Research That Supports Using the Schoolwide Enrichment Model and Extensions of Gifted Education Pedagogy to Meet the Needs of All Students

Sally M. Reis

The Schoolwide Enrichment Model (SEM) (Renzulli, 1977; Renzulli & Reis, 1985, 1997) is widely implemented as an enrichment program used with academically gifted and talented students and a magnet theme or schoolwide enrichment approach for all students. The SEM provides enriched learning experiences and higher standards for all children through three goals: developing talents in all children, providing a broad range of advanced level enrichment experiences for all students, and providing follow-up advanced learning 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.

Recently, a new on-line version of the SEM has become available called Renzulli Learning (RL) that assesses students' interests, learning styles, and product styles and matches them to a unique, individualized database of enrichment activities. RL also offers a Wizard Project Maker to assist students in creating projects and has a series of teacher tools to implement differentiation as well as offer enrichment opportunities to match students' interests, learning styles, and product styles.

Separate studies on the SEM have demonstrated its effectiveness in schools with widely differing socioeconomic levels and program organization patterns (Olenchak, 1988; Olenchak & Renzulli, 1989). The SEM has been adopted in over 2,500 schools across the country (Burns, 1998) and programs using this approach have been widely implemented internationally. The effectiveness of the model has been studied in over 20 years of research and field-testing related to the following topics:

1. the effectiveness of the model as perceived by key groups, such as principals (Cooper, 1983; Olenchak, 1988);
2. research related to student creative productivity (Burns, 1987; Delcourt, 1993; Gubbins, 1982; Newman, 1991; Reis & Renzulli, 1982; Starko, 1986);
3. research related to personal and social development (Olenchak, 1991);
4. the use of SEM with culturally diverse or special needs populations (Baum, 1988; Baum, Renzulli, & Hébert, 1999; Emerick, 1988; Taylor; 1992)
5. research on student self-efficacy (Schack, 1986; Schack, Starko, & Burns, 1991; Starko, 1986),
6. the use of SEM as a curricular framework (Karafelis, 1986; Reis, Gentry, & Maxfield, 1998; Reis, 2005; Reis & Fogarty, 2006);
7. research relating to learning styles and curriculum compacting (Imbeau, 1991; Reis et al., 1993); and
8. longitudinal research on the SEM (Delcourt, 1993; Hébert, 1993; Westberg, 1999).

This research on the SEM suggests that the model is effective at serving high-ability students in a variety of educational settings and in schools serving diverse ethnic and

socioeconomic populations. These studies also suggest that the pedagogy of the SEM can be applied to various content areas resulting in higher achievement when implemented in a wide variety of settings. The model is effective with diverse populations of students, including high ability students with learning disabilities and those who underachieve. A comprehensive list of studies on the SEM that extend the use of gifted education pedagogy to all students is included in Table 1, and some are highlighted below.

Studies on Curriculum Compacting and Differentiated Instruction

Specific studies that investigated achievement include a study on curriculum compacting that found that when teachers eliminated as much as 50% of the regular curriculum for gifted students, they scored as well or better in the out-of-level post achievement tests, using the Iowa Tests of Basic Skills, ITBS. For example, students whose curriculum was eliminated in science scored significantly higher science achievement tests than did the control group whose curriculum was not compacted. Students whose curriculum was compacted in mathematics scored significantly higher in the math concepts Iowa subtest than did control group students whose curriculum was not compacted in mathematics.

In another recent study, the Schoolwide Enrichment Model in Reading (SEM-R) and (Reis, et al., 2005; Reis & Fogarty, 2006) was used to investigate the effects of an enrichment approach to reading on elementary school students' reading achievement and attitudes toward reading. The SEM-R provides enriched reading experiences by exposing students to books in their areas of interest, daily supported independent reading of challenging self-selected books using differentiated reading instruction, and interest-based choice opportunities in reading. Researchers found that when they eliminated 5 hours of regular grouped reading instruction and replaced it with short conferences and enriched reading based on interests, significant differences were found, favoring the SEM-R group, in reading fluency and attitudes toward reading.

