

EWU Programmatic SLO Assessment

Degree/Certificate: Middle-level Science Endorsement

Major/Option: Natural Science

Submitted by: Heather McKean

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Part I – Program SLO Assessment Report for 2013-2014

1. **Student Learning Outcomes I and V: Understands the process of science; understands the process of learning science through inquiry**
2. **Overall evaluation of progress on outcome:** Indicate whether or not the SLO has been met, and if met, to what level.

\_\_\_\_\_ SLO is met after changes resulting from ongoing assessments, referencing assessment results from the previous year to highlight revisions;  
 \_\_\_X\_\_\_ SLO is met, but with changes forthcoming;  
 \_\_\_\_\_ SLO met without change required

3. **Strategies and methods: For this report we have relied mostly on class performance since few of our students took the West E Middle Level Science exam during the year 2013-2014\*. The process of science is emphasized in the following 5 classes that constitute the core of the Natural Science Program. Mean scores on investigations in each class are summarized in the table below. Note that scores in BIOL115, GEOL115 and PHYS115 include other elementary education majors who do not have an emphasis in science as their major within the BAE in Elementary Education.**

- Our program serves a wide band of students who wish to teach science anywhere from K-8<sup>th</sup> grade. Approximately 80% of our students were not interested in teaching grades 6-8 reporting they mostly wanted to teach grades 4 and 5. Since teachers do not have to have the actual middle level endorsement to teach elementary school, these students did not take the exam.

4. **Observations gathered from data:**

- a. Findings:

<b>BIOL115</b>	Students design and implement a quarter long term investigation into factors that affect plant growth. Average grade = 84% (N= 56)
<b>GEOL115</b>	Students investigate an earthquake question using various forms of data. Average grade = 78% (n=48)
<b>PHYS 115</b>	
<b>NTSC301</b>	Students design and implement an investigation into local soils. Average grade =92% (n=9)
<b>NTSC390</b>	Students developed a 5-E inquiry lesson for middle school students. Average grade = 90% (n=7)



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**3. Strategies and methods:** These SLOs were assessed in all of the core classes. However scores represent performance on a number of assessment tools within the three senior level courses.

NTSC301	Scores represent a combination of performance on quizzes and exams. Mean = 77% (n = 9)
NTSC302	Understanding of these SLOs is assessed through 4 exams. Mean = 80% (n=7) Percentages are based on the highest student's score
NTSC390	Students took a WEST-E like exam that we created from middle level released items and higher level WEST E biology and Earth science endorsement release items. Mean = 66% , n= 9 (students were not graded on this nor did they prepare to take the exam. Also in some cases, students had not yet taken PHYS115.)

**WEST-E Data on Middle Level Science:** The two students who passed the WEST-E had 3's on the domain score for each of these principles. The student who did not pass had a 1 on each of the domain scores. A score of 3 means the student meets requirements.

**WEST-E Data on Domain I of the Elementary WEST-E measures math and science understanding.** We compared the Natural Science major's performance with the average of all students who took this exam and passed. The overall mean of those who passed the subtest= 250 or (83%); the Natural Science major = 273 (91%). Passing was 240 or 80%. People who failed the subtest had a mean of 225.98.

4. Observations gathered from data:

**Findings:** We know that all the students in Natural Science program passed the subtest I and further performed approximately ten percent higher than those who passed the exam. This excludes the students who did not pass the subtest.

**Analysis of findings:** We think that students could do better on the subtest of the elementary certification exam and we hope to have more students take and pass the WEST-E Middle Level Exam. We think there are weaknesses in the program in the areas of weather, chemistry, and environmental science.

5. What program changes will be made based on the assessment results?

Describe plans to improve student learning based on assessment findings (e.g., course content, course sequencing, curriculum revision, learning environment or student advising). **The program changes we submitted last year were passed and are included in this year's catalog. They include GEOG 204 or GEOG 314 (Weather**

and Climate); CHEM161 (nursing majors first quarter inorganic chemistry); and BIOL320 – Human Prospect which includes environmental science. Only the students new to the program fall, 2014, have to take these courses. However, we are strongly encouraging people in the old program to take these courses prior to student teaching.

