Enhanced Learning Maps (ELM) Project
Cohort 1 Formative Assessment and Instructional Practices Survey Summary

July 2016

The Enhanced Learning Maps (ELM) project is funded with a four-year U.S. Department of Education Enhanced Assessment Grant. The Center for Educational Testing and Evaluation (CETE) at the University of Kansas coordinates the project, and it is administered by the Kansas State Department of Education. Additionally, there are four other state education agencies (SEA) collaborating in the project. Those SEAs include the Alaska Department of Education, Iowa Department of Education, Missouri Department of Education, and the Wisconsin Department of Public Instruction.

The overall goal of the ELM project is to produce learning maps for individual mathematics and English language arts standards and coherent groups of standards to help teachers plan instruction that is sensitive to cognitive development. During the first year of the project (October 1, 2015 through the current time), CETE staff have been developing resources for the learning maps. The development and refinement process will continue through the duration of the project. The learning maps will be accompanied by written and some (or selected) videotaped descriptions explaining the nodes and connections in each map. For each learning map, ELM project staff are generating an instructional activity and teacher's guide, providing a sample of how to draw out knowledge and target the nodes in the learning map. ELM project staff have or will also develop performance tasks and rubrics, as well as objective item sets, for teachers to administer as formative assessments to generate the individual student data they need to address students' individual learning needs. The rubrics and answer keys for these formative assessments will be accompanied by notes about how to interpret student responses in terms of the nodes and connections in the learning maps.

In Spring 2016, staff from the five SEAs recruited English language arts (ELA) and mathematics grades 2-8 teachers to participate in the project for the 2016-17 school year. A total of 43 teachers met the selection criteria and were invited to participate in Cohort 1 (25 ELA teachers and 18 mathematics teachers). The first formal project activity for Cohort 1 participants was a three-day workshop in Kansas City held July 6th 8th. The teachers received training on how to access the online ELM materials and how to use the materials in instruction. The expectation is that following the training, the teachers will continue to explore the ELM online interface and its tools, implement those tools in instruction, and complete feedback surveys at the conclusion of each instructional unit. ELM staff will provide ongoing support through the school year as the teachers implement the ELM resources.

Survey Overview and Analysis

As a part of the ELM project evaluation, a survey was developed and administered on the first day of the project. The purpose of the survey was to assess the teachers' formative assessment practices prior to training or participation in other project activities. The survey included six open-ended questions. Responses were analyzed by question and by theme. Representative examples were provided to support each theme. Appendix A includes a complete listing of responses for each question.

Of the forty-three teachers who completed the survey, more than one half (53%) reported they teach grade 5. Approximately one fourth said they teach grade 3 (23%) or grade 4 (23%) (Table 1). Teachers were also asked to identify the content area they were focusing on for the ELM project, 58% identified ELA and 42% identified mathematics.

Table 1. Teacher participants per grade level

Grade level	Number of participants teaching grade level	Percentage
Grade 2	6	14%
Grade 3	10	23%
Grade 4	10	23%
Grade 5	23	53%
Grade 6	5	12%
Grade 7	8	19%
Grade 8	5	12%
Other	6	12%

Note: Respondents could select more than one option. "Other" grade level responses included kindergarten and grade 1 (n=1), grade 1 (n=1), algebra 1 (n=3), and instructional coach (n=1).

Findings

This section details the findings for each of the open-ended questions of the survey. The first question asked teachers to explain what the term formative assessment meant to them. Teacher participants described formative assessment as either a formal or an informal assessment that is a quick check for student understanding. They elaborated that formative assessments help them plan their instruction and meet individual student needs (Table 2).

Table 2. What Formative Assessment Means

Themes	Examples
Formal or informal	• Formative assessments are either formal or informal, that guide teacher instruction and help teachers know what students know, don't know, and what still needs to be worked on. • Formative assessment is a way in which I test the knowledge of my students and then assess what I need to reteach or introduce based upon the results. This can be a simple observation of students working or conversing about math in class, grading homework or an actual test.

Themes	Examples
Plan Instruction	• It guides instruction and lets you know which students need more or different instruction. • Assessment that is given to inform instruction.
Meet student needs	• I use formative assessments to do a check-in to see where the students are currently and where it will take me in my teaching. It allows me to guide instruction to move forward, reteach, or to continue on to support learning. • Keeping data on what students are doing on a daily basis and asking them about their knowledge. Using this knowledge to guide further instruction for that individual student. • A formative assessment to me is when you are assessing students' growth during instruction or a unit and adapting your instruction based on what you observe.
Informal	• Formative assessment is a way to check the understanding of your students. This is not a formal assessment but a quick and easy way to check and see if students are grasping the concept being taught. • Ongoing, informal assessments that determine what students have learned and possible next steps in instruction. Can take the form of surveys, observation, quizzes, teacher questioning.
Checking for understanding	• Formative assessment is utilized in my classroom to assess if students are mastering the concepts necessary to achieve the actual goal/learning objective which has been selected for that unit. • Formative assessment is checking for understanding during the course of learning. It is used to check what students have learned as well as identify any misconceptions, in order to reteach or enrich.
Quick	• A way to quickly assess the lesson you just taught, and should take no longer than 5 minutes. • The formative assessments are typically informal and can be used as a quick knowledge check.

The second question asked teachers how their definition of formative assessment aligned with their understanding of formative assessment. Teachers believed that the definition they provided for formative assessment aligns with their understanding of formative assessment in that it is a short assessment of checking student understanding as they teach and it guides their instruction to meet student needs (Table 3).

Table 3. Alignment with Understanding of Formative Assessment

Themes	Examples
Guide instruction	• I try to use formative assessment to modify my instruction to meet the needs of my students and to provide my students with the lessons they need to succeed. • Students and I both track their data and progress and use the data to drive instruction.
Matches	• The above definition IS my understanding of what a formative assessment. • It is my definition so my thoughts align to it perfectly.
Check understanding as you teach	• This is what I try to do on a daily basis in some form, whether on papers, during instruction, in a class discussion or listening to groups as they work together. • I use formative assessment in all subject areas. It is best to use it early and often in lessons and units. • I believe that you check for understanding as you go through your lessons.

Themes	Examples
Short assessment	• You are doing mini check points to assess your students to make sure they are understanding the concept/standards. • I understand that I should basically have short assessments/checking understanding along the way rather than one big assessment at the end of the unit.

The third survey question asked the teachers what eliciting evidence from students means to them in the context of their classroom. The teachers shared that it is having students demonstrate knowledge and checking for student understanding (Table 4).

Table 4. What Eliciting Evidence from Students Mean

Themes	Examples
Demonstrating student knowledge	• Eliciting evidences from students means asking them to show what they know. • Eliciting evidence from my students means that they can show what they know and can demonstrate their learning in a variety of ways.
Checking for student understanding	• Looking for different ways to check for understanding of all students at differing times throughout the class. • Eliciting evidence would be evaluating student learning or checking for understanding by reviewing any assignments/assessments given on the way. • Evidence for me in the classroom is a product from the student that shows their level of understanding or practice of a new idea or skill. Evidence can range from verbal explanation/ justification to written "portfolio" work. • "Eliciting evidence from students" is when my students provide work (written or verbal) to show what parts of the standard they understand. This can be done on formal assessments, teacher observation, white boards, group discussions, conferring with individual students, etc. • This would be where a teacher collects samples whether it be homework, quiz (not ending test), exit slip, concrete examples of work.

The fourth survey question asked the teachers to think of a specific example where they had elicited evidence from students and then to describe the method used and what they did with the evidence. Teachers solicit evidence by using various techniques, for example, observations, quizzes, and one-on-one conferences (Table 5). Teachers provided individual examples where they elicited evidence from students and used the evidence to meet student needs. The examples include student work samples, exit tickets, online platforms where students upload their work like Google Classroom, quizzes, and tests (for a complete list of examples, see Appendix A, Question 3 responses). Teachers used this evidence to meet student needs by directly addressing the learning gaps of individual students, by creating differentiated groups, and using this information to guide the students' learning progression.

Table 5. Examples of Eliciting Evidence and How Information Used

Themes	Examples
Student work samples	• Writing samples from beginning of the year to the end of the year. Talk about the growth that the students see and what I see. Meet with students about reading goals and to set markers to meet such reading goals.
Exit tickets	• Exit tickets are a fast way for me to see how well an idea was understood. Based on the responses at the end of a science lesson, that drives how my lesson starts the next day.
Online platforms	• I mainly use Google Classroom in my classroom right now to elicit evidence from students, mainly their thinking about their learning. I use this blog to help guide discussions and answer questions students may have.
Quizzes and tests	• One specific example is the result of a test. I used this information to make differentiated groups based on what was learned and what was not learned.

The fifth survey question asked the teachers to think of a situation the past school year where they were working individually with a student who may have been struggling on an English language arts or mathematics assignment. Teachers were asked to describe the context (lesson objective or nature of the assignment); the process used to determine the source of the student's difficulty; and how they helped the student overcome this difficulty. The approaches the teachers shared primarily involved observation of the students as they did the classwork, one-on-one conference with the students, and use of student assessments (Table 6). Once the teachers determined the source of difficulty with the assignment, they provided individual help to the students in addition to providing the right tools necessary to overcome the difficulty. They also strive to make the learning opportunities engaging and interactive for the student.

Table 6. Situation Working with Struggling Student

Themes	Examples
Observation, assessment, one-on-one conference and inference	• We were in our writing unit and the students were to write a narrative about an actual event with the expectation of two pages. I had many students who could not come up with anything to write about or had a limited amount of written information. As I sat with the student, I generally begin with basic story elements that are missing in their work. I ask questions regarding people involved, setting, time frame, problems, dialogue involved, internal thoughts. I ask the class at the beginning of the writing period to spend 10 minutes visualizing the event they are going to write about and mention the story elements to think about while revisiting the memory. • I had a student that was struggling with differentiating short vowel and long vowel sounds. I was able to determine this using informal questioning during small group instruction as well as his inability to work independently on certain tasks. I started to work with him and group of students that needed work with the same skill and we worked on words with a short vowel and then progressed into long vowels and how they look/sound differently.
Providing individual help and the right tools	• I had one 8th grader this year who when presented with the problem: simplify 3(x + 2) responded by writing 3(2x) and then was not quite sure what to do next he thought maybe 6x or 6x^3. The lesson objective was to solve equations that involved using the distributive property however I quickly learned that the student did not know what the distributive property was or why it worked. The source of the student's difficulty was as he told me "I didn't really pay attention

Themes	Examples
	or do anything in math last year." I also learned he had inconsistent attendance. I helped the student overcome this difficulty by sitting with him individually and working on the concept of distributing using algebra tiles. I talked about representing 3(x + 2) as three groups of (x + 2) using the tiles and then combining like terms or tiles. After a few examples he caught on to the concept and needed some revisiting/practicing with the tiles but he was able to progress in the learning of solving equations now that he could successfully distribute. • A.) 5th grade math lesson - estimating quotients of long division problems using decimals. B.) Formative assessment in the form of white boards during small group instruction. Student was able to divide whole numbers. Student could round decimals. Student struggled to estimate compatible numbers in a division problem. C.) Two tools: multiplication chart and graph paper. The student rewrote the division problem on graph paper with no decimals and then used the multiplication chart to make a compatible problem. The answer was then transferred back to the original problem. learning to subtract numbers that were double digits, and involved borrowing. Student was confused, often adding rather than subtracting I use small groups go over the problems together working together, using items and 10 frames, one child never understood and became frustrated, that child I worked together playing a simple card game of subtracting and the person with the lowest number won. we played till there was an ease with the subtraction, then wrote out the problems and next added more cards representing place value, wrote out the problems and person with lowest score won. the student had success and was no longer frustrated could easily complete the work. • The objective was for the student to write a paragraph about a time they felt like a hero. I was able to find what the student was struggling with by reviewing the text and finding gaps. I helped the student by showing them how to use a concept map/outline before writing.
Making learning engaging and interactive	• A student did not have an understanding of long and short vowel rules. I evaluated his writing along with his spelling of high frequency words. Each day we did word work one on one starting with short vowels, the rules, and played games. • A.) Students have a difficult time with adding or subtracting with regrouping B.) I asked the student to tell me what steps she was taking as she was solving a problem and at different points asked her why she was doing what she was doing to see if she understood the process and why it was necessary. C.) I went through the method used to solve the problem with several different methods so that she could see the process in many different ways (paper and pencil, using base 10 blocks) and understand what the numbers were symbolizing and why the steps were necessary.