In a second related study on the SEM-R (Reis, McCoach, Coyne, Schreiber, Eckert, Gubbins, 2007) a randomized design investigated the effects of this enriched reading program on urban elementary students' reading comprehension, reading fluency, and attitude toward reading. All students participated in the direct instructional approach, *Success for All* (*SFA*), for 90 minutes each morning. In an attempt to increase reading scores, a daily one-hour afternoon remedial literacy program was implemented each afternoon using workbooks and test preparation instruction instead of teaching social studies and science. In this study teachers were randomly assigned to teach the treatment or control groups, and students were randomly assigned to either participate in the SEM-R treatment group or continue in the control group to receive remedial reading instruction and test preparation for 12 weeks during an afternoon literacy block. Results indicate that students in the SEM-R treatment group scored statistically significantly higher than those in the control group in both oral reading fluency and attitudes toward reading.

Studies on Underachievement and Social Emotional Development

Baum, Renzulli, and Hébert (1999) conducted research with teachers who guided 17 gifted underachieving students (ages 8-13) in the completion of Type III self-selected products based on their interests as part of the SEM. Positive gains were made by 82% of the students who were no longer underachieving in their school setting at the end of the intervention.

Studies on Extending Gifted Education Pedagogy to Meet the Needs of All Students

Reis, Gentry, and Maxfield (1998) investigated the impact of providing one type of gifted education pedagogy, enrichment clusters, to the entire population of two urban elementary schools. Enrichment clusters provided a regularly scheduled weekly time for students to work with adult facilitators to complete a product or provide service in a shared interest area. Teaching practices of classroom teachers who participated as cluster facilitators were affected both in the enrichment clusters and in regular classrooms. More challenging content was integrated into 95% of the clusters through teaching specific authentic methodologies, advanced thinking, and problem solving strategies. Starko (1986) found that students involved in SEM enrichment group reported over twice as many creative projects per student as those in a comparison group and that they showed greater diversity and sophistication in projects.

Studies on Using Gifted Education Pedagogy to Nurture Mathematical Talent

In a recent study (Gavin, Casa, & Adelson, 2006; Gavin & Adelson, 2008; Gavin, et al., 2007), math achievement was investigated using Project M^3: Mentoring Mathematical Minds curriculum units. These units were created specifically to provide high-end learning with challenging and motivational investigations for talented math students in grades 3, 4, and 5. Researchers found that two cohorts of students made consistently significant gains on achievement in math concepts, computation, and problem solving on the Iowa Tests of Basic Skills each year over a 3-year period. Both cohorts of students using the curriculum also outperformed a comparison group of students of like ability from the same schools. There also were highly significant gains on challenging open-ended problems adapted from international and national assessments in favor of students using the Project M^3 curriculum over the comparison group.

Studies on Renzulli Learning

Eleck (2006) studied students in enrichment and regular classrooms who used Renzulli Learning, finding that students could use the program with minimal training. Almost 50% of students had ideas for completing products using Renzulli Learning, and 80% enjoyed using Renzulli Learning completely or very much. Eleck (2007) subsequently conducted intensive case studies of six, fifth grade students who developed mathematics enrichment projects using Renzulli Learning. Findings suggest that RL assists students in developing project ideas, exploring topics, and organizing information for a final product. Students who used RL created amazing presentations using PowerPoint or iMovie to convey the information they learned through the development of mathematics enrichment projects with RL.

Field (2007) used quantitative research procedures in this empirical study to investigate the use of Renzulli Learning on oral reading fluency, reading comprehension, science achievement, and social studies achievement. Students were involved in the study from two schools, an urban middle school where nearly half of all students are considered to be at risk due to poverty or other factors, and a suburban elementary school in a middle class neighborhood. Classes of students in grades 3 – 5 (n = 185) and grades 6 – 8 (n = 198) were randomly assigned to use Renzulli Learning for 2-3 hours each week for a 16-week period. Scores of students in the

treatment groups were compared to those of students who did not have the opportunity to use Renzulli Learning in control classes in the same schools. After only 16 weeks, students who participated in Renzulli Learning demonstrated significantly higher growth in reading comprehension, oral reading fluency, and social studies achievement than students who did not participate in Renzulli Learning.

