Administrator Student Learning Objective

Administrator Name: Greg Marlow School Name: Bluford Middle School

Academic Year: 2015–16

Please populate each section of the *Administrator Student Learning Objective (SLO) Template* using the guidance provided before each field. Refer to the *Administrator SLO Checklist* while completing this template.

Baseline and Trend Data

What information is being used to inform the creation of the SLO and establish the amount of growth that should take place?

For the baseline data, we examined two different assessments—the Ohio Achievement Assessments (OAA) and a teacher-created assessment aligned to Ohio's latest State Assessments and reflective of the integration of Webb's Depth of Knowledge (DOK) framework to ensure rigor. For the past two years, our mathematics department has worked to develop curriculum and assessments that are aligned with Ohio's Learning Standards. The team has created new school-based assessments that reflect the four levels in Webb's DOK framework. Table 1 shows the data based on the OAA for all grades across all levels of proficiency. These data show that our students generally performed well historically. In fact, we maintain a high percentage of students scoring in the accelerated and advanced levels across grade levels. The scores on the 2013–14 OAA (in all subject areas) gave our school a state-calculated performance index score of 111.6, which equated to a performance index score of 93 percent, resulting in an "A" rating on our statewide report card.

Table 1. Grades 6–8 OAA End-of-Year Results in Mathematics, 2013–14

Performance Category	Grade 6[a] *n* (%)	Grade 7 *n* (%)	Grade 8 *n* (%)
Advanced	28 (39%)	31 (42%)	52 (35%)
Accelerated	15 (21%)	25 (34%)	61 (41%)
Proficient	18 (25%)	10 (13.5%)	32 (21%)
Basic	10 (13%)	7 (9.5%)	3 (2%)
Limited	2 (2%)	1 (2%)	2 (1%)
Total	73 (100%)	74 (100%)	73 (100%)

[a] *Note.* Performance during the previous year's posttest (i.e., current sixth graders' performance on the fifth-grade end-of-year OAA).

Although students generally performed well on the OAA in mathematics, based on the 2013–14 end-of-year OAA results and this year's teacher-team-created pre-assessments that are aligned to Ohio's Learning Standards in mathematics and reflect all four levels outlined in Webb's DOK framework, we noticed a learning deficit in the domain of geometry (see Table 2).

Although performance on the newly aligned benchmark assessments was strong overall, students in all grade levels showed a gap in performance on questions related to the geometry standards. Table 2 shows the data from this year's teacher-team-created pre-assessments, with performance disaggregated by domain. These data show that, on average, students scored approximately 10 percent to 15 percent lower on questions related to the domain for geometry (indicated in the row shaded in gray) than they did on questions related to the other domains.

Table 2. Grades 6–8 Average Score on 2014–15 Teacher-Team-Created Preassessment, by Domain

Mathematics Domain	**Grade 6**	**Grade 7**	**Grade 8**
	85%	84%	84%
Ratios and proportional relationships	88%	86%	84%
The number system	90%	88%	86%
Expressions and equations	88%	89%	90%
Geometry	**73%**	**71%**	**71%**
Statistics and probability	87%	88%	89%

After further analysis, the scores on questions aligned to the geometry domain of the teacher-team-created preassessments were broken down into performance levels that mirror those for the state assessment. Table 3 illustrates that although students in Grade 6 reflect good performance generally, with a majority of students scoring at the *proficient* level or higher, students in Grades 7–8 showed much lower scores, with about half the students scoring at the *basic* or *limited* levels in questions related to the geometry standards. The data highlighted in gray reflect this performance gap (see Table 3).

