



Nebraska Unfinished Learning Series 6-12 Math Community of Practice

Session 1: Defining our Approach to Addressing Unfinished Learning

A Tale of Two Schools

Like many schools across the country, Piedmont Valley School and Brightwood Academy started the year in a fully remote model with a phased return to in-person learning in January. Anticipating students would experience a spring/summer slide, both schools developed an approach to make up for lost instructional time and address unfinished teaching and learning as part of their vision for excellence.

Piedmont Valley School

At Piedmont Valley School, Principal Ross brought his leadership team together in the fall to develop a remediation plan. He acknowledged that the challenges they experienced trying to implement remote learning last spring meant that students had not had consistent access to the last two months of their curriculum. He says, "We can't let our students fall any further behind. We have to meet them where they are and catch them up." He charges the team with the task of figuring out how to adjust pacing calendars for the upcoming school year to allow for significant remediation at the beginning of the year based on missed content from their previous grade and data from a beginning of the year diagnostic administered to all students. In order to allot time in the curriculum for remediation, grade level teams are charged with adjusting pacing guides. In some cases, grade level teams decide to shorten every on-grade level unit by 1-2 weeks and in other cases, they identify units that address supplementary and additional standards to skip entirely. In addition to the beginning of the year diagnostic, Principal Ross moves forward with administering the fall MAP, a norm-referenced test, to identify students who need more intensive remediation. Intervention teachers provide additional small group instruction to students with RIT scores falling below the 40th percentile twice a week. These students are also assigned to a computer-based program to practice basic math facts and computation.



Brightwood Academy

At Brightwood Academy, Principal Metts brings her leadership team together to begin planning for the fall. She acknowledges the impact interruptions to teaching and learning have had on their students' social, emotional, and academic development (SEAD). She begins by sharing some research with her team about what works and what doesn't when it comes to addressing unfinished learning. She says, "Yes we may have some gaps to close, but if we pick up where left off this spring, we will just be creating another gap to close the following year. We have to focus on building on student strengths to accelerate their learning and ensure students can move forward with grade-level content this year." Over the summer Principal Metts formed a mathematics steering committee comprised of school leaders, teacher content leads from each grade-band, a lead Special Education teacher, and EL specialist. The committee outlined a plan that involved working with teachers to prioritize the essential instructional content for each grade level. Content leads then worked with grade level teams to adjust pacing calendars to allow time needed for in-depth instruction of the essential content. Principal Metts created a school schedule that carved out weekly collaborative planning times for teachers to work in PLCs. Before each unit of study, teachers meet in PLCs to trace the coherence of the standards addressed in the unit to identify prerequisite standards that will build the foundational understanding for the essential learning of the unit. Content leads support grade level teams to identify opportunities to integrate unfinished learning within grade-level content and plan how to support students in making connections to previous learning. An important part of this work is selecting and using formative assessment tasks to elicit evidence of students' understanding of the relevant prerequisite concepts connected to grade level content. Prior to starting a unit or topic of study, grade level teams interpret the evidence of student understanding uncovered through the formative assessment tasks. They use the evidence to inform decisions about how they will address any specific unfinished learning needs in whole group or small group instruction. They may do this by strategically teaching prerequisite skills before the connected topic of study, by adapting the actual grade level lesson, or by using instructional routines to incorporate spiral review. Teachers also plan targeted small group lessons for students



needing more intensive supports on the relevant foundational concepts and skills.

UNDERSTAND

Standards Analysis Case Study

Ms. Franklin, an algebra 1 teacher, is the mathematics content lead for grades 9-11. Principal Metts has arranged for her to have two hours of daily release time to prepare and facilitate weekly grade level mathematics PLCs. Ms. Franklin is preparing to meet with the 9th grade team which consists of 3 general education teachers, and a special education teacher. She will be supporting them with unpacking their upcoming unit on comparing and contrasting the rates of change of linear and exponential functions. In advance of the meeting, she has shared the PLC agenda with them, and requested all the teachers complete the unit assessment as pre-work.

During the meeting Ms. Franklin supports teachers with unpacking the grade level focus standard addressed in the unit. She reminds the team this focus standard is



one the team had determined to prioritize in the fall when they were adjusting their pacing guide based on the recommendations in the NDE Mathematics Essential Instructional Content.

[HS.F-IF.B.6](#)

Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.*

The teachers discuss the aspect of the rigor intended by the standard, the important concepts that frame the standard, and what students are expected to understand and do. Next, the team turns to studying the progression of the grade level standard. Ms. Franklin has the team start by referring to the NDE Mathematics Essential Instructional Content to identify considerations for foundational work. The team digs into reviewing the relevant foundational standards noted, 8.F.A.3 and 8.F.B.4.

