Title
Guiding Student Learning through Accomplished Mathematics Instruction (Course 2)

Target Audience
This course is intended for pre-service and in-service mathematics teachers, specialists, or coaches serving grades 6-12. The course is also open to any mathematics teacher, specialist or coach teaching upper elementary grades and familiar with algebra.

Course Description
This research-based course draws upon data from the National Board for Professional Teaching Standard’s performance assessment of mathematics teachers teaching grades 6 – 12. Guiding Student Learning through Accomplished Mathematics Instruction (Course 2) focuses on key instructional aspects of guiding student learning effectively: student profiles and a ‘focal’ student approach; classroom culture focused on mathematics learning; aligning goals with instructional methods; and checking for understanding during the lesson. Note: Course 1 (MATH512: Achieving Learning Goals through Accomplished Mathematics Instruction) will be a helpful, but not required, precursor for Course 2.

Instructor/Facilitator
This course is facilitated by National Board Certified Teachers (NBCT) in Mathematics.

Credits
Credits are determined by the college or university. The course was designed to be equivalent to a three credit graduate level course.

Goals
By the end of the course, learners will
• have a process for planning a lesson based on the Architecture for Accomplished Teaching;
• be reflective and purposeful about instructional decisions;
• have explored aspects of teaching, including considering your students as learners, developing a classroom culture, designing and implementing instruction, and checking for understanding; and
• create and evaluate a lesson, taking into account the aspects outlined in the course sessions.

Outline of Assignments
A summary of course content and assignments is outlined below:

Session 1: Who Will You Guide?
This session uses the Architecture of Accomplished Teaching article to set a foundation for the remaining sessions, which parallel the steps of the Architecture used in the course. Thinking begins on step 1, knowing your students, and will be extended in Session 2.

The learners will:
• Write a Reflection Journal entry describing the resources, skills and ideas they draw on when planning and implementing a lesson.
• Discuss expectations of students and why students sometimes exceed those expectations, by posting one original comment and responding to at least two other comments.
• Read “The Architecture of Accomplished Teaching” by the National Board for Professional Teaching Standards (NBPTS).
• Read “Good or Bad, What Teachers Expect from Students They Usually Get!” by Robert T. Tauber.
• Read and compare two different profiles of a student. Submit responses to questions about which profile was more helpful in working with the student, and why.
• Begin the final project (to be turned in during Session 6) by choosing and describing a mathematics topic and explaining why they choose that topic.
• Complete the Pre-Course Evaluation Survey
• Complete a self-check and review.

**Session 2: Describing Students as Learners of Mathematics**

In this session, participants consider the difference between using descriptive language and labeling as they develop profiles of students. The session will solidify the purpose of a student profile, that is, to inform sound instructional decisions for that student.

The learners will:

• Complete a multi-step mathematics activity the from the Misunderstood Minds Web site, and write a Reflection Journal entry describing the types of problems students need to progress through as they learn the topic selected in the Session 1 for the Final Project.
• Discuss effective ways to get to know your students, and explain why they are effective, by posting one original comment and responding to at least two other comments.
• Read two different descriptions of a student, one from the student’s perspective and one from the teacher’s, comparing impressions they create and how they may, or may not, accurately reflect the student’s learning strengths and difficulties.
• Listen to an interview with Fred Gross, Principal Investigator of Addressing Accessibility in Mathematics Project of the NSF, regarding use of labels vs. descriptions with students of mathematics.
• Read “Examining Language in Student Profiles” and review four student profiles, distinguishing between evaluative and descriptive labels. Submit a response to specific questions about each of the four student profiles reviewed above.
• For use in the final project, create learner profiles for three students that represent a cross section of the learner’s class.
• Complete an In the Classroom activity using these profiles to plan instruction for an upcoming lesson.
• Complete a self-check and review.

**Session 3: Developing the Classroom Culture**

This session provides a framework for thinking about classroom culture that is most supportive of mathematics learning. Participants will identify elements that contribute to the classroom environment and understand how a culture of interaction can support learning of mathematics.