Provide a broad timeline of how and when identified changes will be addressed in the upcoming year. **Implemented in Fall of 2014.**

7. Description of revisions to the assessment process the results suggest are needed and an evaluation of the assessment plan/process itself. **Instructors in PHYS115, NTSC301 and NTSC302 are using the Praxis II exam guide to realign the content in their courses. We are also encouraging all students in the program to purchase the Praxis II exam guide though the courses use texts that go beyond the level of the Praxis exam.**

#### **NEW:** PART II – CLOSING THE LOOP

##### FOLLOW-UP FROM THE 2012-13 PROGRAM ASSESSMENT REPORT

In response to the university's accrediting body, the [Northwest Commission on Colleges and Universities](#), this section has been added. This should be viewed as a follow up to the previous year's findings. In other words, begin with findings from 2011-12, and then describe actions taken during 2012-13 to improve student learning along, provide a brief summary of findings, and describe possible next steps.

**Working definition for closing the loop:** *Using assessment results to improve student learning as well as pedagogical practices. This is an essential step in the continuous cycle of assessing student learning. It is the collaborative process through which programs use evidence of student learning to gauge the efficacy of collective educational practices, and to identify and implement strategies for improving student learning.* Adapted 8.21.13 from <http://www.hamline.edu/learning-outcomes/closing-loop.html>.

1. **Student Learning Outcome(s)** assessed for 2012-13 **All the same SLOs as above.**
2. Strategies implemented – **We were successful in adopting three new courses for our program.**
3. **Summary of results** (may include comparative data or narrative; description of changes made to curriculum, pedagogy, mode of delivery, etc.): Describe the effect of the changes towards improving student learning and/or the learning environment. **We do not expect to see changes until next year because only students entering the program this year are**

required to take the additional classes and even then they may not be taking them until their second year.

4. What **further changes to curriculum, pedagogy, mode of delivery**, etc. are projected based on closing-the-loop data, findings and analysis? **We will continue to collect data on our students to see if upcoming changes to our program result in increased percent passage of the WEST-E.**

## Definitions:

1. **Student Learning Outcome:** The student performance or learning objective as published either in the catalog or elsewhere in your department literature.
2. **Overall evaluation of progress on outcome:** This checklist informs the reader whether or not the SLO has been met, and if met, to what level.
3. **Strategies and methods used to gather student performance data,** including assessment instruments used, and a description of how and when the assessments were conducted. Examples of strategies/methods: embedded test questions in a course or courses, portfolios, in-class activities, standardized test scores, case studies, analysis of written projects, etc. Additional information could describe the use of rubrics, etc. as part of the assessment process.
4. **Observations gathered from data:** This section includes findings and analyses based on the above strategies and methods, and provides data to substantiate the distinction made in #2. For that reason this section has been divided into parts (a) and (b) to provide space for both the findings and the analysis of findings.
5. **Program changes based on the assessment results:** This section is where the program lists plans to improve student learning, based on assessment findings, and provides a broad timeline of how and when identified changes will be addressed in the upcoming year. Programs often find assessment is part of an ongoing process of continual improvement.
6. **Description of revisions to the assessment process the results suggest are needed.** Evaluation of the assessment plan and process itself: what worked in the assessment planning and process, what did not, and why.

*Some elements of this document have been drawn or adapted from the University of Massachusetts' assessment handbook, "Program-Based Review and Assessment: Tools and Techniques for Program Improvement" (2001). Retrieved from [http://www.umass.edu/oapa/oapa/publications/online\\_handbooks/program\\_based.pdf](http://www.umass.edu/oapa/oapa/publications/online_handbooks/program_based.pdf)*

