## Addressing Individual Differences

Today's teachers are very aware of the many ways in which students differ from each other. Considerable evidence suggests that students learn more when the instruction they receive is appropriate for their readiness and learning style (Tomlinson, 2000). When formative assessment is linked to instruction, students receive what they need to be successful when they need it.

Tomlinson (2000) lists four ways in which teachers can differentiate instruction:
1. Content: adjust what students need to learn or how they get the information they need.
2. Process: recommend different ways of approaching the content.
3. Products: allow students to rehearse, apply, and extend what they have learned in a variety of ways.
4. Learning Environment: create a flexible classroom with quiet places, areas for interaction, and teach routines that create independence.

Many teachers begin a unit of study by discussing the new topic. The intent of the discussion is to help students access background knowledge and prepare their minds to integrate new information into what they already know. However, if this preliminary discussion is also used to assess prior knowledge in order to differentiate instruction, the information gathered can help teachers think about how to best approach the topic. Will they spend more time than they expected reviewing prerequisite knowledge? Can they skip or just briefly review concepts that students appear to have already acquired? Will some students need extra instruction in small groups? Will others need to have the topic explained with culturally appropriate metaphors and examples? All these decisions require information about the kind of knowledge students bring to the study of the topic.

Differentiating instruction in higher-order thinking requires considerable skill and effort. First, students must be taught about thinking skills and sub-skills and they must learn to recognize and articulate their own thinking processes through reflection activities. Through learning logs and discussions aimed at uncovering how students think, teachers can provide feedback that encourages students to try new thinking strategies and refine familiar ones. This kind of differentiation requires teachers to have an extensive knowledge of different thinking skills and strategies that students can use in a variety of projects. The thinking skills checklists in the *Assessing Projects* library offer a starting point for assessing and analyzing students' thinking skills, and rubrics provide descriptions which can be used to encourage students to work toward more proficient and effective thinking.

## Using Assessment to Differentiate Instruction

With varied methods of assessment occurring throughout a unit, teachers are better informed about the learning progress of individual students. Different assessment methods are more likely to reveal unique strengths and weaknesses of individuals. Similarly, when given a variety of tools and opportunities to express their learning, students are better able to demonstrate and articulate their own abilities and learning needs. Open-ended assessments allow students to respond at their own levels. Self-assessments that focus on metacognitive thinking are inherently useful in distinguishing learning needs, because students approach them from their own ability levels. As teachers develop skill in recognizing the unique needs of individual students through assessment data, they are more likely to design and adjust instruction that is responsive and appropriate.

**Differentiation for Students with Severe Learning Disabilities**
Students with severe disabilities may or may not need to master specific content but instead may use the time in class to apply general thinking skills, develop socialization strategies, and practice reading, writing, and math applications as they apply to the particular class. Students are generally included in the regular classroom for part or all of the day and are sometimes assigned a paraprofessional to assist them. Often, these students have designated pull-out instruction time for math, language arts, or life skills depending on the special education model implemented by the school. Teachers are not as likely to have to adapt instruction to students at this level.

Students with severe learning disabilities generally receive extensive assessment as part of the special education program. The assessment information is usually available to the classroom teacher. The child's special education teacher is also a critical resource in differentiating instruction.

In most cases, students with severe learning disabilities need to be assessed on skills and knowledge at which most students have already become proficient. For this reason, they may have assessments that differ in some ways from those of the rest of the students. For example, a rubric for a middle school group project on creating a newspaper based on an ancient mythology might include a trait on basic computer use or social skills for students with severe learning disabilities that will not be assessed for most students. On the other hand, the rubric might not include the same content knowledge or higher-order thinking expected of other students.

