



What We Talk About When We Talk About Differentiated Learning

Educators universally acknowledge the inherent differences among students, ranging from their unique learning styles to their natural cognitive strengths and weaknesses. In response to this diversity, differentiated learning, a pedagogy in which “teachers adjust their curriculum and instruction to maximize the learning of all students,”¹ continues to grow in prominence.

While many educators and policymakers are aligned with the need to move away from a “one size fits all” approach to education, consensus is less clear on how to best implement this teaching style in a classroom setting.

There are two central reasons for this. The first is that often, educators have varied perspectives on what differentiated learning means. A common misconception is that effective differentiation means that all students must receive individualized instruction.

As Rick Wormeli, author and nationally recognized differentiated learning expert, explained in his article “Busting Myths About Differentiated Instruction,” this is simply not the case. Instead, differentiation can take many forms, large and small:

“When a teacher answers a confused student’s question, stands near to a student to quiet him or her down, suggests an alternative research resource, or suggests that a student turns lined paper sideways to create columns, the teacher is individualizing and, yes, differentiating instruction. The individualizing is temporary, done as necessary.”²

On the other end of the spectrum, sometimes educators believe that simply encouraging group work or giving students a variety of options when it comes to projects constitutes meaningful differentiation. However, Wormeli explained that “the important factor is whether those students were grouped, or those project choices were offered, on the basis of specific information the teacher knew about his or her students.”³

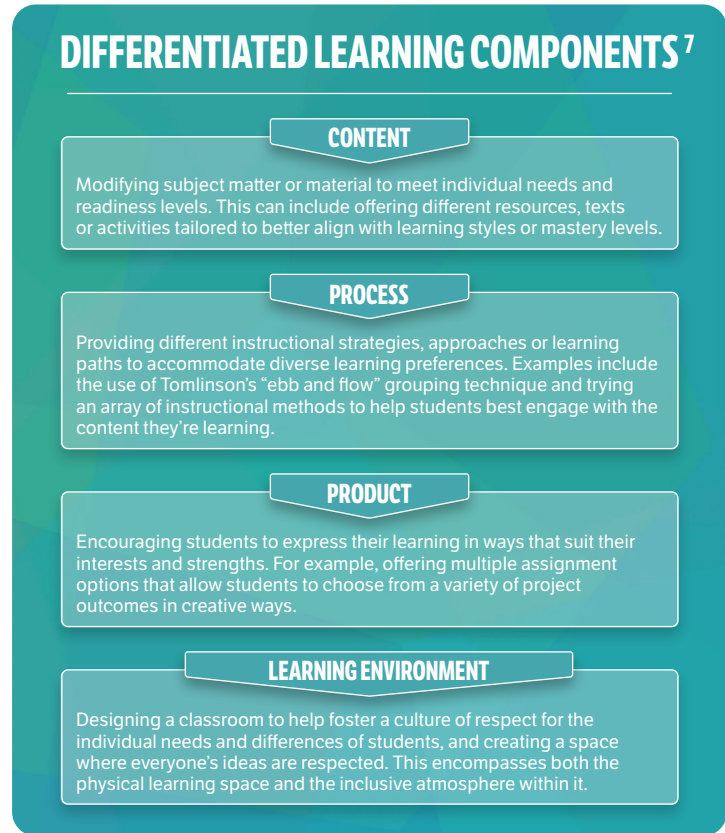
In other words, true differentiated learning requires educators to adapt to the needs of their students in real time. Carol Ann Tomlinson, the famed educator responsible for coining the phrase “differentiated learning,”⁴ refers to this flexibility as the “ebb and flow” of a classroom. She recommends teachers use flexible grouping in their classrooms, in which throughout the course of

a unit, students have the autonomy to move between large and small groups, and to work independently when appropriate.⁵

In an interview with UVA Today, Tomlinson explained that differentiated learning works to dispel the notion that there exist homogenous classes in which students will respond identically to subject matter and lesson plans.

“For the most part, our entire education system is set up to separate children into what we think are relatively homogenous groups and teach them with uniformity so they can perform adequately on standardized tests,” Tomlinson explained. “But what we know is that teaching first with the student in mind and giving a diverse group of students the opportunity to work together and learn to appreciate each other increases the learning outcomes for all of the students.”⁶

To help educators implement quality differentiated learning opportunities, Tomlinson identifies four distinct elements that can be modified depending on a student’s unique needs:



1. Vanderbilt University - IRIS Center. (n.d.). What is Differentiated Instruction?. IRIS Center. <https://iris.peabody.vanderbilt.edu/module/di/cresource/q1/p01/>