This collected body of research suggests that the SEM and related extensions of gifted education pedagogy can be used to increase engagement and enjoyment of learning, as well as to extend interest and enrichment-based learning opportunities to more students. It also suggests that when educators use enrichment-based teaching and learning practices, students achieve as well or better than when the focus is on traditional or remedial practices.

Table 1.
Research Summary of Studies Related to SEM and Renzulli Learning

Author & Date	Title of Study	Sample	Research Findings
Student Creative Productivity			
Gubbins, 1982	Revolving Door Identification Model: Characteristics of talent pool students	E N=776	• Academic self-concept predicted student involvement with product development; students who did not generate self-selected projects (Type IIIs) attributed the lack of product development to time management problems and difficulty in generating product ideas.
Reis, 1981	An analysis of the productivity of gifted students participating in programs using the Revolving Door Identification Model	E N=1,280	• Students in the expanded talent pool (5-20%) produced products of equal quality as compared to students in the top 3-5% of the population.
Schack, 1986; Schack, Starko, & Burns, 1991	Creative productivity and self-efficacy in children	E, M N=294	• Self-efficacy was a significant predictor of initiation of an independent investigation; self-efficacy at the end of treatment was higher in students who participated in Type III projects.
Starko, 1986	The effects of the Revolving Door Identification Model on creative productivity and self-efficacy	E N=103	• Students who became involved with self-selected independent studies in SEM programs initiated their own creative products both inside and outside school more often than students who qualified for the program but did not receive services. • Students in the enrichment group reported over twice as many creative projects per student (3.37) as the comparison group (.50) and showed greater diversity and sophistication in projects. • The number of creative products completed in school (Type IIIs) was a highly significant predictor of self-efficacy.
Burns, 1987	The effects of group training activities on students' creative productivity	E N=515	• Students receiving process skill training were 64% more likely to initiate self-selected projects (Type IIIs) than the students who did not receive the training.
Baum, 1988	An enrichment program for gifted learning disabled students	E N=7	• The Type III study, used as an intervention with high ability, learning disabled students, improved students' behavior, specifically the ability to self-regulate time on task; improvement in self-esteem; and the development of specific instructional strategies to enhance the potential of high potential, learning disabled students.
Newman, 1991	The effects of the Talents Unlimited Model on students' creative productivity	E N=147	• Students with training in the Talents Unlimited Model were more likely to complete independent investigations (Type IIIs) than the students who did not receive the training.
Hébert, 1993	Reflections at graduation: The long-term impact of elementary school experiences in creative productivity	S N=9 (longitudinal)	• Five major findings: Type III interests of students affect post-secondary plans; creative outlets are needed in high school; a decrease in creative Type III productivity occurs during the junior high experience; the Type III process serves as important training for later productivity; non-intellectual characteristics with students remain consistent over time.

Table 1. *(continued)*
Research Summary of Studies Related to SEM and Renzulli Learning

