

# The National Research Center on the Gifted and Talented: Recent Studies and a Look at the Future of Research in Our Field

Joseph S. Renzulli, E. Jean Gubbins,  
& Jennifer L. Koehler

*The National Research Center on the Gifted and Talented (NRC/GT) is funded by the U.S. Department of Education, Institute of Education Sciences. This special issue of the Journal for the Education of the Gifted highlights a few of the research studies conducted from 1995–2000. These selected studies have a common thread as they all address teaching and learning from the perspective of changing behaviors, strategies, and practices. Each study is also responsive to our commitment to quantitative and qualitative studies that are problem based, practice relevant, and consumer oriented. More information about our research studies is available from <http://www.gifted.uconn.edu>.*

You can't open a door unless you have a house.  
—Tom Stoppard, screenwriter for *Shakespeare in Love*

## Background

The National Research Center on the Gifted and Talented (NRC/GT) has been in continuous operation since October 1, 1990. It has provided the “house” that has allowed us to open many doors that came to our attention through the needs assessment studies that have guided the center’s research agenda. The center is a consortium of three permanent universities (Connecticut, Yale, and Virginia), with other universities and researchers in the field that have participated on a collaborative basis because of expertise in specialized areas. The center also includes 365 collaborative school

---

Joseph S. Renzulli is the Neag Professor of Gifted Education and Talent Development at the University of Connecticut, Storrs, and director of The National Research Center on the Gifted and Talented. E. Jean Gubbins is Associate Professor in the Department of Educational Psychology at the University of Connecticut, Storrs, and associate director of The National Research Center on the Gifted and Talented. Jennifer Koehler is a graduate student in the Department of Educational Psychology at the University of Connecticut, Storrs.

*Journal for the Education of the Gifted*. Vol. 27, No. 2/3, 2003, pp. 107–118.  
Copyright ©2003 The Association for the Gifted, Reston, VA 20191-1589.

districts throughout the nation that have agreed to serve as sites for carrying out individual projects and state departments of education that have participated in needs assessment studies and the facilitation of research projects. All of the center's work is supported by grants from the Institute of Education Sciences of the U.S. Department of Education and the Jacob K. Javits Gifted and Talented Students Education Act.

NRC/GT's mission is to plan and conduct theory-driven quantitative and qualitative research that is problem-based, practice-relevant, and consumer-oriented. We view the center's work as a way of providing a strong research base to the field and as a vehicle for contributing to the broader goals of gifted education, such as providing scientifically based instruments, curricular materials, program development strategies, and resources for schools that are designed to translate theory and research into effective practices. Our goals include the following:

1. conducting research that focuses on the needs of low-income students, individuals of limited English proficiency, and other special populations that traditionally have been underserved in programs for gifted and talented students;
2. a broad-based training and dissemination function that is designed to translate research findings into practical applications for teachers, administrators, parents, and policymakers;
3. the formation of a nationwide cooperative of researchers, practitioners, policymakers, and other persons and groups that have a stake in the psychology and education of high-potential youth from preschool through postsecondary levels; and
4. serving as a vehicle for providing the kinds of intellectual and practical leadership necessary for the further stimulation, advancement, and improvement of theory, research, and practice in the field.

Figure 1 depicts the overall organizational structure of the center, and a cumulative list of completed studies and materials available to practitioners and researchers can be found on our Web site (<http://www.gifted.uconn.edu>).

Throughout 14 years of designing and conducting research studies all over the country, we have sought input from educators and researchers on issues that will inform and affect their knowledge, understanding, and, ultimately, teaching and learning strategies and practices. We also have responded to guidance from the U.S. Department of Education's research agenda representing ideas from a broad base of constituents.