The sixth survey question was customized for the ELA and mathematics teacher participants. ELA teachers were asked to imagine they were teaching a lesson that has as its learning goal that "students will learn how to create questions about an informational text." They were to describe in detail the way they would teach this lesson (e.g., teacher role, student role, strategies to be used, formative assessment techniques). The ELA teachers said they begin a lesson by providing an introduction to the topic and then they model for the students how to approach or solve the task

(Table 7). The student role includes working individually, in pairs, or in whole group. The formative assessments include verbal sharing of thought process and individual writing assignments.

Table 7. Teaching an ELA Lesson

Themes	Examples
Teacher role: Provide an introduction	• I would start my lesson by stating our learning target "I can learn how to create questions about an informational text." We would have a quick class discussion on what we think this means to the class. * Share learning target. I would also have a discussion with students letting them know why this task may be helpful or useful to them (e.g. higher level of comprehension, better understanding of text). *Read a passage together and discuss to be sure students understand vocabulary, concept, purpose of text, etc. Part of the reason would be so that students understand text to work with it but part would be stressing the importance, as a reader of always doing self-checks for understanding • I would start my lesson by stating our learning target "I can learn how to create questions about an information text." We would have a quick class discussion on what we think this means to the class.
Teacher role: Modelling	• First, I will read them a story and stop, making my own questions as I go, modeling how to do so. • Teacher role: to demonstrate the thinking process that occurs to generate questions about an informational text prior to reading it. Then read an informational text and demonstrate how to look for those answers while reading to be more engaged in reading.
Student role: Work in pairs, individually, or in whole group	• First, I will read them a story and stop, making my own questions as I go, modeling how to do so. As a class, we will review questions we've seen, determine the verb used, determine what makes a good question. We will then write a question that can be answered from the text, while determining what verb is used and how to find the answer. From there, the students will be given a specific text that they will need to read, and as they read they will write their own question. • As the teacher I would model what my thought process is while reading. The student will then be given examples to use and eventually design their own questions. One formative assessment I would have is a short text for them to read and cite and then come up with a question about the text. • I would read aloud a paragraph of text. Next, I would have the class read the text as a whole group. Then, I would look for key words or phrases that might look important information. Next, I would have students partner up in 2-3 and think of 2-3 questions that would help us understand the text. Finally, I would have one person from each group, take their question and move to another group to get their response.
Formative assessment	• I would teach this lesson by explaining to students what an informational text is and what we can gain from it. I would then read aloud a story and think aloud the questions I had as I read. Using an engaging text like a Time for Kids article, I would have students read the text with a partner and write the questions they had as they go. The formative assessment would be the actual content and depth of the questions they generate. • I would first model how to write questions of the text. One way would be to use the heading as the answers to questions. I would have students work with partners or in groups and write a question for each heading in a section. The goal would be that the question is not a right there question but the heading

Themes	Examples
	could be the answer. Each group would share out their questions and explain how they developed their questions. They could write them on large paper and other groups could go around the room and use sticky notes to judge the level of questioning. The teacher is able to see if the partners could write questions and how it related to the text. • If this was the first time we were dealing with this topic, I would probably start with how to ask questions. We would probably ask questions in student pairs and record a few of the questions so we could discuss words you use to ask questions (who, what when, etc.). Then we would go to asking questions about pictures or objects, most likely in pairs or small groups and then individually. Then we would move on to interacting with an informational text. That would include reading and re-reading both individually and with a buddy. Depending on the text, it might even be read aloud by the teacher as a first interaction if it is a difficult passage. Next we would work on questioning about certain parts of the passage so that the students could work in small groups or pairs and then working toward working individually. All along the way would be sharing verbally and the teacher checking in with groups and with students, especially with those who tend to struggle or who have struggled on similar lessons in the past.

Mathematics teachers were asked to imagine they were teaching a lesson that has as its learning goal that "students will analyze and compare linear and nonlinear functions given in different representations." The critical outcome of the activity was for students to be able to analyze the properties of the functions separately and then compare them to each other when the functions are represented in different ways. They were to describe in detail the way they would teach this lesson (e.g., teacher role, student role, strategies to be used, formative assessment techniques). The mathematics teachers described that they begin by checking for student background knowledge about the topic and providing an introduction (Table 8). Similar to the ELA teaching strategy of modelling, math teachers also model for their students how to approach and solve the task. In addition, they also include real life examples to teach the math lessons. Students work in pairs, individually, or in whole group in mathematics lessons.

Table 8. Teaching a Mathematics Lesson

Themes	Examples
Teacher role: Provide introduction and check student background knowledge	• I would have students give me buzz words to break down what they have for background information on either function. I would then have them relate any visuals that might represent either function. Lastly, I would have them include numbers that represent either function. The student should lead the activities when they pair and share, discuss within their group, display their poster paper, or have them make their best picture/word/number to represent each function. The teacher role would be to facilitate the discussion within their small groups, guiding them via questions if they seem to be stuck in their brainstorming. We would dive into an investigation with the linear functions, go into nonlinear functions, and then compare the differences between the two (e.g. put up words on the board and have them pair up to play Catch Phrase). As they leave, I would give them a ticket to leave and ask them a linear question and nonlinear questions.

Themes	Examples
	• First, I may provide a graphical representation of a linear function and have students make a list of observations about the function. Then, I would provide other representations of same functions and collect observations on that. Ask students to explain what they notice about the different representations. Then, provide nonlinear representations and have students compare the linear to nonlinear. Provide a definition of a function and notes on the subject to go in interactive notebooks. Practice identifying functions based on different representations. • One way I have taught this lesson is to hand out cell phone deals, graphs, tables, and equations. Students are asked to match the words, graphs, tables and equations that go together and be able to formulate reasons why they think those things match. We discuss if this was easy or hard, what was the process and thinking on how you completed the task, etc. My role is to observe them working on the activity and listen to the group discussions. Students are matching and formulating reasons why they match. Strategies used are to have students learn, discover and discuss the problem. Then have students tell how and why they did what they did and encourage collaboration in the class. I assess by listening and watching. Then I discuss with the class the mistakes and solutions and we discuss why each one matches. We discuss what was hardest to match...graph, table, etc. This brings up many comments from students and was a great way for me to determine what we need to focus on in that objective.
Teacher role: Modelling	• First I would use real life situations to model each type of function. This would be quite a lengthy period of time. Linear functions would come first. We would describe the situation, discuss rate of change, then model the situation with graphs, tables, and with equations. From here, I would move on to non-linear functions using the same process. Finally, we would discuss similarities and differences in linear vs non-linear functions. Formative assessment techniques could be bell-ringers, exit tickets, class discussion, partner share, etc. • TR- teacher role, SR - Student role. TR would begin with introduction of linear functions, working on an I do, we do, you do, model until a strong grasp of the concept is achieved. Mastery will not be achieved in this setting if this was a first introduction. SR is participation in class discussion, partner work, and independent work. TR would then move to nonlinear functions, same model of I do, we do, you do, SR would be the same as well. Once student have a solid understanding of the skills linear and nonlinear functions would be shown together in the same representations, TR would model differentiating the two of them. TR would pass on to students of identifying the two functions in the same representations. As the students show mastery of basic representation, alternating representations would be shown with gradual release to the students to identify and compare the linear and nonlinear functions.
Teacher role: Sharing real-life examples	• Cell phone deals, graphs, tables, and equation solving • Present students with 3-5 different t-shirt design companies' prices based on how many shirts are ordered, but the information for each company is presented in a different way.
Student role: Work in pairs, individually, or in whole group	• Different students working with different situations and then share the work as a group and finally individually. • Teacher provides review first, followed by students sharing their own examples. This is followed by a whole group discussion involving several examples, finally followed by students working with a partner and coming back as a whole class.

In summary, responses of the ELM Cohort 1 ELA and mathematics teachers to the six open-ended survey questions indicated they have a good foundational understanding of formative assessment and how to apply it in their classrooms. Descriptions of their instructional practices show they are using a variety of techniques to informally assess students' understanding of a topic and using the formative assessments to address struggling students' needs. A similar survey will be administered to these teachers at the end of the year. Survey data will be analyzed between these two points in time to determine if there are any changes in teachers understanding and utilization of formative assessment following one year of participating in the ELM project.

Appendix A

Question 1: What does the term "formative assessment" mean to you? (n=43)

- Formative assessment is utilized in my classroom to assess if students are mastering the concepts necessary to achieve the actual goal/learning objective which has been selected for that unit.
- A way to quickly assess the lesson you just taught, and should take no longer than 5 minutes. Something that is quick and useful to see if you can go on to the following lesson, and which students are still struggling what you just taught.
- An assessment given to measure knowledge of a subject. One assessment is given to all. The results of the assessment are then used for further instruction.
- I think formative assessment means that you are checking for understanding while you are teaching your standards.
- Formative assessment is any assessment that you use to make "formative" decisions with in regards to your instruction.
- Ongoing, informal assessments that determine what students have learned and possible next steps in instruction. Can take the form of surveys, observation, quizzes, teacher questioning.
- Formative assessment means assessing students as they learn to see how they are responding to the lessons and teaching. This can be informally like exit tickets and questioning students or it can be done in more formal ways like presentations and chapter tests.
- Formative assessment means to me assessing my students throughout a unit/lesson on their understanding of material and concepts. From these assessments, changing/restructuring/modifying instruction to meet their needs. That could mean re-teaching something, advancing the material, or even backing up and revising some beginning concepts.
- Formative assessment means check for understanding in any way possible.
- Formative assessment is used to see if the students understand what I taught them.
- Formative assessment helps you plan your instruction and next steps. It can be anything from a test to a response on a whiteboard. It helps you see where your students are and what the next step needed to reach the goal or the standard.
- Ongoing assessments done with students to show their knowledge or growth. The formative assessments are typically informal and can be used as a quick knowledge check.
- A formative assessment to me is when you are assessing students' growth during instruction or a unit and adapting your instruction based on what you observe.
- Evaluating where students are in the progression of learning a skill.
- Formative assessments are assessments, whether formal or informal, that guide teacher instruction and help teachers know what students know, don't know, and what still needs to be worked on.
- Assessing student work and ability at the end of a skill set.
- A short task to assess what students already know about a topic prior to instruction.
- Formative assessment is any assessment (formal or not) that helps me inform my instruction to meet the needs of my students.

