

# Differentiated instruction

**Differentiated instruction and assessment** (also known as **differentiated learning** or, in education, simply, **differentiation**) is a framework or philosophy for effective teaching that involves providing different students with different avenues to learning (often in the same classroom) in terms of: acquiring content; processing, constructing, or making sense of ideas; and developing teaching materials and assessment measures so that all students within a classroom can learn effectively, regardless of differences in ability.<sup>[1]</sup> Students vary in culture, socioeconomic status, language, gender, motivation, ability/disability, personal interests and more, and teachers need to be aware of these varieties as they are planning their curriculum. By considering varied learning needs, teachers can develop personalized instruction so that all children in the classroom can learn effectively.<sup>[2]</sup> Differentiated classrooms have also been described as ones that are responsive to student variety in readiness levels, interests and learning profiles. It is a classroom where all students are included and can be successful. To do this a teacher sets different expectations for task completion for students based upon their individual needs.<sup>[3]</sup>

Differentiated instruction, according to Carol Ann Tomlinson (as cited by Ellis, Gable, Greg, & Rock, 2008, p. 32), is the process of “ensuring that what a student learns, how he or she learns it, and how the student demonstrates what he or she has learned is a match for that student’s readiness level, interests, and preferred mode of learning.” Teachers can differentiate through four ways: 1) through content, 2) process, 3) product, and 4) learning environment based on the individual learner.<sup>[4]</sup> Differentiation stems from beliefs about differences among learners, how they learn, learning preferences and individual interests (Anderson, 2007). Therefore, differentiation is an organized, yet flexible way of proactively adjusting teaching and learning methods to accommodate each child’s learning needs and preferences in order to achieve his or her maximum growth as a learner.<sup>[5]</sup> In order to understand how our students learn and what they know, pre-assessment and ongoing assessment are essential. This provides feedback for both the teacher and the student with the ultimate goal of improving student learning.<sup>[4]</sup> Delivery of instruction in the past often followed a “one size fits all” approach. In contrast, differentiation is individually student centered, with a focus on utilizing appropriate instructional and assessment tools that are fair, flexible, challenging, and engage students in the curriculum in meaningful ways.

## 1 Brain-Based Learning

Differentiation finds its roots and is supported in the literature and research about the brain. Evidence suggests that by instructing through multiple learning pathways, more “dendritic pathways of access” will be created.<sup>[6]</sup> This can be achieved by using several senses (i.e. sight, sound, smell) or by creating cross-curricular connections. When more regions of the brain store data about a subject, there is more interconnection and cross-referencing of data from multiple storage areas in response to a single cue, meaning one has learned rather than memorized.<sup>[6]</sup>

As Wolfe (2001) argues, information is acquired through the five senses: sight, smell, taste, touch and sound. This information is stored temporarily, and the brain decides what to do with the acquired data. The more of these stimuli that are activated, the more impact the data has on the brain.<sup>[7]</sup> This information is pertinent to differentiation, which can activate multiple senses and thus have a greater impact on the brain.

Further, Howard Gardner’s theory of Multiple Intelligences identified eight distinct intelligences: linguistic, logical-mathematical, musical, bodily-kinesthetic, spatial, interpersonal, intrapersonal and naturalist.<sup>[8]</sup> This is important when looking at how students possess different kinds of minds, and therefore learn, remember, perform, and understand in different ways. He argues that students would be better served if teachers could teach in a number of ways and learning could be assessed through a variety of means.<sup>[8]</sup> This might reach more students and improve content retention. Learning preferences extends these ideas by effectively instructing a larger number of students to encourage development of the less preferred style.

