QR Lesson Plan

Background of the Assignment or Exercise

This lesson is important because special education teachers must be proficient in understanding assessment data so that they can plan and implement interventions and measure students' progress towards IEP and curriculum goals.

The lesson provides the foundation for understanding content in this course and courses to follow in the program. Special education strongly emphasizes practice based on empirical research with an assessment/diagnosis/intervention instructional model. Proficiency in creating and interpreting assessment data is critical to the job of a special educator. Students in the program often have difficulty with basic mathematics and statistical concepts.

The development of this lesson is to improve how the material is taught. Prior to the specific lesson little to nothing that is relevant to the lesson is covered in the course. This lesson is an introduction to the material in courses that are early in the program sequence. Students vary greatly in their ability to deal with the material: some are secondary level math teachers; others have taken only the minimum required math courses for their bachelor's degree.

Learning Objectives

By the end of these lessons, given a sample set of scores, students will be able to:

Day 1

1. calculate mean, median and mode
2. graph a sample set of scores
3. draw a mean and a median line on the graph
4. explain how extreme scores affect the mean and the median
5. explain why the median is often a more useful statistic for teachers than the mean
6. explain the implications of extreme scores
7. define a standard score and percentile rank
8. define a standard deviation
9. identify a student's standard score based on the standard deviation for a provided case study.

Day 2

1. Create progress monitoring graphs using data from case studies. Graphs contain:
   ● horizontal and vertical axes,

- benchmark score,
- trend line, and
- goal line.

2. Synthesize the information in a score report and explain a student's score in a manner appropriate for a parent meeting.

3. Discriminate between formative and summative assessment.

<u>Time Required for Instruction</u>.

Each lesson requires 45 minutes (may be adjusted based on pretest performance)

<u>Written Instructions</u>

Pretest will be completed by students online.

Lesson 1

1. Instructor will elicit definitions of mean, median and mode from class and write them on the board.

2. Instructor will demonstrate how to calculate mean, median and mode on the board using a set of 5 scores [10, 10, 9, 8, 7].

3. Instructor will provide guided practice with small sample data sets until students can calculate independently.

4. Instructor will demonstrate how to draw an x and y axis and plot scores.

5. Instructor will provide guided practice in plotting scores with the data sets from above.

6. Instructor will demonstrate how extreme scores affect the mean by substituting extreme scores into the dataset above, e.g. [10, 10, 9, 8, 0] and working through the same calculations.

7. Instructor will demonstrate how different distributions may have similar means [10, 10, 5, 0, 0], [6, 6, 5, 4, 4].

8. Instructor will ask students to discuss the implications of the distributions for interpreting the performance of the group.

9. Students will create a "tricky" dataset in which the the mean or the median do not provide information that is instructionally relevant to a teacher and share them with a partner. Instructor will select one or two of the students' datasets for the students to share with the whole class.

10. Instructor will draw the mean line for each set of scores in item 7, then demonstrate and explain variance. Ask students to explain why it is important to know how spread out the scores are. Ask question: Do datasets with a high variance contain more scores that cluster around the mean than datasets with a small variance? Can the variance be negative? Plot an extreme score and ask: is the distance from the mean greater or lesser than the other scores. Add a definition of variance to the list on the board.

11. Instructor will explain that the standard deviation is the square root of the variance and add this definition to the list. Instructor will present the figure of the normal curve with SD and percentile rank and explain the normal distribution. Ask students to identify the percentage of scores that fall within each standard deviation.

12. Instructor will demonstrate how the standard score is related to the SD. Instructor will explain percentile rank and its relationship to mean and SD.

13. Instructor will distribute and discuss the case study. Students will independently identify the standard score in the case study and the instructor will check for correctness.

Lesson 2

1. Instructor will review concepts from previous class briefly then direct the discussion to assessment for the purpose of monitoring progress. Why is it essential to monitor student progress? How can progress monitoring data affect instructional decisions? What is assessment driven instruction?

2. Instructor will demonstrate on the board horizontal and vertical axes, benchmark score, trend line, and goal line based on a brief case distributed to the class.

3. Instructor will distribute a variety of cases. Students will create horizontal and vertical axes, benchmark score, trend line, and goal line for the case each individual student received.

