

Course-Level Assessment Report Course: <u>EDUC 2330</u> Academic Year: <u>2021-22</u>

Due to Chair/Program Director and Faculty Assessment Chair by September 1





1. Name of course:	EDUC 2330 Math for Teachers 1
2. Name of individual(s) compiling report:	Lana Riding
3. Date of submission:	September 9, 2022
4. Academic year:	2021-22

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 CLOs were addressed.



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

All will be addressed in the upcoming academic year.

4. How does this report connect or map to program-level or institutional-level outcomes?

(ILO link: <u>https://uaptc.edu/college-academics/resources/student-learning-outcomes</u> PLO list will vary depending on your Program.)

Institutional Learning Outcome Map:

CLO 1 maps to ILO 4 – Critical Thinking CLO 2 maps to ILO 5 – Quantitative Reasoning CLO 3 maps to ILO 7 – Professionalism CLO 5 maps to ILO 2 – Technology Literacy

The Program Learning Outcomes this course map to are the AS – Education Program: CLO 3 and CLO 4 map to PLO 1 - Apply developmentally appropriate standards to the daily classroom practices and instructional practices.

CLO 1, CLO 2, and CLO 5 map to PLO 4 - Apply developmental domains, developmental learning theories, learning theories, technology learning theories, and instructional practices to a variety of formal education activities.

For each Course Level Outcome assessed this academic year, please complete the chart below, providing the assessment data for both fall and spring, and then a total for the academic year.

Assessment Methods- How did	For CLO 1, Apply Polya's problem-solving process
you assess student learning (define	and strategies and build new mathematical
direct assessment methods used)	knowledge through solving problems and in context.
in relation to the course level	Students were assessed based on the results of the
outcome being reported?	final exam by identifying the questions which relate
	to this CLO. There were ten questions which relate to
	CLO 1 on the final exam. It was a paper exam, taken
	in class and proctored by the instructor.



Were indirect assessment methods also used to assess students? If 'yes', please describe the method used.		No There was no indirect assessment given, only direct assessment.
How do you define success for an individual student on the CLO assessment assignment or measure?	Student scores 75% on the CLO	questions linked to the
How do you define success for the course level outcome? What is the benchmark for the Course Level Outcome?	75% of students in the cou CLO assessment assignme	rse achieve success on the nt or measure
How many students completed the assessment, and how many were successful?	<i>Fall</i> 16 students assessed 14 successful (87.5% success rate)	<i>Spring</i> <i>This course is only</i> <i>offered in the fall</i> <i>semester.</i>
Academic Year Total (add the numbers from Fall and Spring)	16 students assessed 14 successful (87.5% success rate)	
Was the benchmark/goal for this academic year met?	Yes	
Were standardized rubrics, tests, or checklists used?	Yes	

Assessment Methods- How did you assess student learning (define direct assessment methods used) in relation to the course level outcome being reported? How the definition of the arithmetic operations for each. Students were assessed based on the results of the final exam by identifying the questions which relate to this CLO. There were twelve questions which relate to CLO 2 on the final exam. It was a paper exam, taken in class and proctored by the instructor.			
you assess student learning (define direct assessment methods used) in relation to the course level outcome being reported?	Assessment Methods- How did	For CLO 2, Identify and demonstrate important	
direct assessment methods used) in relation to the course level outcome being reported? students were assessed based on the results of the final exam by identifying the questions which relate to this CLO. There were twelve questions which relate to CLO 2 on the final exam. It was a paper exam, taken in class and proctored by the instructor.	you assess student learning (define	properties of whole numbers, integers, rational	
in relation to the course level outcome being reported? representations for the arithmetic operations for each. Students were assessed based on the results of the final exam by identifying the questions which relate to this CLO. There were twelve questions which relate to CLO 2 on the final exam. It was a paper exam, taken in class and proctored by the instructor. Return to Top of Document	direct assessment methods used)	numbers and real numbers, and multiple	
outcome being reported? Students were assessed based on the results of the final exam by identifying the questions which relate to this CLO. There were twelve questions which relate to CLO 2 on the final exam. It was a paper exam, taken in class and proctored by the instructor.	in relation to the course level	representations for the arithmetic operations for each.	
g e 4 final exam by identifying the questions which relate to this CLO. There were twelve questions which relate to CLO 2 on the final exam. It was a paper exam, taken in class and proctored by the instructor. Return to Top of Document	outcome being reported?	Students were assessed based on the results of the	
to this CLO. There were twelve questions which relate to CLO 2 on the final exam. It was a paper exam, taken in class and proctored by the instructor. g e 4	~ 1	final exam by identifying the questions which relate	
g e 4 relate to CLO 2 on the final exam. It was a paper exam, taken in class and proctored by the instructor. Return to Top of Document		to this CLO. There were twelve questions which	
g e 4 Return to Top of Document		<i>relate to CLO 2 on the final exam. It was a paper</i>	
g e 4 Return to Top of Document		exam, taken in class and proctored by the instructor.	
	g e 4	Return to Top of Document	