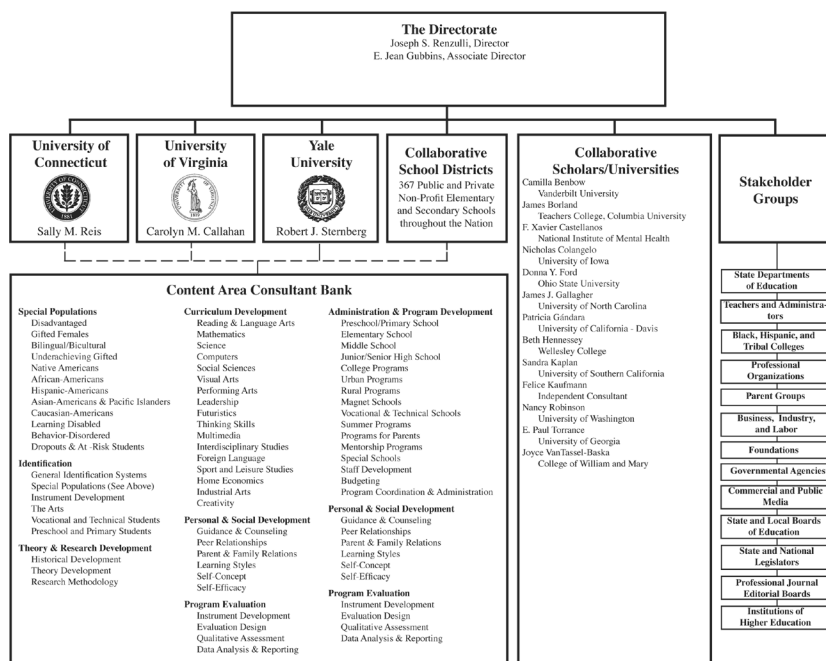


Figure 1. Organizational structure of the NRC/GT

With this guidance in mind, we designed research proposals that would add to and extend contemporary and historical research bases related to meeting the needs of gifted and talented students by analyzing the conditions of teaching and learning cycles. Four studies from the 1995–2000 agenda are highlighted in this special issue of the *Journal for the Education of the Gifted*. These studies have a common thread as they all address teaching and learning from the perspective of changing behaviors, strategies, and practices. Each study is also responsive to our commitment to quantitative and qualitative studies that are problem-based, practice-relevant, and consumer oriented. One or two studies will be previewed under each of these design and development characteristics of NRC/GT research.

## Problem Based

As researchers, we investigate the educational landscape within and outside classrooms. Our firsthand knowledge provokes questions and

leads to problems that are not only suitable for further study, but warrant attention. Using the perspective of changing behaviors, strategies, and practices, it was important to analyze the contributions of other researchers and scholars whose work built a case for such change.

In the article entitled "Differentiating Instruction in Response to Student Readiness, Interest, and Learning Profile in Academically Diverse Classrooms: A Review of Literature," Tomlinson et al. concentrated on academically diverse classrooms and the need for improvement of strategies and practices. These researchers recognized the long-held assumption that organizing schools by grade levels associated with students' chronological age is most appropriate. Part of the reason for the longevity of this assumption is the ultimate leverage for decision making due to the ease of placement of students into grades. Tomlinson et al. assert,

Seated side by side in classrooms that still harbor a myth of "homogeneity by virtue of chronological age" are students with identified learning problems; highly advanced learners; students whose first language is not English; students who underachieve for a complex array of reasons; students from broadly diverse cultures, economic backgrounds, or both; students of both genders; motivated and unmotivated students; students who fit two or three of these categories; students who fall closer to the template of grade-level expectations and norms; and students of widely varying interests and preferred modes of learning. (pp. 119–120)

The problem of interest addressed in the Tomlinson et al. study centered on using extant literature to develop a rationale for differentiating instruction in response to student readiness, interest, and learning profile. However, to engage fully in the arguments in support of differentiating instruction, one belief that may be a reality for some educators needs to be held in abeyance while reading this article: *Heterogeneous classes offer equal opportunities to learn*. Tomlinson et al. contend that "equality of opportunity becomes a reality only when students receive instruction suited to their varied readiness levels, interests, and learning preferences, thus enabling them to maximize the opportunity for growth (McLaughlin & Talbert, 1993)" (p. 120).

The reality of equality of opportunity can be realized through differentiation, which is defined as

an approach to teaching in which teachers proactively modify curriculum, teaching methods, resources, learning activities, and student products to address the diverse needs of individual

students and small groups of students to maximize the learning opportunity for each student in a classroom (Bearne, 1996; Tomlinson, 1999). (Tomlinson et al., p. 121)

Differentiation is part of preplanning lessons and units, not last-minute substitutions or alternatives to learning. Theoretical and research support for differentiation presented by NRC/GT researchers is just a small part of the existing research base.