4. Students will share graphs with a partner and check for correctness. Partners will share with another set of partners and discuss. Instructor will perambulate and verify each student has been successful at the task or correct as needed. Instructor will model and prompt as necessary.

5. Discuss – how would we explain these score reports to parents? Where would we start? What kinds of things should we be sure to address first? How can we elicit the parents' input? Emphasize building on student's strengths and focusing on essential skills. Instructor: Have a student pretend to be a parent. Use a score report and demonstrate how you might explain the report to a parent (explain what the assessment is testing, explain what the numbers are ie, percentiles, raw scores, etc., identify the student's strengths, identify one or two areas for immediate focus for improvement. Explain that if you had previous data on the student, you would identify progress or regression.)

6. Role play. Students will stay in the groups of 4 from the activity above. Each student will explain the score report in the cases to 2 students acting as parents. The other student will act as a reviewer and comment on the student's explanation. All students will take turns until each has played the role of the teacher. Instructor will observe and correct as needed. Students will begin by taking 5 minutes to look at their own case and make notes about how to discuss it. Each student will then take 3 minutes to explain the score report. The reviewer will take 2 minutes to comment on the explanation and proceed until each student has had a turn to explain. The whole group will take 5 minutes to debrief and summarize what they learned from this experience that will be helpful in their work as teachers (30 minutes total).

7. Discuss formative vs. summative assessment: What are different purposes for assessment that you know? What kinds of assessment do you use to plan instruction? What can you use progress monitoring data for? What can you use end-of-the year test data for? How is progress monitoring assessment different from summative assessment? What do you call the kind of

assessment in which the student learns from completing the assessment? How can this distinction help you help parents understand their child's performance?

Post-tests will be completed by students online.

Materials Required for Assignment or Exercise & Format

All materials other than pencil and paper are provided by the instructor: pretest, posttest, small sample datasets, several cases with score reports.

Assessment Plan & Instruments

Student learning will be evaluated with a pre and a post test. The pretest will be administered online through Blackboard and will be due one day before the class meets. It will be a required assignment for all students and students will earn points towards the final grade for completing the assignment.

The instructor will evaluate students' performance on the pretest and adjust time spent/number of examples in guided practice sequences accordingly. Students performing poorly on the pretest will need more practice examples to feel confident. Both the pre and post tests are tightly linked to the specific learning goals developed. Students with extremely poor performance on the pretest may need one-on-one or small group instruction from the instructor, preferably before the lessons if possible. If students do really well, we would progress to lesson 2 after a very brief review.

Pre-Test Questions Personal Information: Please circle the best response that pertains to your perceptions and experiences:

1. This is my first assessment course. T   F
2. I've always loved math!   T   F
3. I'm much stronger in reading than I am in math.   T   F
4. I've had some negative experiences related to assessments that I have taken. T   F

Pre-Test Questions Learning Outcome Day 1: Answer the following questions using the representation of the bell curve provided below:

1) One standard deviation is
   a. 2 points
   b. 4 points
   c. 15 points

d. 32 points

2) What percentage of the population falls within 1 standard deviation from the mean?

    a. 55%

    b. 68%

    c. 14%

    d. 100%
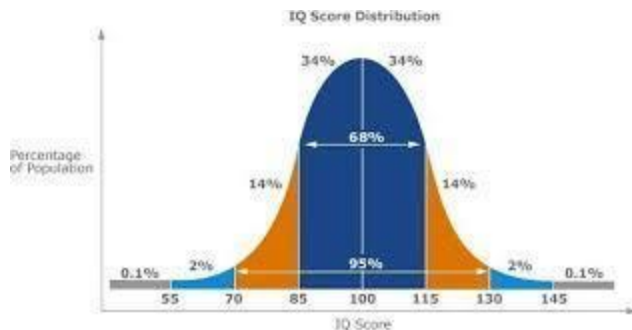
3) This type of assessment is ongoing and completed during the acquisition of a skill. It allows the teacher to make instructional decisions about the student's academic performance and adjust teaching strategies.

    a. Summative assessment

    b. Formative assessment

    c. Curriculum-based assessment

    d. Criterion-referenced assessment

4) Baseline data refers to

    a. The student's ability before an intervention is implemented.

    b. The student's weekly data that are entered into a graph.

    c. The planned outcome after an intervention has been completed.

    d. Data about a student's ability when the intervention has failed.