Table 3. Grades 6–8 Performance on 2014–15 Teacher-Team-Created Preassessment, Geometry Domain Only, by Performance Level

Performance Level	**Grade 6** ***N*** **(%)**	**Grade 7** ***N*** **(%)**	**Grade 8** ***N*** **(%)**
Advanced (90% to 100%)	12 (16.5%)	0 (0%)	0 (0%)
Accelerated (80% to 89%)	19 (26%)	3 (4%)	3 (3%)
Proficient (65% to 79%)	35 (48%)	34 (46%)	32 (44%)
Basic (20% to 64%)	7 (9.5%)	**17 (23%)**	**52 (34.6%)**
Limited (0% to 19%)	0 (0%)	**20 (27%)**	**15 (20.5%)**
Total	**73 (100%)**	**74 (100%)**	**73 (100%)**

Based on these data, it became clear that a renewed focus on the geometry domain was needed in our scope and sequence in Grades 7–8 to address this performance gap. It also is clear that more formative assessments were needed to enable teachers to assess student progress before the larger summative assessments were given.

One additional focus for our mathematics department has been to ensure that we are providing academic challenges to students at every academic level and in a variety of different ways. To accomplish this task, our teacher team has worked closely with the mathematics content specialist to develop both learning activities and assessment activities for students who are already demonstrating mastery of grade-level standards or who demonstrate mastery more quickly than their academic peers. Based on the baseline data in Table 3 for grades 7 and 8 in the geometry domain we see that this impacts only a small percentage of students, but it is important that we continue to improve the ability to differentiate both the instruction and the assessment tools for those students.

Student Population

Which student population will be included in this SLO? When applicable, include subject, grade level, and number of students. Include the rationale for determining the student population by grade level, content area, or targeted needs, as appropriate.

All students in Grades 7–8 will be included in this SLO. These grades were selected for the following reasons:

- In Grades 7–8, there was a significant drop in performance on the geometry standard.
- In Grades 7–8, there is the largest emphasis on geometry in the new learning standards.

Currently, there are 74 students in Grade 7 and 73 students in Grade 8 (see Table 4).

Table 4. Demographics of SLO Student Population

Demographic	**Grade 7** ***n*** **(%)**	**Grade 8** ***n*** **(%)**
Asian or Pacific Islander	6 (8.1%)	3 (4%)
Black, non-Hispanic	7 (9.4%)	5 (7%)
Hispanic	4 (5.4%)	3 (4%)
White, non-Hispanic	57 (77%)	63 (85%)
Students with disabilities	14 (18.9%)	6 (8%)
Economic disadvantaged	10 (13.6%)	11 (15%)
Daily attendance average (all students)	97.1%	97%
Total students in grade	**73**	**74**

Interval of Instruction

What is the duration of the SLO? Include beginning and end dates.

September 1, 2015, to April 15, 2016 (as SLOs must be scored by May 1)

Standards and Content

What content will the SLO cover? To what related standards is the SLO aligned? Include the rationale for selecting comprehensive or targeted content and skills.

The focus domain for the SLO is geometry, based on the deficit identified in the past year's OAA and this year's teacher-team-created preassessment data.

The following statements from Ohio's Learning Standards helped inform this choice:

> **In Grade 7**, instructional time should focus on four critical areas: (1) developing understanding of and applying proportional relationships; (2) developing understanding of operations with rational numbers and working with expressions and linear equations; (3) solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume; and (4) drawing inferences about populations based on samples.
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> **In Grade 8**, instructional time should focus on three critical areas: (1) formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, and solving linear equations and systems of linear equations; (2) grasping the concept of a function and using functions to describe quantitative relationships; (3) analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean theorem.
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> *Source:* Ohio Department of Education. (2010). *Ohio's new learning standards: Mathematics standards.* Columbus, OH: Author. Retrieved from https://education.ohio.gov/getattachment/Topics/Ohio-s-New-Learning-Standards/Mathematics/Math-Standards.pdf.aspx

As the highlighted sections of the focus statements show, for seventh grade, this SLO covers two of the four critical areas within the standards. Therefore, it represents a major push in this grade level. As highlighted in the second paragraph, the standard focusing on geometry represents one third of the critical areas listed. Based on the scope of the standards at both grade levels and the baseline data, these domains are appropriate to focus on. Another reason for selecting these specific standards is that in our district, we are focusing on ensuring that students entering high school are well prepared for higher level mathematics classes. To ensure that we are preparing our students for success in high school, we know we need to focus on closing the gap between performance on other mathematics standards and on the geometry standards.

