The Five Dimensions of Differentiation

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"True differentiation requires that we look at all the characteristics of the learner in addition to achievement level." **Joseph Renzulli**

"Differentiation is a journey that all teachers must take. With multiple levels of achievement, interests, readiness, learning and product styles represented in each classroom, effective and meaningful differentiation may be the most important attribute of the 21st century teacher who wants to help each student make continuous progress in learning." **Sally Reis**

The diversity of skills, talents, and interests of students that we serve in our schools requires a remarkable range of teachers' skills, time, and resources. This brief article focuses on differentiation and the ways that teachers can adapt and differentiate the regular curriculum to meet the academic needs of all of their students. Challenges and solutions about how differentiation can be implemented will be discussed, as will a variety of strategies that can be used to differentiate, challenge, and engage all students. Defined simply, differentiation is matching a required curriculum with the learning styles, expression styles, interests and abilities of students. It is predicated on the simple belief that engaged and motivated students score higher, are easier to manage, and enjoy learning more. Both research and current practice illustrate the importance of differentiated instruction for meeting every child's needs as well as raising achievement– and some of that research is summarized in this article.

Defining differentiation

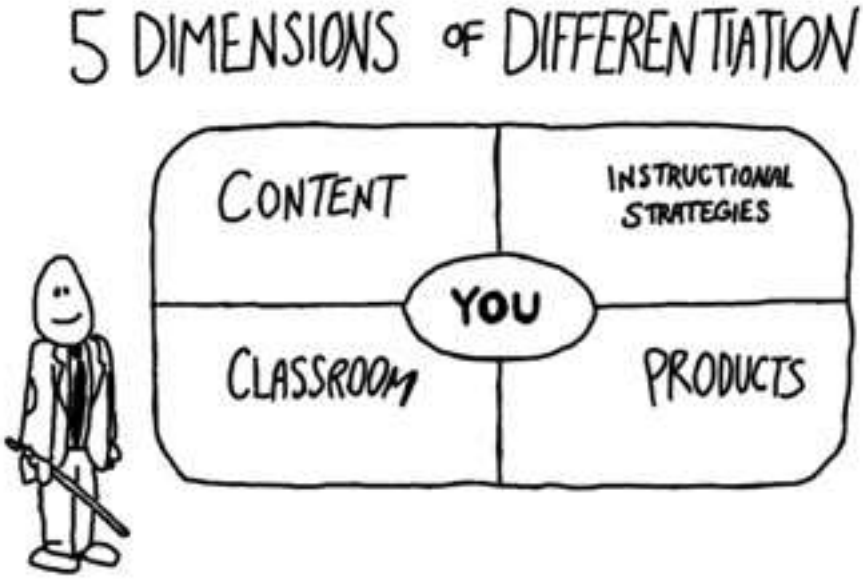
In order to accommodate the needs of students across many different levels of academic achievement, teachers across the country have implemented within-classroom strategies referred to as differentiated instruction. Differentiation is an attempt to address the variation of learners in the classroom through multiple approaches that modify instruction and curriculum to match the individual needs of students (Renzulli, 1977; Tomlinson, 2000). Students vary in their abilities, interests, and prior knowledge. Differentiation serves to address this variation by matching the content, instruction, and assessment to students' needs and interests. Tomlinson (1995) emphasized that when teachers differentiate curriculum, they stop acting as dispensers of knowledge and serve as organizers of learning opportunities. Differentiation of instruction and curriculum suggests that students can be provided with materials and work of varied levels of difficulty, different levels of assistance, various types of grouping, as well as different environments in the classroom. In other words, differentiation is the opposite of a "one size fits all curriculum".

Five dimensions of differentiation

The three components that are most often associated with successful differentiation are: curriculum or content--what is being taught; instruction or process—how it is being taught; and student product—tangible results produced based on students' interests and abilities. More recently, Joseph Renzulli expanded these components in the "Five Dimensions of Differentiation", to explain five ways to integrate differentiation into teaching practices.

