

The following is a review of instructional strategies and models supporting differentiated instruction for gifted students in the regular classroom. Instructional strategies recommended by researchers offer general classroom goals, emphasizing enrichment and open-ended activities. Additionally, researchers describe various models that apply these strategies to enhance the learning environment for gifted children.

Curriculum compacting is a teaching technique that provides gifted children with more exposure to enrichment activities (Reis & Westberg, 2004). The goals of this technique include generating more challenges for students, assuring student understanding of the curriculum, and providing more time for enrichment activities. To meet these goals, curriculum compacting allows teachers to modify the regular curriculum by removing or restructuring work formerly mastered by students. By restructuring work, learning may be customized and accelerated to meet the needs of gifted students. Furthermore, the elimination of work provides students more time to work on enrichment activities (Reis & Westberg, 2004).

To implement curriculum compacting, teachers use a specific record keeping document, The Compactor (Reis, Westberg, Kulikowich, & Purcell, 2004). The Compactor is organized into three sections: (a) curriculum areas to be considered, (b) procedures for compacting, and (c) enrichment activities. Under curriculum areas to be considered, teachers document a student's mastery of material. With the second section, teachers specify the material a student still needs to learn. Under the last section, teachers report enrichment activities that would benefit the student (Reis et al., 2004). Therefore, curriculum compacting provides teachers with a clear method to offer more enrichment activities and individualize students' learning.

In addition to curriculum compacting, other researchers offer recommendations for implementing differentiated instruction, focusing on enrichment activities with small groups of students. According to Mulhern (2003), educators can provide instruction for gifted children in the regular classroom by developing goals for subject areas that incorporate individualization and small group work. Teachers may integrate enrichment activities in the following subject areas: reading, language, social studies, art, mathematics, and science. For reading programs, Mulhern (2003) proposes educators integrate reading activities with other subjects. Some suggested goals include development of activities with reading as a primary source of acquiring information, promotion of literary analysis, and expansion of free reading time. With language arts programs, educators may promote opportunities for creativity. Examples of goals are the expansion of

grammar study and the development of story writing and telling. With social studies programs, educators may refer students to original documents and develop leadership skills with small group work. For art programs, Mulhern (2003) suggests educators integrate art into other subject areas. Furthermore, for mathematic and science programs, teachers may promote the use of mathematics in other subject areas and implement laboratory science courses. Thus, researchers encourage the use of a variety of enrichment activities to differentiate learning experiences for gifted children in the regular classroom.

Another method of differentiating instruction is the employment of open-ended activities. Stein and Poole (1997) support learner-focused curriculum by providing students with open-ended activities. To implement open-ended activities, the researchers suggest educators embrace a no boundary view of learning and recognize the possible interactions between subject areas. Additionally, teachers may encourage an open-learning environment that permits students to guide activities in various directions. The researchers also suggest teachers do not restrict students' learning with time schedules. Furthermore, with open-ended activities, teachers ought to be prepared for a variety of outcomes (Stein & Poole, 1997).

Other researchers also support differentiated instruction with the use of open-ended activities; however, they specifically emphasize differentiation through learner responses. According to Hertzog (2004), differentiation with learner responses, compared to learning experiences, involves students using favored learning styles, generating work reflective of their abilities, working at their own pace, and exploring their specific interests. Therefore, instead of differentiating the experience, all students work on the same activity. Differentiation develops from the students' different responses to the activity.

To explore how gifted students respond to open-ended questions in a differentiated environment, Hertzog (2004) interviewed third grade teachers regarding their gifted students' responses. The teachers reported that gifted students, compared to other students, spent more time on activities and elaborated on assignments with extra reading and research. Additionally, teachers found gifted students' responses to activities to correspond with their ability level. Therefore, it appears that open-ended activities promoted differentiated learning experiences and encouraged students to work at their ability levels.

