessment. I have been using the comments made from the recent external review of the program to guide my actions. The external review deals with issues beyond student learning per se but still has some relevance to this assessment. Moreover, the assessment of the previous reporting period did not specifically list any items to address. It did subtly raise a few points that align with the comments of the external reviewers.

Concerns of the program and actions taken since July 1:

1. The BMS student seminar class (BMS9900-14) has been a point of weakness in the curriculum. There is uneven student participation and apparently little guidance for improving the quality of the seminar seems to be uniformly lacking.
   - The program is now providing a rubric for seminars where all attendees are encouraged to provide feedback. There were several iterations of the rubric but it appears we are asymptotically approaching a viable assessment tool. The program will keep a record of the comments and track them longitudinally through the tenure of each student. The expectation is that the quality of each student’s presentations will improve over time. Naturally, the feedback is shared with the student.
   - The relatively poor attendance by our faculty similarly needs addressing. Discussions for improving this are being discussed but no formal policy has been decided.

2. The Time to Degree (TTD) and Time to Meet Program Deadlines (TMPDs) appears to be a big issue for the program.
   - These timing problems derive from several points. The funding provided by the program is only five years and the median TTD is roughly one semester longer. When one considers that the national median TTD is 5.5-8 years, it seems unrealistic to expect BMS students finish in five years. The funding model should change. However, there are students who finish in four years so it is worth determining what factors presage a short BMS tenure.
   - The TMPD problems are more complex. Currently policies state that students should pass the qualifying exam during the summer of the second year (after completing the most of the advanced curriculum). The proposal should be finished shortly after during the fall term.
The candidacy exam is 10-week process. The failure to qualify on time is a combination of poor policy as well as student and mentor lapses. The policy of temporally linking the qualifying examination to proposal writing as tandem requirements seems faulty. Both qualifying and proposal writing are similarly exhausting exercises that detract students from their research. This is not to say that the exam and proposal components are not essential—they are. The temporal coupling simply does not recognize the desire of student and mentor to do research, which is a priority. The sequential timing seems to be the problem and the time between the exercises increased.

That said, both students and their mentors share some of the blame for not completing these tasks in a timely manner. Upon appointment as Director, students well behind meeting program deadlines now run the risk of losing program funding.

The Academic Policies Committee has met to discuss this issue and we propose to standardize the timing of the candidacy exam. All students must begin the qualifying process in the summer and complete it by summer’s end. Failure to do so risks dismissal. Moreover, all dissertation faculty members must agree to attend the initial and final stages of the candidacy examination or they will be unable to participate on the student’s committee. Students, of course, can initiate the exam earlier. A proposal that allows students who qualify during their second year will only have to be a GTA for one term will be discussed soon. Test cases are underway this semester.

3. Last year’s assessment stated that the Academics Policy Committee was considering decreasing the commitment as teaching assistants.
   - This has not been discussed further except to point out that we are exploring a policy of waiving one term of GTA duties if the student tries to qualify early. Test cases are underway this semester.

4. Last year’s assessment suggested that there are insufficient resources assessment.
   - Getting compliance with exit interviews is difficult and garnering information about student success five to ten out from graduation is harder. The assessment is correct. While both tasks are excellent assessment tools, the program should look at initiating assessments of student learning that occur earlier in the program and can benefit the student before graduating.

   We have initiated a seminar rubric that will be used at student driven presentations (discussed above). The Curriculum Committee hopes to develop additional rubrics for monitoring student learning for each dissertation committee meeting in practice by next year. Overall, I believe the assessment tools currently in place can be significantly improved.

5. The external reviewers as well as exit interviews and casual conversation hinted that “student culture” and student mentoring could be improved.
   - This year, the program has supported the formation of a student association (initiated by the students) that aims to improve the atmosphere of the program.

   - Incoming students were paired with experienced BMS students who are to act as mentors.
B. STUDENT LEARNING OUTCOMES ASSESSED AND EXAMINED

Which Program Level Student Learning Outcomes did you assess and examine during 2012-2013? List the Program Level Student Learning Outcomes using the format of “Graduates will be able to _______________________."

(Please note that due to specialized accreditation requirements, accredited programs may be required to assess and report on all program level student learning outcomes every year; accredited programs should report in a manner that will align with their accreditation. Programs not carrying specialized accreditation may assess all of their learning outcomes every year but may choose to report on 2-3 per year, looking at several years of data.)

