Progress Monitoring:
Mathematics

Use this outline to follow along with the module's main features. The blank "Notes" panels below each section are interactive and can be filled in using Adobe Acrobat. Otherwise, print this document and record your notes by hand.

Module Home

- Module Description: This resource introduces users to progress monitoring in mathematics, a type of formative assessment in which student learning is evaluated to provide useful feedback about performance to both learners and teachers (est. completion time: 2 hours).
- Link: IRIS PD Certificate for this module
- Link: Play the Kahoot!
- *STAR Legacy* Cycle
- Related to This Module
  - Link: Module Outline
  - LInk: Navigating an IRIS *STAR Legacy* Module
  - Link: IRIS and Adult Learning Theory
  - Link: Wrap-Around Content Map

Challenge

- Video: Ms. Wu has a problem, a mathematics problem. A 2nd-grade teacher at Penbrook Elementary, Ms. Wu is preparing for her third year. It is the pre-planning week before her students arrive and she's just received the results of the end-of-year state assessment for the prior academic year. The mathematics results are disappointing to say the least.

Notes

Initial Thoughts

- How can teachers use assessment to guide instruction?
- How can teachers determine whether students are making appropriate progress?

Notes

VANDERBILT PEABODY COLLEGE

The contents of this resource were developed under a grant from the U.S. Department of Education, #H325E170001. However, those contents do not necessarily represent the policy of the U.S. Department of Education, and you should not assume endorsement by the Federal Government. Project Officer, Sarah Allen.

Progress Monitoring: Mathematics

Perspectives & Resources

Module Objectives

- By completing the entire Perspectives & Resources section and reviewing the accompanying activities, you should be able to:
  - Identify the different types of classroom assessments
  - Understand how progress monitoring, in particular general outcome measurement (GOM), can inform instruction
  - Administer, score, and graph GOM measures
  - Evaluate student data to make informed instructional decisions
  - Use graphs to facilitate communication with student, parents, and other educators
- This IRIS Module aligns with the following licensure and program standards and topic areas…

Notes

Page 1: Formative Assessment

- Mathematics is key to many of our most common daily activities and routines
- Explanation of classroom assessment
  - The three most common types of assessment [table]
    - Link: exit ticket [definition]
    - Note on diagnostic assessment
- Did You Know?
  - Link: Every Student Succeeds Act (ESSA) [definition]
  - Link: Individuals with Disabilities Education Act (IDEA) [definition]
- Diagnostic assessments
- Summative assessments
- Formative assessments
  - More specifically, formative assessment… [bullet points]
- Research Shows

Notes

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Page 2: Progress Monitoring

- Progress monitoring allows teachers to… [bullet points]
- For Your Information
  - Link: Mastery Measurement vs. General Outcome Measurement [PDF]
- There are two types progress monitoring
- Explanation of general outcome measurement (GOM)
  - Audio: Lynn Fuchs describes the curricular sampling approach and the overall indicator approach
  - Definition of "measure" or "probe"
  - Definition of "alternate version"
  - Sample beginning and end-of year (EOY) probes [drop-down menu]
- Teachers can use GOM data to… [bullet points]
  - Link: maintenance [definition]
- Did You Know?
  - Link: High-Quality Mathematics Instruction: What Teachers Should Know [IRIS Module]
- Audio: Lynn Fuchs talks more about the benefits of using progress monitoring probes that sample the entire year's curriculum
- Audio: Jessica Sellers discusses how she used progress monitoring to evaluate student performance and adjust her instruction in an ongoing manner
- Research Shows
- GOM and Struggling Students
  - Teachers can use GOM data to… [bullet points]
  - Audio: Lynn Fuchs describes the importance of using CBM with at-risk students and those with disabilities
- For Your Information
  - Link: meta-analysis [definition]
  - Link: MTSS/RTI: Mathematics [IRIS Module]
  - Link: Intensive Intervention (Part 2): Collecting and Analyzing Data for Data-Based Individualization [IRIS Module]
- The GOM Process [bullet points]

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Page 3: Select a Measure

- The first step in the progress monitoring process is to select a measure
  - Important factors to keep in mind when selecting a GOM measure [bullet points]
- Definition of "computation probe"
  - Link: sample elementary computation probe
  - Link: sample secondary computation probe
- Definition of "concepts and applications probe"
  - Link: sample elementary concepts and applications probe
- For Your Information
  - Link: standardized measures [definition]
  - Link: National Center on Intensive Intervention (NCII) tools chart
  - Link: Algebra Assessment & Instruction: Meeting Standards (AAIMS) [Website]
- Audio: There is a lack of available validated measures to assess high school students' conceptual understanding in mathematics. David Allsopp discusses an option for assessing this type of understanding
- Selecting Measures for Struggling Students
  - Procedure for selecting an appropriate grade-level probe for struggling students [numbered list with bullet points]
  - Example [box]