## 2 Pre-assessment

An important part of differentiated instruction and assessment is determining what students already know so as not to cover material students have mastered, or use methods that would be ineffective for students. The goal of pre-assessment is to determine a student’s knowledge, understanding and skill prior to the unit of study. These assessments are referred to as assessments for learning, which include diagnostic or pre-assessments to be used by the teacher to help guide their instruction and benefit each learner.<sup>[9]</sup> They are informal and provide

qualitative feedback to teachers and students to address strengths and needs during the unit. Pre-assessments should be conducted several weeks before the unit of study and should not be graded.<sup>[10]</sup> Chapman and King (2005) note that when “teachers strategically administer pre-assessments before planning their lessons, they can address the students’ strengths and needs during instruction.”<sup>[11]</sup> Pre-assessment can be conducted in two ways: 1) by identifying learning preferences and interests (i.e. Gardner’s Multiple Intelligence test, or Visual, Auditory, or Kinesthetic learner), and 2) by identifying knowledge of student understandings (i.e. checklists, quizzes, class discussion, portfolios, entry/exit cards, anticipation guides, journals, self-reflections). Both of these types of pre-assessment are used to design student tasks, particularly when a student might require support, enrichment, or have different learning styles, intelligences, or interests.<sup>[12]</sup> Teachers can also determine, locate, and compile appropriate resources and decide timelines/priorities for upcoming units.

The goals of differentiated instruction are to develop engaging tasks that challenge and enhance learning for each student. Instructional activities are flexible, and based and evaluated on content, process, product, and learning environment. This instructional approach and choice of content are driven by the data from students’ assessment results and from the outcomes of other screening tools. Pre-assessments can gather information about each student’s strengths, comforts, or areas of weakness. This leads to appropriate differentiation that accommodates each student’s learning needs and preferences. Assessments should be used as a tool to create clear, and meaningful instruction that guide each student towards challenging but not frustrating activities.

### 3 Ongoing Assessment

Assessment is the process of gathering information from a variety of sources such as assignments, teacher observations, class discussions, and tests and quizzes.<sup>[12]</sup> Teachers must assess regularly in order to inform their instructional strategies, learn about each student’s readiness, interests, and learning preferences and to improve student learning. This information can be gathered through diagnostic (pre-assessments), formative, and summative assessments, as well as Individual Education Plans, Ontario Student Records, student interest surveys, and multiple intelligence or learning style inventories.<sup>[9]</sup>

Assessment for learning not only includes diagnostic or pre-assessment measures, but also formative assessment. Formative assessments are used during a unit to provide understanding about what the student is learning, and continually guide instructional decisions.<sup>[10]</sup> Assessment as learning takes place when students self-assess their work and reflect on their growth as learners.<sup>[9]</sup> Earl (2003) says this is the process in metacognition, and

“occurs when students personally monitor what they are learning and use feedback . . . to make adjustments, adaptations, and . . . changes in what they understand.”<sup>[13]</sup> Differentiation can be used when applying, demonstrating, extending knowledge, or practicing skills and attitudes to monitor achievement of goals. This might include peer/self assessments, and peer/teacher conferences. Assessment of learning is the culminating task or summative assessment, which takes place after the learning has occurred and students can show what concepts and/or skills they learned.<sup>[10]</sup> Differentiation can also be used here through a variety of strategies such as tests, projects, demonstrations, writing performances, and more.

All of these ongoing assessments allow the teacher to know their students and their needs, in order to select effective teaching and learning strategies and interventions to maximize student achievement. Consistent program review and diagnosis of whole-class and individual student responses not only provides ongoing feedback to enhance teaching and learning for teachers, but students and parents as well. Teachers use ongoing assessments to gather information about a student’s knowledge and capabilities, to direct future planning, to monitor student progress, and to evaluate student achievement.<sup>[12]</sup> Students and parents can also use these assessments to reflect and understand their own learning preferences and level of achievement.

It is important to remember that students must be assessed based upon a standard and not based upon the level of the work they are assigned. In other words, a student who struggles in a particular subject may be given an assignment geared toward their abilities to assist them in the learning process. They may do well at the adjusted work they are given. That does not mean they should be given the same grade for their work, as the child who does not get an adjustment assignment.