1. **Content**: Students have different academic abilities, and interests – and teachers can differentiate the content/curriculum delivered to their students. Some students need content that matches their interests, or is more or less challenging and appropriate for their reading level – and not every student should receive the same content in any given lesson.

2. **Instructional Strategies**: Students also arrive with different learning styles. Some learn best through group work and some by working alone, some learn best by doing projects, while other learn by discussion. Teachers can differentiate by using different instructional strategies that match the preferences of individuals or groups in their classrooms.



3. **The Classroom:** Teachers can differentiate the learning environment itself, and how they manage it. Students can have the opportunity to work in groups with other students like themselves, or work in groups in which every student has a chance to demonstrate their different style – or, you can introduce new guest speakers or technology – or bring your class into new environs like the computer lab, library, or a field trip.
4. **Products**: Students express what they have learned in different ways – some students' preferred expression style is written – while others do better with technology, social action, or visually. Teachers can differentiate products by giving students options, when practical, to choose their own modes of expression to demonstrate what they have learned.
5. **The Teacher**: Obviously, it is hard to imagine that teachers can differentiate every lesson every day– so differentiation is about the decisions and choices that teachers make about how to differentiate the curriculum for a diverse group of students. Differentiation requires that teachers consider their students' learning styles, interests, abilities, and expression styles – and that they accept the freedom, flexibility, and creativity to implement this process in the classroom.

Renzulli's (1977; 1988; Renzulli & Reis, 1997, 2014) five dimensions of **content, process, products, classroom organization and management, and the teacher's own commitment to differentiate** into a learner as well as a teacher provides a method to differentiate instruction. As noted in Figure 1, the differentiation of *content* involves adding more depth to the curriculum by focusing on structures of knowledge, basic principles, functional concepts, and methods of inquiry in particular disciplines. Within the **content** area, representative topics are explored and webbed, with open-ended questions that probe a particular field of knowledge (Renzulli, 1997).

The differentiation of **process** incorporates the use of various instructional strategies and materials to enhance and motivate various students' learning styles. The differentiation of **products** enhances students' communication skills by encouraging them to express themselves in a variety of ways. To differentiate **classroom management,** teachers can change the physical environment and grouping patterns they use in class and vary the allocation of time and resources for both groups and individuals. Classroom differentiation strategies can also be greatly enhanced by using the Internet in a variety of creative ways. The Internet can expand the **learning environment** far beyond the walls of

the classroom and offer particular promise for engaging and differentiating content for children. Last, teachers can differentiate **themselves** by modeling the roles of athletic or drama coaches, stage or production managers, promotional agents, and academic advisers. All these roles differ qualitatively from the role of teacher-as-instructor. Teachers can also "inject" themselves into the material through a process called artistic modification (Renzulli, 1988). This process guides teachers in the sharing of direct, indirect, and vicarious experiences related to personal interests, travel experiences, collections, hobbies, and teachers' "extra-curricular" involvements that can enhance content.

Five dimensions of differentiation described in a classroom

The following description illustrates what differentiated classrooms would look like if each of Renzulli's five dimensions were implemented. Content would be adjusted and changed to meet the needs of advanced students. In reading, for example, advanced self-selected reading materials would be used to challenge talented readers and less than challenging but high interest content would be used to engage struggling readers (Reis, McCoach, Little, Muller & Kaniskan, 2011). Instructional strategies or **processes** used to teach and stimulate student problem solving and critical thinking would include but not be limited to problem-based learning, simulations, independent study (both guided and unguided), and higher-level thinking questions. Higher-level thinking questions should incorporate critical thinking skills to enable students to conduct research, brainstorm, identify problems and develop an action plan and motivate students to pursue independent investigations of real world problems, what Renzulli calls Type III studies (Renzulli, 1977).