- Formative assessment is a way in which I test the knowledge of my students and then assess what I need to reteach or introduce based upon the results. This can be a simple observation of students working or conversing about math in class, grading homework or an actual test.
- Assessing student knowledge via hands-on activities and discussions. Keeping data on what students are doing on a daily basis and asking them about their knowledge. Using this knowledge to guide further instruction for that individual student
- The checkpoints or information collected within the classroom to evaluate the students' performance on various materials and their understanding of the content discussed. It is ongoing and continuous with the students.
- The term formative assessment, to me, means taking information from what I am teaching and using that information to guide any further instruction.
- Formative assessment is a way to check the understanding of your students. This is not a formal assessment but a quick and easy way to check and see if students are grasping the concept being taught.
- I use formative assessments to do a check-in to see where the students are currently and where it will take me in my teaching. It allows me to guide instruction to move forward, reteach, or to continue on to support learning.
- Formative Assessment is a way to assess our students and their understanding while we are working on a unit or in daily studies.
- This means you are constantly checking for understanding throughout your teaching. Collecting information that will help check for understanding and guide my teaching in the future.
- To me, formative assessment is the overall assessment of what students have learned. When teaching a unit, the overall goal is stated and sought for. Formative assessment is used to measure how successful I was in teaching the unit, and what the students brought away from it.
- Formative assessment is assessing with the intentions of continuing teaching. Formative assessment can be used to identify students who are struggling and students in need on enrichment. This form of assessment is meant to give teachers (and students) an accurate look at what students know and what they have yet to learn.
- An assessment, or way of finding student knowledge, given before and during teaching of a topic of learning to guide your teaching toward students.
- A tool to use during teaching to see if the students are learning what you want them to learn. It guides instruction and lets you know which students need more or different instruction.
- To me, formative assessment is a tool used to help both the teacher and the students. As a teacher, it is used to determine what content and key ideas are still needing focus on. It is also used to help pinpoint what students still need additional instruction on the targeted content.
- Formative assessment is assessing understanding of students as you go about specific topics so that summative assessment isn't a huge surprise.
- Formative assessment is checking for understanding during the course of learning. It is used to check what students have learned as well as identify any misconceptions, in order to reteach or enrich.

- Assessing students' knowledge regularly to determine the level of understanding and how to adjust teaching methods and time spent on topics due to student responses.
- To me formative assessment is a way to check for student understanding. It is any way or tool that I use to gain information about my students learning.
- Formative assessment can take on a variety of forms. It is the information you obtain after teaching a lesson from your students' understanding and application of the tasks you presented.
- Continuous assessment in a variety of ways to see what the students are learning and where they need different or additional instruction, practice, etc.
- Formative assessment is a check up to see where a student's current base knowledge starts at and should guide a teacher in instructing them going forward. A formative assessment is what has formed the student coming into the classroom.
- Assessment that is given to inform instruction. It can take many forms from something as simple as a personal thumbs up or down, an exit slip, or short quiz following instruction. The teacher can use this to gauge if there are student misconceptions or if further teaching/re-teaching is necessary.
- Formative assessment means checking for understanding before and during instruction. It is usually informal and is supposed to address misconceptions of students. It helps to identify which students may need one-on-one help or a different instructional strategy.
- Formative assessment can be done in a variety of forms but it is designed to make assessments along the way to make sure your students are understanding the content. It was a way to monitor and adjust as the lesson(s) progress.
- Hard, difficult, standard, made for the profit of testing companies, not informative for instruction, worthless, time consuming, fear based, last century, a waste of limited school funding.
- My understanding of formative assessment is an assessment process that a teacher uses to evaluate if his/her students are missing something, meeting, or need enrichment in the concept or skill the student is demonstrating. This can be done each day as one evaluates the students' progress and then the teacher will adjust his/her instruction to meet the students' areas of need. It can be formally planned by the teacher or grade level team. Then is noted or recorded and the teachers adjusts their instruction. Because, if students have the skills needed then the teacher can move on to the next step of learning or help fill in the gaps missing

Question 2. How does this definition align with your understanding of formative assessment? (n=43)

- I understand that I should basically have short assessments/checking understanding along the way rather than one big assessment at the end of the unit.
- Something that I strive to consistently apply in my teaching daily, or at the end of every lesson.
- Perfectly!
- I believe that you check for understanding as you go through your lessons. You are doing mini check points to assess your students to make sure they are understanding the concept/standards.

- Formative assessments are used in my classroom on a daily basis from a simple thumbs up/thumbs down to check for understanding to answering questions on whiteboards. By checking for understanding I can change the direction of my instruction to meet student needs.
- This is how I understand formative assessment!
- My usage of formative assessment is well intended however, I often find myself relying on benchmark tests and universal screeners to help inform my instruction.
- I use formative assessment in my classroom right now by using mainly STAR data to guide the instruction for Reading and Math with my students--particularly during my conferring time with students and in strategy groups.
- Checklists, mastery checks, student reflection, one-on-one meetings
- I use formative assessments after I teach lessons to see which students that I need to work more with and which students already understand what I taught them.
- As a reading specialist, I use many things for formative assessment. Listening to a student read and doing a running record, looking at student writing, etc. are all forms of assessment. It does align with my thinking.
- The above definition is my understanding of what a formative assessment.
- I do this through benchmarking, running records, quizzes, observations, etc.
- A formative assessment could be observation, paper and pencil assessment, performance tasks, etc. I give feedback to students so they have a better understanding of where they are in the targeted skills.
- I use formative assessments daily. My instruction and grouping of students varies from day to day based on what the students work reveals. I have flexible "focus" groups in my room and all are established from formatives.
- I use this method to check for understanding and ability with a skill set. Students need mastery of certain skills before they are able to move onto the next standard or growth pattern from a previous skill.
- I use formative assessments to see what students already know. I usually use formative assessments in the form of "warm-up" problems or activities as a whole class. I also give quizzes throughout the lesson to check for understanding.
- I use pre-tests, homework, daily math talk, one-on-one conversations with students, quizzes - and even chapter tests when they lead to additional instruction about a topic.
- I use formative assessments daily. Typically, by looking at homework, talking to students and asking questions to make sure they understand the concepts. If there is confusion, then I reteach or teach in a new way.
- It is my definition so my thoughts align to it perfectly. These are things that I am currently doing to assess and enhance student knowledge in my classroom.
- I use formative assessment in my classroom every day and within or at the end of every lesson to see what changes I need to make to my instruction and how well the information is being received by the students.
- In my classroom, I use formative assessment by listening to my students read and jotting down notes about areas that they are struggling. I then will use these notes to determine what reading group that student would be in or what other resources I can use with that students to better improve their area of struggle.

- I use formative assessment in my classroom to guide my instruction. It is a tool in my teacher toolbox to help create lessons, increase student understanding, and assist students in reaching their educational goals.
- I use formative assessment regularly in my classroom. At times, students feel that they are always being assessed, but it is important. I seem to use more formative assessments in math and not as much in reading. My hopes are that this research project will assist my teaching and learning to utilize it more.
- Ways it has been integrated into my practice- I try to use formative assessment to modify my instruction to meet the needs of my students and to provide my students with the lessons they need to succeed.
- I would agree with my definition, and I hope to learn more.
- Again, formative assessment is used to measure how much students have learned from a lesson or unit. I use this to measure whether I was successful or not successful, which will make me have to reteach the lesson.
- In my classroom, I use formative assessment to inform myself and my students about their knowledge and progress throughout the learning process. Students and I both track their data and progress and use the data to drive instruction.
- Completely aligns, I use formative assessment to guide my instruction to my students on particular topics.
- I don't always have students write down formative assessment but visually see that students understand or don't understand the concepts. Sometimes formative assessment is verbal also. I don't think I always have to have documentation during formative assessments.
- In my classroom, I collect responses from students in a variety of ways to see what they need to work more on. We use pre and mid reading assessments to continuously track how students are progressing. I believe that the use of any kind of formative assessment should be used to see not only the struggle of the students, but also the progress that the students are continuously making.
- I use formative assessment in my classroom through group check-ins (exit slips, quick writes, etc.) as well as through individual or group conferencing. In addition, I utilize formative assessments required by my building including DIBELS or AIMSWEB probes, especially for students who tend to struggle academically. I prefer formative assessments that are not high-stakes or hugely formal because I think students respond more honestly to those kind of assessments. I don't want formative assessments to be high stress incidents for my students or for me.
- I use formative assessment in all subject areas. It is best to use it early and often in lessons and units.
- This is what I try to do on a daily basis in some form, whether on papers, during instruction, in a class discussion or listening to groups as they work together.
- To me formative assessment is how I progress monitor on a daily or weekly basis. This can be as simple as me, the teacher, walking around the room and asking individual or small groups of students specific questions to get an idea of their understanding of the concept they were supposed to learn, it can be asking the class to give me a thumbs up or down, or it can be a short quiz.
- Formative assessments can be observations, verbal discussions, explanations, demonstrations, peer teaching, providing questions to clarify understanding, and written

responses. Formative assessments are the learning along the way toward mastery of tasks or skills.

- As a resource room teacher co-teaching as well as working one on one or small group in the resource room, it is imperative that I use formative assessments as a way to fine tune instruction and goals for each student as well as for small and large group instruction.
- When implementing formative practices, I've looked at it through the scope of practicing. Check-in/check-out allows me to group students based on where they are at, homework allows me to gain insight on problems that students struggle with, posting videos and embedding questions within allows me to use a re-teach to the whole class if my instruction is not clear on a topic.
- It aligns with my understanding because that is how I use formative assessment in my classroom.
- I have used pre-tests, and activities as simple as a fist of five feedback during an instructional activity. I like to use exit tickets and think-pair-share.
- I am constantly doing check-ins with my students with questioning, the use of technology (such as google forms, plickers.com, etc). Listening in as students turn and talk. Written responses. Formal projects.
- Is this question a mistake? Or are you confused? I use formative assessment by testing the students according to my district and state policy when the testing dates are open.
- This past year our district worked in PLCs to develop formative assessments. They discussed what benchmarks should be checked along the way. It proved to be helpful to learn who needed the small group direct instruction interventions or enrichment. Each teacher or grade level team developed his/her assessments and recorded them formally in the grade book. I instruct students who receive small group or one-on-one direct instruction in the areas of reading, writing, math, art, social studies and science, and/or adaptive skills. I could use the formative assessments a grade level partner created, or create my own, and record the results. As a result, I was able to re-group students and adjust the direct instruction to meet their needs. I also used the IEP goal areas as formative assessments.

Question 3. What does "eliciting evidence from students" mean to you in the context of your classroom? (n=43)

- Eliciting evidence would be evaluating student learning or checking for understanding by reviewing any assignments/assessments given on the way. If they are struggling to understand, I am able to pinpoint exactly where I need to revise my teaching and differentiate my approach to certain students.
- Making sure that students show their work that explains their thinking and reasoning.
- It means that what the student knows or does not know and how the student learns and why the student is not learning.
- Check for understanding. Having them show you the evidence that they are getting it.
- "Eliciting evidence from students" can be as simple as having them explain or demonstrate their knowledge in some format to check for understanding.
- Asking questions, student participation, written response, role play, etc. Getting students to show what they have learned.
- Using student work to inform teaching. For example, using student produced materials to help give feedback on the effectiveness of a lesson.