Differentiation as a response to student readiness is acknowledged by Bransford, Brown, and Cocking (1999) and Vygotsky (1978, 1986), who support the perspective on teaching and learning that a "teacher's job is to push the child into his or her zone of proximal development, coach for success with a task slightly more complex than the child can manage alone and, thus, push forward the area of independence" (Tomlinson et al., p. 126). If instruction is presented at or below the child's level of understanding, there will be no growth in learning. As stated by Byrnes (1996), "instruction should always 'be in advance' of a child's current level of mastery" (p. 33).

Differentiation of curriculum and instruction as a response to student interest is linked to motivation, short- and long-term impacts on learning, productivity, achievement, creativity, student autonomy, acceptance of challenge, and persistence with tasks. A small sampling of the researchers cited in the Tomlinson et al. article includes Amabile (1996); Bruner (1961); Csikszentmihalyi, Rathunde, and Whalen (1993); Hébert (1993); Sharan and Sharan (1992); and Torrance (1995).

Responding to students' learning profile refers to modes of learning that include learning style and intelligence preference. Theorists analyze preferences in the environment that may be controlled, such as light, temperature, time of day (see Dunn, 1996), or types of intelligence (analytical, creative, or practical; see Sternberg, 1997). Although there may not be an easy way to respond to multiple styles of learning and thinking, there is a commonsense approach to teaching and learning, as stated by Tomlinson et al.:

The goal of effective instruction seems to be adequate flexibility in a teacher's mode of presentation and in a student's options for learning and expressing learning so that an individual can generally find a match for his or her learning-profile preferences. (p. 131)

The extant literature provides the rationale for differentiation based on student readiness, interest, and learner profile. However, it is just the beginning for the ultimate support needed to change teacher beliefs and pedagogy in response to learner variance.

### Practice Relevant

Sternberg and Grigorenko present the theory of successful intelligence in their article, "Teaching for Successful Intelligence: Principles, Procedures, and Practices," to illuminate reasons many children, including those who are gifted and talented, do not perform at optimal levels. Intelligence is described as multidimensional, and "teaching for successful intelligence is designed to help ensure that all children can capitalize on their gifts, as well as correct or compensate for skill sets in which they have not developed gifts" (p. 208). These researchers present a "capsule description" of the theory through examples and analogies. People generate ideas through creative abilities, determine the quality of ideas through analytical abilities, and implement ideas and convince others of their worth through practical abilities.

Sternberg and Grigorenko follow their explanation of the theory by describing its relevance in classrooms. They encourage teachers to "teach and assess achievement in ways that enable students to analyze, create with, and apply their knowledge. When students think to learn, they also learn to think" (p. 215). They offer a host of strategies for teaching analytically, creatively, and practically. Analytical teaching encourages students to analyze, critique, judge, compare and contrast, evaluate, and assess. Analytical strategies suggested by Sternberg and Grigorenko include the following:

Analyze the development of the character of Heathcliff in *Wuthering Heights*. (p. 216)

Compare and contrast the respective natures of the American Revolution and the French Revolution, pointing out ways both in which they were similar and those in which they were different. (p. 216)

Teaching creatively means encouraging students to (a) create, (b) invent, (c) discover, (d) imagine if . . . , (e) suppose that . . . , (f) predict. (p. 216)

Suppose that you were to design one additional instrument to be played in a symphony orchestra for future compositions. What might that instrument be like, and why? (p. 217)

Predict changes that are likely to occur in the vocabulary or grammar of spoken Spanish in the border areas of the Rio

Grande over the next 100 years as a result of continuous interactions between Spanish and English speakers. (p. 217)

Teaching practically encourages students to apply, use, put into practice, implement, employ, and render practical. For example,

Apply the formula for computing compound interest to a problem people are likely to face when planning for retirement. (p. 217)

Render practical a proposed design for a new building that will not work in the aesthetic context of the surrounding buildings, all of which are at least 100 years old. (p. 218)

These suggestions for approaching teaching and learning offer practical and relevant curricular and instructional approaches that will promote successful intelligence and help students capitalize on their gifts and talents.

