UNIVERSITY OF ARKANSAS
PULASKI TECH

Course-Level Assessment Report
Course: EDUC 2330
Math for Teachers 1
Academic Year: 2020-21

1. Name of course: EDUC 2320 Math for Teachers 1

2. Name of individual(s) compiling report: Lana Riding

3. Date of submission: September 17, 2021

4. Academic year: 2020-2021

Course-Level Learning Outcomes

1. What are the Course-Level Outcomes (CLOs)?

Beginning with the academic year 2020 -2021, the CLOs were modified to more accurately reflect the division of course learning outcomes between EDUC 2330 and EDUC 2340. The CLOs that are emphasized more in Math for Teachers 2 have been removed from EDUC 2330, and will only be assessed as part of EDUC 2340. New CLOs were written to show the emphasis of outcomes for EDUC 2330. The new CLOs beginning in 2020-2021 are:

1. Apply Polya's problem-solving process and strategies and build new mathematical knowledge through solving problems and in context.
2. Identify and demonstrate important properties of whole numbers, integers, rational numbers and real numbers, and multiple representations for the arithmetic operations for each.
3. Understand what growth mindset is and reflect on what it takes to foster this in teaching elementary school mathematics.
4. Discuss and demonstrate effective use and content knowledge of manipulatives in the teaching of mathematics at the K-8 school level.
5. Apply technology as an integral part of teaching and learning mathematics, whenever appropriate.

2. Which CLOs were addressed for the academic year?

All CLOSs were addressed.

3. Which CLOs are being addressed in your assessment plan in the upcoming academic year?

All CLOSs will be addressed in the upcoming year.

4. Explain the assessment cycle.

All CLOSs are assessed each year. CLOs 1 and 2 are assessed and reported on based on the results of a common final exam which is administered through Cegage WebAssign. Students upload their written work from the exam to Blackboard for the instructor to review. Questions from the exam are mapped to one of these two learning outcomes.

For CLO 3, students are assessed through a presentation and an essay. The presentation is given during class, and the essay is uploaded to Blackboard as a part of the midterm exam. In Fall 2020, the students presented through Zoom with the instructor and other students watching virtually. During Summer 2021, students presented during a face-to-face class session.

For CLOs 4 and 5, students are assessed through their completion of a project on teaching using three different types of manipulatives. Students create their project in PowerPoint, and are required to present their work in class, either in person (Summer 2021) or in Zoom (Fall 2020).

Because new course learning outcomes have been implemented for this assessment cycle, we will gather data over the next three academic years before making any major changes to the assessment methods.

In previous assessment reports, data has been reported for this course using only the fall semester data. During 2020-21, EDUC 2340 (Math for Teachers 2) was cancelled due to low enrollment in the Spring, and was only offered during the summer. For this reason, since EDUC 340 will be assessed using the summer data, this year's report will also include the summer cohort for EDUC 2330.

5. What are the assessment methods? Are they direct or indirect?

The assessment methods are direct. As described in question 4, they include an exam, a presentation, an essay, and a project.

Return to Top of Document

6. What are the assessment goal(s), including benchmarks?

We will continue to use the assessment goal used in prior academic years, which is for students to score at least 75% on the questions associated with each CLO. As we have now added a presentation, essay, and project to the assessment methods, we will set our benchmark at 75% for those also.

7. What were the findings for the academic year?

Students met the threshold for all CLOs.

	Fall 2021	Summer 2021	Combined
CLO 1	78.3%	79.0%	78.7%
CLO 2	93.8%	92.3%	92.86%
CLO 3	94.2%	85.2%	88.6%
CLO 4	88.2%	88.5%	88.4%
CLO 5	88.2%	88.5%	88.4%
Total students	6	10	16

8. What is your analysis of the findings?

The new CLO 1 was assessed in previous years using the same WebAssign final exam, but represents a combination of previous years' CLOs 1, 2, and 4. In 2019-2020, the students showed 69.7% of the students were successful on these learning outcomes. This year, while the benchmark was achieved, at 78.7% for the combined fall and summer cohorts, it represents the weakest performance out of all the learning outcomes. We achieved 9.0% improvement over the previous year.

As noted in previous assessment reports for EDUC 2330, students struggle with applying Polya's problem-solving process and strategies (CLO 1). They are more comfortable with being told how to solve problems. Learning to build new mathematical knowledge through solving problems and within a given context is a new skill, and the students often enter the course with a fixed mindset. They do not believe they can accomplish this. It is a challenge for them to apply and adapt strategies to solve problems. Problem solving using Polya's process (CLO 1) and other strategies (previous CLO 2), and solving problems involving data collection and analysis (previous CLO 4) are both vital skills for students who are

pursuing a career in elementary education. These skills need continued emphasis and additional opportunities for practice. We are pleased to have seen improvement to above the 75% threshold, and will continue to focus efforts on improving this outcome.

CLO 2 is a new course learning outcome this year. We are encouraged by the students' performance on the assessment. Being able to identify and demonstrate important properties of whole numbers, integers, rational numbers and real numbers, and multiple representations for the arithmetic operations for each is something students have more experience with, and seem to be competent with these skills. This was not one of the CLOs previously assessed.

CLO 3 is for students to understand what growth mindset is and reflect on what it takes to foster this in teaching elementary school mathematics. In mathematics, more than any other subject, a fixed mindset is a major obstacle to student success. As future educators, it is imperative that these students learn to recognize and combat fixed mindsets in themselves, as well as in their future students. Students complete a presentation early in the semester, as well as write an essay as part of their midterm grade on the concepts of fixed and growth mindsets. Students assessments showed 88.6% on this learning outcome. This was not one of the CLOs previously assessed.

CLOs 4 and 5 were assessed together through the use of the Manipulative Project. Students choose three manipulatives to explore and present. They include virtual and physical manipulatives in the presentation. The students' assessment of their projects showed 88.4% success, and exceeded the threshold. As noted earlier, this assessment report includes both a traditional 16-week semester for Fall 2020. The modality was hybrid webinar. The report also includes a 4-week summer session, which was taught as a hybrid face-to-face class. The class met one day a week, for a four-hour session each week. There were no significant differences in the students' assessment results.

9. What is the action plan for the upcoming academic year? Explain.

We will continue to focus efforts on improving problem-solving skills, recognizing and valuing growth mindsets, learning how to use various manipulatives in teaching mathematics, while incorporating technology whenever appropriate.