In addition to instructional strategies, researchers describe various models that apply differentiated instruction using enrichment and open-ended activities. According to Olenchak

and Renzulli (2004), the Schoolwide Enrichment Model (SEM) provides differentiated instruction by offering students different opportunities to demonstrate their abilities. The structure of the SEM includes curriculum compacting, to provide appropriate level enrichment activities, and a systematic process for assessing students' abilities. Furthermore, there are three different levels of enrichment activities. First, Type I Enrichment involves general exploratory encounters, which offers students experience with multiple activities entailing various areas of study usually not included in the regular curriculum. Second, Type II Enrichment includes group training activities encouraging the development of thinking and feeling. Third, Type III Enrichment involves individual and small group examination of real problems. With Type III Enrichment, students take on the role of a professional and investigate activities. Additionally, students involved with Type III Enrichment activities demonstrate above average ability, commitment, and creativity. Furthermore, students' promotion to more advanced levels is based on their performances and responses to activities.

Olenchak and Renzulli (2004) examined responses and changes with students and teachers after the implementation of the SEM in their schools. Results indicated that students expressed positive views about instructional alterations created by the SEM, such as consideration of students' interests in planning activities. Students' attitudes about learning also improved. Additionally, after the implementation of the SEM, teachers became more involved with shared planning. Furthermore, the researchers found students' creative products to increase (Olenchak & Renzulli, 2004). Similarly, Schack (as cited in Friedman & Lee, 1996) found students involved with Type III Enrichment to demonstrate more creative production. Therefore, research suggests that the SEM provides differentiated instruction with different levels of activities, enhances the learning environment for students and teachers, and increases students' creative output.

Another model emphasizing students' creativity as well as thinking abilities is the Multiple Talent Model (Friedman & Lee, 1996). This model developed from research on intelligence, creativity, and functional intelligence. The Multiple Talent Model suggests more students will surface as talented if teachers recognize additional types of aptitudes and provide opportunities for talent to materialize. Hence, there is an assumption that talent emerges from instruction, specifically differentiated curriculum. Additionally, the Multiple Talent Model identifies a broad range of talents: academic, creativity, communicating, forecasting, decision-

making, planning, implementing, human relations, and discerning opportunities. Furthermore, researchers have also found students' creativity to increase after implementation of the Multiple Talent Model (Friedman & Lee, 1996). Thus, research indicates that this model promotes creativity and enhances students' talents by providing differentiated experiences.

Similarly, the Cognitive-Affective Interaction Model focuses on developing creative-thinking processes (Friedman & Lee, 1996). The model's structure includes 6 curriculum subjects, 8 student behaviors associated with creativity, and 18 teacher behaviors related to improving creativity. Implementation of the model involves educators evaluating the regular curriculum, collecting student data, and determining underdeveloped areas concerning creative thinking. Once areas are discovered, educators develop multiple activities emphasizing creativity and considering learning processes. Activities may include provoking questions that encourage students to think creatively (Friedman & Lee, 1996). Therefore, the Cognitive-Affective Interaction Model promotes differentiated instruction and the development of creativity by having educators customize activities for their particular needs.

Friedman and Lee (1996) explored how the Enrichment Triad Model (associated with the SEM), the Multiple Talent Model, and the Cognitive-Affective Interaction Model each affected two classroom elements: cognitive complexity and student involvement. Cognitive complexity involved teacher questions and student responses, while student involvement encompassed on-task behavior. The researchers examined the models by interviewing teachers and observing instruction in fourth and fifth grade classrooms implementing the models. For the Enrichment Triad Model, researchers did not find an increase in cognitive complexity; however, teachers reported a rise in student enthusiasm and independence. Concerning the Multiple Talent Model, results indicated an initial increase in cognitive complexity. Additionally, teachers believed the model encouraged more productive thinking and active student involvement. For the Cognitive-Affective Interaction Model, researchers found the highest increase in cognitive complexity. Teachers also reported more student interest and higher cognitive and creative thinking (Friedman & Lee, 1996). Thus, research suggests all three models improve student involvement and interest. Furthermore, the Multiple Talent Model and the Cognitive-Affective Interaction Model appear to cause an initial increase with cognitive complexity in the classroom.