Practice relevant as a characteristic of NRC/GT research is also evident in Brighton's article on "The Effects of Middle School Teachers' Beliefs on Classroom Practices." Middle school teachers worked with professional developers who presented, demonstrated, and reinforced differentiated approaches to instruction and assessment. They also had access to monthly coaching sessions related to the philosophy and practices associated with differentiation. As teachers participated in professional development and worked with coaches, they "believed that they already incorporated the classroom practices they heard" (p. 185). When teachers "recognized that they had not yet implemented the ideas, many believed that the new practices were aligned with their (then) current methods, simply more refined and structured versions of the old" (p. 185).

In Brighton's study, differentiation practices were relevant and appropriate and offered instructional and assessment strategies to promote achievement and motivation. The research-supported practices include

Teachers should strive to create student-centered classrooms and learning communities. (p. 189)

Teachers should assume the role of facilitator in the classroom. (p. 187, Table 1)

Teachers should teach for success for all learners. (p. 187, Table 1)

Teachers should be focused on clear goals and objectives for each learning task. (p. 187, Table 1)

Teachers should provide options for students that reinforce multiple learning modes and individual preferences. (p. 187, Table 1)

These practices seem reasonable; they honor the importance of teachers in creating challenging learning environments for all students. However, Brighton's study reveals the twists and turns related to each practice that support or prevent the adoption of differentiation strategies and practices. Teachers whose beliefs aligned with the strategies and practices set the stage for implementation, and those whose beliefs conflicted prevented full implementation. Even if practices are relevant and appropriate to meeting the needs of students in academically diverse classrooms, teachers must be willing to change their instructional styles, which are affected by their personal history, level of knowledge of the content they teach, facility with pedagogical content knowledge, and self-efficacy and "beliefs about their competence relative to content, their students, and the specific reform effort" (p. 181).

### **Consumer Oriented**

Just as potential and obvious consumers traverse the aisles of stores or circle the roundabouts of goods notice large-print banners heralding sales and, sometimes, small-print messages limiting these conditions, administrators, teachers, and students are also consumers. They, too, must remember the phrase "buyer beware." Educators notice a new rating scale that purports to measure the characteristics of schools. It sounds interesting, so why not use it? Does it measure what it is supposed to measure? Moon et al. raised the same question in "School Characteristics Inventory: Development of a Quantitative Instrument for Measuring the Modifiability of School Contexts for Implementation of Educational Innovations" and conducted a reliability and validity study of Sternberg's (2000) instrument. A national sample of middle school teachers and teachers involved in a 3-year study of differentiating instruction or differentiating authentic assessments responded to this survey.

Moon et al. were intrigued by the supposition that "successful change in a school *requires* that the school be modifiable in the first place" (p. 147). How does one assess the beliefs and practices of teachers prior to the implementation of an innovation? The School



Characteristics Inventory assesses change as surface-structural change and deep-seated change through six factors: school reputation, general school state, staff attitudes and state of mind, responsiveness to change, general perceptions of school, and administration responsiveness. Items included under Factor 4: Responsiveness to Change follow:

Administrators in this school are apathetic about this school.  
(p. 154)

Administrators in this school believe that change would only make this school worse. (p. 154)

Parents and the community believe that the prognosis for this school is bleak. (p. 155)

Administrators in this school are despondent about the situation in this school. (p. 155)

Such items as these and others from the School Characteristics Inventory serve consumer-oriented educators and researchers by presenting an opportunity to analyze conditions that will influence the degree of change. The instrument yields information that will spur discussions about the change process and the extent to which an educational innovation will be adopted wholeheartedly or rejected. Add a response scale, such as *strongly disagree*, *disagree*, *agree*, and *strongly agree*, to the items within the article, and you can complete a self-analysis of your own school.

## Summary

The NRC/GT research studies for this special issue of the *Journal for the Education of the Gifted* address teaching and learning from the perspective of changing behaviors, strategies, and practices. It is evident that the interventions were implemented with varying levels of expertise and acceptance. Teachers were asked to change teaching and learning strategies with which they were quite comfortable. Changing familiar approaches to teaching and learning to accommodate students in academically diverse classrooms is a long-term process, not an event.