2. Wormeli, R. (n.d.). Busting Myths About Differentiated Instruction - Great Schools Partnership. Busting Myths About Differentiated Instruction. <https://www.greatschoolspartnership.org/wp-content/uploads/2017/01/Busting-Myths-About-Differentiated-Instruction-1.pdf>

3. Ibid.,

4. Breen, A. (2020, October 22). Renowned Educator and Scholar Carol Tomlinson Defined a New Way of Teaching. UVA Today. <https://news.virginia.edu/content/renowned-educator-and-scholar-carol-tomlinson-defined-new-way-teaching>

5. Differentiation in Practice - A Resource Guide for Differentiating Curriculum. (2003). ASCD.

6. Breen, A. (2020, October 22). Renowned Educator and Scholar Carol Tomlinson Defined a New Way of Teaching. UVA Today. <https://news.virginia.edu/content/renowned-educator-and-scholar-carol-tomlinson-defined-new-way-teaching> 7 ASCD. (2011). Key Elements of Differentiated Instruction - ASCD. The Association for Supervision and Curriculum Development. <https://pdo.ascd.org/>

7. ASCD. (2011). Key Elements of Differentiated Instruction - ASCD. The Association for Supervision and Curriculum Development. https://pdo.ascd.org/LMSCourses/PD11OC115M/media/DI-Intro_M4_Reading_Key_Elements.pdf

Invention Education Simplifies Differentiated Learning

Even with the best intentions, differentiated learning can be difficult to implement, especially when an instructor's curriculum does not naturally lend itself to differentiation.

This is one of the reasons that increasingly, school districts have started to implement invention education — a pedagogy that encourages students to use their creativity and problem-solving skills to invent solutions to real-world problems. For over 33 years, the National Inventors Hall of Fame® has used this hands-on approach to STEM (science, technology, engineering and mathematics) curricula to inspire millions of students and educators across the country.⁸ In doing so, it's helped ignite children's natural curiosity and prepare them for the challenges of our ever-evolving world.

AN INVENTIVE APPROACH TO DIFFERENTIATION

CONTENT

Invention education encompasses a wide range of topics and challenges that cater to diverse interests and learning styles. Students can choose projects that align with their passions and strengths, ensuring that the content is personally meaningful and engaging.

PROCESS

Promoting hands-on, inquiry-based learning, invention education enables students to approach problems and projects in various ways, and to apply their preferred learning style. For example, some students might excel in the planning or design phase of prototyping while others thrive during the experimentation and testing stages. This flexibility accommodates different learning preferences and competencies.

PRODUCT

Invention education allows students to create unique solutions to real-world problems, and to showcase their understanding and creativity through projects and prototypes that can take many different forms. Given a sense of ownership, students naturally express their learning in ways that align with ideas they find meaningful.

LEARNING ENVIRONMENT

Fostering a positive and student-centered atmosphere, invention education encourages group work and collaboration, and gives students the confidence to take risks because they feel supported. This pedagogy also can be adapted to accommodate individual learning preferences and is equally effective for students who prefer to work independently.

Pinellas County School District Uses Invention Education to Engage Both Gifted and ESOL Students



Pinellas County School District students proudly demonstrate their invention prototypes.

In Pinellas County School District, Florida, officials faced the challenge of increasing the participation of underrepresented students in their gifted and talented program while navigating strict state guidelines. Coral Marsh, supervisor of gifted and talented education, found inspiration in the district's success with Camp Invention®, a K-6 summer STEM program offered by the National Inventors Hall of Fame, over the past five years.

To address their goals, Marsh and Natasha Karac, English learners services director, applied for separate grants to merge their needs into a collaborative summer camp program. By combining gifted and ESOL (English for Speakers of Other Languages) students, they discovered that both groups could benefit significantly. The former enjoyed an engaging learning experience, and the latter improved their confidence, literacy skills and language proficiency while interacting with their gifted peers.

Invention education in this context provided a supportive environment where ESOL students felt comfortable expressing themselves and collaborating freely. For gifted students, the program's open-ended challenges allowed for deep exploration of STEM topics, keeping them engaged and invested in each experience.

One of the standout features of Camp Invention is its ability to naturally differentiate activities, making it equally enjoyable and beneficial for all students. This comprehensive program eliminates the need for separate camps, serving the diverse needs of all students in one convenient package.

To fellow educators interested in bringing invention education to their school and implementing effective differentiated learning, Marsh recommends seeking outside resources and getting creative to secure funding opportunities. All National Inventors Hall of Fame education programs qualify for various funding sources, making them accessible for schools and districts looking to inspire and support all students.

8. NIHF By the Numbers 2022. The National Inventors Hall of Fame. (n.d.). <https://www.invent.org/sites/default/files/2023-04/2022-NIHF-Impact.pdf>