Author & Date	Title of Study	Sample	Research Findings
Delcourt, 1993	Creative productivity among secondary school students: Combining energy, interest, and imagination	S N=18 (longitudinal)	• Students participating in Type III projects, both in and out of school, maintained interests and career aspirations in college. • Research study supports the concept that adolescents and young adults can be producers of information, as well as consumers. • Student giftedness, as manifested in performances and product development, may be predicted by high levels of creative/productive behaviors at an early age.
Westberg, 1999	A longitudinal study of students who participated in a program based on the Enrichment Triad Model in 1981-1984	E, S N=15 (longitudinal)	• Students maintained interests over time and were still involved in creative productive work
Special Populations and Affective Issues			
Baum, 1988	Learning disabled students with superior cognitive abilities: A validation study of descriptive behaviors	E N=112	• SEM recommended as one vehicle to meet the unique needs of gifted students with learning disabilities because of the emphasis on strengths, interests, and learning styles.
Baum, Hébert, & Renzulli, 1999	Students who underachieve	E, M N=17	• Reversal of underachievement through the use of SEM Type III projects
Emerick, 1988	Academic underachievement among the gifted: Students' perceptions of factors relating to the reversal of academic underachievement patterns	H+ N=10	• Reversal of academic underachievement through use of various components of SEM including curriculum compacting, exposure to Type I experiences, opportunities to be involved in Type III studies, and an appropriate assessment of learning styles to provide a match between students and teachers. • To reverse the academic underachievement in gifted students, the following factors must be considered: • out-of-school interests • parents • goals associated with academic performance • classroom instruction and curriculum • teachers • changes in the self
Olenchak, 1991	Assessing program effects for gifted/learning disabled students	P, E N=108	• Research study supported use of SEM as a means of meeting educational needs of a wide variety of high ability students. • SEM, when used as an intervention, was associated with improved attitudes toward learning among elementary, high ability students with learning disabilities. Furthermore, the same students, who completed a high percentage of Type III projects, made positive gains with respect to self-concept.

Table 1. *(continued)*
Research Summary of Studies Related to SEM and Renzulli Learning

Author & Date	Title of Study	Sample	Research Findings
Taylor, 1992	The effects of the Secondary Enrichment Triad Model on the career development of vocational-technical school students	S N=60	• Involvement in Type III studies substantially increased post-secondary education plans of students (from attending 2.6 years to attending 4.0 years).
Heal, 1989	Student perceptions of labeling the gifted: A comparative case study analysis	E N=149	• SEM was associated with a reduction in the negative effects of labeling.
Reis, Schader, & Milne, & Stephens, 2003	Music & minds: Using a talent development approach for young adults with Williams syndrome	S N=16	• One third of the participants had high levels of musical talent. • The use of participants' interests and advanced training in music was found to both enhance all participants' understanding of mathematics and to provide opportunities for the further development of their interests and abilities, especially their potential in music. • The use of a talent development approach focusing on strengths, interests, and style preferences was found to be successful for this group of young persons with Williams Syndrome.
SEM as Applied to School Change			
Olenchak, 1988	School change through gifted education: Effects on elementary students' attitudes toward learning	P, E N=1,935	• Positive changes in student attitudes toward learning as well as toward gifted education and school in general.
Olenchak, 1988; Olenchak & Renzulli, 1989	The Schoolwide Enrichment Model in elementary schools: A study of implementation stages and effects on educational excellence	P, E N=236 teachers N=1,698 students	• SEM contributed to improved attitudes of teachers, parents, and administrators toward education for high ability students.
Cooper, 1983	Administrator's attitudes toward gifted programs based on the Enrichment Triad/Revolving Door Identification Model: Case studies in decision-making	8 districts N=32	• Administrator perceptions regarding the model included greater staff participation in education of high ability students, more positive staff attitudes toward the program, fewer concerns about identification, positive changes in how the guidance department worked with students, and more incentives for students to work toward higher goals. • Administrators found SEM to have an impact on all students.

Table 1. *(continued)*
Research Summary of Studies Related to SEM and Renzulli Learning