The Program Assessment Plan for the BMS Ph.D. Program created in 2004 lists seven learning outcomes. They are paraphrased below to meet the requested format:

1. If students are proficient in laboratory methods and strategies appropriate for their area of investigation, they will be able to
   a. pass their core and advanced curriculum
   b. pass a proposal-based candidacy exam
   c. submit a competent research proposal
   d. defend original dissertation research
   e. present their data in the appropriate research venues including but not limited to BMS and WSU sponsored seminar series, scientific conferences, and peer-reviewed research journals

2. If students have a master of knowledge appropriate to the course of study and the published literature, they will be able to
   a. pass their core and advanced curriculum
   b. pass a proposal-based candidacy exam
   c. submit a competent research proposal
   d. defend original dissertation research
   e. present their data in the appropriate research venues including but not limited to BMS and WSU sponsored seminar series, scientific conferences, and peer-reviewed research journals
   f. have a GPA greater or equal to 3.0 (i.e., no student is on academic probation)

3. If students are able apply their knowledge of multiple areas in the biomedical sciences to evaluate and develop solutions to relevant biomedical/biological problems, they will be able to
   a. pass a proposal-based candidacy exam
   b. submit a competent research proposal
   c. defend original dissertation research
   d. present their data in the appropriate research venues including but not limited to BMS and WSU sponsored seminar series, scientific conferences, and peer-reviewed research journals

4. If students are able to: a) design and implement complex experiments, b) perform critical analyses of complex data, and c) place their research in the context of the current state of scientific knowledge, they will be able to
   a. pass a proposal-based candidacy exam
   b. submit a competent research proposal
   c. defend original dissertation research
   d. present their data in the appropriate research venues including but not limited to BMS and WSU sponsored seminar series, scientific conferences, and peer-reviewed research journals

5. If students are able to effectively communicate research results in written and oral presentations, they will be able to
   a. pass a proposal-based candidacy exam
b. submit a competent research proposal
c. defend original dissertation research
d. present their data in the appropriate research venues including but not limited to BMS and WSU sponsored seminar series, scientific conferences, and peer-reviewed research journals

6. If students are able to instruct courses within their area of expertise at the college and university level, they will be able to teach/assist teaching undergraduate laboratory classes such that their evaluations by lead instructors should be satisfactory or better.

7. If students are trained in a current and relevant area of biomedical sciences, they will be able to obtain relevant employment where they are able to apply their BMS training.

C. METHODS FOR COLLECTING DATA
Which students were included in the assessment? (For example, all seniors completing Course X in Spring 2013, all graduating seniors, etc.)

Data sources
- Data was collected by examining student transcripts and reviewing student records (e.g., annual evaluations, graduate teaching evaluations, committee meeting summations, etc.). These methods are likely to be consistent with past practices.
- Exit surveys of graduating students (students dismissed or leaving the program were not polled)

Students involved in assessment
- All students were considered when assessing technical expertise and passing program benchmarks in a prescribed manner. Program benchmarks are
  - First year students: completing lab rotations and finding a mentor
  - Second year students: completing lab rotations and finding a mentor, passing and completing curriculum (and not on academic probation), completing curriculum, passing candidacy exam, and receiving Graduate Teaching Assistant evaluations.
  - Third year students: passing and completing curriculum (not on probation) and passing candidacy exam.
  - Fourth year students: passing candidacy exam, completing an approved proposal, and getting permission to write dissertation, and successfully defending a thesis
  - Fifth year students and beyond: completing an approved proposal, and getting permission to write dissertation, and successfully defending a thesis
- Fifth to ninth year students were also considered when assessing the quality of a research proposal and dissertation.
- Fourth year students were also considered when assessing the quality of a research proposal and dissertation.
- Third year students were also considered when assessing candidacy exam, the quality of a research proposal, and calculating core and advanced curriculum.
- Second year students were considered when assessing teaching competencies, passage rate of candidacy exam, passing a grant writing course, and calculating core and advanced curriculum GPA.
- First year students were considered when calculating core curriculum GPA.
D. ASSESSMENT MEASURES

- What key assessments/assignments/student work did you examine to directly assess the Program Level Student Learning Outcomes listed above?
- What, if any, indirect assessments (e.g. exit survey, alumni survey, focus groups, etc.) did you use to indirectly assess the Program Level Student Learning Outcomes listed above?

As stated in “C” above, we used committee transcripts, program requirements, student transcripts, and exit surveys. To my knowledge, there are no other assessments during this time.

E. SIGNIFICANT FINDINGS
What did you find from your assessments? What did your data reveal about how well students are achieving the Program Level Student Learning Outcomes that you listed above?

A. Summary statement
There were 65 students during this reporting period (2012-13 academic year). Three students exited the program during this time. One left to enroll in the Army Dental School and two left by mutual agreement. The latter two were not making adequate progress. In addition, three students who left the program after the reporting period were assumed to be struggling for the sake of this report. Two were not making adequate research process after failing with a previous advisor. Another student left the due to the lack of interest in the program. The remaining 59 students (91%) can be assumed to be making satisfactory progress in the program.

Seven (7) students traveled with BMS financial support to present nine (9) research seminars and/or posters during the reporting period. Research productive students should have sufficient data by the 4th and 5th years in the program and therefore travel to present at regional, national, or international conferences each year. Therefore the number of student traveling this year seems lower than it should be. The program and University should ensure that travel funds are not limiting travel.