- Students may fill out surveys from their work, respond to a blog question on Google classroom about their learning, write to me in their Reading/Math journals, provide evidence or argument to an answer, have discussions with their peers.
- Actively listening to the students with a rubric in mind. The students do a self-reflection. Students do submit drafts and finished projects. Keep a data folder for parents to see, and the students have say what to show.
- It means seeing how students can show me what they learned.
- I think this means the evidence that you get from students to let you know they got it. Authentic writing is good evidence of a student's comprehension and understanding. Student response in class or in groups can also be good evidence that they "get it."
- A lot of informal assessments~ quick exit notes, quick writes, think-pair-share, asking questions, students participation and discussion. Anything that will show students understanding of the materials.
- This would be where a teacher collects samples whether it be homework, quiz (not ending test), exit slip, concrete examples of work.
- Eliciting evidence can come from discussion with students, samples of student work, having students explain or show their thinking.
- "Eliciting evidence from students" is when my students provide work (written or verbal) to show what parts of the standard they understand. This can be done on formal assessments, teacher observation, white boards, group discussions, conferring with individual students, etc.
- Having students show in a variety of ways how they are able to complete a task or show an understanding of how they solved a problem.
- It means gathering student work whether that is in a physical form or something they say verbally. In mathematics, I would mostly to take that to mean physical homework or tests.
- I would be eliciting evidence from students if I ask them to give me a product of their current proficiency.
- Observing them, questioning them, viewing their homework, testing them, listening as they discuss math.
- Eliciting evidence means that a student is able to explain their thought processes either verbally or via demonstration. This may be done as a test, quiz, discussion, or hands-on project (demonstration).
- Eliciting evidence from students would mean that the students are not only able to give the correct answer or respond to a question or thought correctly but that they are actually able to show they fully understand the information they are learning. This could be turning to teach someone else in the class or demonstrating their understanding with me one on one or in some other fashion.
- To me, eliciting evidence from students means to use oral readings, reading response journals, and completed projects or activities to guide further instruction on a particular topic.
- Eliciting evidence from my students means that I am gathering information on what they understand and know. What they can show they understand and any misconceptions they may or may not have.

- Gathering the evidence or student work allows for me to show the student and use this tool to help guide their learning. It also allows concrete evidence to give to parents throughout the year.
- Eliciting evidence from my students means that they can show what they know and can demonstrate their learning in a variety of ways.
- This could mean something like a verbal definition or answer of a question, or written evidence of knowledge on the topic.
- When doing a unit, I will use student work to gather evidence on how well they are comprehending and absorbing the lesson.
- As I understand it, eliciting evidence from students means that I, as the teacher, am collecting data (evidence) from students. This can be done in many different ways from a pen and paper assessment, discussions with or among students, projects, and many other ways. There is not one-single or superior way to elicit evidence (or gather data) from students.
- To get evidence directly out of students. Within my classroom this means having concrete evidence from my students on a particular area of learning. Whether it is a worksheet (which doesn't happen much) or a test, or a writing piece.
- I think it means they can show me they understand as well as verbally tell me and also write it down. I think there is a time and a place for each of these depending on the task, situation, and time constraint.
- Collecting material ("evidence") of student work from students, that can then be used by the teacher to review and see feedback from a lesson.
- Eliciting evidences from students means asking them to show what they know. It might be verbally, in writing, or through a project. Eliciting evidence can be simply through regular, daily interaction with learning materials and the teacher.
- "Prove It" Eliciting evidence from students includes not only a check for understanding, but higher level knowledge of the essential question and big ideas. Students need not only an answer, but an explanation of how and why. This can be written, draw, verbal, through technology, creation, etc.
- Looking for different ways check for understanding of all students at differing times throughout the class.
- "Eliciting evidence from students" means having students demonstrate their knowledge of a concept. This can be verbal, written, or by creating something that demonstrates a clear understanding of the learning target.
- It is the students presenting their understanding through verbal discussions, explanations, demonstrations, peer teaching, providing questions to clarify understanding, and written responses. These responses guide the learning process of advancing or re-teaching concepts.
- The type of work or "assessment" that is used (e.g. whiteboard answers to a math question, participation in a conversation or discussion about a story or book, independent work, journaling, conferring, projects, etc.).
- There are many different ways to solve a problem. Just getting the answer is only one part of math. Can you explain multiple ways of getting to that same answer and understand another algorithm from a different student's perspective? Teaching a student to understand is better than saying that, just because they solved the problem correctly, they are good with math.

- When I ask students for evidence, I want to know what information did they use to justify their thinking. Evidence is also a product of student understanding of a concept. For example, a misconception may become evident after examining a student's work.
- Evidence for me in the classroom is a product from the student that shows their level of understanding or practice of a new idea or skill. Evidence can range from verbal explanation/ justification to written "portfolio" work.
- Eliciting evidence from students means that information about a student's learning and understanding is gathered. For example, student can give evidence through portfolios or even students verbal responses. Again, it can take many forms beyond these two mentioned.
- Gathering samples of their work over time. Individualizing instruction to meet the needs of each student. Differentiating instruction with fidelity. Asking questions, allowing time for responses and conversations, application of their learning. Observation and documentation of gaps in what they know and filling in the gaps with instruction and examples.
- My understanding of eliciting evidence from students is the process of observation, anecdotal notes, reviews, or seeing the progression of steps the students demonstrate leading up the targeted skills. Some examples are group interactions, study guide review, KWL of prior knowledge building then reflecting on their learning.

Question 4. Think of a specific example where you have elicited evidence from students. Describe the method(s) you used and what you did with the evidence. (n=43)

- Examples I have used are short daily quizzes, having students fill out a yes/no form, rating their understanding on a scale, or through conversation.
- Give students two to three math problems, then reflect by having students explain their answer and how they got there. For example, after teaching how to simplify algebraic expressions a+a-6, 7+b-6+b+b, and 3c-c+4+7c. Most of the students thought that each variable was the number 1, so a+a-6 they came up with 4, or 8; instead of 2a-6. This showed that I needed to give more reasoning and partner work for them to understand that each variable is a number that we don't know yet.
- One specific example is the result of a test. I used this information to make differentiated groups based on what was learned and what was not learned.
- Quiz, writing sample, comprehension quiz, etc.
- Student samples, student observation especially in small group discussions, work example, student self- knowledge ratings and assessments are a few of the ways I get students to demonstrate what they understand.
- In reviewing for a summative assessment, I had students create graffiti walls. The students had to look at the problems on the graffiti walls to find the mistakes and then write their responses on the wall. Students rotated around the room to view and comment on each wall.
- For feedback on the effectiveness on my phonics lessons involving short vowel/long vowel sorts I had students independently create lists of short/long vowel words that involved the specific vowel we were covering.
- I mainly use Google Classroom in my classroom right now to elicit evidence from students, mainly their thinking about their learning. I use this blog to help guide discussions and answer questions students may have.

- Writing samples from beginning of the year to the end of the year. Talk about the growth that the students see and what I see. Meet with students about reading goals and to set markers to meet such reading goals.
- I wanted to see if the students knew what a certain vocab word meant. They could illustrate an example, write the definition, use it in a sentence or give me examples of what it meant.
- We used Socratic Seminar last year to have group discussions over a whole class text. First, the student wrote questions over the text that were worthy of discussion. Next, they talked with a partner to see if the questions were deep enough for discussion. After, they got into groups and had a discussion over the text. Their partner sat behind them and tallied how many times they spoke and then reflected on their partner's questioning and group talk. All of this was turned in to the teacher (the questions, the partner reflection, etc.) It was easy to see who really got the standards and skills in the text.
- Students love to use sticky-notes! I have had students write they answer or their thoughts on a sticky note and stick it to a discussion board. I can quickly check for understanding on the stickies. We can begin a discussion about the material using what students have shared and some students are more comfortable sharing in this method.
- One example is when I had my students working on writing to explain while solving math problems. Students had a criterion of what was to be in a quality answer. This was not taken for a grade, rather it was for me to see progress over time and to find the areas in which they were strong and areas where they needed additional instruction. Then, based on findings, I could address both areas.
- I have used an online tool called Recap. The students video recorded their response to a question. They were able to use visuals to help them explain their understanding of the concept. I used this evidence to decide who was ready to move on from this skill and who I needed to work with further to strengthen their understanding.
- An example of eliciting evidence when assessing student understanding of ordering fractions was to provide a number line and fractions with different denominators and ask the students to place the fractions in order. Some students used equivalent fractions to order the given set of fractions. Other students used benchmark fractions and began by comparing the given set to 0, 1/2, and 1.
- I enjoy working with project based learning. An intro activity we did for math was "Myself in Numbers". Students were given word problems and they had to write number stories that gave the answers of their numbers. An example question would be What is your birth date? If their birthday is on the 25th they would write a number story with the answer being 25. Students are having to work the problems backwards to find ways to make the number instead of just solving basic facts. Students were directed they had to vary their problems with multiple methods to find the answers to their questions.
- I give quizzes usually on a weekly basis to see where students are in their understanding of the material. I often look for misconceptions and decide what I need to focus on or what I can skip.
- Daily homework is elicited evidence that helps me know how to structure each day's lesson. I am able to collect homework several hours prior to math class and then create my examples and class problems in a way that will help struggling students - whether I pull them aside in a small group, encourage those who excelled to push their thinking, or re-explore a previous lesson entirely.

- I stood at the board and asked students how to solve a problem. As they shouted out directions, I completed the tasks they instructed. As they had differing opinions on how to work the problem, we split into two sections and worked each side. Then we discussed how to arrive at the correct answer. I used that to start the lesson the next day and discuss why one method got us an incorrect answer and why the other led us to the correct answer. Some things in math, such as PEMDAS are rules put into place so that no matter what math problem we do, we can all get the same answer.
- At the beginning of every unit I teach, students are given a pre-test. This test takes on various forms - paper/pencil, discussion, and hands-on activities. This elicits information from the student about background knowledge and skills they already have on a subject. This can then be used to guide instruction. It gives a starting point for instruction and lets me know if I need to work with some of my students to fill in gaps in their background understanding.
- I ask students to "think pair share" or utilize other cooperative or feedback strategies to ensure that the students are not only listening, paying attention and learning the content but that they are truly understanding the material and are able to connect it to other knowledge they hold. I may ask them to produce a math problem that would utilize a certain skill or pair with a partner and then teach the material to their partner.
- I use guided reading in my classroom. With that I use various types of groupings and activities to see my students use their skills in different ways. For example, if two students are reading together and then are supposed to complete an activity based off of what they have read, then I will use the work from that activity to guide further instruction on that particular topic.
- I was checking students understanding of our vocabulary words. The students had a list of their words without definitions. I would give them clues or definitions and they had to put symbols next to the word I was describing. I was able to easily see if they had the correct symbol next to each word.
- I used an exit ticket for a science concept where students had to tell me what they gained from the lesson. It was clear as I read the slips that I needed to go over some of the concepts because of their lack of knowledge of what I was trying to gain from them. After re-teaching the concept, I used the same tool and it was clear to me who needed more guidance and what I needed to do for specific students.
- I have worked with my students on Book Clubs. We use the information we are studying and have discussions based on evidence from the text. The students have to interpret the hidden meanings of the text and then use what they know to challenge others in the group to change their thinking.
- I have used the Kagan Cooperative strategies, tickets out the door, brief CPS quizzes, whiteboards, tests, interviews with students, surveys, and just a simple thumbs up or thumbs down.
- When teaching main idea to my fifth graders last year, they had a very difficult time differentiating between a main idea and supporting details. When doing an activity, students had to use one color of a crayon to underline the main idea, and another color crayon to underline supporting details. By doing this, I could clearly see how the students were learning.
- During a guided reading group, I am constantly gathering evidence from students. For example, in a group this past year, I listened to a student reading aloud. I noticed (elicited

evidence) that the student was not reading with appropriate phrasing and would often ignore punctuation while reading. I used the evidence to address this with the student. I modeled appropriate and fluent phrasing for the student and had the student try it out for themselves. I also made note of this to watch for in future group meetings. \In short, I noticed an area that needed improvement, gave targeted instruction, then continued to assess the student in future meetings.