The specific clusters for each grade level are listed in Table 5.

Table 5. Specific Geometry Standards for Grades 7–8 From Ohio's Learning Standards in Mathematics

For Grade 7	Geometry Draw, construct, and describe geometrical figures and describe the relationships between them. 1. Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. 2. Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. 3. Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids. Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. 1. Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. 2. Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. 3. Solve real-world and mathematical problems involving area, volume, and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.
For Grade 8	Geometry Understand congruence and similarity using physical models, transparencies, or geometry software. 1. Verify experimentally the properties of rotations, reflections, and translations: • Lines are taken to lines, and line segments to line segments of the same length. • Angles are taken to angles of the same measure. • Parallel lines are taken to parallel lines. 2. Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them. 3. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. 4. Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them. 5. Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.*

	Understand and apply the Pythagorean Theorem. 1. Explain a proof of the Pythagorean Theorem and its converse. 2. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. 3. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system. 4. Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres. 5. Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

Source: Ohio Department of Education. (2010). *Ohio's new learning standards: Mathematics standards.* Columbus, OH: Author. Retrieved from https://education.ohio.gov/getattachment/Topics/Ohio-s-New-Learning-Standards/Mathematics/Math-Standards.pdf.aspx

Assessment(s)

What assessment(s) will be used to measure student growth for this SLO? Specify how multiple assessment measures will be combined, as appropriate (e.g., if your student population spans multiple grade levels).

Postassessment

For baseline and summative data for this SLO, the mathematics team created preassessments and postassessments for each grade level that reflect the levels of rigor outlined in Webb's DOK framework. These assessments were created by the mathematics department working with a mathematics curriculum specialist to ensure alignment with Ohio's Learning Standards in mathematics and to reflect the rigor that is expected. While the preassessments and postassessments are similar in the type of problems presented, they are not identical. The assessments include a mix of question types described in Table 6, including the following:

- Five questions focused on recall and reproduction (Level I questions, 2 points each)
- Five questions focused on skills and concepts (Level II questions, 4 points each)
- Three questions focused on strategic thinking and reasoning (Level III questions, 4-point rubric used for each question)
- Two questions focused on extending thinking (Level IV 4-point rubric used for each question)

The total possible points on the preassessment and postassessment is 50. For the purpose of this SLO, the total points (converted to percent scores) will be tracked.

The mathematics department used the assessment guidance and definitions outlined in Table 6 to create each assessment question (pulled from http://education.ohio.gov/getattachment/Topics/Teaching/Educator-Evaluation-System/How-to-Design-and-Select-Quality-Assessments/Assessment-Literacy-Overview-Presentation.pdf.aspx).

