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ABSTRACT

Four issues of this quarterly publications on gifted education include the following articles: "Unrecognized Giftedness: The Frustrating Case of the Gifted Adult" (Marylou Kelly Streznewski); "Shakespeare in the Classroom: The Bard is Back!" (Rosanna DiMillo Sandell); "What Teachers, Parents, and Administrators Need To Know about Gifted Students" (Susan Winebrenner); "Decreasing Perfectionism by Using Science in the Classroom" (Robert Arthur Schultz); "Here Comes High School: Understanding and Planning for Your Child's Educational Future" (Paula Olszewski-Kubilius and Lisa Limburg-Weber); "How To Teach Mathematics to Gifted Students" (Semyon Rafalson); "Radical Decceleration: Self-Directed Homeschooling for Highly Gifted Children" (Lisa Rivero); and "Gifted Education Programs at Michigan State University" (Jenny MacRae McCampbell). Each issue also includes briefer articles and book reviews. (Individual articles contain references.) (DB)

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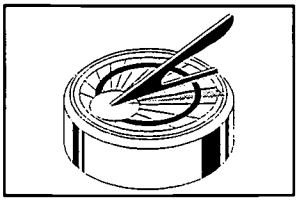

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Happy New Year and I hope your programs for the gifted continue to be successful and expand as we enter the new century/millennium! As part of the annual meeting of the Virginia Association for the Gifted, Dr. Howard Gardner presented a keynote speech (October 29, 1999) in which he emphasized the importance of educating children for understanding while using the guiding concepts of Truth, Beauty and Ethics. His book, **The Disciplined Mind** (1999), includes a detailed discussion of the concepts underlying education for understanding, and he provides detailed examples of his proposed curriculum from music (***The Marriage of Figaro*** by Mozart), biology (Darwin's Theory of Evolution), and history (the Wannsee Conference attended by Nazi Germany's top leaders to plan the extermination of all European Jews). We have a close association with a curriculum that emphasizes understanding and the study of rigorous subject matter. Gifted Education Press has published many books on a differentiated humanities curriculum starting with **Humanities Education for Gifted Children** (1984) by Michael Walters and **Foundations of Humanities Education for Gifted Students** (1985) by Michael Walters and James LoGiudice. Other books in this series emphasize the study of philosophy (**Teaching Philosophy to Gifted Students** [1985] by James LoGiudice, and **The Philosophy of Ethics Applied to Everyday Life** [1987] by James LoGiudice and Michael Walters). In addition, there are books on history, theatre, Shakespeare and logic. We remain strong advocates of a rigorous differentiated humanities curriculum in gifted education, and believe that our humanities books can still help educators of the gifted fulfill Gardner's recommendations concerning education for understanding.

I would like to welcome two authors who are new to ***GEPQ***. Marylou Kelly Streznewski has published an excellent book entitled, **Gifted Grownups: The Mixed Blessings of Extraordinary Potential** (1999). Her article, based on this book, examines some of the problems and issues concerned with adult giftedness. Rosanna DiMillo Sandell taught American literature, Shakespeare and English Literature at the high school level for twelve years. She is also a lawyer and is currently pursuing her Masters degree in gifted education. Her article addresses some of the advantages of teaching Shakespeare to elementary school children. The poems by Millicent C. Borges are concerned with educators she has known -- we have previously published some of her other poems. Ms. Borges has received a poetry grant from the National Endowment for the Arts, and she has been featured in many poetry anthologies such as **To Honor a Teacher** (1999). Our old standby, Mike Walters, writes about one of his favorite authors, Edgar Allen Poe.

Maurice D. Fisher, Publisher

UNRECOGNIZED GIFTEDNESS: THE FRUSTRATING CASE OF THE GIFTED ADULT

BY MARYLOU KELLY STREZNEWSKI FURLONG, PENNSYLVANIA

"What then needs to be done that is crucial to the future success of this educational field? One of the biggest problems is that we have been mainly 'preaching to the choir' rather than presenting our case for gifted education to average Americans who pay most of the taxes for operating public schools. This is a major challenge which must be addressed if gifted students and their education programs are to survive and thrive."