- I have used my students writing piece to gather their phonics knowledge and skills. I used their free writing to look for evidence of their understanding/ lack thereof with spelling high frequency words. I then generate a list for each student and evaluate the list for common threads. Such as long / short vowel knowledge etc. I can then create a lesson based off of this information. If I realize this group of kids need long A instruction I create a group and a lesson. And maybe this small group needs short A, while the whole class needs abstract vowels and therefor I know where small groups learning will go and whole class learning will go.
- Homework is evidence from students they did or did not understand the concept. I correct their problems and give feedback. It is not graded. I use index cards and have students write down lists or notes that we have talked about so they can use it at a later date. Tickets out the door or sticky notes on the whiteboard. Explain to a partner, work with a group are all types of methods I have used.
- Lesson: Determining Main Idea and Supporting Details. Following this lesson, I had the students determine what the main idea of a passage (and paragraph) would be, as well as determine what were supporting details (this was after a lesson that included how to connect main idea and supporting details). After collecting the "evidence", I looked over each students' work, then went back to see: which students struggled the most, and which area the students struggled the most in. That way I could target those students and those areas.
- There are a lot of ways to elicit evidence, but one way I have elicited evidence is through quick writes. I ask the students to spend a few minutes writing, usually in a journal, about a specific topic or about their thinking and understanding about something. By 4th/5th grade, they are old enough to put into words their understanding. Many also choose to add diagrams and pictures to help support their written answers.
- Teaching a unit on area and perimeter: students were required to show the difference between the two, give examples of finding area and perimeter, worked in teams to create models of area and perimeter. As students worked on their evidence, I looked for understanding of area, of perimeter, connections between the two, correct mathematical answers, and any common misconceptions. After, students who were proficient, moved to volume formulas. Students who were not proficient, worked with me to create a "farm model" using perimeter, area, and volume.
- Spiral reviews on paper and class checks of student answers at the beginning of class to determine if students have prior knowledge of content needed to due to upcoming skills, giving a mini "quiz" over newer content from earlier that week to determine if learning has taken place and how much, group discussions of the students working on problem solving techniques with multiple concepts within in the problem and exit questions where students have to write about what they did on a particular day in class.
- I gave students a scenario with options for three different companies that they could hire with three different payment options that they could choose from to fix their plumbing issue. Students then needed to decide which company was the best to hire to fix their problem. Students needed to provide evidence as to why they choose the company and

needed to include at least one graph and one other form of evidence. I used the evidence students provided to gain an understanding of the students' knowledge of different linear functions.

- One example of eliciting evidence was after reading 2-3 pages of text students were asked to copy a portion of the text that they felt was most meaningful. After correctly copying down the text, they wrote and explanation of what the text meant and why they chose it. We then as a large group took 3-5 volunteers to read aloud their quotes and explanation. Then students responded to those students and continued the conversation.
- This happens daily and frequently. Examples may include having students work on the smart board or dry erase board, completing an assignment, during conversation or journaling about a book, a writing sample, a hands-on math manipulatives project, etc. I am constantly evaluating their understanding of each concept or each part of a concept to determine how and where I need to adjust in terms of instruction, practice, etc. Whole group may be a mixed math applications timed probe or giving each student 3 problems to do and turn in after a lesson and independent work (which works well after working with a flex intervention group too).
- We were tying in linear equations, tables, and graphing. I took pictures with my phone to share with the groups, posted them via Smart Board, and posed the question, "Can you tell me what is different about this (insert table, equation, graph) than the one who produced?" I've also posted them on PearDeck and used this platform to access multiple visuals to lead class discussion.
- Any formative assessment would be an example of eliciting evidence of student learning/understanding. For example, I'm a fan of the "exit slip" because it can show me what the level of student understanding is. I can then use that information to guide the next step in the students learning progression.
- Exit tickets are a fast way for me to see how well an idea was understood. Based on the responses at the end of a science lesson, that drives how my lesson starts the next day.
- In a recent project, we integrated our social studies lessons with art and writing. After exploring historical photos, we presented students with short articles (at student reading levels) about the ideas presented in the photos (for example, natural resources, city founding fathers, native culture, etc.). Students took notes on the articles then rework the important information into a paragraph and created a unique piece of art to go with their writing. The paragraphs were then used to evaluate students understanding of the subject and to see how capable they were to independently write a paragraph at grade-level expectation.
- Put the evidence in the students file, portfolio of their learning process during the year. I make photo copies for my own reflection as I look at students over time from different years to see the similarities and differences in stages of development of young human beings. I then look at what I notice that I can do to develop students' cognitive abilities in various areas or what to leave out because it is a natural developmental stage that occurs in all children just because they are human. I have evidence data from over 20 years that I continue to add to. I take writing evidence, I record reading and listen to it with the student so they can listen to their voice, I keep math evidence of their developmental process of logical mathematical thinking. I collect things the students do, I video tape segments of their application process, I take photographs, I journal as I observe, and I keep a file for each student.

- Math - PBITS - then discuss different ways to solve the math "story problem". This provides students the opportunity to learn from one another and correct misconceptions/errors can be corrected immediately. WH questions during individual direct instruction reading. Discrete trail in the learning of science or studies concepts to pre-teach or review to support the general education instruction.

Question 5. Think of a situation this past school year where you were working individually with a student who may have been struggling on an English language arts or mathematics assignment. Describe the following: a. the context (lesson objective or nature of the assignment), b. the process you used to determine the source of the student's difficulty, c. how you helped the student overcome this difficulty.

- The objective was for the student to write a paragraph over a time they felt like a hero. I was able to find what the student was struggling with by reviewing the text and finding gaps. I helped the student by showing them how to use a concept map/outline before writing.
- Objective: multiplying multi-digit numbers with 2 and 4-digit numbers. Process: After walk-around, the third time still on the same question with little to no progress. Help: simplified the multiplication by first multiplying by groups of tens, then by groups of ones, finally ending in adding the two products together. Noticing that developmentally not ready for the multi-digit algorithm.
- Johnny was struggling on how to divide whole numbers. I gave a pretest and a post test. I then put Johnny in a small group with other students of whom struggled with division of whole numbers. I then retaught using different strategies until one worked. The post test was then given.
- a) Inference b) through reading a passage together in small group. Asking the questions: How can I infer what that means c) understanding the context clues from the story to figure out what is happening.
- Student was struggling with long division when the quotient had a zero in the middle of it. I had the student be the "teacher" and walk me through how to solve the division problem. We reviewed powers of 10 and place value and the importance of the zero as a place holder. We also discussed the differences in their answer without the zero and with it.
- Solving equations. I sat down with a student and asked probing questions, "What is the purpose of solving an equation? What are we trying to solve? What are we trying to accomplish?" I then used manipulatives (Hands-On equations) and pictures to help the student internalize and visualize the process. In addition, I used real life scenarios. (You are enrolled in a gym and the cost is $10 per week plus a $100 startup fee. How many weeks have you been a member if the total cost is $130?
- I had a student that was struggling with differentiating short vowel and long vowel sounds. I was able to determine this using informal questioning during small group instruction as well as his inability to work independently on certain tasks. I started to work with him and group of students that needed work with the same skill and we worked on words with a short vowel and then progressed into long vowels and how they look/sound differently.
- Math a. the student was struggling with fractions b. STAR data, homework completion, parent comments, observations from class practices c. started doing an intervention using Number Worlds that went back to the basics of fractions; part to whole, numerators and denominators and what that means, drawing fractions, labeling fractions, evaluating fractions.
- The student was new to the country and did not understand English really well. He was tested at Pre reading. We worked on sounds and creating letters from sight words in books that were at his desk. Put him on Core 5 for writing. He is now only a year behind his classmates.

- a. dividing five digits by two digits b. I watched to see how the student solved the problem. c. In watching the student, I determined at what point they were struggling. Then I do several problems with them. Then I had them do several problems individually.
- Our 4 - 6 grade students are often asked to respond in writing to a text they have written. A few of our low writing students had trouble getting started on this activity. There were a couple of different strategies we used. One was having additional questions with the prompt so that they could start by answering those in their writing. Another strategy was to have the student answer the prompt verbally and help them organize their thoughts in an organizer and then finally putting it into writing.
- I was on indoor recess duty (which means I got to help those not finished with homework). I had a third grade girl who had a word problem on solving the area of a polygon. She had NO clue how to even set up the problem. I watched her for a while and she kept setting up the problem- but using addition, subtraction, division- even fractions at one point! I sat with her and discussed what she knew about the problem already- underlining key terms and relevant numbers. We talked about the vocabulary in the problem. I shared with her that drawing pictures helps me solve problems. So, we drew the figure and continued on to solve the problem. We also "checked" the problem and the reasonableness of the answer by talking about what area means, and sketching that into our drawing.
- The lesson was one in which the student was to divide large numbers. I asked the student to show me the process in which she used to solve the problem and then I asked her what her thought process was (basically asking her to walk me through how she solved it). Once seeing where her error was I was able to explain, model, and provide practice for at the point at which the error occurred. I then provided more opportunities for her to her practice.
- I had a student in 7th grade who was at about a 2nd grade level in additive reasoning. This was determined by the Advantage Math Recovery Assessment. I used number talks and number strings to try to increase their relational understanding and build their number sense.
- The context of the lesson was to divide whole numbers using the standard algorithm. This requires a lot of one-on-one time with some students to correctly identify the misconceptions. I began by watching a student complete as much as possible of the problem on their own. Asked the student to tell me when they began struggling, and then discussed what they thought should be happening. What we found was that the student knew the algorithm and the only difficulty was remembering the basic facts while completing the algorithm. That was an easy fix. The student began using multiples of the divisor to help remember facts. After a few weeks of using this strategy the student was able to drop the strategy and do the facts form memory,
- I teach special education so all of my students struggle with varied topics. In reading we have specific assessments to identify student needs. Based on the assessment we have materials to fill in those holes. This assessment is great for students learning to read, once that is mastered the materials we have to enhance learning for those students that are behind greatly decreases. I work to find new materials and work in small group or one on one settings to fill in holes and get students working in the general classroom instead of in the resource room.
- a. Algebra Systems of Equations worksheet. b. Student was having a difficult time working out the problem. First, I checked her work going through each step she took and had her check it with me. We found she struggled with adding/subtracting integers. c. We created a flowchart with series of questions to help her reach the correct answers.

- Using the quadratic formula was confusing for one student in particular after only having one exploration day as a class where we all derived the formula together. I specifically asked her about her homework as she came into my classroom (I do that for anyone there early) and realized her struggles. Already having anticipated that we'd need at least one more day practicing this I was able to specifically look at the questions she had with her homework to see that she was struggling to calculate the discriminant. Rather than jump in to a full practice, I led the class on an exploration of the discriminant and then asked them to calculate several separate from finding solutions to the equations. The general class was able to use it to find the number of solutions and I was able to sit quietly by this student's side and ask her questions that helped her understand how the -2ac could be subtracted from b^2...and how she could use her prior knowledge about square roots to understand the discriminant. We then took notes in our interactive notebook as a class about these things and she struggled no more!
- This year I had a student who did not know how to divide correctly. He told me he missed a lot of the homework and wanted some help on what he was doing wrong. As we sat down with his paper, we looked at each step of division. We walked through each step saying out loud what is the next step, completing that step and watching how the numbers were lining up. Then, we checked it on the calculator to see if our answer was correct. Then we took our divisor and our quotient and multiplied by hand to show division in "reverse" Then we checked it with the dividend to make sure we got the correct answer. We discussed how to be sure the answer was correct and he was able to check it work on his own.
- I had a student that was having difficulty with adding fractions. She was able to add fractions if the denominators were alike, but was not able to do so if the denominators were different. She was trying to add the numerators and then add the denominators. She didn't understand that the denominator needed to be the same in order to add the fraction together. I worked one on one with her using manipulatives to show her that we need to find a common denominator prior to adding the fractions. As we worked with the manipulatives, she could "see" why the denominators needed to be the same
- a. Students have a difficult time with adding or subtracting with regrouping. b. I asked the student to tell me what steps she was taking as she was solving a problem and at different points asked her why she was doing what she was doing to see if she understood the process and why it was necessary. c. I went through the method used to solve the problem with several different methods so that she could see the process in many different ways (paper and pencil, using base 10 blocks) and understand what the numbers were symbolizing and why the steps were necessary.
- This past school year I had a student who was having trouble comprehending what he read independently. I would have him read aloud to me and then complete the rest of the reading on his own and then respond in his journal. Once I realized that he was struggling through repeated readings and his written response, I decided to have him read aloud at all times. This could have been with me or independently. Then, instead of having him write his response on his own I would guide him in his response by asking questions orally and then having him write down his thoughts step-by-step.
- The learning target for this lesson was using context clues to determine word meaning. While conferring one on one with students I would often see students read a word and continue without determining the meaning of the word. I would stop and ask them about the word. We would then discuss the strategy of using context clues before and after to determine the meaning of the word. The student would have ample opportunities to

practice during Daily 5 and would say "I think this word means .... because the text says ....."