Students have a difficult time meeting programmatic deadlines. Whether this is a bona fide indirect measure of student learning outcomes is unclear. Certainly, students who meet program benchmarks are academically successful and therefore meeting learning expectations. The inability to meet benchmarks is not necessarily a failure of the student and careful examination of policies is warranted.

Better assessment tools are needed while the students are still in the program.

This year’s Ph.D. graduates took an average of 5.5 years (median = 6.1 years) to complete degree requirements, still less time than national norms (median = 5.5-8.0 years). Graduates from this reporting period appear to be on track for highly successful careers and have solid publication records. The sole M.D./Ph.D. student took 4.2 years to complete the three year research window.

Collectively, these data are consistent with previous graduating classes and suggest that the program is good at training students.

B. Outcomes of Specific Learning Goals
1. If students are proficient in laboratory methods... **94% of students met this goal.**

Based primarily on annual progress reports and the continued registration in the program, a minimum of 62 students (95%) exhibit satisfactory proficiency in laboratory methods. Of the
65 students in the program and excluding 13 first-year students, 94% of the remaining 53 students are technically proficient. The assessment tools used to derive these numbers are very indirect.

2. If students have a master of knowledge appropriate to the course of study …100% of students met their stage-specific goal this year.
   - Based on the GPAs recorded during this year, every student taking core or advanced coursework earned an A or B grade. 100% success. N.b., Four (4) students who earned 5 C grades last year all earned A and B grades this year.
   - Based on passing programmatic deadlines, 100% of all students attempting to defend a candidacy exam, writing a proposal, or defending a thesis were successful. One student passed the oral component of the candidacy exam on his first attempt but needed a second to pass the written component.

3. If students are able apply their knowledge of multiple areas…94% of students met this goal.
   - This is the same calculation as in B.1. above.

4. If students are able to: a) design and implement complex experiments, b) …100% of students met this goal.
   - Of the 52 students eligible, 50 (96%) met this criteria.

5. If students are able to effectively communicate research results …All students are doing well.
   Every student including those that left the program during reporting period has good academic standing (i.e., GPA greater than 3.0).

   First year students have a 3.67 GPA in the core curriculum and no student received a C in any class. This is much improved over the previous class whose core curricular GPA is 3.20 and three students had GPAs under 3.0 (four students had one C grade and one students had two C grades). During this reporting period, second year students had a 3.79 GPA in the advanced curriculum. All students have GPAs above 3.0.

   All students who took the candidacy exam (6), wrote and defended their proposal (4), or defended their dissertation (8) were successful in their tasks. Six students passed both oral and written components of their candidacy exam, five on the first attempt. The remaining student passed the oral exam but the written exam merited a deferral, which was resolved on the second attempt. Students writing and defending proposals and dissertations passed on the first attempt.

6. If students are able to instruct courses within their area of expertise …100% of students met this goal.
   Seven (7) students served as Graduate Teaching Assistants and received evaluations from the lead instructor. Six (6) received top scores (5 on a scale of 1-5). One received a satisfactory evaluation (3 on a scale of 1-5).

7. If students are trained in a current and relevant area …100% are doing well.
   - Eight (8) students graduated during the reporting period and each completed an exit interview.
   - They reported publishing fourteen (18) papers and ten (≥10) in preparation.
• Three of the eight hold postdoctoral positions, one is an interning as a neurologist, two are research scientists at the base, and one is completing her M.D. The eighth is a youth pastor.
• Only person listed any scientific conferences where data was presented (but older exit interview forms that lacked this question was used for the majority of interviews). In contrast, one graduate listed giving 16 oral and ten (10) poster presentations and winning four research awards and three travel awards during his tenure in the program.

F. DISCUSSION OF RESULTS
How were results shared? With whom were they discussed?

1. I am unaware that any previous assessments were shared with anyone or not.
2. This assessment will be discussed with the BMS Academic Policies Committee and shared with the faculty at our next meetings.

G. ACTIONS PLANNED TO IMPROVE STUDENT LEARNING
Based on what you learned from your assessment of the Program Level Student Learning Outcomes, what actions do the faculty in your program plan to take to improve student learning in your program/area? Describe the steps faculty have taken/will take to use information from the assessments for improvement of student performance and the program. List additional faculty meetings or discussions and planned or actual changes to curriculum, teaching methods, approaches, or services that are in response to the assessment findings.

There are three large areas that should be tackled although they only partially derive from this assessment.
1. The practices and properties of the four tracks in the program (with the inclusion of ‘uncodified’ informal education and business tracks should be assessed and possibly reinvented. The Structural and Quantitative Track is disjointed due to faculty retirements and courses required for the track are not offered.
2. The present curriculum needs more courses at the advanced level with an across the board inclusion of a course in statistics.
3. There is a big need is to implement better assessment tools that are timely and can benefit the student before they graduate.

H. SUPPORTING DOCUMENTS (recommended)
Please attach minutes of program faculty meeting where discussion of results and action planning occurred and any other relevant documents.