

**University of Louisiana Monroe**

**QEP Annual Impact Report**

**Summer 2022**

**Section 1: A succinct list of the initial goals and intended outcomes of the Quality Enhancement Plan**

*FOCUS on Biology*, the Quality Enhancement Plan (QEP) of the University of Louisiana Monroe (ULM), seeks to increase student success and critical thinking skills in two introductory science courses through instructional enhancement. Sixty-one percent of incoming students to ULM are required to take either Fundamentals of Anatomy and Physiology I (BIOL 1014) or Principles of Biology (BIOL 1020). FOCUS sessions will be integrated into all sections of these courses. The primary goal of ULM’s QEP is to improve performance and success of STEM and pre-health sciences freshmen students in these two gateway biology courses. The QEP will use high-impact practices to implement an innovative strategy focused on improving student learning by enhancing critical thinking.

**Initial Overarching QEP Goal**: To improve academic performance in the two gateway science courses that all STEM and pre-health sciences majors must take, BIOL 1014 and BIOL 1020. This goal will be monitored by student success rates in the two courses as well as success in subsequent science courses.

**Initial Learning Outcome 1**: To improve critical thinking skills as defined by the Critical Thinking Assessment Test (CAT) developed at Tennessee Tech.

**Initial Learning Outcome 2**: To develop discipline-specific knowledge aligned with a locally developed mneumonic: **F**ormulate, **O**bserve, **C**ommunicate, **U**se, and **S**ynthesize.

**Section 2: A discussion of changes made to the QEP and the reasons for making those changes**

**COVID-19:** Fall 2021 and Spring 2022 semesters saw a return to all face-to-face instruction for FOCUS sessions. While this greatly improved the delivery end effectiveness of the FOCUS session activities, we are still seeing a drastic change in our students. After not attending in-person classes for up to two years in some cases, students are coming to college with not only a different base of content knowledge but also different expectations and skills surrounding learning and college-level work. FOCUS sessions as well as the lecture classes that accompany them were adapted to accommodate the shift in our students’ preparedness by providing more basic activities to establish a foundation of knowledge and also by providing more detail on certain learning strategies to help them be efficient learners.

**FOCUS Content and Activities:** FOCUS activities were re-designed in innovative ways to accommodate our evolving students. FOCUS activities were once again designed to be completed in person with all students in the same classroom for the first time since the inception of the QEP. In response to changing needs and student feedback, activities were re-designed or slightly changed to make them more helpful and appropriate.

**Diagnostic Questions:** Diagnostic Questions were given as a pre-test post-test model in all sections for the first time during the 2021-2022 academic year, as opposed to having them embedded on final exams as had been done in the past. The questions for the BIOL 1014 diagnostic test were changed and adapted this year to reflect learning outcomes and testing styles of the lecture portion of the class more closely, as had been done for BIOL 1020 the previous academic year.

**Administration of the CAT test**: The CAT test was given in a campus computer lab during a FOCUS session for the Fall 2021 and Spring 2022 semesters to some students, and a locally developed version of a critical thinking assessment was administered in the Moodle learning system to the other students asynchronously. This was the first time we had been able to do this since the inception of the QEP.

**Section 3: QEP impact on the environment and student learning**

**Achievement of identified goals and outcomes**: FOCUS sessions were fully implemented into all sections of BIOL 1020 and BIOL 1014.

* **Overarching goa**l: To improve academic performance in the two gateway science courses that all STEM and pre-health sciences majors must take, BIOL 1014 and BIOL 1020. This goal will be monitored by student success rates in the two courses as well as success in subsequent science courses.
	+ BIOL 1014 (Fall 2021): 50% of students received an A, B, or C
	+ BIOL 1014 (Spring 2022): 56% of students received an A, B, or C
	+ BIOL 1020 (Fall 2021): 60% received an A, B, or C
	+ BIOL 1020 (Spring 2022): 78% received an A, B, or C

While pass rates in BIOL 1020 have improved for this academic year over last academic year, pass rates for BIOL 1014 were lower. The instructors for BIOL 1014 are exploring new pedagogical techniques to meet the evolving needs of our students.