Perhaps, the greatest disservice done to students at this level is to deny them opportunities to develop thinking skills. Assessment is extremely important in this area so that these students can receive instruction that challenges but does not overwhelm them. For example, observational anecdotes of a group classification activity could look similar to the following:

| Name: *Jane* (student with severe disabilities) | Name: *Lily* | Name: *Bobby* |
| --- | --- | --- |
| *Categorized items quickly based on color.* | *Spent some time thinking and looking carefully at the items before beginning to categorize.* | *Asked himself questions about use and appearance as he worked. Rearranged categories frequently until he settled on one he liked.* |

From the notes, a teacher could determine some steps to take with Jane that will improve her ability to place items in categories. The teacher can give Jane a checklist that asks her to look for more than one characteristic before she begins to put items in categories. The teacher can also point out the effective behaviors of Jane's peers, such as thinking for awhile before beginning to put the items into categories and asking self-directed questions while working.

Students with severe learning disabilities can reflect on their work with prompting and can learn to ask questions about what they are learning. They can also self-assess and monitor their understanding with simple techniques, such as the following traffic light method:
- Green—I understand well enough to explain to someone else.

- Yellow—I understand some but not completely.
- Red—I am confused and don't understand at all.

**Differentiation for Students with Moderate Learning Disabilities**

Students with moderate learning disabilities learn at a slower rate and are expected to learn content, but may be responsible for a limited number of concepts. Rubrics can be adjusted to address fewer concepts or additional skills that other students have already mastered. If a grade is assigned on the basis of different expectations, this adaptation may need to be noted in the final grade report.

Students at this level can achieve higher levels of thinking, but they usually need extensive scaffolding and support. For example, the following checklist is used by high school students to observe the thinking skills of their peers in a small-group activity. The various thinking skills can be divided among the members of the group. Checklist items marked with an star (✱) would be appropriate for students with moderate learning disabilities to observe, depending on their age and understanding of the subject matter. Of course, all students need instruction and modeling before participating in this activity.

| Problem Solving Skills | Comments |
|---|---|
| ✱Responds positively to complex   problems | |
| Maintains concentration in an active environment | |
| ✱Persists with challenging problems | |
| Takes a systematic approach to   support decisions and conclusions | |
| Uses equations | |
| Works backward | |
| Chooses effective notation | |
| ✱Creates tables and diagrams | |
| ✱Builds models | |
| | |

| Simplifies the problem | |
| --- | --- |
| Assesses the validity of methods   and answers | |

Careful assessment is critical for targeting learning goals for students with moderate disabilities. Since these students will not be expected to achieve all the objectives for a unit, teachers must carefully prioritize the concepts and skills that students are expected to learn. Take, for example, the following journal entry written by an elementary student before a science unit on frogs:

> *I like froggs. They are green and they are amphbins and live in the ocen in little houses with their mommys and daddys and all their bothers and sisters and the daddy frog gos to wrk evry day and the mommy frog clens the house and frogs grow from seeds like flowers.*

A teacher could determine several strengths and weaknesses from this short writing. The child's thoughts are connected and fairly well elaborated. They make a kind of sense. The student knows that frogs are amphibians, they are green, and they live in water. The writing needs to be divided into sentences, and spelling errors, most of which are phonetic in some way, need to be corrected. A teacher could use this journal entry to prioritize some learning objectives for the student.

When planning science concepts to address, while the student has several misconceptions about frogs—such as they live in the ocean and they grow like flowers—the student's biggest misconception clearly comes from mixing the fantasy frogs in storybooks and cartoons with real frogs. This is the first content issue that the teacher should address, leaving the other issues for later. Most likely, other students in the class have the same misconception, even though they may not have indicated it in their journals. Therefore, spending some whole-class instruction on this subject would be a valuable use of instructional time. The teacher would then check with the student frequently to see if the student's beliefs are changing to a more scientific perspective.