These four research studies represent a small selection of our multiyear research agenda. All studies completed to date are summarized in abstracts and findings on our Web site (<http://www>.

gifted.uconn.edu). Readers interested in learning more about meeting the needs of gifted and talented students and ratcheting up the challenge level of curricula for all students are invited to peruse the many titles and topics by NRC/GT researchers and other invited researchers and scholars.

Our current research agenda (2000–2005) centers on the theme of Transitions From Potential to Performance and addresses the following questions:

1. Are the personality and behavioral characteristics of gifted underachievers more similar to those of underachievers of average-ability levels, achievers of average ability levels, or with achievers of high ability levels?
2. To what extent can teachers modify reading practices and curricula for above-average reading students in regular classroom settings?
3. What variables predict high achievement on international assessments of mathematics and science?
4. What are the effects of state testing on schools and teachers relative to curriculum and instruction?
5. What is the degree of consistency between teachers' philosophies about giftedness and classroom practices?
6. What is the impact of differentiation of curriculum and instruction on students from disadvantaged backgrounds, students from some minority groups, or both?
7. To what extent will creative and practical abilities be of increasing importance to the development of giftedness, with increasing age and across domains?
8. What is the impact of dynamic pedagogy or uniting curriculum, instruction, and assessment in the service of children's learning and performance on mathematics achievement and intellectual competence?
9. To what extent do mathematical curricular units based on gifted education pedagogy impact the performance of students in general education classrooms, especially those who are gifted and talented?

Conducting research in schools requires the cooperation of many individuals whose names and schools do not end up in articles. Administrators and teachers lend their support to our work and open their doors to observers, evaluators, and professional developers. They complete what seems to them as pounds of paperwork, respond to numerous questions, and offer feedback on the status of the study protocols and innovations. These educators are all instrumental in adding to the research base on providing alternative

approaches to teaching and learning and meeting the needs of students in academically diverse classrooms.

## References

- Amabile, T. (1996). *Creativity in context*. Boulder, CO: Westview Press.
- Bearne, E. (Ed.). (1996). *Differentiation and diversity in the primary school*. London: Routledge.
- Bransford, J., Brown, A. & Cocking, R. (1999). *How people learn: Brain, mind, experience, and school*. Washington, DC: National Academy Press.
- Bruner, J. (1961). The act of discovery. *Harvard Educational Review*, 31, 21–32.
- Byrnes, J. (1996). *Cognitive development and learning in instructional contexts*. Boston: Allyn and Bacon.
- Csikszentmihalyi, M., Rathunde, K., & Whalen, S. (1993). *Talented teenagers: The roots of success and failure*. New York: Cambridge University Press.
- Hébert, T. (1993). Reflections on graduations: The long-term impact of elementary school experiences in creativity productivity. *Roeper Review*, 16, 22–28.
- McLaughlin, M., & Talbert, J. (1993). *Contexts that matter for teaching and learning: Strategic opportunities for meeting the nation's educational goals*. Stanford, CA: Center for Research on the Context for Secondary School Teaching. (ERIC Document Reproduction Service No. ED 357 023)
- Sharan, Y., & Sharan, S. (1992). *Expanding cooperative learning through group investigation*. New York: Teachers College Press.
- Tomlinson, C. (1999). *The differentiated classroom: Responding to the needs of all learners*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Torrance, E. (1995). Insights about creativity: Questioned, rejected, ridiculed, ignored. *Educational Psychology Review*, 7, 313–322.
- Vygotsky, L. (1978). *Mind in society*. Cambridge, MA: Harvard University Press.
- Vygotsky, L. (1986). *Thought and language*. (A. Kozulin, Trans. & Ed.). Cambridge, MA: MIT Press.

**Authors' Note**

The work reported herein was supported under the Educational Research and Development Centers Program, PR/Award Number R206R000001, as administered by the Institute of Education Sciences, U.S. Department of Education. The findings and opinions expressed do not reflect the position or the policies of the Institute of Education Sciences or the U.S. Department of Education.