5) James' obtained a Basic Reading score that fell in the 38 percentile. This means

    a. 62% of individuals with the same age and grade as James scored better than he did

    b. 62% of individuals with the same age and grade as James scored lower than he did

c. 62% of all individuals scored better than James.

d. 62% of all individuals scored lower than James.

6) These kinds of test/assessments are used to compare students to one another.

   a. Aptitude tests

   b. Curriculum-based assessment

   c. Diagnostic tests

   d. Norm-referenced tests

7) Raymond's median score on his first three progress monitorings (*week 1: 40 wpm, week 2: 42 wpm, and week 3: 43 wpm*) is _____wpm.

8) Find the mean, median, mode, and range for the following list of values: 13, 18, 13, 14, 13, 16, 14, 21, 13:

   Mean: _____, Median: _____, Mode: _____

Pre-Test Learning Outcomes Day 2:

   1) Progress monitoring allows practitioners to
      a. estimate rates of improvement
      b. identify students who are not demonstrating adequate progress
      c. compare the efficacy of different forms of different forms of instruction in order to design more effective, individualized instruction
      d. all of the above
   2) The four essential components of (Response to Intervention) RTI are universal screening, data based decision making, multi-level prevention systems and _____ _____.

   3) In the graph below the student's score are (circle a or b)

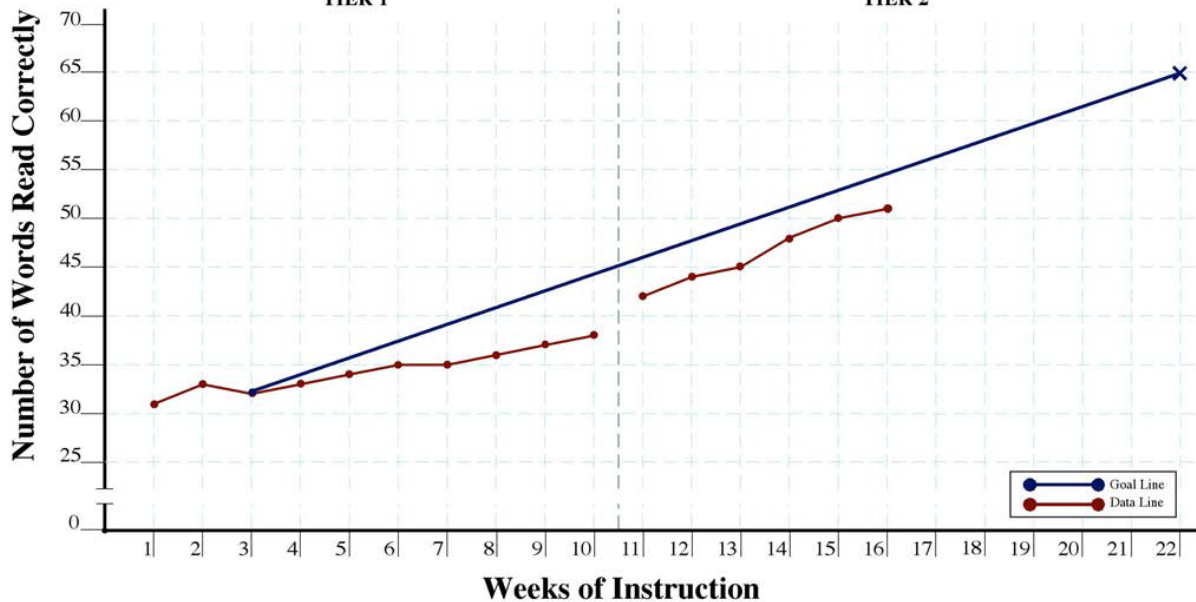   a. increasing towards the goal line
      b. flat
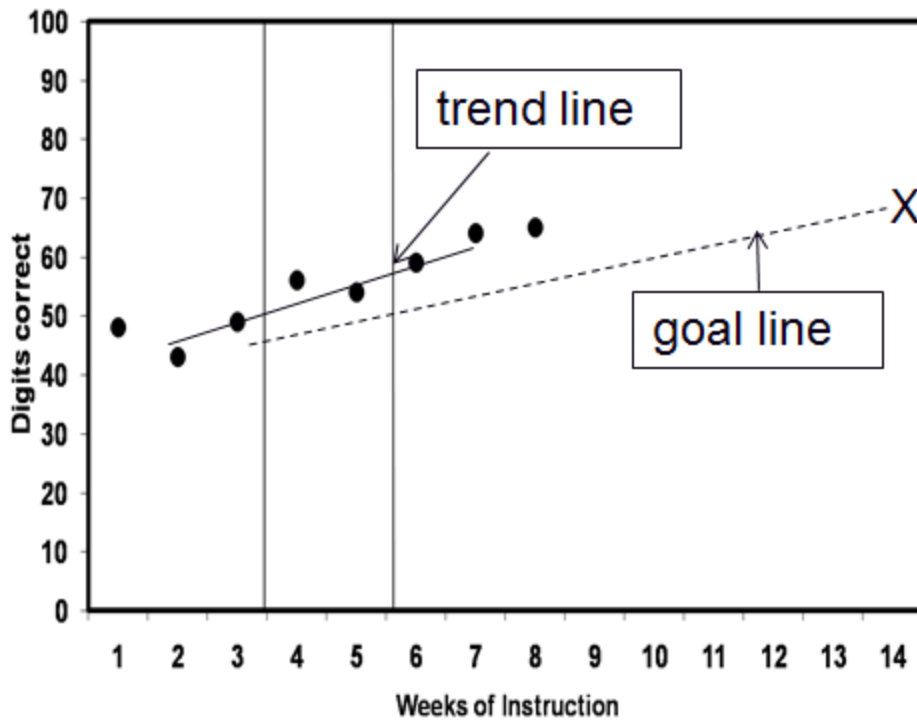
4. In the graph below Samira's scores indicate:

   a. Samira is not making progress towards her goal
   b. Samira's scores have increased since the Tier 2 implementation
   c. Samira will most likely never reach her goal.
   d. Samira has made so much progress she does not need Tier 2 intervention anymore.
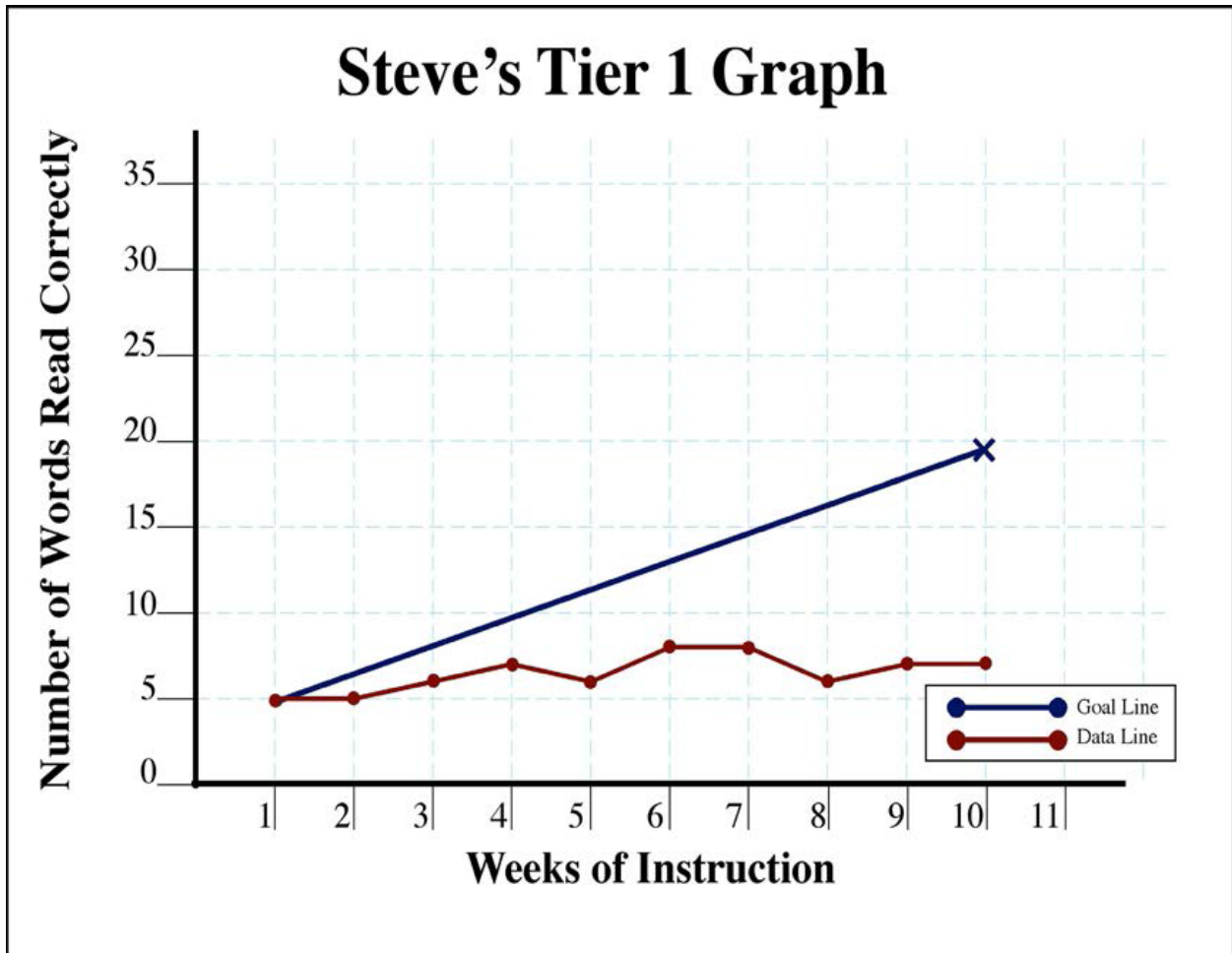
Samaria's Progress Monitoring Graph