[8.F.A.3](#)

Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points $(1,1)$, $(2,4)$ and $(3,9)$, which are not on a straight line.*

[8.F.B.4](#)

Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.

Ms. Franklin then leads the team through a process to identify the specific concepts, procedures and strategies embedded in these foundational standards that could impact student success with the grade level standard. The team then analyzes strategies and models from the grade 8 curriculum to see how these

approaches are designed to build students' conceptual understanding interpreting and constructing functions. Together, they make a list of the potential misconceptions or incomplete understandings students may have about functions as a result of unfinished instruction. They also consider the range of strategies students may use as they develop and deepen their understanding of functions.

To determine students' current understanding of the concepts and skills in the foundational standards as well as strategies students are employing, Ms. Franklin tasks the team with selecting a couple of formative assessment tasks from their curriculum resources. The team identifies one task aligned to standards 8.F.A.3 and 8.F.B.4 from the grade 8 curriculum. They agree they will administer the tasks to their students before the next PLC meeting to collect evidence of how students' are presently reasoning about functions.

DIAGNOSE

Evidence Analysis Case Study

After administering the aligned formative assessment tasks they selected during last week's PLC meeting, Ms. Franklin and the grade 5 team reconvened to analyze student responses. As pre-work for the meeting, Ms. Franklin had tasked teachers with creating a snapshot of student performance on the prerequisite standards.

Mr. Jones' chart looks like this.

	Mastery	Approaching Mastery	Not Yet Approaching Mastery
Item # 1 8.F.A.3	A.S, M.B, J.P, P.K, S.F, B.J, P.S, M.J, A.L, K.A, J.S, T.W, I.S	R.T, S.H, N.P, I.N,	C.G, A.C, K.B
Item # 2 8.F.B.4	S.F, B.J, M.J	J.S, T.W, I.S, J.P, I.N, P.K, P.S	A.S, M.B, R.T, S.H, N.P, A.C, K.B, C.G, A.L, K.A

After a quick check-in, Ms. Franklin starts the meeting by asking the team what trends they noticed in student performance on the formative assessment tasks.



While there were some differences between classes, the team notes constructing a function to model a linear relationship between two quantities. Knowing the importance of constructing linear functions on the upcoming functions unit, Ms. Franklin charges the teachers with charting students' approaches, strengths and misconceptions on the formative assessment task the team selected to elicit student understanding of 8.F.B.4.

Susan has a business helping people to set up their home computer systems. She advertises the following rates for a home visit, including a consultation.

<i>Hours</i>	<i>Total Cost</i>
0	\$50
0.5	\$65
1	\$80
2	\$110

How much does Susan charge per hour of service? Explain.

Mr. Jones' chart looks like this.

Approaches	Students
Compares two ordered pairs to identify rate of change, initial cost and provides clear explanation	S.F, B.J, M.J
Compares to order pairs to identify the initial value (initial cost)	J.S, I.S
Writes a function to model the relationship	P.K, T.W
Identifies the rate of change and initial cost but labels incorrectly	A.S, J.P, I.N
Identifies rate of change for half hour intervals	P.S
<p>Strengths</p> <ul style="list-style-type: none"> • Determine the rate of change and initial value of the function from a table • Interpret the rate of change and initial value of a linear function in terms of the given scenario. • Explains how to find the hourly cost of service • 	<p>Misconceptions</p> <ul style="list-style-type: none"> • Two students used two ordered pairs to determine the initial value but did not keep working to determine the rate of change • Two students were able to create a linear function modeled by the table but did explain the rate of change • Three students incorrectly labeled the rate of change and initial value • One student identifies the rate of change for the half hour intervals using the first two ordered pairs from the table

The team discusses trends in the approaches, strengths, and misconceptions they observed in student work. Next, Ms. Franklin asks the team to consider what a plan of action needs to include based on the trends. The team names their plan of action should accomplish the following:

- Build on student understanding of rate of change and initial value with practice identifying them in tables, graphs and real world scenarios.
- Incorporate core supports to develop emerging understanding finding rate of change versus just finding the difference between the first two ordered pairs
- Plan core support questions and tasks that will engage students in providing justifications to construct a linear function and explain the connection between the rate of change and the initial value.



For the remaining two formative assessment tasks, Ms. Franklin has the Algebra 1 team briefly discuss patterns (successes and struggles) they observed across student work samples, as well as things they didn't see in the work. Based on their analysis of the student work, Ms. Franklin asks the Algebra 1 teachers to record any teaching points that would support all students with accessing the content in their upcoming functions unit, and which models (function notation, tables, graph, etc) would be best to incorporate. The team agrees deepening students' understanding of arithmetic sequences and their connection to linear functions would benefit the whole grade, as well as using tables and graphs to model the scenarios.