Notes

Page 4: Create a Graph

- Having selected a measure, the teacher should next prepare to collect and document student data
  - Benefits of using a graph
  - Benefits for Teachers / Benefits for Students [table]
  - Sample GOM graph
  - Educators can obtain blank GOM graphs in several ways [bullet points]
  - For Your Information
    - Link: Student Progress Monitoring Tool for Data Collection and Graphing [NCII resource, Excel]

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Notes

Page 5: Create a Goal Line

- Definition of "goal line"
- Establishing a Baseline
  - Definition of "baseline"
  - Definition of "median score"
  - Sample Graph: Median Base Line Data Point
- Determine the Expected Goal
  - The importance of setting long-term goals for every student
  - Sample Graph: Median Base Line Data Point with Goal
  - Sample benchmarks [table]
- Draw the Goal Line
  - Explanation of "rate of improvement (ROI)"
  - Sample Graph: Median Base Line Data Point with Goal and Goal Line
- For Your Information
- Activity: Plot Lana's Goal Line
- Determining Goals for Struggling Students
  - Intra-Individual Framework: Step / Actions / Example [table]
  - Activity: Use the intra-individual framework to determine Raymond's end-of-year goal

Notes

Page 6: Administer, Score, and Graph

- The teacher is ready to administer and score GOM mathematic measures
  - Link: fidelity of implementation [definition]
- Administer Measures

- Mathematics measures can be administered in a variety of ways [bullet points]
- Tips for Administering Probes
- Video: Watch a teacher individually administering a number identification measure

- Score Measures
  - Elementary
    - Link: Elementary computation probe scored by number of digits correct and by number of problems correct
  - Secondary
    - Link: Secondary algebra probe scored by number of problems correct
  - Audio: Lynn Fuchs points out several issues that school personnel should consider as they decide whether to score probes by the number of digits correct or problems correct
  - Audio: Brad Witzel discusses the reasoning behind giving partial credit for correctly performed steps in multi-step problems
- Graph Scores
  - Sample GOM graph
- Activity: Score Raymond's most recent computation test for digits correct

Notes

Page 7: Make Data-Based Instructional Decisions

- Before she can obtain a clear picture of the student's performance, the teacher should...
- Learn more about the necessity of collecting enough data to establish a clear picture of a student's performance [drop-down menu]
  - Sample graphs
- Once at least six data points have been collected...
- Definition of "Four-Point Method"
- Position of the Four Most Recent Data Points / Instructional Response [table]
- For Your Information
  - Link: High-Quality Mathematics Instruction: What Teachers Should Know [IRIS Module]
- High-leverage practices [box]
- Graphing the Data of Struggling Students
  - Definition of "phase change line"
  - Sample graph
- Activity: Ms. Wu is ready to evaluate Lana and Raymond's performance and make instructional

decisions based on their GOM graphs

Notes

Page 8: Communicate Progress

- The importance of communicating student progress with others
  - Students
  - Parents
  - Other Professionals
    - Link: individualized education program (IEP) [definition]
    - Link: IEP team [definition]
- High-leverage practices [box]
- Research Shows
- Audio: Jessica Sellers describes how CBM graphs have helped her communicate student performance with parents and other professionals
- Activity: Help Ms. Wu communicate with Raymond's parents about his mathematics performance

Notes

Page 9: References & Additional Resources

- Suggested module citation
- References
- Additional Resources

Page 10: Credits

- Suggested module citation
- Content Contributor
- Reviewers
- Module Developers
- Module Production Team
- Media Production Team
- Media
- Expert Interviews

Wrap Up

- Summary of the module
- Six steps for collecting and interpreting GOM data to monitor progress and guide instruction [table]
- Revisit your Initial Thoughts responses

Notes

Assessment

- Complete the numbered questions. Please note that the IRIS Center does not collect your Assessment responses. If this is a course assignment, you should turn them in to your professor using whatever method he or she requires.

Notes

Notes

You Have Completed This Module

- Give Us Your Feedback
  - Link: Module feedback survey form
- Professional Development Hours
  - Link: IRIS PD Options
- Related Resources [links]