

Differentiating Instruction in Responsive Middle and High School Classrooms

Nancy Frey

School of Teacher Education

San Diego State University

The secondary classrooms of the 21st century will be increasingly defined by their diversity. As with larger society, the students of our future classrooms are likely to speak another language or possess a set of cultural experiences different from the teacher. As well, accountability systems requiring progress by significant subgroups such as students with disabilities mean that these students will need access to general education curriculum and expert content area teachers in order to make academic gains. Teaching effectiveness now more than ever is predicated on the teacher's ability to meet the needs of a wide range of students.

But what factors define effective teaching for student learning? The National Research Council conducted a synthesis of the research on factors critical to student learning in history, mathematics, and science and found three tenets of sound instruction:

- understanding students' initial level of knowledge and anticipating their misconceptions;
- developing a solid foundation of factual knowledge; and
- teaching for metacognition so they can be active learners (NRC, 2005).

These instructional practices encompass a number of approaches, including formative and summative assessments, scaffolding curriculum, and flexible grouping practices to tailor instruction. Differentiated instruction holds the key for drawing upon these practices in a cohesive fashion.

What is differentiated instruction?

Carol Ann Tomlinson, a leader in the field of differentiated instruction, and her colleagues define differentiation as “an approach to teaching in which teachers proactively modify curriculum, teaching methods, resources, learning activities, and student products to address the needs of individual students and small groups of students to maximize the learning opportunity for each student in the classroom.” (Tomlinson, Brighton, Hertberg, Callahan, Moon, Brimijoin, Conover, & Reynolds, 2003, p. 121) Perhaps the key word in that definition

is “proactively.” The entire process of differentiation is rooted in an assumption of differences among learners — it does not come as a surprise. These student differences include variance in interest, background knowledge, and ability. In addition, these variations are influenced by language, gender, culture, and ethnicity. Although often used in the discussion of supporting students whose achievement is lower than the class average, differentiated instruction was conceived as a way to meet the needs of learners identified as talented or gifted, especially as more of these students were moved into heterogeneous classrooms (e.g., Willard-Holt, 1994). The goal of differentiation is to make classrooms more responsive to the needs, talents, and interests of the students in them.

It is important to define what differentiated instruction is not. This approach is not intended to result in completely individualized instruction for every student, necessitating 35 separate lesson plans. As well, the practice need not be reserved only for those students who carry a label of “different.” Rather than designing a lesson for all and then retrofitting for a few, a differentiated approach requires planning for a range of grouping experiences, materials, and methods for receiving information and demonstrating mastery. When differentiation becomes the norm for all, rather than a stopgap measure for individual students, all learners benefit because of instruction intent on building background knowledge, using flexible grouping arrangements, and teaching for knowledge and strategies (Marzano, Pickering, & Pollock, 2001).

Differentiating Instruction in Middle and High School Classrooms

Effective differentiation requires examining the curriculum demands and the methods of instruction to be used. This begins with reflective questioning about the curriculum content:

- *What are the standards and goals for this unit?*
- *What are my students’ interests and talents?*
- *What pertinent background knowledge do they possess?*
- *What misconceptions are they likely to harbor?*

Next, consider how students will receive information and demonstrate competency:

- *How will I provide a range of materials?*
- *In what ways can students show me they have learned the content?*

Finally, take into account the ways students will acquire strategic knowledge for independent learning:

- *Where are the opportunities for students to work collaboratively?*
- *How will I expand metacognitive awareness of learning?*

Through reflective planning, content area teachers can design engaging and effective units of study for their students. Accordingly, it is useful to use a step-by-step approach in developing your first differentiated unit (Fisher & Frey, 2001). Let's look more closely at each element of a differentiated unit.

Step 1: Identify Standards, Expectations, and Essential Questions

The starting point in any secondary course is the content standards. These documents, with accompanying curricular frameworks, have been produced by 49 of the 50 states (Iowa is the exception) to guide teachers, administrators, and parents in understanding what is important at each grade level (Tucker & Coddling, 1998). Typically found within the content standards are three types of knowledge necessary for students to gain mastery of the subject (Fisher & Frey, 2001):

- Factual knowledge;
- dispositions, skills, and habits of mind (such as inquiry, work habits, and critical literacy); and
- communication skills (reading, writing, speaking, listening, and viewing).

While it is unlikely that it is wise or even permissible to have students work on a set of standards different from the rest of the class, it is possible to differentiate according to expectations. For example, a middle school science unit on ecosystems would utilize the same content standards, while expectations may be individualized within the unit for individual students. Thus, some students would be expected to demonstrate competency in differing ways.