- Well, recently in summer school I was working with students who had difficulty with adding multi-digit numbers. One of the students did not know their facts (second grader), so as we were trying to complete a two-digit addition problem with three addends, we boxed each place value so the student could focus on the specific box, and use tally marks and base ten cubes to check. The student was first adding the tens column then proceeding to the ones column and did not grasp the concept of carrying. That's when I used the base ten blocks. After several problems, the student was able to do the problems without problems.
- One of my students was a very high reader and could read very high level books. What I discovered was that he could read these books but he could not understand them. His recall of story events was not satisfactory and he struggled to answer basic questions about the stories he was reading. I worked with him one on one and we broke down the things he was reading into smaller sections and he would read a section and then he had to stop and then retell the things he remembered. I slowly added longer sections and increased his reading time, but still had him recall events after reading. He really improved his understanding and learned to process the information he was getting from books in a more useful way.
- The objective was learning their multiplication facts. I learned that throw several Concepts and Applications probes, that the math fact knowledge was difficult for the students. I started to use the book Teaching math for the hands on learner. The book is called *Multiplication and Division Facts for the Whole-to-Part Visual Learner* by Christopher Woodin. This resource gave concrete and physical moments that helped students learn their facts conceptually. I saw a difference in how I taught them, as well as how the students were learning them. It was incredible the difference.
- The context of an assignment was to use the RACE method: restate the question, answer the question, cite evidence to support the answer, and explain. I had one student who had a difficult time in all of the method, including restating the question. I kept this student behind one day and spoke with her about how to overcome this obstacle she seemed to be having. I read several answers to a question, but did not tell her what the question was. I then asked her if she could tell me what the question was. She could, and by doing this exercise, it taught her how to restate a question when doing short answered responses.
- This past year, I worked with a student in ELA on summarizing and determining the important parts of a story. During small guided reading group instruction, I noticed this student continuing to struggle with this despite whole group instruction. The student would give details and often state words directly from the story rather than offer a summary. I gave the student an individual goal to work on summarizing in a fiction story. The individual goal helped me to target instruction, but also helped the student to focus more on summarizing. I guided the student by having them read aloud one page at a time. Then I closed the book and had the student tell me what happened on that page. At the end of a chapter, I would have them put all of their statements together to make one summary statement. After this targeted intervention, the student was more successful in summarizing in small group as well as in whole group instruction.
- A student did not have an understanding of long and short vowel rules. I evaluated his writing along with his spelling of high frequency words. Each day we did word work one on one starting with short vowels, the rules, and played games.
- Subtracting unlike denominators-I looked over his work on his assignment, had him explain what he was doing or attempting to do. By having him talk it out I could see he was

forgetting the step. I also think it was a problem with him thinking he already knew how to do it so he didn't have to pay attention to the problems we did as a class so after this I would make sure to either call on him or check in with him to see that he was doing all steps.

- A. In this lesson, the student had to "determine the volume of an unfamiliar object". Meaning, the student had two shapes put together, and he/she had to determine the volume of the object. B. While sitting with the student, I had him tell me what he would do/how he would solve the problem. Even if this student was unsure where to start or begin, I still had him tell me what he would do. From there, I could see if the student was struggling a lot (not sure where to begin), or if he was missing a step. C. To overcome this, I had the student cut the unfamiliar shape into two familiar shapes. From there, I explained how to find the length of an unknown side again. Then, I had the student label all the unknown sides. Finally, working one shape at a time, the student was able to find the volume for the unfamiliar shape.
- There are always struggles! One example was a small group I worked with in ELA. The three or four students were struggling readers in decoding/fluency as well as comprehension. There were many issues that arose when working with this group. They struggled to understand some reading assignments and their confidence lagged as a result. One thing that was a struggle early in the year was understanding cause and effect. They could identify some basic cause-effect relationships but they really couldn't think anything beyond the surface. To help determine the source of the difficulty, we would read parts of the passage alone, and then again together. We talked a lot about the characters and plot of the story. We talked about how the characters interacted and how the setting came into play (or didn't). We acted out or drew parts of the story. Through conversation, acting, and writing, misconceptions came to light and we were able to draw parallels to their lives and other events in literature and the real world that would help them have a deeper understanding of the passage and the relationships between characters and story events
- a. 5th grade math lesson - estimating quotients of long division problems using decimals. b. Formative assessment in the form of white boards during small group instruction. Student was able to divide whole numbers. Student could round decimals. Student struggled to estimate compatible numbers in a division problem. c. Two tools: multiplication chart and graph paper. The student rewrote the division problem on graph paper with no decimals and then used the multiplication chart to make a compatible problem. The answer was then transferred back to the original problem.
- Powers of ten and how they affect your answers which lead to difficulties with negative integers in powers of 10. b. The student was giving me the correct answers for how to "move the decimal to the right" when multiplying by a power or ten, but not when there was a decimal place value holder. The student was just counting zeros and could not explain when to add the same number of zeros as the power or fewer due to the decimal place value holder. This information came from a spiral review I did in class before teaching a lesson on understanding negative exponents which in turn lead to a lesson on and scientific notation and its uses. We looked at the metric system because they understood that. I showed the student how the powers of ten were present with 1, 10, 100 and 1000 and also .1, .01, .001 and then we talked about how that was related to 10 to the first, second, third and so on. We then talked about the patterns in the positive direction and established the pattern to be a negative value when going the opposite direction. I related that to the number line and how positive moves to the right and negative moves to the left and then proceeded to show the movement of the decimal place value and how that was really division by a power of ten.

This made showing how to place numbers in scientific notation quicker for the student and then using the powers of ten to operate with addition and subtraction much easier later in the week.

- I had one 8th grader this year who when presented with the problem: simplify 3(x + 2) responded by writing 3(2x) and then was not quite sure what to do next he thought maybe 6x or 6x^3.\\The lesson objective was to solve equations that involved using the distributive property however I quickly learned that the student did not know what the distributive property was or why it worked. The source of the student's difficulty was as he told me "I didn't really pay attention or do anything in math last year." I also learned he had inconsistent attendance. I helped the student overcome this difficulty by sitting with him individually and working on the concept of distributing using algebra tiles. I talked about representing 3(x + 2) as three groups of (x + 2) using the tiles and then combining like terms or tiles. After a few examples he caught on to the concept and needed some revisiting/practicing with the tiles but he was able to progress in the learning of solving equations now that he could successfully distribute.
- We were in our writing unit and the students were to write a narrative about an actual event with the expectation of two pages. I had many students who could not come up with anything to write about or had a limited amount of written information. As I sat with the student, I generally begin with basic story elements that are missing in their work. I ask questions regarding people involved, setting, time frame, problems, dialogue involved, internal thoughts. I ask the class at the beginning of the writing period to spend 10 minutes visualizing the event they are going to write about and mention the story elements to think about while revisiting the memory.
- For example, if it were a math lesson on long division (single into multi with remainder), I may first see if the student has all of the prerequisites. This may include understanding the concept of multiplication and division. I would check to see if the student knows his/her division facts. Does the student know and understand each step when completing a problem, etc.? Maybe the student is just forgetting one step or doesn't know how to begin. Once the determination was made as to why the student was having difficulty and where, we would start instruction and practice from that spot. It may encompass a more tactile or brain-based approach using manipulatives or even using tape to mark a life size problem that the student uses his/her body to "walk" through. It may be that the student really doesn't have a grasp of what dividing is and means so work with manipulatives or real life cases that connect with the student's life may be needed. It could just be that the student is missing one vital step so more instruction, review and practice may be necessary with a visual reminder would be needed. Maybe the student will respond better to the use of technology or a peer tutor explaining it. Obviously, the list for process and approach to helping the student are endless.
- Given the equation 3x + 5 = y, solve for x if y=11 b. Asked is the goal of this problem. Can you tell me what information you know? In the equation, where are you supposed to put 11? How do you read 3x + 5 = 11? Can you show me how you solved this problem? c. Erase and replace, using different visuals to represent the 3 versus the x, taking the x and making it a question mark, relating it back to previous problems, making them physical move something, putting it in context of their personal life.
- ELA example working with my ESOL (Spanish speakers) students on the vocabulary skill: Lesson objective Context Clues b. Questioning c. Taught strategies- 1. Say the word. Does it sound like another word you may already know in either Spanish or English? 2. Break the

word into its roots, suffixes, prefixes. Is there part of the word you understand? \3. Re-read the paragraph. Is what the paragraph about help you understand the word? 4. Use a resource.

- We spend a lot of time learning how to take a position and write a persuasive paper. For Nathan who struggles to organize his thinking, we started with figuring out what he was passionate about. He loved animals and was frustrated that he couldn't write a research paper on an animal he thought was interesting. He didn't know enough about sharks to have a position. He and a couple other students had their "Shark Week" doing research and finding out what he could take a position on. From here it was just a matter of having him map out his thinking, outline to get it organized, then articulate in persuasive language.
- After teaching my whole class the parts of paragraphing (Main idea --- supporting details --- conclusion), I had several students have difficulty understanding how to write their own paragraphs. While most of the class was able to write a simple, non-fiction paragraph with little guidance, several had to have more individual attention. I therefore created a simple document that helped students visually see the structure of paragraphing. We worked together to plan and write paragraphs in a very simple form. After working together in a small group and individually, most students who had difficulty were able to write their own paragraphs.
- Learning to subtract numbers that were double digits, and involved borrowing. Student was confused, often adding rather than subtracting \I use small groups go over the problems together working together, using items and 10 frames, one child never understood and became frustrated, that child I worked together playing a simple card game of subtracting and the person with the lowest number won. we played till there was an ease with the subtraction, then wrote out the problems and next added more cards representing place value, wrote out the problems and person with lowest score won. the student had success and was no longer frustrated could easily complete the work.
- The student will write a letter to a friend on a topic they know a lot about or studied. b. I had students write a letter to me about what they like to do at school. I discover often they don't know the parts of a letter. I do - We do - You do. Then I write about a different animal that they have not selected. c. Pull a name out of the hat (who you'll write to) then use the model from the anchor chart to write the greeting. I give sentence stems to write their paragraph. Then the students refer to anchor chart to write their closing of the letter.