### 4 Content

The content of lessons may be differentiated based on what students already know. The most basic content of a lesson should cover the standards of learning set by the district or state. Some students in a class may be completely unfamiliar with the concepts in a lesson, some students may have partial mastery of the content - or display mistaken ideas about the content, and some students may show mastery of the content before the lesson begins. The teacher may differentiate the content by designing activities for groups of students that cover different areas of Bloom’s Taxonomy. For example, students who are unfamiliar with the concepts may be required to complete tasks on the lower levels of Bloom’s Taxonomy: knowledge, comprehension, and application. Students with partial mastery may be asked to complete tasks in the application, analysis and evaluation areas, and students who

have high levels of mastery may be asked to complete tasks in evaluation and synthesis.

When teachers differentiate content, they may adapt what they want the students to learn or how the students will gain access to the knowledge, understanding, and skills (Anderson, 2007). In these instances, educators are not varying student objectives or lowering performance standards for students. They use different texts, novels, or short stories at a reading level appropriate for each individual student. Teachers can use flexible groups and have students assigned to like groups listening to audiobooks or accessing specific internet sources. Students could have a choice to work in pairs, groups, or individually, but all students are working towards the same standards and objectives.

#### 4.1 Understanding by Design

Understanding by Design (UbD) is an educational strategy that may be used to inform content in a differentiated classroom. According to Carol Ann Tomlinson and Jay McTighe, UbD and Differentiated Instruction (DI) form an essential partnership. Combining these two educational theories may allow educators to simultaneously “craft powerful curriculum in a standards-dominated era and ensure academic success for the full spectrum of learners.”<sup>[14]</sup>

### 5 Process

The process of how the material in a lesson is learned may be differentiated for students based on their learning styles, taking into account what standards of performance are required for the age level. This stage of differentiation allows students to learn based either on what method is easiest for them to gain knowledge, or what may challenge them most: some students may prefer to read about a topic (or may require practice in reading), and others may prefer to listen (or require practice in listening), or acquire knowledge by manipulating objects associated with the content. Information may be presented in multiple ways by the teacher, and may be based on any available methods or materials. Many teachers use areas of Multiple Intelligences to provide learning opportunities.

Commonalities in the assessment results lead to grouping practices that are designed to meet the students’ needs. “How” a teacher plans to deliver the instruction is based on assessment results that show the needs, learning styles, interests, and levels of prior knowledge. The grouping practices must be flexible, as groups will change with regard to the need that will be addressed. Regardless of whether the differentiation of instruction is based upon student readiness, interests, or needs, the dynamic flow of grouping and regrouping is one of the foundations of differentiated instruction. It is important for a differen-

tiated classroom to allow some students to work alone, if this is their best modality for a particular task. (Nunley, 2004)

Differentiating by process refers to how a student comes to understand and assimilate facts, concepts and skills (Anderson, 2007). After teaching a lesson, a teacher might break students into small “ability” groups based on their readiness. The teacher would then give each group a series of questions, based on each group’s appropriate level of readiness-skills, related to the objectives of the lesson. Another way to group the students could be based on the students’ learning styles. The main idea behind this is that students are at different levels and learn in different ways, so a teacher can’t teach them all the same way.

Another model of differentiation, Layered Curriculum, simply offers student a choice of assignments but requires demonstration of learning in order to pass the assignment. This eliminates the need for pre-assessment and is useful for teachers with large class loads, such as in high school. (Nunley, 2004).

### 6 Product

The product is essentially what the student produces at the end of the lesson to demonstrate the mastery of the content: tests, evaluations, projects, reports, or other activities. Based on students’ skill levels and educational standards, teachers may assign students to complete activities that demonstrate mastery of an educational concept (writing a report), or in a method the student prefers (composing an original song about the content, or building a 3-dimensional object that explains mastery of concepts in the lesson or unit). The product is an integral component of the differentiated model, as the preparation of the assessments will primarily determine both the ‘what’ and ‘how’ instruction will be delivered.

When an educator differentiates by product or performance, they are affording students various ways of demonstrating what they have learned from the lesson or unit (Anderson, 2007; Nunley, 2006). It is done by using menu unit sheets, choice boards or open-ended lists of final product options. It is meant to allow students to show what they learned based on their learning preferences, interests and strengths.