Were indirect assessment methods also used to assess students? If 'yes', please describe the method used.		No There was no indirect assessment given, only direct assessment.
How do you define success for an individual student on the CLO assessment assignment or measure?	Student scores 75% on the CLO	e questions linked to the
How do you define success for the course level outcome? What is the benchmark for the Course Level Outcome?	75% of students in the cou CLO assessment assignme	rse achieve success on the nt or measure
How many students completed the assessment, and how many were successful?	<i>Fall</i> 16 students assessed 13 successful (81.25% success rate)	<i>Spring</i> <i>This course is only</i> <i>offered in the fall</i> <i>semester.</i>
Academic Year Total (add the numbers from Fall and Spring)	16 students assessed 13 successful (81.25% success rate)	•
Was the benchmark/goal for this academic year met?	Yes	
Were standardized rubrics, tests, or checklists used?	Yes	

Assessment Methods- How did you assess student learning (define direct assessment methods used) in relation to the course level outcome being reported?	For CLO 3 , understand what growth mindset is an reflect on what it takes to foster this in teaching elementary school mathematics. Students were assessed based on the results of a presentation given in class, and also submitted and graded by rubric in Blackboard.	1d !
Were indirect assessment methods also used to assess students? If	No	
g e 5	Return to Top of Document	



'yes', please describe the method used.		There was no indirect assessment given, only direct assessment.
How do you define success for an individual student on the CLO assessment assignment or measure?	Student scores 75% on the presentation	e rubric for their
How do you define success for the course level outcome? What is the benchmark for the Course Level Outcome?	75% of students in the cou CLO assessment rubric	urse achieve success on the
How many students completed the assessment, and how many were successful?	<i>Fall</i> 16 students assessed 14 successful (87.5% success rate)	Spring
Academic Year Total (add the numbers from Fall and Spring)	16 students assessed 14 successful (87.5% success rate)	
Was the benchmark/goal for this academic year met?	Yes	
Were standardized rubrics, tests, or checklists used?	Yes	

Assessment Methods- How did you assess student learning (define direct assessment methods used) in relation to the course level outcome being reported?	For CLO 4 , Discuss and demonstrate effecti and content knowledge of manipulatives in t teaching of mathematics at the K-8 school lec 4 was assessed along with CLO 5 through th the Manipulative Project. Students choose th manipulatives to explore and present. They i virtual and physical manipulatives in the presentation. The assessment was completed rubric in Blackboard.	ve use he vel. CLO e use of tree nclude using a
Were indirect assessment methods also used to assess students? If	No	
g e 6	<u>Return to Top of Do</u>	cument