Question 6. ELA Teachers: Imagine you are teaching a lesson that has as its learning goal that "students will learn how to create questions about an informational text." Describe in detail the way you would teach this lesson (e.g., teacher role, student role, strategies to be used, and formative assessment techniques). (n=25)

- As the teacher I would model what my thought process is while reading. The student will then be given examples to use and eventually design their own questions. One formative assessment I would have is a short text for them to read and cite and then come up with a question about the text.
- I would read aloud a paragraph of text. Next, I would have the class read the text as a whole group. Then, I would look for key words or phrases that might look important information. Next, I would have students partner up in 2-3 and think of 2-3 questions that would help us understand the text. Finally, I would have one person from each group, take their question and move to another group to get their response.

- I would show an example I do we do you do. Teach the students how to create questions from the text. Give them an example and go over the questions. Show them step by step how you did it. Then do it together as a class. After the two example one from you and one from whole group have the students try it on their own. Read the passage and have them create questions regarding the informal text.
- I would teach this lesson by explaining to students what an informational text is and what we can gain from it. I would then read aloud a story and think aloud the questions I had as I read. Using an engaging text like a Time for Kids article, I would have students read the text with a partner and write the questions they had as they go. The formative assessment would be the actual content and depth of the questions they generate.
- My district uses the Lucy Calkins reader's workshop model to teaching Reading so my lesson would be set up like this. I would present this goal as a mini-lesson to students. I would talk about what the goal is and what that means and tie it into what we have been working on previously and how it relates to what unit we are focusing on. I would then model how to create questions about an informational text using a shared text between us. I would model a few questions, and then allow students to have some practice in small groups/partnerships in coming up with questions based on our shared informational text, ex. (tornadoes). I would have these partnerships share out some of their strategies for coming up with questions. Then I would re-state my goal for students and ask them to try this on their own in their informational texts. A formative assessment technique I would use for this would be to create a question in their reading journals about today's lesson and have them writing about their thinking and learning in there. I would then read their responses to judge their understanding of the lesson.
- First I would premise saying what is at the beginning of questions like who, what, where, when, how, why. I would also state what is at the end of a question. I would then show the title of the informational text. I would model my one thought about what I might learn. Then I would have the students turn and talk to a partner and come up with a question they have about the text. I would write down some of the questions, making sure all the questions asked had the beginning words. As we read we would remember to go back and look at some of the questions to see if they were answered. I would end by stating what are the beginning words of a question. Then ask about the end mark of a question.
- I would first model how to write questions of the text. One way would be to use the heading as the answers to questions. I would have students work with partners or in groups and write a question for each heading in a section. The goal would be that the question is not a right there question but the heading could be the answer. Each group would share out their questions and explain how they developed their questions. They could write them on large paper and other groups could go around the room and use sticky notes to judge the level of questioning. The teacher is able to see if the partners could write questions and how it related to the text.
- I am going to return to teaching 1st grade this year. At that level, I could share an informational text with the students and model some questions that were created in my mind while reading the text. I would think aloud to demonstrate to students what my thought process was in creating these questions. I would also create a chart/poster of what my questions are throughout the text and modeling process. Additionally, I would share another informational text with the students, letting them know beforehand that their job is to write questions about the text when we separate. I would partner them up to make questions together. This would be a great formative assessment to show which students still

need more support and which ones have a good handle on the concept. After going through this process, this would be a great activity to add during learning centers or stations- it would give students ongoing practice in the skill.

- I would state the objective to the students and explain it as the goal for our lesson today. As a class we would discuss the qualities an informational text would have. We might even brainstorm some examples of informational text we have used in class previously. We would then come up with general questions that might be asked when getting ready to read a text that we know would be informational. I would then have students partner up or work in small groups to look through an informational text from either our classroom or school library. I would have them work together to look through the text and formulate questions they might have. Within the next day they would review their questions on the text and then read through the text and try to see if they are able to answer any of the questions they brainstormed just by looking through the text. I would also see if they are able to come up with new questions while reading through the information. Together as a class we would discuss the types of questions we had before reading the text and then also compare the questions we formatted as we were reading the text. I would likely even compare these questions with the types of things we would ask if we were reading a fictional piece of writing and would the questions be the same or different and analyze as a class why those questions might be drastically different. As a formative assessment for this lesson I would observe the students working together as a small group and the contributions given by the students as a group. I would also observe their participation in class discussions on the topic. I would have each student create a question about an informational text as an exit ticket on the last day of class.
- If I were teaching a lesson about creating questions about an informational text, I would start by explaining what an informational text was and giving some examples. I would then read aloud a portion of a selected text and modeling what questions I had. I would continue to read a few more pages and then ask the students to help me come up with some questions and we would go over what types of questions were acceptable and how to make some of them better. This would be on the first day. On the second day I would have students partner and work with a selected text to form 3 questions. On the last day I would allow them to select a text on their own and they would be given the assignment to form 5 questions about their text and hand them in. I would then look over the questions and conference with each student individually.
- I would start my lesson by stating our learning target "I can learn how to create questions about an information text." We would have a quick class discussion on what we think this means to the class. I would model by choosing an informational text and complete a read aloud. I would use chart paper to model my thinking aloud. After reading a page or two I would say to aloud, (example) What was the main cause of the Civil War? Why was the battle important? etc. I would continue this strategy of modeling and thinking aloud. Then I would give students a sample passage to read and use a graphic organizer to list questions. We would discuss this and I would assist students during this guided practice time. Then during Daily 5 students would use the sticky notes to create questions to put in their books while reading. I would go over these questions during our one on one conferring time to check student understanding. My formative assessment would be the students' sticky notes. After I conferred with students I would gather my class data and decide on the next step either complete another round of modeling or taking in a step farther by increasing the question depth.

- So I would have an object hidden in a bag. Students would have to ask me questions that were yes/no answers. For instance, if I were teaching about mammals, I could have a picture of a dog. The students could ask if the animal had fur. They could use the information that I would put on the smartboard to determine what was in the bag. As this is just a transitional activity to get them to ask questions and use inference skills, I would then lead them into the discussion about other types of questions and go into more in depth questions. Using the who, what, where, why, how, and when starter vocabulary words to get them started.
- Teacher role: I would first create a mini-lesson with an informational mentor text that focused on questioning. I would model how my thinking works and how I generate questions when I am reading. Student role: I would then have the students work together on another piece of reading and work on generating their own questions. I would have them share the questions with the whole class. Finally, I would have the students use their own informational texts to generate questions. I would have them work in a guided reading setting or in a strategy group to share their information or strategies used. Formative Assessment: I would use a short reading and have the students generate questions that pertain to the reading. I would then also use notes that I have taken throughout the process on how the student is performing at asking questions.
- The first thing I would do is give the objectives, which would be: Students will develop questions over an instructional text they have read. I would then ask students to think about what this means. They can brainstorm in partners and share with the class some questions they think they could ask after reading an informational text. This will give them a starting point. Then we will read the instructional text together. As a class, we will discuss one question that could be asked over the text. I will write it on the board. Then as partners, students will need to come up with three more questions together, and one more question individually. When done, I will pull all of the kids back together and discuss some of the questions they came up with. I will also have them discuss why they chose those questions. We would stop there for a moment and come back together after I have put all of the questions together. Students will then answer the questions. Afterward, we will again discuss the questions and answers and discuss why students chose those questions in particular. I will follow up with other readings where students must come up with their own questions.
- As a teacher, I would first identify the success criteria in this lesson and decide "how will I know if a student has been successful?". Once I have identified success criteria, I will then bring out a text that the class has read before and is familiar with. I would read a part or the whole text again, but this time modeling out loud how to create questions about an informational text. After modeling, I would ask students to try out this strategy in their independent books. I would also assess student understanding of the concept (formatively) during the next guided reading group. I believe that reading assessment needs to be contextual (during true reading) and should be as meaningful as possible.
- Teacher role: to demonstrate the thinking process that occurs to generate questions about an informational text prior to reading it. Then read an information text and demonstrate how to look for those answers while reading to be more engaged in reading. Then practice this as a whole group help students to generate questions and write down their thinking on large lined paper. Then teacher reads the informational text and students raise their hand when they find information to a question that they came up with. Explain students' jobs as they leave the carpet area and go off to do independent work. Students role: to grab an

informational use the strategies that we just practiced and generate questions in their writer's notebooks prior to reading and when they find answers while reading they may write them down also.

- First, I will read them a story and stop, making my own questions as I go, modeling how to do so. As a class, we will review questions we've seen, determine the verb used, determine what makes a good question. We will then write a question that can be answered from the text, while determining what verb is used and how to find the answer. From there, the students will be given a specific text that they will need to read, and as they read they will write their own question.
- If this was the first time we were dealing with this topic, I would probably start with how to ask questions. We would probably ask questions in student pairs and record a few of the questions so we could discuss words you use to ask questions (who, what when, etc.). Then we would go to asking questions about pictures or objects, most likely in pairs or small groups and then individually. Then we would move on to interacting with an informational text. That would include reading and re-reading both individually and with a buddy. Depending on the text, it might even be read aloud by the teacher as a first interaction if it is a difficult passage. Next we would work on questioning about certain parts of the passage so that the students could work in small groups or pairs and then working toward working individually. All along the way would be sharing verbally and the teacher checking in with groups and with students, especially with those who tend to struggle or who have struggled on similar lessons in the past.
- I would first have a copy of the informational text on the digital board and a copy of it in front of each student. As I read aloud the information I like to underline with color main ideas or information I find important. Students then copy along on their paper. As I read I would pose a question that I had in the margin of the text. i.e. I wonder why... As I would get to the middle, I ask for student volunteers to read a paragraph and repeat the underlining and questioning in the border. Students can always turn and ask for help from their classmates, so getting students to volunteer is not a problem. As each paragraph is completed, I stop and ask for a response from the group verbally, thumbs up, thumbs down, etc. After we have finished a group assignment, the next option is for students to work with a partner and then meet back up as a group to discuss the questions that were written. Finally, students would complete this activity independently, or in a small group with me if that was required.
- Share learning target. I would also have a discussion with students letting them know why this task may be helpful or useful to them (e.g. higher level of comprehension, better understanding of text). *Read a passage together and discuss to be sure students understand vocabulary, concept, purpose of text, etc. Part of the reason would be so that students understand text to work with it but part would be stressing the importance, as a reader of always doing self-checks for understanding. *Next, I would do a think aloud and give examples of questions that I have generated, including writing those down on smart board or dry erase board. *I would then ask students to verbally suggest questions which I would record with mine. *Based on student participation, I may do some re-teaching or ask each student to write down their own question(s). *After reading student questions, I would be able to determine who needed additional instruction, practice, etc. I may then pull a small group to work with as other students read a new passage and work on their own questions. It would depend on the level of understanding, etc. how I would progress.

