**Differentiating Math Instruction Grades 4-6 Statement**

By: Sarah Squires, Amy (Fox) Usher, Sarah (Sparks) Bowen, & Lauren Medley  
  
  
**Participants/Background Information**

40 participants will be attending our PD program. This program will be tailored to 4-6 math grade teachers focusing on differentiated instruction within the general education setting. The demographic characteristics of our community are of high socioeconomic status. Each teacher has been assigned an iPad from their district and will be required to bring their iPads to the seminar.   
  
We produced a comprehensive, 18-hour professional development program in which our attendees will learn about differentiating math instruction within their general education classrooms. We will be providing three 6-hour sessions covering various differentiation methods and strategies to use within the general education math class. We also have activities dispersed throughout our professional development. These activities will allow our attendees to work in professional learning groups to create differentiated lessons about a given math topic. Attendees are required to bring their iPads to the seminar, on which they can access our weebly website. On the website they will be able to follow along with the presentation’s powerpoints, pull up activities, articles, and take notes throughout the presentation. On Day Two the participants will also receive a UDL toolkit and Co-teaching toolkit which includes lesson plan templates, graphs, and checklists.

**Overall Goals**

1. Attendees will be able to define gifted learners, dyscalculia, and learning/behavioral disabilities, explain how these labels affect students in mathematics, and list strategies to implement to build students’ mathematical skills.
2. Attendees will be able to define the three principles of the Universal Design for Learning framework, apply these features to their own math lesson plans, and put accommodations/modifications into place to assist struggling math learners.
3. Attendees will be able to identify and define the six co-teaching models, understand when to use each model, and be able to construct a co-teaching math lesson plan implementing cooperative learning strategies.
4. When given a math problem, attendees will be able to differentiate by tiering the math problem for diverse learners, implement technology into their lesson and administer formative and summative assessments to assess mastery.

**Series of Objectives**

Day One Objectives:

* Differentiation Objectives:
  1. Attendees will demonstrate their knowledge of differentiation by reflecting on what they learned in the session on their KWLR chart.
  2. Attendees will explain ways to differentiate in the math classroom by verbally stating examples during a whole group brainstorm.
  3. Attendees will recognize what differentiation features should be added to their math instruction and will describe these features in their reflection.
* Learning and Behavioral Difficulties in Math Objectives:
  1. Attendees will define dyscalculia, describe possible effects it may have on students, and list one instructional strategy used to help students with math disabilities
  2. Attendees will construct an example of how to use CRA with content from their own curriculum.
* RTI Objectives:
  1. Attendees will be able to define RTI and describe the different tiers  
     and their purposes.
  2. Attendees will be able to navigate the Easy CBM program in order to  
     retrieve probes and record data.
* Gifted Learners Objectives:
  1. Attendees will understand the definition of gifted learners.
  2. Attendees will learn the basics of the Javits Act and the implications it has on the education of gifted and talented students.
  3. Attendees will demonstrate their knowledge of gifted learner instruction through role play.

Day Two Objectives:

* Universal Design For Learning Objectives:
  1. Attendees will identify the three principles of the UDL framework.
  2. Attendees will describe the guidelines and checkpoints within each UDL principle.
  3. Attendees will use web-based resources and colleagues to locate math classroom activities to use for various UDL checkpoints.
* Accommodations and Modification Objectives:
  1. Attendees will define the terms "accommodation" and "modification".
  2. Attendees will describe the differences between accommodations and modifications.
  3. Attendees will identify 5 accommodations and 5 modifications that are already in use or could be used in their classroom math lessons.
* Co-teaching Objectives:
  1. Attendees will be able to define co-teaching and describe the three characteristics which make up co-teaching.
  2. Attendees will be able to understand and explain the six different co-teaching models.
  3. Attendees will construct a co-teaching math lesson plan and demonstrate their understanding of the pros and cons of co-planning.
* Cooperative Learning Objectives:
  1. Attendees will be able to define the term cooperative learning and explain ways to implement cooperative learning strategies into a mathematics lesson.
  2. Attendees will be able to work together using the jigsaw method to summarize a cooperative learning article on mathematics instruction.
  3. Attendees will demonstrate understanding of the benefits to using cooperative learning within their classroom to facilitate their students’ learning.

Day Three Objectives:

* Assessment:

1. Attendees will be able to identify the difference between formative assessment and summative assessment.
2. Attendees will implement formative assessment strategies when planning a unit.
3. When given a math problem, attendees will be able to differentiate by tiering the math problem for diverse learners.

* Technology:

1. Attendees will be able to explain how technology is used to support student performance.
2. Attendees will demonstrate technology knowledge by accessing resources with the use of an iPad.

* Unit Planning:

1. Attendees will demonstrate Unit Planning knowledge by following the Guiding Question Process for Planning Diagram.
2. Attendees will demonstrate knowledge of differentiating by unit planning with their co-teachers using rubrics/graphic organizers provided.
3. Attendees will receive and give feedback to peers unit planning using 3-2-1 Feedback form.

Our assessments each day will help us reflect on the value and benefit of our professional development program. By administering assessments, we will be able to assess our attendees’ level of interest and mastery throughout the 18 hour presentation. We will also have the opportunity to evaluate the feedback received on survey monkey (day 2) and twitter to further develop our future PD programs. We will reflect on the information provided by our participants and take their recommendations into consideration when structuring our future professional development programs. For example, if our attendees mentioned they were not involved enough during a particular session, we will plan to include more engaging activities. Below is a detailed description of each assessment we will be including during our PD Program:

**Assessment**

**Day One:**

**Segment 1 (formative):** Attendees will fill out the “L” (learned) and “R”(reflections) sections on their KWLR chart for differentiation. For the reflection section, there are specific open-ended questions the attendees are asked to think and write about on their chart.