The learners will:

• Write a Reflection Journal entry describing how students interacted with mathematics during a recent lesson, including tasks engaged in and time on those tasks.
• Discuss four social norms for a typical mathematics classroom and identify and defend their selection of the norms having the least potential impact, by posting one original comment and responding to at least two other comments.
• Read “The Classroom Environment” by Charlotte Danielson.
• Read an excerpt from “Making Sense: Teaching and Learning Mathematics with Understanding” by James Hiebert.
• Read “Teaching Arc Length” and examine how norms in two different classrooms might support student learning of mathematics.
• Watch four videos of a middle school mathematics classroom and identify whether the teacher incorporated specific norms.
• Submit an assignment identifying how each of four specific norms may affect the three focal students profiled in Session 2.
• For use in the final project, identify one place in the lesson that the learner will try to strengthen one specific social norm to support mathematics learning for all students in the class.
• Complete a self-check and review.
Session 4: Choosing Instructional Methods

This session provides an opportunity to think about different instructional methods and the advantages and disadvantages of each. Participants will focus on aligning the activity to the goal and how to modify the activity based on knowledge of students.

The learners will:

- Write a Reflection Journal entry describing a recent lesson that did not go well and identify whether the reason it did not go well was related to the content of the lesson, or the presentation of the lesson.
- Read and discuss “Two Lessons” and identify and support which lesson best supports a specific mathematics goal by posting one original comment and respond to at least two other comments.
- Read the vignette, “Similarity Strings,” identify the instruction mode used, an aspect of implementation that was missing or managed incorrectly, and suggest a mode that might have worked better.
- Watch three videos and examine how the instructional modes might support the students and learning goals for the final project lesson, and provide opportunities for gauging student learning in that lesson.
- Watch one video with the teacher from the above activity describing his answers to the questions examined above.
- Read, complete and submit the worksheet “Supporting Focal Students” examining whether a specific adjustment to the lesson would be helpful to the focal student and why.
- Complete an In the Classroom activity reflecting on planned use of instructional modes in a future lesson and their alignment to students and learning goals.
- Choose an activity to present the topic of the final project, describe the activity (including goals and evidence of achievement of those goals), explain why it was chosen, and note any adjustments to be made for each focal student.
- Complete a self-check and review.

Session 5: Checking for Understanding (CfU) During Instruction

This session has participants think about assessing during instruction and adjusting instruction according to that information. Participants become familiar with a variety of CfU techniques and consider how to align techniques with lesson goals.

The learners will:

- Write a Reflection Journal entry describing how and when the learner examines what students understand about a mathematics topic.
- Examine and discuss a specific example of checking for understand, by posting one original comment and responding to at least two other comments.
- Read “Classroom Assessment: Minute by Minute, Day by Day” by Leahy, Leon, Thompson, and William.
- Read the examples in “What does Checking for Understanding Look Like?”
- View five videos of examples of a teacher using various CfU techniques.
- Read “Multiplying Fractions,” examine use of CfU techniques and compare learner responses to example responses.
- Submit two sample CfU techniques, with explanations of what information the learner wants to get and why they chose those particular techniques.
- Complete an In the Classroom activity choosing 2 CfU techniques to use in an upcoming lesson and reflect on how effective that technique was.
• For the final project, describe at least two CfU techniques to be used in the lesson, and how, when and why they would be used.
• Complete a self-check and review.

Session 6: Reflecting on Course 2
Participants will create a lesson plan complete with student profiles, description of their activity with the rationale for why they chose a particular instructional method, and the Checking for Understanding techniques they will include and why. This session will also be an opportunity to reflect back on the course.

The learners will:
• Write a Reflection Journal entry on how they have previously evaluated student learning in a lesson.
• Rank and discuss the relative importance of four aspects of Accomplished Teaching which the learner feels would provide the most benefit to their students, by posting one original comment and responding to at least two other comments.
• Read the excerpt from “Enhancing Professional Practice” by Charlotte Danielson.
• Read and apply “Lesson Evaluation Guidelines” to learners Final Project.
• Review Reflection Journal, write a final reflection on how learner’s thinking may have changed during the course, and submit the final Reflection Journal.
• Review, complete, and submit the Final Project.
• Complete the Post-Course Evaluation Survey.

Schedule
This course is scheduled to take approximately 45 hours to complete readings, activities, video, discussions, assignments, reflections, reviews, and a final project. The number of hours identified for each course reflects time spent online, but does not reflect the total time spent completing offline coursework and assignments. All learners are different and learners will likely spend double the indicated number of hours completing all coursework depending on learning styles and work habits.

Requirements
Learners are expected to:
• Complete all assignments
• Maintain a reflection journal
• Participate regularly in discussion boards
• Ask for assistance when they need it
• Review and respond to facilitator feedback

Materials (hardware, software, plug-ins)
Technical Requirements:
• Word processor
• Internet browser with Javascript
• High speed Internet service provider (for video viewing)
• E-mail
• Ability to view PDF documents

Evaluation
This course is evaluated on a letter grade basis, and may be available for graduate credit. See graduate credit details pertaining to specific graduate credit institutions.