Table 6. Identifying Task Types for Teacher-Team-Created Mathematics Assessments

Level I: ***Recall and Reproduction***	**Level II:** ***Skills and Processes***	**Level III:** ***Strategic Thinking and Reasoning***	**Level IV:** ***Extending Thinking***
Curricular elements that fall into this category involve basic tasks that require students to recall or reproduce knowledge or skills. The subject matter content at this particular level usually involves working with facts, terms, or properties of objects. It also may involve the use of simple procedures or formulas.	Level II includes the engagement of some mental processing beyond recalling or reproducing a response. This level generally requires students to contrast or compare people, places, events, and concepts; convert information from one form to another; classify or sort items into meaningful categories; or describe or explain issues and problems, patterns, cause and effect, significance or impact, relationships, points of view, or processes. A Level II "describe or explain" would require students to go beyond a description or explanation of recalled information to describe or explain a result or "how" or "why." The learner should make use of information in a context different from the one in which it was learned. Elements found in a curriculum that fall in this category involve working with or applying skills or concepts to tasks related to the field of study in a laboratory setting. The subject matter content at this level usually involves working with a set of principles, categories, heuristics, and protocols. At this level, students are asked to transform or process target knowledge before responding.	Items falling into this category demand a short-term use of higher order thinking processes, such as analysis and evaluation, to solve real-world problems with predictable outcomes. Stating one's reasoning is a key marker of tasks that fall into this category. The expectation established for tasks at this level tends to require coordination of knowledge and skill from multiple subject matter areas to carry out processes and reach a solution in a project-based setting. Key processes that often denote this level include analyze, explain, support with evidence, generalize, and create.	Curricular elements assigned to this level demand extended use of higher order thinking processes such as synthesis, reflection, assessment, and adjustment of plans over time. Students are engaged in conducting investigations to solve real-world problems with unpredictable outcomes. Employing and sustaining strategic thinking processes throughout a longer period to solve the problem is a key feature of curricular objectives that are assigned to this level. Key strategic thinking processes that denote this level include synthesize, reflect, conduct, and manage.

	Example mental processes that often denote this level include summarize, estimate, organize, classify, and infer.		

“Stretch” Assessment: End-of-Year Project

The growth targets outlined in this SLO reflect this added academic stretch by including, for students who are at the proficient level and above on the preassessment, an additional end-of–year project. This additional “stretch” assessment will be administered to all students, but scores will only be counted for the purposes of this SLO for the students who score at the proficient and accelerated level on the preassessment (no students scored at the advanced level on the preassessment).

For this end-of- year project, students will construct models to scale of selected historical buildings. Students will be scored using a rubric (see below), and their final project must include the mathematical formulas used to calculate the correct scale as well as descriptions of how they calculated the correct measurements and how much material was needed to ensure that the models were built accurately.

This end-of-year project includes several components, each focusing on a different specific strand in the mathematics standards, and is designed to have students synthesize many of the skills they have developed over the year. A portion of this project is focused on the geometry standards, assessing students’ ability to create models of three-dimensional objects using a range of mathematical skills, including being able to:

- measure and calculate scale,
- create a budget,
- compare the costs of different materials, and
- use a range of formulas to make accurate calculations.

As an added element to assessing students’ depth of knowledge, this project asks students to compare the cost for some building materials and to select materials that fall within a given budget but still meet the needs for their selected buildings. For example, students are given the actual dimensions of the Empire State Building and then asked to identify which geometric shapes are evidenced in construction and what the correct measurements would be for a model that uses the scale "1 foot to 1 cm. Both of these parts of the project reflect Webb’s DOK Levels 1 and 2. To ensure that students are engaging at DOK Levels 3 and 4, students are asked to use materials to construct a scale model and compare the cost of different construction materials that might be used in the construction of the models. Students will then be asked to justify their selections in a short essay that will accompany their calculations.

This end-of-year project uses a scoring rubric with a maximum 16 possible points. The project is designed to ensure that students are engaging with the content by demonstrating their ability to reason with the content and extend their thinking through the application of the concepts and skills. The rubric used will focus on the following categories:

- Identification of shapes and accuracy of calculations (maximum possible: 4 points)
- Construction accuracy (maximum possible: 4 points)

- Comparison of the cost of materials calculations (maximum possible: 4 points)
- Justification essay (maximum possible: 4 points)

While the essay portion of the rubric has been developed by the mathematics team to ensure alignment to the selected math standards, and was reviewed by the English team to ensure that it reflects appropriate grade-level writing expectations, the main focus for scoring will be on students' use of mathematics to justify their choices.

Our staff members continue to work on their own professional understanding of how Webb's DOK should be considered when writing assessments. As they continue to build their knowledge, staff members will continue to create and refine in-class assessments that can be used to track which students are on track for meeting their growth targets and which students need more remediation and re-teaching. These data will be the focus for one of the mathematics team meetings each month.

Growth Target(s)

Considering all available data and content requirements, what growth target(s) can students be expected to reach?