Before closing out the meeting, Ms. Franklin tasks teachers with identifying students who would benefit from targeted small group lessons as well as individual students who will need more intensive intervention. Because the Algebra 1 team will be starting the function unit the following week, Ms. Franklin schedules additional time for the PLC team to meet during the school's weekly staff development time on Friday to plan core supports and targeted small group lessons.

PLAN & TAKE ACTION

Instructional Response Case Study

Ms. Franklin opens the Friday planning time by sharing the goals of the team meeting are to...

1. Identify the most appropriate place within the learning sequence to incorporate teaching points to build student emerging understanding and connect to lesson content
2. Plan core supports to implement the teaching points
3. Start preparing for small group, or individualized instruction

She reminds the team of the teaching points they identified during their last PLC meeting to address students' emerging understanding and build an on-ramp for the grade 8 function content.

The team starts by reviewing all of the lesson objectives in the function unit to get a sense of where it makes sense to address unfinished learning on the foundational standards.

Standards	Topics and Objectives		Days
	A	Linear and Exponential Sequences	1
F.BF.A.1.a F.IF.A.2		Lesson 1: Students examine sequences and are introduced to the notation used to describe them	
F.BF.A.1.a F.IF.A.2		Lesson 2: Students write recursive and explicit formulas for sequences	1
8.F.A.3 F.BF.A.1.a F.IF.A.2	Use Flex Day	Add Lesson: Grade 8 Module 5 Lesson 3: Students realize that linear functions of the form $y=mx+b$ can be seen as rules defining functions. Lesson 3: Students learn the structure of arithmetic and geometric sequences	2 3
A.SSE.A.1.b F.BF.A.1.a F.IF.A.2		Lesson 4: Students compare the rate of change for simple and compound interest and recognize situations in which a quantity grows by a constant percent rate per unit interval	2
A.SSE.A.1.b F.BF.A.1.a F.IF.A.2		Lesson 5: Students are able to model with and solve problems involving exponential formulas	1
8.F.B.4 A.SSE.A.1.b F.BF.A.1.a F.IF.A.2 F.IF.B.6	Use Flex Days	Add Lessons: Grade 8 Module 6 Lessons 1: Students interpret linear functions based on the context of a problem Add Lesson: Grade 8, Module 6 Lesson 2: Students interpret the constant rate of change and initial value of a line in context Lesson 6: Students compare linear and exponential models of population growth	1 3

Once the team identifies the best places to address unfinished teaching and learning in the context of grade-level content, they then start making a plan for HOW they will integrate work on previous standards. For instance, one decision they made was to add a lesson from the grade 8 curriculum before lesson 3. Since the team noted students had some unfinished learning around interpreting rates of change and initial value, they decided to spend two flex days to address this concept before lesson 6.



Finally, Ms. Franklin has the team turn to planning for targeted small group lessons. The teachers look at their student work snapshot and evidence analysis. Students from across the grade are grouped based on the specific knowledge, strategies, or skills they need to be successful with the topic but have not yet mastered. Teachers look at how many different groups are needed and the size of each group, and then decide which teacher will work with each group during their math intervention block that occurs three times a week. Groups change based on data every 1 to 3 weeks depending on when new topics begin and student progress along the way. Ms. Jewel, a special education teacher, works with the grade 5 general education teachers to support students who would benefit from individualized support. These may or may not be students who have IEPs.

To plan their small group lessons, Ms. Franklin supports the teachers with selecting problem-based tasks from the grade 8 curriculum that align to the relevant foundational concepts and skills and will intentionally engage students in the Standards for Mathematical Practice.

Ms. Franklin closes the meeting by having teachers share their next steps for planning and implementing the instructional decisions they made. She reminds them to bring evidence of student work from lessons 3 to their next PLC meeting so the team can reflect on and adjust their plans as needed.

Pause Point: Consider Your Context

- To what extent are these 3 essential practices happening effectively? How do you know?
- What feels most urgent to address right now? Why?



UNDERSTAND.



DIAGNOSE.



PLAN &
TAKE ACTION.

Systems & Structures Reflection

- What is currently happening effectively at your school?
- What, specifically, could be improved? Why and how?

Next Steps: Complete the Self-Assessment

Access and make a copy of the self-assessment here:

<https://tinyurl.com/MathSelfAssessment>

- **When** will you complete this self-assessment?
- **Who** will be the point person for holding the team accountable for completing the assessment?
- **How** will you work together as a team to complete and norm on this self assessment?