Like previous models, the Multidimensional Curriculum Model supports differentiated instruction with the use of challenging activities (Morelock & Morrison, 1999). The model was

specifically designed to address the needs of young gifted children and has been successfully put into practice in kindergarten classrooms. The model may be implemented in mixed-ability or homogeneous gifted classrooms. Additionally, the model's structure includes five levels advancing in complexity, in which students may either progress through the levels or remain at the same level. Level one focuses on concrete and direct experiences. In the second level, teachers present information children may only be familiar with because of secondary sources. Additionally, this level involves children developing ideas and comparisons. Level three includes complex and abstract content. Moreover, teachers promote evaluation and different ways of thinking. Level four involves students exploring content over a variety of contexts. With level five, students are encouraged to make connections across subject matters and link the known with the unknown.

According to Morelock and Morrison (1999), the implementation of the model varies for individual students, depending on their learning abilities and interests. The researchers have observed students in mixed-ability classrooms to unintentionally select activities and groups that match their ability level. Additionally, teachers allow groups to naturally form and facilitate higher-level activities. The researchers support the implementation of this model because it provides multiple experiences for students with a broad range of abilities. Therefore, the Multidimensional Curriculum Model supports a child directed environment with teacher support. Furthermore, students have the opportunity to participate in a variety of activities that fit their needs and ability level.

Another model emphasizing student exposure to multiple experiences is DISCOVER (Maker, Rogers, Nielson, & Bauerle, 1996). The goals of DISCOVER, based on Gardner's Theory of Multiple Intelligence, are to develop students' multiple intelligences, offer structured and unstructured problem-solving activities, encourage hands-on learning with centers, incorporate culture into the curriculum, and structure lessons around abstract themes. Additionally, students have freedom to make choices with whole group, small group, and individual activities. Students also have choices regarding whether they work alone or with others, what they would like to contribute to the group activity, and what intelligences they wish to use in learning a concept (Maker et al., 1996). Thus, DISCOVER uses differentiated instruction by allowing students to make choices with activities facilitated by educators.

Maker et al. (1996) explored whether the use of the DISCOVER model in the classroom affected students' problem solving and increased identification of gifted students. The researchers found student's problem solving to have risen at the end of the year, specifically with spatial and storytelling activities. Additionally, there was an increase in students identified as gifted at the end of the year, including Spanish-speaking children (Maker et al., 1996). Therefore, research indicates that DISCOVER offers an enriched environment, enhancing students' problem solving.

Similar to DISCOVER, the Integrated Developmental Model offers students opportunities to make choices with activities developed around abstract themes (Garner, Haugland, Spezia, & Boissoneau, 1990). This model occurs in multi-aged classrooms, with students working alone or with peers. Educators allow students to select activities, yet have an active role by offering support, stressing problem solving, and modifying activities to develop children's abilities. Additionally, activities and learning centers provide students with opportunities to manipulate objects, formulate hypotheses, and consider strategies to solve problems. Furthermore, activities integrate different subject areas, such as mathematics, science, and language; thus, encouraging learning processes instead of focusing on grades and tests (Garner et al., 1990).

According to Garner et al. (1990), the Integrated Developmental Model is a useful approach for all children; however, it is especially beneficial for gifted students. First, this approach allows students to pursue activities at their own pace; therefore, gifted students may move forward with activities instead of waiting for other students to complete work. Second, the model provides gifted students with the opportunity to plan, implement, and assess challenging activities. Third, by promoting choices, the model supports curiosity and exploration. Fourth, the multi-aged classroom offers gifted students opportunities to collaborate with older students who may have similar abilities (Garner et al., 1990). Therefore, researchers recommend the Integrated Developmental Model as a favorable approach for educating gifted students.

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