These types of **products** associated with a differentiated approach reflect both the learners' expression and the applied skills of a field of study. These products can be achieved through exposure to learning opportunities developed within the classroom or through the out of school environment such as agencies, museums, TV, radio, community organizations, and mentorships or apprenticeships. When differentiation is occurring in a **classroom environment**, teachers use a combination of interest and learning centers across the classroom, and organize study areas, computer stations, and work areas for products as well as artistic, literary, and scientific work. Some students will need to use additional out of school learning areas (e.g., library, gym, auditorium, lab) if the topic being investigated requires additional resources or environments that allow for freedom of movement. In the last dimension of differentiation, the **teacher** extends him/herself by becoming part of the learning exploration through direct personal experiences, by offering an opinion or belief that sparks a curiosity or confrontation with knowledge, or by modeling the love of learning. Using Renzulli's five dimensions of differentiation, educators can adapt and implement differentiation in a consistent and progressive manner to meet the needs of all learners.

Differentiation by competency, grouping, and using compacting

A recent emphasis on differentiated instruction calls for the use of assessment data to support modification of curriculum and instruction to respond to differences in students' readiness, interests, and learning profile (Renzulli, 1988; Tomlinson, 2001). Differentiated instruction emphasizes that learning is most effective when teachers are able to assess students' current levels of functioning and learning preferences, and then use this information to help students progress to more advanced levels of functioning and more advanced learning. This is exactly what the Renazulli Learning activities are developed to do. The Renzulli Learning process enables teachers to use data-based decision making to pre-assess student learning and use assessment, instruction, and data management to differentiate content.

Differentiated instruction combines flexible grouping of students with adjustments to the learning tasks; in some instances, whole group instruction is the most appropriate delivery model, while in other instances, students work in small groups or individually to complete tasks that are targeted to their own levels of readiness, interests, and learning preferences. Kulik and Kulik studied the use of some form of grouping—the practice of organizing classrooms in graded schools to combine children who are similar in ability to ascertain whether they were positive or negative effects in their meta-analysis of 31 separate studies of grouping children at the elementary school level

(1984). The studies primarily focused on grouping students within a school into different classes based on differing average ability levels. After analyzing 28 separate studies that examined effects of grouping by achievement test performance, the authors found that grouping over heterogeneous grouping worked. Another study by Tieso (2005) found that significant student achievement gains resulted when teachers used flexible within-class ability grouping. To differentiate for students in homogeneous groups, teachers should use formal and informal assessment data to determine the most appropriate learning objectives and instructional strategies to better ensure that students will gain the most learning from being placed into these instructional groups. In addition to differentiating instruction for students in tiered groups, professional development for teachers, flexibility, and a combination of different grouping structures may also attribute to student achievement. In a three-year longitudinal study, Gentry and Owen (1999) found that flexible cluster grouping had positive effects on all ability levels of students in a small rural, Midwest elementary school when accompanied by professional development.

Another proven strategy for differentiation is curriculum compacting. Curriculum compacting, a service described by Joseph Renzulli and Sally Reis (1992), is another process that can be used to eliminate or modify work that may already be mastered, and thus enable students to prove that they already know the course content. This strategy is one of the most widely used approaches to encourage curriculum differentiation (Renzulli & Reis, 1992; Reis, Renzulli, & Burns, 2016). Curriculum compacting is an instructional technique that is specifically designed to make appropriate curricular adjustments for students in any curricular area and at any grade level. Essentially, the procedure involves (1) defining the goals and outcomes of a particular unit or segment of instruction, (2) determining and documenting which students have already mastered most or all of a specified set of learning outcomes, and (3) providing replacement strategies for material already mastered through the use of instructional options that enable a more challenging and productive use of the student's time. Curriculum compacting might best be thought of as *organized common sense,* because it simply recommends the natural pattern that teachers ordinarily would follow if they were individualizing instruction for each student. In research on compacting, approximately 40 to 50% of traditional classroom material was compacted for targeted students in one or more content areas. When teachers eliminated as much as 50% of regular curricular activities and materials for targeted students, no differences were observed in post-test achievement scores between treatment and control groups in math concepts, math computation, social studies, and spelling. In science, the students who had between 40 to 50% of their curriculum eliminated actually scored significantly higher on science achievement post-tests than their peers in the control group. And students in group one whose curriculum was specifically compacted in mathematics scored significantly higher than their peers in the control group on the math concepts post-test (Reis, Westberg, Kulikowich, & Purcell, 1998).