Students with moderate disabilities can also benefit from extensive self-assessment through checklists and reflections. For example, an item from a problem-solving checklist can be elaborated as follows to be used by students with moderate learning disabilities:

| **Regular Checklist** | **Checklist Adapted for Students with Moderate Learning Disabilities** |
| --- | --- |
| ☐  I think ahead to avoid potential problems. | ☐  I think about problems I might have with equipment and how to solve them. <br> ☐  I think about problems I might have getting the materials I need and how to solve them. <br> ☐  I think about problems our group might have working together and how to solve them. <br> ☐  I think about problems I might have meeting deadlines and how to solve them. |

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Checklists can also be simplified by eliminating some steps and information, and by providing space for students to write on the checklist itself. One important concept to remember is that although students with moderate disabilities will need more extensive scaffolding to achieve their learning goals, the scaffolding still needs to be removed bit by bit. Certainly, removing support structures takes place at a much slower rate, but students should be moving toward a degree of independence appropriate to their abilities.

**Differentiation for Students with Mild Learning Disabilities**
Mild learning disabilities are the most common learning disabilities. Students with mild learning disabilities have average to above average intelligence but have learning disabilities in math, reading, and/or language arts. Students at this level are expected to master all learning outcomes but should receive adaptations that can help them to learn the concepts.

Assessment is particularly important for students at this level, because students might be quite advanced in some areas and still struggle in others, especially in communication. They might be sophisticated thinkers but unable to communicate their thoughts effectively in writing. The following high school student's journal entry about the novel *The Metamorphosis* by Franz Kafka is an example of this:

> *I thoght this book is sposed to show us who living with hope or creativity can kill you. Gregor's borring job and still lived at home with his parents. Everyone dipended him to ern money to support the family, but the didn't realy care about him as a person he feelt obligated to take care of his family but his heart wasn't in. When he truned into a bug and lost his abillity to give them what they wanted they just forget about him.*

This student did an excellent job of extracting personal meaning from the story, but the writing is confusing and difficult to understand, obstructing the meaning and the good thinking that the student is doing. Students with mild disabilities must be assessed through a variety of methods because many students will show higher levels of thinking through speaking or creative interpretations of content than through traditional methods.

Most students with mild learning disabilities struggle with writing, and many have reading problems. If they are given instruction consistently that addresses their weaknesses and does not recognize their strengths, they can easily become bored and disengaged. These students need challenging material and instruction in areas that need improvement.

Other areas in which many students with mild disabilities need help are self-direction and metacognition. Students are often disorganized and overly dependent on teachers to tell them what to do. These students can benefit from a range of self-assessment strategies, such as checklists like the following one for elementary students that helps students self-assess their work habits and become more independent learners:

| |
|---|
| ☐ I use my time wisely. |

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| ☐ I set goals. | |
| ☐ I anticipate resources I might need to reach my goals. | |
| ☐ I keep track of my progress in my learning log. | |
| ☐ I persevere when I meet obstacles or problems. | |
| ☐ I ask for help when needed. | |
| ☐ I complete my tasks. | |
| ☐ I set high standards for my work. | |
| ☐ I review my work when completed. | |
| ☐ I am willing to improve on my work when needed. | |
| ☐ I explain how I can learn from my successes and failures. | |

Metacognitive training is especially beneficial for students with mild learning disabilities who often have difficulty choosing appropriate learning strategies. Checklists that prompt students to stop and think about various ways to approach a task, and reflections that ask students to look back and evaluate their thinking processes can help students learn how to take control of their learning.

Reading comprehension is a problem for many students with mild learning disabilities. They might be able to say the words, but they might have little understanding or memory of what they read. Students can learn to monitor their own understanding using checklists and reflective writing. Teachers can use the information from these assessments to determine specific concepts that should be addressed in individual and small-group literacy instruction.

**Differentiation for Gifted and Talented Students**
A student-centered environment is conducive to differentiating instruction for gifted students as long as assessments support extension of processes and concepts, and the product or process is open-ended.

The following examples compare a poorly designed to an improved rubric for differentiation. In the first, the descriptors are so narrowly defined that a student could produce any level of brochure and have it earn "5" marks. The scoring guide does not describe details about how well the brochure needs to be completed and only provides a checklist of what to include. This does not address the gifted student because nothing in the "5" category is challenging. The second example is more likely to challenge higher level learners in the classroom while giving special needs students direction and assistance.