* **Learning Outcome 1**: To improve critical thinking skills as defined by the Critical Thinking Assessment Test (CAT) developed at Tennessee Tech. Tennessee Tech has issued a statement that they have seen an overall decline in performance on the CAT test due to the impacts of COVID-19. There are 38 possible points on the test, and the national average has historically been around 15. We did see an overall increase in our average during the Fall 2021 semester, which may be a reflection of the improvement of the FOCUS session metacognition activities during this academic year and the return to the intended in-person model. ULM students across sections in BIOL 1014 and BIOL 1020 achieved the following average scores.
	+ Fall 2021: 13.13
	+ Spring 2022: 13.20

The improvement in performance on the CAT test is very encouraging. The metacognitive lessons within FOCUS sessions coupled with an increased effort towards critical thinking skills in the campus environment as a whole and an improvement in learning environments as the global pandemic conditions continue to improve have all contributed to the gradual increase in performance on the CAT.

* **Learning Outcome 2**: The following percentages of students answered 75% or more of diagnostic questions correctly.
	+ BIOL 1014 (Fall 2021): 3%
	+ BIOL 1014 (Spring 2022): 5%
	+ BIOL 1020 (Fall 2021): 5%
	+ BIOL 1020 (Spring 2022): 8%

Due to the lack of improvement in performance on the diagnostic questions, an additional metric was used this year to determine more about performance on these questions. The additional metric, the number of question that were answered correctly by at least 50% of the students, was performed in order to determine if there were certain questions and/or topics that were understood by the majority of students and others that were answered incorrectly by a majority. The following data shows the results of that analysis as the number of questions that were answered correctly by at least 50% of the students.

* BIOL 1014 (Fall 2021): 8 questions
* BIOL 1014 (Spring 2022): 5 questions
* BIOL 1020 (Fall 2021): 10 questions
* BIOL 1020 (Spring 2022): 5 questions

The decision to give the diagnostic questions as a pre-test and post-test in FOCUS sessions as opposed to embedding them on final exams was primarily due to an effort towards consistency. As the instructors for the classes give very different final exams in regard to length, degree of comprehensiveness, and content, embedding the questions on the final exam lacked consistency across sections. Giving the questions in a FOCUS sessions, however, may have reduced students’ motivation to perform to the best of their ability, which is reflected in the scores from this academic year.

**Section 4: A reflection on what the institution has learned as a result of the QEP experience**

The QEP in general has raised an awareness of the importance of pedagogy and the variety of methodologies and resources available to improve and diversify pedagogical techniques, particularly in these two introductory Biology courses. The work done on the QEP has been contagious in creating a more learner-centered environment within the Biology department as instructors have begun collaborating on ways to improve courses, integrate active learning, and explore ways to improve student success, but it has been a learning process and one that still needs time to grow. We have also learned, however, that one hour a week with a separate instructor may not be enough to see the gains aspired to with the goals of this QEP both in critical thinking skills and content knowledge. While this model may not have accomplished all that we set out to achieve, it has taught us much about ways that we can improve student learning, and how we may want to change in the future to create more success. Specifically, a different model of integration of active learning and metacognitive skills across the curriculum would potentially be more effective than the model explored here.

By diving deeper into the issues of student success that surround these two courses, which are important to our student body and our mission and vision, we have discovered many facets of the courses that can be addressed. We are continuing to examine, in conjunction with the work being done on the QEP, whether our class assessments are a good measure of what we want students to learn from a course as compared to performance on the diagnostic questions. Additionally, we are beginning to examine course structure and grading breakdown as a reflection of student learning in the course such that we minimize any barriers and maximize student success to be prepared for next course that they may take. With the new metric on diagnostic questions, we can begin to discuss with the implementation team which questions are the most problematic to discover the underlying difficulties. Through a combination of anonymous, written student feedback, analysis of performance on the CAT and in the courses, and continuous experimentation with new methods for teaching and assessment, we are continuing to learn and work to improve student success.