Essential questions further engage learners by increasing their interest in the unit of study (Jorgensen, 1998). These questions should never be answered by a simple "yes" or "no", but rather require that students become active participants in their own learning. Consequently, the ecosystem unit of study can be refined through use of the essential question "How do living

and nonliving things interact?” Learners explore ecosystems using this essential question as a lens for inquiry. The essential question later forms the basis for assessment of student learning. The National Research Council affirms the importance of both facts and big ideas in science, mathematics, and history: “Competent performance is built on neither factual nor conceptual understanding alone; the concepts take on meaning in the knowledge-rich contexts in which they are applied.” (NRC, 2005, p. 6)

Step 2: Design Formal and Informal Assessments

Once the standards and expectations for the unit have been identified, it is time to design the assessments that will be used to gauge student learning. First among these is a pre-assessment to determine background knowledge and misconceptions. For instance, a student survey of key vocabulary in a tenth grade biology class provides the teacher with insight about their understanding of genetic variation and mutation, allowing for more precise lessons. Similarly, inviting students to place positive and negative integers on a number line can serve as an effective assessment for planning a unit on number sense in sixth grade mathematics. Students who demonstrate extensive understanding of these principles can extend their understanding through independent learning projects. This differentiation practice is called *curriculum compacting* and is useful for meeting the needs of students working above grade level (Fisher & Kennedy, 2001).

In addition to pre-assessments of student background knowledge and misconceptions, differentiated units of instruction need formative assessments in order to identify those who may need further instruction. One of the most useful ways to gather formative assessments is through *writing to learn* activities (Fisher & Frey, 2004). Writing to learn activities are brief writing events designed to capture student understanding at a given moment in time. Moreover, they provide an opportunity for students to clarify their own understanding and formulate questions they still have (Mitchell, 1996). A simple method for collecting this information is by devoting the last five minutes of class to summary writing of the key points in the day’s lesson. This “ticket out the door” is handed to the teacher when the bell rings (Fisher & Frey, 2004). The teacher can quickly review the written responses and gain timely information about which concepts may need to be reviewed, and with whom.

Step 3: Offer Richly Detailed Source Material

Textbooks are the primary resource for written material in secondary classrooms (Dove, 1998). These usually offer content that is aligned with state standards, as well as graphics, comprehension questions, and a variety of other text features. However, in today's diverse classrooms there are likely to be students for whom the readings are too difficult. Other students may be captivated by a particular topic and hunger for more detailed information. The use of other richly detailed source materials ensures that all students have access to meaningful text (Onosko & Jorgensen, 1997). Materials such as biographies and autobiographies in social studies courses, picture books illustrating complex scientific processes, or websites on current events in mathematics can be used to introduce new concepts or extend familiar ones. Many teacher editions of textbooks offer additional sources for use, and innovative publishers are now producing their own websites to enhance written information.

Step 4: Plan for Flexible Grouping Patterns

Differentiated classrooms are notable in the use many types of grouping patterns. In particular, students should experience:

- *whole group instruction* to introduce material and model strategies;
- *small group work* for collaborative learning with peers; and
- *individualized learning* for independent work and teacher-directed instruction.

Small group work is an opportunity for students to work with a variety of classmates. In particular, it is useful to group heterogeneously so that they learn from a broad range of peers. These guiding questions can be helpful in making grouping decisions (Fisher & Frey, 2001, p. 64).

- What are the goals and objectives of the lesson?
- What comprises the students' background knowledge?
- What is the range of fluency in oral language?
- What are students' interests and work habits?
- Are there social concerns or needs?
- Do students have a choice in grouping?
- What materials are available?

Step 5: Design Interrelated Daily Lessons and Culminating Activities

Once goals and assessments have been identified and the print resources have been reviewed, it is time to plan for a series of daily lessons that are crafted to scaffold student understanding. These lessons should lead to culminating activities that allow students to utilize the strategies taught to allow them more independence in their learning (Fisher & Frey, 2001).

Effective daily lessons utilize a research-based format to build student understanding. These elements should be transparent to learners so that they can become more cognizant of how their learning progresses. These elements include establishing a purpose, an anticipatory activity, modeling, guided practice, independent practice, and assessment and closure (Hunter, 1994). Of course, this language is not used in the classroom; rather, phrases that guide understanding of learning processes can become part of the classroom vernacular (Fisher & Frey, 2001).