- I use a I do, we do, you do model. Teacher role "I do": Model how this is done. Do a group read while and model with a "think aloud." Show the students what you are thinking and the questions that come to mind while you are reading. Is there something that isn't clear? Is there something you would like to know more about? Teacher and Student role "we do": Guide them through the process together as a group. Elicit questions the students have about the text. This is a shared activity, so everyone should write down all the questions generated. It's fun if you can make it a game and tell them we are going to try and come up with as many questions as possible. It's important that you write the questions exactly as the students ask them...resist the fix up! Student role "you do": Students will try it out with a small group or partnership. Generating as many questions as they can. Finally, move them to independent work. Formative assessment can take the form of observation during these activities analyzing the independent work produced.
- Teacher Role: Find 4-5 high interest, age- appropriate informational texts. Source from magazines and online journals looking for big headlines and photo/graphics. Set them up in stations around the room. Introduce topic by explaining that today they are going to learn how to rock out informational texts. Ask if anyone has ever read an article or story and 10 minutes into the reading couldn't talk about a thing that they had read. Have they ever gotten so into a story or article that that was all they could talk about for days was what they've read? The difference in getting the most out of the reading is asking questions while you're reading. Student Role: Find a story that is interesting to you. Grab an index card. Write WHY you picked this story from all the choices. Turn the card over divide it in half and write. Write what you already know about the topic. Have kids read together the story. make a game of stopping to ask questions. Formative assessment: observations, collect cards.
- The first step would be to scaffold the modeling. As we read a non-fiction text, I stop fairly often to ask a question about the text, pointing out how I am going through the process. After modeling that, later in the text, we would work through an example or two as a group. Then, in a later portion of the text, I would have students model it to each other as a turn-and-talk or in small groups. Lots of examples would be shared. Finally, I would give students their own section to attempt questioning on their own or with a collaborative partner. Throughout the process, students would be talking with me and each other and formative assessment would be gathered through those instances. As I understand their needs, I would adjust the lesson or give the information in a different way.
- Introduce a topic to students: Put the students into groups, have them work out a problem based on the topic, sharing what they know what they wonder, what they think they will learn from the text. The groups are responsible for recording each of their ideas. they then share with the whole group their small group discussion. Then I go through the process at another time. I have a chart available for reflection and responses, modeling my thinking process as I think talk out loud, read a book or some informational text, reflect out loud questions that I am wondering about as I am reading, students often begin to wonder out loud with me and I write those down, I make a web as I reflect to connect the topic with the questions and make a visual story map of the thinking process and the connections that are made. Then at a different time I engage the students in creating their own with me together or in small groups. Then they are off on their own.
- Teacher: Read the text aloud. Then do a Think Aloud: I want to learn more about.... What animal am I learning about? Where do __ live (habitat)? What do __ eat (food source)? ... Student: Show good listening skills (look, stay still, listen) Repeat example aloud with the

teacher...Students: Share with a partner what they want to learn about their animal of study. Then 2 students share out each day until all have shared. Formative Assessment: check list participating and notes of what types of questions they had about their animal. I've recorded this on a KWL anchor chart.

Question 6. Mathematics teachers: Imagine you are teaching a lesson that has as its learning goal that "students will analyze and compare linear and nonlinear functions given in different representations." The critical outcome of this activity is for students to be able to analyze the properties of the functions separately and then compare them to each other when the functions are represented in different ways. Describe in detail the way you would teach this lesson (e.g., teacher role, student role, strategies to be used, and formative assessment techniques). (n=18)

- I've never taught the properties of linear and nonlinear functions, so I would first find concrete examples to show that it means. I would use visual and tactile cues. I would first show the students, have them work together in small groups to compare the functions, have them demonstrate for the class, and then have them work alone and share out. I would compare my pretest and my post tests for my assessment.
- First, students would need to know the difference between a linear and nonlinear function by definition and examples. Students would need to be able to list or explain attributes of each and then place those on a Venn-diagram to look at similarities and differences. Students would need to be able to separate examples into the two types of functions on a T-chart.
- First I would use real life situations to model each type of function. This would be quite a lengthy period of time. Linear functions would come first. We would describe the situation, discuss rate of change, then model the situation with graphs, tables, and with equations.\From here, I would move on to non-linear functions using the same process. Finally, we would discuss similarities and differences in linear vs non-linear functions. Formative assessment techniques could be bell-ringers, exit tickets, class discussion, partner share, etc.
- I would first review linear and nonlinear functions. I would give some examples. Then I would have the students give examples. We would then go through the process to determine how to determine what functions are linear and which functions are nonlinear. We would do several of these problems together. Then I would have the students work with a partner to determine the types of functions. I would work with a small group. We would come back together as a class. Then we would go through the answers and discuss how they got their answers. At the conclusion of the lesson, I would have the students take a FA to see who understands it and who still needs some help.
- The teacher role would be to first find out what is already known and capitalize on that prior knowledge. I would first provide time for the student to try to tackle the problem on their own using prior knowledge. Then, I would place in small groups and have students attempt to solve together using contributions from each group member. Next, I would allow time for table groups to share out with the class (I would have been circulating throughout the room as they work.) on how they attempted to solve. Finally, I would model my approach to solving and comparing. More time would then be given back to have the individual solve, then groups, and finally do a formative individually to check for understanding. The

formative would be to solve the problem and explain in writing using the established classroom rubric.

- I would start by having students create tables, graphs, and equations based on real world situations that would produce both linear and non-linear functions. Perhaps I would have different students working with different situations and then we would share the work. We would then look at all the different situations. I would ask the students what they notice and what they wonder? We would then proceed to have a class discussion about what they notice and keep track of any wonders. Through the discussion I would try to lead the students to look at what is different about the tables, equations, and situations in the linear versus the non-linear graphs. After the discussion we would look back at any of the wonder statements/questions that students had. If there were any that are worth exploring we would do so, either that day or perhaps the next depending on time. To formalize their understanding at the end of class I would either have students write or recap (video explanation) The difference between linear and non-linear functions, specifically how can you identify if a function is linear or non-linear based on the graph? The table? The equation? The situation? Students would do this last part individually as a formative assessment. This would allow me to see what they understood from the day's lesson and will direct my instruction for tomorrow based on any misconceptions.
- I lack knowledge in the area of nonlinear functions so first I would have to do my own PD to learn about linear functions. I might begin by working backwards and show the students the two different types of functions and ask them if they can recognize a difference between the two. I might do some partner work as they brainstorm differences between the two functions. Then I would explicitly teach linear functions and have students practice linear functions. I would be observing and assessing student understanding of linear functions. At this point, I would pull some small focus groups that were in need of re-teaching on linear functions. I could also extend learning of linear functions for the kids who understood that skill. Next I would explicitly teach nonlinear functions, practice, and assess. Create small groups for re-teaching, enrichment, etc. Then we would move into comparing the different functions. I would continue to pull small groups to work on whichever part was needed and I would move the other student on to other skills.
- TR- teacher role, SR - Student role. TR would begin with introduction of linear functions, working on an I do, we do, you do, model until a strong grasp of the concept is achieved. Mastery will not be achieved in this setting if this was a first introduction. SR is participation in class discussion, partner work, and independent work. TR would then move to nonlinear functions, same model of I do, we do, you do, SR would be the same as well. Once student have a solid understanding of the skills linear and nonlinear functions would be shown together in the same representations, TR would model differentiating the two of them. TR would pass on to students of identifying the two functions in the same representations. As the students show mastery of basic representation alternating representations would be shown with gradual release to the students to identify and compare the linear and nonlinear functions.
- First, I may provide a graphical representation of a linear function and have students make a list of observations about the function. Then, I would provide other representations of same functions and collect observations on that. Ask students to explain what they notice about the different representations. Then, provide nonlinear representations and have students compare the linear to nonlinear. Provide a definition of a function and notes on

the subject to go in interactive notebooks. Practice identifying functions based on different representations.

- I would use the "which one doesn't belong" activity - giving four examples of equations first...they must decide different ways that each equation would be the 'odd one out'. Then give four graphs, and then four word situations, and finally a mixture. I would expect my students to participate in groups doing math talk, record responses, and everyone in the group should be able to justify that any one of the examples 'are the odd one out' thought their active discussions to the large group (I'd purposely choose students). We would also do several sample problems (probably from a textbook assignment) as a class, looking at what is expected for them to accomplish proficiency in this standard. I would also create an interactive notebook page that shows how pieces of equations and parts of graphs relate and how they'll be different depending on whether it is linear or nonlinear. My students would complete a homework assignment to be turned in showing their proficiency. My students would reflect on this knowledge in their interactive math notebooks (which I would read while they write by peeking over shoulders and also collect at the end of the unit).
- One way I have taught this lesson is to hand out cell phone deals, graphs, tables, and equations. Students are asked to match the words, graphs, tables and equations that go together and be able to formulate reasons why they think those things match. We discuss if this was easy or hard, what was the process and thinking on how you completed the task, etc. My role is to observe them working on the activity and listen to the group discussions. Students are matching and formulating reasons why they match. Strategies used are to have students learn, discover and discuss the problem. Then have students tell how and why they did what they did and encourage collaboration in the class. I assess by listening and watching. Then I discuss with the class the mistakes and solutions and we discuss why each one matches. We discuss what was hardest to match...graph, table, etc. This brings up many comments from students and was a great way for me to determine what we need to focus on in that objective.
- I would present the learning goal to the students. I would then show the students how to work through the problem. After that, students would work in groups or with partners to practice the skill. Then students would work rote problems to internalize the concept. (I do, we do, you do). Strategies would include discussions with and among students, hands-on activities, and individual work with students not understanding the concept. Teacher role would be to observe student interactions and work and help as needed.
- To be honest, we wouldn't get to this level of math in the elementary level. I am honestly more concerned with the basic mathematical functions in my classroom. It will be interesting to see this level of math play out next year for me. (I teach Special Education).
- I would do one together as a whole class. Share my thoughts/thinking out loud and get ideas from the class. Then I would have them work in groups of 3. I would give them 3 to 4 problems and have them write down the thoughts of the group telling whether the functions are linear or nonlinear and why and how are they different. I would them have them present to the class as a group their thoughts on one problem. I would use this as a formative assessment. I would also then have them do some problems the next day where some of the problems of the previous day were included. They would do these on their own and turn in. This would be another formative assessment.
- Introduction - whole group - definitions of key vocabulary, examples of linear and nonlinear functions. Student work - groups of three - students analyzing the properties of the functions, present their findings to the class. Work in groups again to compare them to each

other when the functions are represented in different ways. Again, share their findings to the whole class. Whole group - view a Khan video to reinforce work. Small group question/answer session. Whole group question/answer session. One problem exit ticket as a check for understanding. *After introduction whole group the teacher's main role is facilitator, not lecturer. Students role is hands on, engaged. The room should be a buzz.

- I would have already taken the time to show students many different ways to look at functions such as graphing, tables, sequences, using slope, and as a linear model. I would then have small assessments to determine if they can use those techniques individually when asked specifically to use only one at a time. This would help me gauge which students are comfortable with which methods and the proficiency of those models. I would then group the students differently on different days -Day 1 with students using similar methods, Day 2 with students using differing methods as a type of jigsaw learning so students can share how and why they are using their methods while at the same time teaching others the non-selected methods of choice. Finally, I would give the students a check of understanding asking the students to model at least 2 ways they can use the information of the given functions and then compare and contrast the two methods of choice to explain why the functions are linear or non-linear.
- I would present students with 3-5 different t-shirt design companies' prices based on how many shirts are ordered, but the information for each company will be presented in a different way. One will be in words describing the payment plan, one will be a graph, one will be an equation, one will be a table of values, and one would be a list of ordered pairs. Some would be linear and others would not be linear. Students would be expected to compare the different companies and decide which company is the best deal for a design and order of 20 shirts, a design and order of 100 shirts, and a design and order of 500 shirts. At first I would let the students work in small groups while I walk around the room to see how they are doing and to ask questions. If a group seems 'stuck' I would suggest that one member go spy on another group to gain some new knowledge or ideas and bring that back to share with their group. As most groups are wrapping up I would have students present their findings to the entire class. I would ask questions and elaborate on what students said if needed.
- I would have student give me buzz words to break down what they have for background information on either function. I would then have them relate any visuals that might represent either function. Lastly, I would have them include numbers that represent either function. The student should lead the activities when they pair and share, discuss within their group, display their poster paper, or have them make their best picture/word/number to represent each function. The teacher role would be to facilitate the discussion within their small groups, guiding them via questions if they seem to be stuck in their brainstorming. We would dive into an investigation with the linear functions, go into nonlinear functions, and then compare the differences between the two (e.g. put up words on the board and have them pair up to play Catch Phrase). As they leave, I would give them a ticket to leave and ask them a linear question and nonlinear questions.