Examples of differentiated structures include Layered Curriculum, tiered instruction, tic-tac-toe extension menus, Curry/Samara models, RAFT writing activities, and similar designs. (see external links below)

In differentiated instruction, teachers respond to students’ readiness, instructional needs, interests and learning preferences and provide opportunities for students to work in varied instructional formats. A classroom that utilizes differentiated instruction is a learner-responsive, teacher-facilitated classroom where all students have the opportunity to meet curriculum foundation objectives. Lessons

may be on inquiry based, problem based and project based instruction.

## 7 Learning Environment

Differentiating through the environment is important as it creates the conditions for optimal learning to take place. According to Tomlinson (2003), “environment will support or deter the student’s quest for affirmation, contribution, power, purpose, and challenge in the classroom” (p. 37).<sup>[15]</sup> The learning environment includes the physical layout of the classroom, the way that the teacher uses the space, environmental elements and sensitivities including lighting, as well as the overall atmosphere of the classroom.<sup>[4]</sup> The teacher’s goal is to create an environment that is positive, structured, and supportive for each student. The physical environment should be a place that is flexible with varied types of furniture and arrangements, and areas for quiet individual work as well as areas for group work and collaboration. This supports a variety of ways to engage in flexible and dynamic learning. Teachers should be sensitive and alert to ways in which the classroom environment supports students’ ability to interact with others individually, in small groups, and as a whole class. They should employ classroom management techniques that support a safe and supportive learning environment.

In a classroom where the teaching theory is based on differentiated instruction, students should feel welcomed and safe. The teacher teaches for success and fairness is evident. The teacher and students collaborate for mutual growth and success. In a differentiated classroom, there is a strong rationale for differentiating instruction based on assessment results, student readiness, interest, and learning profiles. All instructions are clearly stated in a way that students easily understand. Students are aware of the classroom rules and know routines and procedures. There is a procedure for all activities completed in the classroom. These procedures should promote minimal noise, minimize unnecessary movement, encourage on-task behavior, have a plan for those who finish early, and promote independent work and responsibility.

## 8 Helping Parents Learn About Differentiated Instruction

According to Carol Ann Tomlinson,<sup>[16]</sup> most parents are eager for their students to learn, grow, succeed and feel accepted in school. Sharing the goals is important. It’s just the way a differentiated classroom “looks” that’s different from what parents may expect. Teacher can help them develop a clear, positive understanding of differentiated instruction and how it benefits their children. Let parents know that: - The goal of differentiated instruction

is to make certain that everyone grows in all key skills and knowledge areas, moving on from their starting points. - In a differentiated classroom, the teacher closely assess and monitors skills, knowledge levels, interests and effective ways of learning for all students and then plans lessons and tasks with those levels in mind. - A differentiated lesson assigned by a teacher reflects the teacher’s current best understanding of what a child needs to grow in understanding and skill. That understanding is evaluatory and will change as the year goes on, as the child grows, and as parents contribute to the understanding. - The teacher will be glad to have parents come to school and talk about their children because both have important perspectives to share. A teacher sees a student more broadly in regard to ages and developmental benchmarks. A parent sees a student more deeply in regard to interests, feelings, and change over time. When the wide-angle lens and close up lens both add images of the child, the picture becomes fuller for everyone. - A goal in your classroom is to help each student become a more independent learner.

## 9 See also

- Streaming (education)

## 10 References

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## 11 Further reading

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## 12 External links

- [Differentiated Instruction Resources from ASCD](#)
- [Information on developing RAFT activities](#)
- [Carol Tomlinson: Differentiation Expert](#)
- [Differentiated Instruction – Reading Rockets and American Federation of Teachers \(AFT\)](#)
- [Differentiating for High Ability Students – Lesson Planet](#)
- [A journal paper describing how differentiated lab exercises were used to teach undergraduates programming](#)

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