Author & Date	Title of Study	Sample	Research Findings
Reis, Gentry, & Maxfield, 1998	The application of enrichment clusters to teachers' classroom practices	E 2 schools N=120 teachers	• Teachers trained to use enrichment clusters as part of the enrichment program were able to transfer and implement the use of advanced content and methods in their regular classrooms. • Methods used by teachers included: advanced content and methods, advanced vocabulary, authentic tools of the disciplines, advanced references, and problem solving
Curriculum Modification; Learning and Product Styles			
Gubbins, et al., 2002	Implementing a professional development model using gifted education strategies with all students	E, M N=40 liaisons N=235 teachers	• Liaisons became local experts in modifying, differentiating, and enriching curriculum; teachers raised expectations for students' work; teachers recognized the need to provide challenging academic options
Imbeau, 1991	Teachers' attitudes toward curriculum compacting with regard to the implementation of the procedure	P, E, M, S N=166	• Group membership (peer coaching) was a significant predictor of posttest teachers' attitudes. • Comparisons of teachers' attitudes toward curriculum compacting indicate a need for additional research on variables that enhance and inhibit the use of curriculum compacting as a classroom strategy.
Kettle, Renzulli, & Rizza, 1997	Products of mind: Exploring student preferences for product development using My Way...An Expression Style Instrument	E, M N=3,532	• Students' preferences for creating potential products were explored using an Expression Style Instrument. Factor analytic procedures yielded the following 11 factors: computer, service, dramatization, artistic, audio/visual, written, commercial, oral, manipulative, musical, and vocal.
Reis, Westberg, Kulikowich, & Purcell, 1998	Curriculum compacting and achievement test scores: What does the research say?	K, E, M N=336	• Using curriculum compacting to eliminate between 40%-50% of curricula for students with demonstrated advanced content knowledge and superior ability resulted in no decline in achievement test scores.
Application of SEM to Curriculum and Related Achievement Increases			
Karafelis, 1986	The effects of the tri-art drama curriculum on the reading comprehension of students with varying levels of cognitive ability	E, M N=80	• Students receiving experimental treatment did equally well on achievement tests as the control group.

Table 1. *(continued)*
Research Summary of Studies Related to SEM and Renzulli Learning

Author & Date	Title of Study	Sample	Research Findings
Reis, et al., 2005	The Schoolwide Enrichment Model in Reading	E, M N=1,500	• Students who participated in an enriched reading program based on SEM had significantly higher scores in reading fluency and reading comprehension than students in the control group. • Students who participated in an enriched reading program based on SEM had significantly higher attitudes toward reading than students did in the control group.
Reis, et al., 2007	The Schoolwide Enrichment Model in Reading	E N=226	• Results indicate that students in the SEM-R treatment group scored statistically significantly higher than those in the control group in both oral reading fluency and attitudes toward reading.
Eleck, 2005	Implementing Renzulli Learning in enrichment programs and classrooms	E, M N=200	• Students in enrichment and regular classrooms used Renzulli Learning with minimal training. • Almost 50% of students had ideas for completing products using Renzulli Learning; 80% enjoyed using Renzulli Learning completely or very much. • Each of the pilot teachers using the system assigned projects to students on-line.
Eleck, 2006	Projects by gifted mathematics students: A case study of six student processes using Renzulli Learning Systems as a guide	E, M N=200	• Students in enrichment programs successfully used Renzulli Learning to complete advanced mathematical projects using advanced on-line resources.
Field, 2007	An experimental study using Renzulli Learning to investigate reading fluency and comprehension as well as social studies achievement	E, M N=383	• After 16 weeks, students who participated in Renzulli Learning for 2-3 hours each week demonstrated significantly higher growth in reading comprehension than students who did not participate in Renzulli Learning. • Students who participated in Renzulli Learning demonstrated significantly higher growth in oral reading fluency than those students who did not participate in Renzulli Learning. • Students who participated in Renzulli Learning demonstrated significantly higher growth in social studies achievement than those students who did not participate in Renzulli Learning.
Gubbins, Housand, Oliver, Schader, & De Wet, 2007	Unclogging the mathematics pipeline through access to algebraic understanding: University of Connecticut site	M N=5 teachers N=73 students	• Grade 6 students identified for an after-school program in algebra using grade 8, norm-referenced achievement and algebra aptitude tests; 30 hour intervention yielded significant pre/post achievement results in problem solving and data interpretation (17-point gain), and algebra tests

*P=Primary grades, K-2; E=Elementary grades, 3-5; M=Middle grades, 6-8; S, H=Secondary or High School grades, 9-12. PS=Post secondary grades.

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