The growth targets in Table 7 represent rigorous increases in student scores for each baseline performance level.

Table 7. Growth Targets for Students: Targeted Percentage-Point Increase, by Baseline Performance Level

Baseline Performance	Growth Target (Required Percentage-Point Increase)	
	Grade 7	Grade 8
Advanced	No students scored in this range on the preassessment	
Accelerated (80% to 89%)	Increase 10+ percentage points, plus successful completion of the Geometry Models project with a minimum rubric score of 14 out of 16 points	
Proficient (65% to 79%)	Increase 15+ percentage points, plus successful completion of the Geometry Models project with a minimum rubric score of 12 out of 16 points	
Basic (20% to 64%)	Increase 20+ percentage points or attain a 70% score, whichever is greater	
Limited (0% to 19%)	Increase of 40+ percentage points or a minimum score of 60%, whichever is greater	

Rationale for Growth Target(s)

What is your rationale for setting the above target(s) for student growth within the interval of instruction? Include rationale for any decisions made at the building or district levels related to selection of the student population, content, assessment, and growth targets.

The tiered growth targets from Table 7 represent rigorous goals for students at each baseline performance level. For the first two tiers, the growth targets represent movement between levels, meaning that students currently scoring at the *accelerated* level will move into the *advanced* level, and, in addition to growth on their formal assessment score, this subgroup of students also will be expected to complete the end of year project (described in the Assessments section of this SLO). For the top-scoring students on the preassessment (those scoring at the Accelerated level since no students scored at the Advanced level on the preassessment), the expectation is that they will complete the end of year project with a minimum score of 14 out of 16 possible points on the rubric (which equals a minimum score of 86 percent). For students scoring in the *proficient* level on the preassessment, the expectation is that they will score at least 12 points out of the possible 16 on the capstone project (a minimum score of 75 percent). The addition of this project helps ensure that the assessment provides stretch for the students in these top-scoring subgroups.

For students in the lower two tiers (those scoring at the basic and limited levels on the preassessment), the growth goals represent ambitious growth targets reflecting at least a movement toward the *proficient* score level. The growth targets for students scoring at the proficient and accelerated levels on the preassessment (no students scored in the advanced level on the preassessment) also include “stretch” goals via an end-of-year project.

The growth target for students who start at the basic or limited preassessment level represents growth beyond what is expected for students at the higher starting levels. Although more growth should be expected of this group, this target still might mean that some students are not meeting the basic level of proficiency. Our goal for students who score at this range is to have them catch up to their academic peers within two years. For example, a student who starts with a score of 12 percent on the seventh-grade preassessment is expected to grow a minimum of 25+ percentage points. This growth would give them an ending score of 37 percent. Because the skills learned in seventh grade in geometry are built on with the eighth-grade content, we should expect these students to score a passing grade on the geometry portion of the assessment in eighth grade.

Teachers have worked to realign their classroom lessons to the new standards, and new textbooks and online resources have been purchased within the last two years that support these standards. Similarly, teachers have been working to align all assessments to ensure that all four of Webb’s DOK levels are represented on each assessment. The growth targets represent the goals that teachers have for these changes in practice and programs. The expected growth in Table 7 also represents continued work teachers are engaged in toward better alignment to the new standards and the increased depth of knowledge expected in statewide assessments. The use of the formative assessments also will assist teachers in identifying students who are on track to meet their goals with enough time to reteach key ideas and content. All of these factors make the growth targets attainable.

For students with individualized education programs (IEPs), our mathematics team has worked closely with our special education teachers to ensure that the assessments and the scoring tools are modified to meet the specifics in the IEPs. In addition, teachers are working with the special education teachers to ensure that the accommodations teachers are providing during instruction and assessment allow for the expected growth listed in the Growth Target section.

Finally, by including tiered targets, we are ensuring that all performance-level groups of students are asked to demonstrate appropriate growth, based on their baseline performance.