Differentiation with enrichment

Enrichment opportunities enable children to move beyond grade level lessons and extend the regular curriculum with individualized opportunities. Examples of enrichment include exposure to new topics and ideas, training in creative and critical thinking skills, problem solving, first-hand investigative opportunities, the development of an independent study in areas of choice with individual research, and the use of advanced research methods. There are a variety of factors to consider when using enrichment to differentiate instruction and content. For example, what types of enrichment opportunities can and will be made available? Will the regular curriculum be extended with enrichment or will it be compacted and replaced with teacher-selected advanced content? Will students have the opportunity to pursue their personal interests using independent study? Enrichment can take many forms and these questions about content and how curriculum can be enriched are at the core of the decisions that guide enrichment selections.

The Triad Model, along with its larger-scale translation into the Schoolwide Enrichment Model-SEM (Renzulli, 1977; Renzulli & Reis, 1985, 1997), is one of the most popular approaches in enrichment education pedagogy (Van Tassel-Baska & Brown, 2007). This model has been applied and used with students in urban, suburban, and rural schools across the country with positive

outcomes for the last three decades (Reis & Renzulli, 2003; Renzulli & Reis, 1994). The SEM has been used widely in both gifted and regular education programs, with this broad applicability of the SEM's three central goals: developing talents in all children, providing a broad range of advanced level enrichment experiences for all students, and providing follow-up advanced learning opportunities for children based on interests.

The SEM emphasizes engagement and the use of enjoyable and challenging learning experiences constructed around students' interests, learning styles, and product styles. Renzulli's Enrichment Triad Model and the subsequent, Schoolwide Enrichment Model suggests the need for a comprehensive approach to elementary enrichment to differentiate instruction. The Enrichment Triad Model, an organizational and service delivery model, has three components: Type I enrichment (general exploratory experiences), Type II enrichment (group training activities), and Type III individual and small-group investigations of real problems. Their work includes elements such as enrichment planning teams, needs assessments, staff development, materials selection, and program evaluation.

In summary, classroom teachers can provide differentiated levels of enrichment to many students using various types of enrichment. Enrichment usually includes some or all of the following components: exposure to new topics and areas of interest, training in thinking and research skills, opportunities for self-selected investigative activities of problems that students select or are assigned by their teachers. Enrichment usually includes emphasis on authentic content and process, enabling students to serve as firsthand inquirers, and explore the structure and interconnectedness of knowledge. Enrichment teams, as advocated by Renzulli and Reis in the Schoolwide Enrichment Model, can help plan enrichment experiences for the entire school. Enrichment programs should evolve into an integral part of a differentiated system and should be regularly reviewed to determine both content effectiveness and appropriateness of delivery. All students benefit from a planned, articulated and coordinated enrichment program that will provide differentiated challenges as well as engagement and enjoyment of learning.

Differentiation using Renzulli Learning System

The main goal of the Renzulli Learning System is to provide students with experiences that help them enjoy the *process* of learning through their personal engagement. Renzulli Learning is an on-line educational profile and matching database geared to enrichment resources, creative productivity, and high-end learning that matches student interests, learning styles, and expression styles with a vast array of educational activities and resources designed to enrich students' learning process. Renzulli Learning is an exciting new, interactive online program that matches student interests, expression styles, and learning styles with a vast array of educational activities and resources, designed to enrich gifted and high potential students' learning process. Using Renzulli Learning, students can explore, discover, learn and create using the most current technology resources independently and in a safe environment.

Field (2009) studied the use of the Renzulli Learning System, an innovative on-line enrichment program based on the Enrichment Triad Model, for students in both an urban and suburban school. In this 16-week experimental study, both gifted and non-gifted students who participated in this enrichment program and used Renzulli Learning for two to three hours each week demonstrated significantly higher growth in reading comprehension than control group students who did not participate in the program. Students also demonstrated significantly higher growth in oral reading fluency and in social studies achievement than those students who did not participate (Field, 2009).

