

SLO and PPG

Baseline Data and Rationale

During the first two weeks of September my Algebra 2A classes worked through several word problems that employed the use of systems of equations. After working through several scenarios they were asked to select one problem/solution to explain thoroughly in writing. This process involves students in deep reflection and extensive writing as they must describe their entire thought process from their initial interpretation of the problem and development of equations to their reasoning behind the steps they took in order to arrive at a solution for the system and what those solutions tell them about the problem at hand. This assessment showed that many students struggle in the area of constructing viable arguments, sequencing their logic adequately, and justifying their reasoning. Not a single student scored AD in this area and less than 18% of all 58 of my Algebra 2A students scored PR. Therefore, it is appropriate to select this as a focus area.

Learning Content/Grade Level

Common Core State Standards for Mathematics

Reasoning with Equations and Inequalities, A-REI

Understand solving equations as a process of reasoning and explain the reasoning.

1. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

Mathematics Standards for Mathematical Practice

3. Construct viable arguments and critique the reasoning of others.

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

Student Population

The students I have selected are in my Bilingual or Sheltered Algebra 2A classes. These students are predominantly juniors. As mentioned above, this group of students scored very low on the initial assessment in both their algebraic manipulation and the justification of their reasoning.

Targeted Growth

By the end of the year, 24% of students in my Algebra 2A classes will improve by at least one proficiency level within my personal mathematics writing/speaking rubric. Growth towards this goal will be assessed at least once prior to their final assessment in order to determine if the goal needs to be adjusted.

Time Interval

This is a yearlong objective with baseline data collected during the second week of September and formative assessments throughout the school year. Formative assessments will determine if the goal needs to be adjusted.

Evidence Sources

Assessments will vary throughout the school year. I will use performance tasks, exit slips, or teacher designed assessments that require student writing/speaking for pre, mid, and post instruction benchmarks. This will showcase students' ability to construct an argument, sequence their logic, and justify their reasoning when solving equations. A rubric to assess these areas has been created by the teacher and was uploaded to artifacts.

SLO Goal Statement

By May of 2015, 14 out of 58 Algebra 2A students (24%) will improve at least one proficiency level, as determined by my personal mathematics writing/speaking rubric, as students focus on constructing viable arguments, sequencing their logic adequately, and justifying their reasoning when solving equations.

Instructional Strategies and Supports

In order to support this goal, students must have multiple opportunities in which they can write/speak about the processes and reasoning they used in solving equations. This includes responding to the logic presented by their peers. Collaborating with ESL and Special Education staff will be essential to ensure that students are consistently prompted, in a variety of ways, to construct viable arguments, sequence their logic adequately, and justify their reasoning when solving equations. As students develop in this area timely and descriptive feedback will be provided by ESL, Special Education, or the Regular Education teacher with a focus on students' unique areas of need.

Professional Practice Goal

Per my self-reflection and student baseline data, I need growth in the areas of developing prompts that ask students to explain and defend their processes and reasoning. This includes responding to the logic presented by the teacher and peers. Since my SLO focuses on improving students' ability to construct viable arguments, sequencing their logic, and justifying their reasoning when solving equations I will improve my ability to design prompts that target these skills through collaboration with ESL and Special Education staff. This will incorporate their expertise in scaffolding techniques as well as differentiation. Such collaboration will solidify instruction and the creation of tools that promote consistently prompting students, in a variety of ways, to go beyond simply solving an equation. Students need to see the value in constructing viable arguments, sequencing their logic adequately, and justifying their reasoning when solving equations. As students develop in this area timely and descriptive feedback will be provided by ESL, Special Education, or the Regular Education teacher with a focus on students' unique areas of need.

Relationship between SLO and PPG

My SLO focuses on moving 24% of my Algebra 2A students up one proficiency level in the construction of arguments, logic sequencing, and justification of reasoning when solving equations. The PPG explains how such efforts will be attained, while enhancing instruction and student learning.

Danielson Components

This goal will potentially affect the following six Danielson components: 1c, 1e, 1f, 3a, 3b, and 3d.

1c: Setting Instructional Outcomes

1e: Designing Coherent Instruction

1f: Designing Student Assessments

- 3a: Communicating with Students
- 3b: Using Questioning and Discussion Techniques
- 3d: Using Assessment in Instruction

Description of Activities

Collaboration with ESL and Special Education staff to design prompts that assist students in their development of constructing arguments, sequencing logic, and justifying their reasoning, in mathematics, is a non-instructional activity. However, this will directly influence instruction in that all teaching participants as well as students should be more receptive to written or spoken dialogues around the mathematics at hand.

Resources and Support

Time. I need time to sit with both ESL and Special Education staff to plan out questions/activities that get to the root of the mathematics and encourage students to analyze and reflect on their work.