Pre-Test questions related to Learning Outcome 2, Day 2:

1) Below is Steve's Tier 1 progress monitoring graph. Write a one paragraph summary of how you would discuss Steve's progress with his parents.

Steve's Tier 1 Graph

Post Test Questions That Address the Learning Objectives

Learning Outcome Day 1:

Learning Outcome 1a) Using the report below, interpret the student's Basic Reading and Reading Comprehension standard scores.

Age: 9 years, 5 months   Grade: 4.2
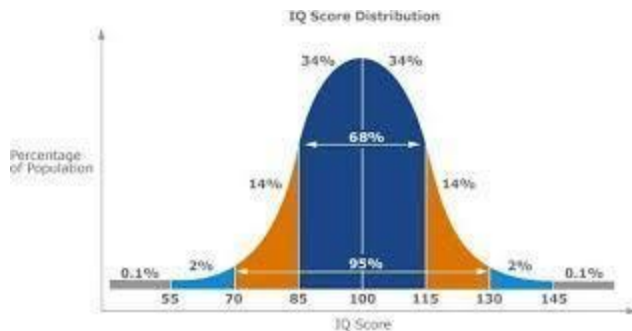
Sex: Male   Examiner:

CLUSTER/Test   Raw   W   GE   EASY to DIFF   RPI   SS (68% Band)   AE
BASIC READING SKILLS   489 3.5   3.0   4.2   76/90   94 (92-96) 8-10
READING COMP   -   48 2.7 2.1   3.7   66/90   84 (81-88) 8-0

Learning Outcome 1b) A student's IQ is -1.5 standard deviations from the mean. Using the bell curve below, identify the student's standard score. _____.

Learning Outcome 1c) Find the mean, median, mode, and range for the following list of values: 10, 18, 13, 14, 18, 16, 14, 21, 19:

       Mean: _____, Median: _____, Mode: _____

Learning Outcome 1d) Define summative and formative assessment and give an example of a testing situation which each would be appropriate for each type of assessment.

Learning Outcome Day 2, #1: Using the information below, create a progress monitoring graph, including the trend line and goal line.

The student is in grade 3

Words read per minute: week 1-35, week 2-36, week 3-28, week 4-30, week 5-38, week 9-41, week 10-45.

Learning Outcome Day 2, #2: This part of the post assessment will be done in groups of three in the classroom. An example of this question follows. Each student in the group will have a different graph.

In groups of 3 (teacher, parent, reviewer) each participant will take the role of the teacher and explain use the information on the graph (sample provided below) below and the provided checklist and correctly explain the student's score in context to parent with a focus on explaining the student's standing in relation to their grade level.

Steve's Tier 1 Graph