Teachers can use Renzulli Learning to differentiate instruction using four steps. The first step consists of a computer-based diagnostic assessment that creates a profile of each student's academic strengths, interests, learning styles, and preferred modes of expression. The on-line assessment, which takes about thirty minutes, results in a personalized profile that highlights individual student strengths

and sets the stage for step two of the RLS. The profile serves a compass for the second step, which is a differentiation search engine that examines thousands of resources that relate specifically to each student's profile. Student profiles can also be used to form groups of students who share common interests. A project management tool guides students and teachers to use specifically selected resources for assigned curricular activities, independent or small group investigative projects, and a wide variety of challenging enrichment experiences. Another management tool enables teachers to form instructional groups and enrichment clusters based on interests and learning style preferences. Teachers have instant access to student profiles, all sites visited on the web, and the amount of time spent in each activity. Parents may also access their own child's profile and web activities. In order to promote parent involvement, we suggest that students actually work on some of their favorite activities with their parents.

Next, the differentiation search engine matches student strengths and interests to an enrichment database of 40,000 enrichment activities, materials, resources, and opportunities for further study that are grouped into the following categories: virtual field trips, real field trips, creativity training, critical thinking, projects and independent study, contests and competitions, websites, fiction and non-fiction books, summer programs, on-line activities, research skills, and high interest videos and DVDs. These resources are not merely intended to inform students about new information or to occupy time surfing around the web. Rather, they are used as vehicles to help students find and focus a problem or creative exploration of personal interest to pursue in greater depth. Many of the resources provide the methods of inquiry, advanced level thinking and creative problem solving skills, and investigative approaches. Students are guided toward the *application of knowledge* to the development of original research studies, creative projects, and action-oriented undertakings that put knowledge to work in personally meaningful areas of interest, and provide students with suggestions for outlets and audiences for their creative products. The resources available in step two also provide students with opportunities to pursue advanced level training in their strength areas and areas of personal interest.

The third part of Renzulli Learning for students is a project organization and management plan called The Wizard Project Maker. Using this project planner, teachers can help students target their web-based explorations to undertake original research, investigative projects, and the development of a wide variety of creative undertakings. The sophisticated software used in this tool automatically locates potentially relevant web-based resources that can be used in connection with the student's investigative activity. This management device is designed to fulfill the requirements of a Type III Enrichment experience, which is the highest level of enrichment described in our discussion of the Enrichment Triad Model. Specifically, the Project Maker provides students with the metacognitive skills to define a project and set a goal; identify and evaluate both the resources to which they have access and the resources they need (e.g. time, Internet sites, teacher or mentor assistance); prioritize and refine goals; balance the resources needed to meet multiple goals; learn from past actions, projecting future outcomes; and monitor progress, making necessary adjustments as a project unfolds. The Wizard Project Maker helps students make the best use of web resources, helps to focus their interests as they pursue advanced level work, and establishes a creative and viable responsibility for teachers in their role as "the guide on the side." By helping students pursue advanced levels of challenge and engagement through the use of the Wizard Project Maker, we hope students will begin to regard their teachers as mentors rather than just as disseminators of knowledge.

The final step in the Renzulli Learning System is an automatic compilation and storage of all student activity from steps one, two, and three into an on-going student record called the Total Talent Portfolio. A management tool allows students to evaluate each site visited and resource used; students can complete a self-assessment of what they derived from the resource, and if they choose they can store favorite activities and resources in their portfolio. This feature allows easy-return-access to on-going work. The portfolio can be reviewed at any time by teachers and parents through the use of an access code, which allows teachers to give feedback and guidance to individual students and provides parents with information about students' work and opportunities for parental involvement. The Total Talent Portfolio will travel with students throughout their years at the Academy to serve as a reminder

of previous activities and creative accomplishments that they might want to include in college applications, and it is an ongoing record that can help students, teachers, guidance counselors, and parents make decisions about future educational and vocational plans.