'yes', please describe the method used.		There was no indirect assessment given, only direct assessment.
How do you define success for an individual student on the CLO assessment assignment or measure?	Student scores 75% on the rubric	
How do you define success for the course level outcome? What is the benchmark for the Course Level Outcome?	75% of students in the cou CLO assessment rubric	urse achieve success on the
How many students completed the assessment, and how many were successful?	Fall 16 students assessed 15 successful (93.75% success rate)	<i>Spring</i> <i>This course is only</i> <i>offered in the fall</i> <i>semester.</i>
Academic Year Total (add the numbers from Fall and Spring)	16 students assessed 15 successful (93.75% success rate)	
Was the benchmark/goal for this academic year met?	Yes	
Were standardized rubrics, tests, or checklists used?	Yes	

Assessment Methods- How did you assess student learning (define direct assessment methods used) in relation to the course level outcome being reported?	For CLO 5 , Apply technology as an integral part of teaching and learning mathematics, whenever appropriate. CLO 5 was assessed along with CLO 4 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 assessment was completed using a rubric in Blackboard.	
Were indirect assessment methods also used to assess students? If	No	
g e 7	Return to Top of Document	



'yes', please describe the method used.		There was no indirect assessment given, only direct assessment.
How do you define success for an individual student on the CLO assessment assignment or measure?	Student scores 75% on assessment rubric	
How do you define success for the course level outcome? What is the benchmark for the Course Level Outcome?	75% of students in the course achieve success on the CLO assessment rubric	
How many students completed the assessment, and how many were successful?	Fall 16 students assessed 15 successful (93.75% success rate)	<i>Spring</i> <i>This course is only</i> <i>offered in the fall</i> <i>semester.</i>
Academic Year Total (add the numbers from Fall and Spring)	16 students assessed 15 successful (93.75% success rate)	1
Was the benchmark/goal for this academic year met?	Yes	
Were standardized rubrics, tests, or checklists used?	Yes	

5. What is your analysis of the findings?

For CLO 1, 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) is a vital skill for students who are pursuing a career in elementary education. These problem solving 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. It could be argued that the questions on the final exam are not the purest way to assess true problem-solving skills, since the questions on the final exam are generally types of problems that students have previously encountered. However, in lieu of a better way to assess this learning outcome, we will continue to use similar, yet not identical, problem solving questions on the final exam.

Based on this year's assessment, 14 of 16 students assessed scored higher than 75% on the questions tied to CLO 1. One student scored 70%, which was very close to the threshold. The remaining student was less successful, scoring only 57.5% on the ten questions tied to CLO 1.

For CLO 2, there was a decrease in the percentage of students who were successful compared to the previous academic year, however there was a much smaller cohort (only 6 students) that year. Five of the six students met the benchmark in 2020-21, while 13 of the 16 met the benchmark in 2021-22. This is only the second year for this CLO, as they were revised beginning last year.

CLO 3, is that students will 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. Fourteen of the sixteen students assessed scored at or above the benchmark of 75%, which is 87.5% of the students. In the previous year, students' assessments showed 88.6% (5 out of 6 students) successful on this learning outcome in 2020-21. While this represents a very small decline, as mentioned above, the previous cohort was quite small. This was not one of the CLOs previously assessed prior to 2020-21.

CLOs 4 and 5 were both assessed through the use of the Manipulative Project. Students choose three manipulatives to explore and present. They must include virtual and photographs of physical manipulatives in the presentation. Technology is an integral part of this project, as the final product is a PowerPoint which is presented to the class. The slides are created using virtual manipulatives, links to videos or songs, and other important educational technologies. Students must be adept at projecting their presentation and



engaging with their peers and the instructor. Fifteen of the sixteen students, or 93.75% success, shows the students exceeded the benchmark for these two CLOs.

6. 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. The assessments completed did not show any major areas of concern. Students are generally successful in the course. One indirect measure that could have been reported was the pass rate for the course, which showed 13 of the 16 students passed with either an A or a B, and there was only one student who earned a D, and was required to repeat the class. Students who take the class are interested in learning how to be good elementary school math teachers, and when the material is presenting in an engaging and accessible way, the students show enthusiasm and an eagerness to learn. The students who graduate with education degrees from UAPTC are well equipped to teach mathematics in a way that will positively impact future generations of students.