**Poorly Designed Rubric**

| BROCHURE | 5 Above and | 4 Excellent | 3 Satisfactory | 2 Working | 1 Not Yet |
|---|---|---|---|---|---|

| | Beyond | | | | |
|---|---|---|---|---|---|
| Includes a clever introduction to element | | | | | |
| Includes information on at least three uses with pictures | | | | | |
| Includes information on history and interesting facts | | | | | |
| Follows design layout given in class (trifold, used all six sides, neat, colorful) | | | | | |
| Includes bibliography | | | | | |
| **50 points possible** | | | | | |

### Revised Rubric

| | 4 | 3 | 2 | 1 |
|---|---|---|---|---|
| **Organization** | My brochure is organized in a manner that makes reading each panel easy.<br><br>Content flows from one panel to the next. I included a theme or purpose that ties the whole report together. | My brochure's organization makes sense to the reader. Content flows from one panel to the next. | Some of the panels in my brochure are out of order or the content is not developed enough to make sense. | My brochure has no organizational structure. Making sense out of the pieces of information is difficult. |
| **Content Ideas** | I completed all components of the task, and information is included on all six sides in the brochure layout.<br><br>Content reflects in-depth understanding of relevant concepts.<br><br>Content offers unique interpretations or extensions (generalizations, applications, analogies). | I completed most components of the task, and information is included on all six sides.<br><br>My brochure shows understanding of major concepts, but some supporting ideas/details are overlooked or misunderstood.<br><br>I included expected interpretations or | I completed some components of the task, but information is missing from at least one of the panels of the brochure.<br><br>My brochure shows gaps in conceptual understanding.<br><br>I just reworded the research information and did not interpret or extend the information. | Panels are missing in my brochure.<br><br>My brochure shows gaps in conceptual understanding.<br><br>I just reworded the research information or copied chunks of information. |

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| | | extensions. | | |
| **Graphics** | I chose at least four graphics that are very relevant to the content. They add to the overall message of my brochure and support the content featured in my brochure. | I chose at least three graphics that add to the understanding of the material in my brochure. | Some of the graphics I chose relate to the content, but others don't. Or I only included a few graphics. | I did not include graphics, or the graphics I chose do not connect to the content in my brochure. |
| **Writing** | My writing shows sophisticated tone, voice, and sense of audience.<br><br>I use strong language to create writing that is interesting and powerful.<br><br>My sentences flow together naturally and are varied in length and structure to enhance meaning.<br><br>My writing contains surprising or unusual elements that enhance the communication of the content.<br><br>My brochure contains no spelling, grammatical, or typing errors. | My writing shows appropriate tone, voice, and sense of audience.<br><br>I use language that is interesting and engaging.<br><br>My sentences vary and flow together naturally.<br><br>My brochure has a few spelling, grammatical, or typing errors that do not distract the reader from the content. | My writing attempts to reflect the individuality of the author and the audience.<br><br>I use predictable language.<br><br>My sentences show little variety.<br><br>My brochure has many spelling, grammatical, and typing errors that detract from the meaning of the content. | My writing is generic, reflecting little about the author or the audience.<br><br>My sentences sound monotonous because they are similar in structure and language.<br><br>My brochure has multiple spelling, grammar, and typing errors that make it very difficult to understand. |
| **Layout** | I use computer layout guidelines, positioning, and color to create an attractive, neat, and interesting brochure. I use appropriate font sizes and line spacing that add to readability. | I use computer layout guidelines, positioning, and color to create an attractive and neat brochure. | I tried to use computer layout guidelines, positioning, and color to create an attractive and neat brochure, but my brochure does not look as good as it could. | I did not use computer layout guidelines or positioning, and my brochure looks sloppy. |
| **Sources** | The content in my brochure is supported by reliable sources (four or more), and all are properly cited. | The content in my brochure is supported by reliable sources (at least three), | The content in my brochure is supported by too few or unreliable sources, and | The content in my brochure is supported by a single source or by unreliable |

| | | and most are properly cited within the report. | sources are often improperly cited. | sources, and sources are improperly cited. |
|---|---|---|---|---|