Teacher resources in Renzulli Learning enable teachers to differentiate assignments and send tiered and compacted assignments to students by placing them in their electronic talent portfolio. Teachers can also use Renzulli Learning to group students based on their interests, learning, and expression or product styles.

How many teachers actually differentiate?

While most teachers, if asked, would indicate that they are committed to meeting students' individual needs, many teachers do not have background information to put this commitment into practice. Research demonstrates, for example, that many academically talented students receive little differentiation of curriculum and instruction and spend a great deal of time in school doing work that they have already mastered (Archambault, Westberg, Brown, Hallmark, Emmons, & Zhang, 1993; Reis, Westberg, Kulikovich, Caillard, Herbert, & Plucker, 1993; Westberg, Archambault, Dobyns, & Salvin, 1993). Many educators would like to adapt or modify or differentiate the regular curriculum for their above-average students. Accomplishing this, however, is no small task. Too little time, too many curricular objectives and poor organizational structures—all can take their toll on even the most dedicated professionals. The emphasis on differentiated instruction uses assessment data to support modification of curriculum and instruction to respond to differences in students' readiness, interests, and learning profile (Renzulli, 1988; Tomlinson, 2001). Differentiated instruction emphasizes that learning is most effective when teachers are able to assess students' current levels of functioning and learning preferences, and then use this information to help students progress to more advanced levels of functioning and more advanced learning. Differentiated instruction combines flexible grouping of students with adjustments to the learning tasks; in some instances, whole group instruction is the most appropriate delivery model, while in other instances, students work in small groups or individually to complete tasks that are targeted to their own levels of readiness, interests, and learning preferences.

Tomlinson and Allan (2000) detailed the roots of differentiated instruction as well as research relating to the importance of challenge in promoting engagement, growth, and authentic feelings of success for students (e.g., Byrnes, 1996; Csikszentmihalyi, Rathunde, & Whalen, 1993; Renzulli, 1977). Nevertheless, teachers still struggle to implement differentiated instruction, and among the challenges they face in implementing differentiation are concerns about planning for and managing differentiation, as well as fear of state assessments and little administrative support (Hertberg-Davis & Brighton, 2006; Katz et al., 2009; Moon et al., 2003; Reis et al.,1993; VanTassel-Baska & Stambaugh, 2005).

With tools like Renzulli Learning, teachers have a much easier and more focused task of implementing differentiated instruction in the classroom. And when this happens, gifted, creative and high potential students will have the opportunity to be challenged and to make continuous progress in all content areas. They will also have the time to pursue more challenging and creative work in their areas of talent, creativity and interest.

Glossary of Differentiation

Compacting- Determining goals of curriculum, assessing student mastery, and providing enrichment opportunities.

Differentiation- Matching the given content area with a student's interests, abilities, and learning styles through various instructional strategies.

Enrichment- Activities related to student's curriculum or interest area that involve higher level thinking skills and guided problem solving.

Personalized Instruction- Customizing the curriculum to students' achievement level, learning style, social-emotional concerns, interests, abilities, potential, creativity, and task commitment.

Instructional Style- Method of delivery used by teachers to stimulate learning within and beyond the

classroom.

Modification- Changing the existing curriculum either by expanding the depth or breath of the content area.

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Joseph S. Renzulli is the Neag Professor of Gifted Education and Talent Development at the University of Connecticut where he also served as the Director of the National Research Center on the Gifted and Talented for over two decades. He has spent his 40-year career in research focused on the identification and development of creativity and giftedness in young people and the use of gifted education pedagogy to increase engagement and achievement for all children. He has worked on the development of organizational models and curricular strategies for differentiated learning environments that contribute to total school improvement. A focus of his work has been the application of the pedagogy of gifted education to the improvement of learning for all students. His work on the Enrichment Triad Model was one of the first efforts on problem-based learning in the 1970's and his work on curriculum compacting and differentiation were pioneering efforts in these areas in the 1970's.