- Learning objectives and standards: *“This is our purpose today...”*
- Anticipatory activity: *“Here’s what we’re going to learn today...”*
- Instruction and modeling: *“Let me show you...”*
- Guided practice: *“Follow me...”*
- Independent practice: *“Now you try it...”*
- Assessment and closure: *What did you learn today?”*

These interrelated lessons should lead to noteworthy culminating projects that provide students with ways to respond to the essential questions of the unit. For example, the eighth grade social studies students attempting to answer the question, “What is freedom?” might be given a choice of culminating activities, including writing a research paper, giving an oral presentation, or creating a website. Because each student’s response to this question would differ, the entire class can benefit from each other’s work. Thus, the learning in the classroom shifts from teacher-directed to student-centered as they take on responsibility for creating new knowledge. This last element (student-centered learning), is an important factor in the differentiated classroom (Tomlinson, 2001). While differentiation is not about creating 35 individual lessons, it is about meeting the needs of a range of students. When these learners support each other all share the responsibility.

Other tools for differentiation of assessments are *tiered assignments and tests*. This is the practice of developing multiple pathways for learners to demonstrate their competence. Tiered assignments and tests offer levels of difficulty so that the range of students in the classroom can successfully respond. For example, a tiered assignment on probability might offer degrees of difficulty for discrete random variables such as creating a distribution table for coin tosses (Level 1), determining the mean and standard deviation of the coin tosses (Level 2), or developing the probability density function of the coin tosses (Level 3). Students then choose which assignment they want to do, or are given it by the teacher.

Tiered tests also offer a choice to students. Most commonly, teachers develop a test containing a variety of items such as multiple choice, short answer, and short essay. Each item has a different point value based on relative difficulty, and students choose the items they want to answer. Once again, metacognition plays a role as students must consider their own understanding as they select test items.

Conclusion

Differentiated instruction is often described as a tool to meet the needs of diverse learners. However, this limits the potential of this approach to teaching and learning because it focuses only on the differences of students. What if we began to see it for what it really is - the practice of creating more responsive curriculum and instruction to meet the diverse needs of learners (Fisher & Frey, 2001)?

References

- Dove, M. (1998). The textbook in education. *The Delta Kappa Gamma Bulletin*, 64(3), 24–30.
- Fisher, D., & Frey, N. (2001). *Responsive curriculum design in secondary schools: Meeting the diverse needs of students*. Lanham, MD: Scarecrow.
- Fisher, D., & Frey, N. (2004). *Improving adolescent literacy: Strategies at work*. Upper Saddle River, NJ: Merrill Prentice Hall.
- Fisher, D., & Kennedy, C. H. (2001). Differentiated instruction for diverse middle school students. In C. H. Kennedy & D. Fisher (Eds.), *Inclusive middle schools*. Baltimore, MD: Paul H. Brookes.

Hunter, M. C. (1994). *Enhancing teaching*. New York: Macmillan.

Jorgensen, C. M. (Ed.). (1998). *Restructuring high schools for all students*. Baltimore, MD: Paul H. Brookes.

Marzano, R. J., Pickering, D. J., & Pollock, J. E. (2001). *Classroom instruction that works: Research-based strategies for increasing student achievement*. Alexandria, VA: Association for Supervision and Curriculum Development.

Mitchell, D. (1996). Writing to learn across the curriculum and the English teacher. *English Journal*, 85, 93–97.

National Research Council. (2005). *How students learn: History, mathematics, and science in the classroom*, M. S. Donovan & J. D. Bransford, (Eds.). Washington, DC: National Academies Press.

Onosko, J. J., & Jorgensen, C. M. (1997). Unit and lesson planning in the inclusive classroom: Maximizing learning opportunities for all students. In C. M. Jorgensen (Ed.), *Restructuring high schools for all students* (pp. 71–106). Baltimore, MD: Paul H. Brookes.

Tomlinson, C. A. (2001). *How to differentiate instruction in mixed-ability classrooms* (2nd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.

Tomlinson, C. A., Brighton, C., Hertberg, H., Callahan, C. M., Moon, T. R., Brimijoin, K., Conover, L. A., & Reynolds, T. (2003). Differentiating instruction in response to student readiness, interest, and learning profile in academically diverse classrooms: A review of literature. *Journal for the Education of the Gifted*, 27, 119–145.

Tucker, M. S., & Coddling, J. B. (1998). *Standards for our schools: How to set them, measure them, and reach them*. San Francisco: Jossey-Bass.

Willard-Holt, C. (1994). Strategies for individualizing instruction in regular classrooms. *Roeper Review*, 17, (September, 1994), 43–45.