**Segment 2 (summative):** Attendees will develop a CRA sequence example using content from their own curriculum, and share what they did with the group. Attendees will also fill out an exit ticket asking them to write down the definition of dyscalculia, 3 different effects dyscalculia can have on students, and 1 instructional strategy that could be used to help students with math disabilities.

**Segment 3 (formative):** Attendees will go to the computer lab and navigate the EasyCBM website while being supervised by the presenters. They will show their ability to find and print probes, as well as chart data in the program.

**Segment 4 (formative):** Attendees will role play the dos and don’ts of gifted learner instruction to demonstrate their knowledge of the topic.

**Day 1 Overall Assessment (summative):** Before leaving for the day, attendeeswill be asked to fill out a reflection sheet that has specific spaces set aside for each segment. Attendees will write down things that they learned and will take away from each individual segment of the day. In addition, attendees will be given a survey. This survey will ask questions about the first day of the professional development program as a whole. Attendees will have the opportunity to write about segments they liked, segments they didn’t like, and ways the day could have been improved. The presenters will take the information received on the surveys to improve the effectiveness of day one of the three day professional development program.

**Day Two:**

**Segment 1 (formative):** Attendees will brainstorm and list classroom activities and instructional strategies that can be used within a UDL lesson plan on chart paper with a small group. Attendees may use the internet or other given resources to locate information. Attendees will present their findings to the large group, and answer questions from colleagues and presenters about their findings.

**Segment 2 (formative):** Attendees will participate in a paired activity, in which they will review list of accommodations and modifications, and discriminate between the two. Attendees will be asked to justify why they believe each item on a list is either an accommodation or a modification.

**Segment 3 (formative):**  Attendees will participate in a partnered activity with an assigned co-teacher. The attendees will be given a lesson on multiplying fractions and they will have to fill out a co-planning template based upon this lesson. The group will then participate in a whole group discussion and reflection the pros/cons of co-planning.

**Segment 4 (formative):** Attendees will get into 5 groups of 8 and participate in a jigsaw activity. Each group will be assigned an article on cooperative learning strategies in mathematics. The participants will be asked to summarize the main ideas, discuss the benefits and ways to implement cooperative learning.

**Day 2 Overall Assessment (summative):** Attendees will fill out a survey with feedback for our seminar, as well as a questionnaire to assess the attendees’ level of mastery --http://www.surveymonkey.com/s/6PVNV7F

**Day 3:**

**Assessments Segment 1 (formative):** Attendees will begin by reflecting on their prior-knowledge about assessment on a KWLR form. Then they will share out in a time RoundRobin group. The group will play four corners to asses where they stand about assessment. They can visually see where other attendees would identify themselves when relating to assessment. In addition, the leaders of the professional development can see where group members stand when discussing assessment in their classroom.

Attendees will apply what they know about goal setting into “I can” statements with a State of Michigan GLCE. They will share out with partners. Constructing Complexity for Differentiated Learning article is read and jigsawed out into groups. Members of groups only read one portion of the article then share with their group. This article is about tiering and differentiating math problems. The groups will practice tiering and differentiating a math problem given to them to apply what they have learned. One group member will travel to a new group to share how their math problem was differentiated.

Attendees will practice observing and recognizing peer to peer assessment by watching a youtube video about break dancers learning different moves. They will takes notes on assessments taking place to apply formative assessment strategies they have learned.

Attendees will writing down their “ah-ha” moments from the day tied to assessment on a sticky note and place this on the door before leaving for lunch.

**Assessments Segment 2 on Technology (formative):** Sticky notes of “ah-ha” moments will be read aloud by the group leader to the entire group. Attendees will walk around to music. When the music stops, they will move to the closest poster that has a question on it. Attendees will respond to writing on topics tied to the professional development to begin reflecting on their learning and responding to peers thoughts.

After the youtube video about technology in schools, participants will share about technology they use in their personal lives and in the classroom in a table top twitter activity. Participants are silently “tweeting” to themselves about their ideas on a large piece of paper in the middle of the group. There is no talking aloud. Participants respond to each other by drawing arrows and writing next to the text they are responding to.

**Assessments Segment 4 Unit Planning (summative):** Technological resources will be accessed on the iPads and the process of unit planning is discussed and explained. The participants will move to the computer lab to explore unit planning forms, print the forms they’d like to use, and be given an hour to plan with their co-teacher. This is the final assessment. The teachers are required to reflect on the past three days and apply what they now know about differentiation to real life units they will be using this school year. Teachers will use the differentiating process to think about their lessons and use the differentiating unit planning rubrics to help guide their lesson planning. Guiding Questions for Planning are explained in detail: Goals, Cautions, Identifying Potential Barriers, Planning and Implementing Accessibility Strategies, Evaluation Accessibility Strategies handout.

After having unit planning time, the co-teachers will split up into groups of six and complete peer evaluations. Attendees will use a 3-2-1 peer feedback rubric to give their peers praise and offer suggestions. All suggestions and praise is required to be tied to differentiation. This final assessment allows attendees to demonstrate their thinking through a “differentiation lens” when lesson planning.

**Overall Professional Development Assessment (formative):** Participants are encouraged to put this conversation about differentiation online and tweet concepts of the professional development. This allows attendees to expand and continue their thinking after the professional development has ended. This also increase communication between attendees to use each other as resources when the professional development as ended. Hashtags are placed on slides to encourage conversation about the topics being discussed.