This statement by Maurice Fisher in the Winter 1999 issue of ***GEPQ*** struck a responsive chord in me, especially the phrase "preaching to the choir." It is the same phrase I used when as an educator, I diligently attended state and national conferences on gifted education in order to improve my skills. I was excited by the information I gleaned from presentations by the experts and from the books they wrote. However, there came a time when a disheartening insight emerged.

This (in some cases, literally) life-saving knowledge was circulating in a closed loop of dedicated professionals and a few savvy parents. If even 3% of the population is gifted, we are talking about information which needs to reach millions of people. Obviously, this wider audience could not attend the NAGC's annual conference, and would have little occasion to read the many well-written academic books in the field of gifted studies. But they might read a trade book aimed at an intelligent lay audience; one which explained the nature of giftedness to the public, and shared the lives of gifted adults, in their own voices. As a professional writer, I assigned myself the task of creating such a book.

Gifted Grownups: The Mixed Blessings of Extraordinary Potential (John Wiley & Sons, 1999) is an anecdotal study of one hundred gifted adults from 18 to 90, and diversified by gender, family background, occupation, economic status, education, geographic location, ethnic origin, social class and race. I conducted almost three hundred hours of interviews in writing it: in living rooms, in offices, in restaurants, under trees. As I realized the depth and variety of what these non-eminent people have to offer, listened to their accounts of mis-understanding, rejection and frustration, shared their stories of success and communication, my own view of giftedness was enlarged dramatically. It became evident that studying the lives of eminent adults is not enough. We need to investigate, in much more depth than has been done up to now, the lives of gifted people of all ages, in all areas of society.

In the months since the publication of the book, new insights have emerged from giving talks at conferences, to parent groups, and in bookstores. In some cases, old fears have been realized; in others, hopes renewed. The old stereotype, "You know, the kids with glasses we all remember from school," was resurrected for me by a radio interviewer. When I pointed out that the Terman studies long ago showed gifted people to be taller, stronger, healthier, and even better –looking, she worried out loud about some kind of "Master race theory." Saddest of all have been the encounters with women (the latest only hours ago) who, over and over say, "Oh yes, the kids are gifted but they get it from my husband, not me." My hopes were raised by the women in mid-life who have come to respect and honor their own intelligence, and are building exciting lives; and by senior citizens who have never given up enlarging their special gifts.

Overall, I have concluded that there are large numbers of frustrated gifted adults, who can be located by anyone who knows what to look for, who do not find outlets for their potential. We are not paying enough attention to trying to teach gifted people how to cope with their lives in the adult world. Far too many of them find their drive and creativity thwarted by persons or establishments who regard them as either silly or threatening. I am well aware of the school of thinking which designates adults as gifted only if they have achieved something called eminence. I find many difficulties in accepting such thinking.

One: There is an inherent difficulty in changing the terms of the definition of giftedness in the middle of the definition. A recent article in ***Gifted Child Quarterly*** (Noble, Subotnik and Arnold, 1999) presented giftedness in adults and children as distinct from one another, stating, "Giftedness in children is linked to potential, in adults to achievement." In attempting to employ such a method, do we not move from describing qualities within the *nature* of the person to effects of the *actions the older person may or may not have the opportunity to take* – and all within the same definition? If we change from characteristics to accomplishments, the characteristics with which we started do not simply go away. The racing brain, the questing mind can be observed at any and every age, and for the sake of the health of the individual person, he or she deserves to know enough about the gift to respect and honor it.

Second: If we accept the practice of trying to define giftedness in two different ways at the same time, some very strange questions and concerns begin to arise. A question I encountered recently holds many pitfalls for the unwary thinker. "If, after several years spent raising children, a formerly gifted girl is elected to Congress or organizes a nature preserve, does she become gifted again?" (The insulting implication that if you are raising children you are no longer gifted hangs in this question.)

Where the transition to the non-gifted state takes place remains a mystery. Can criteria be developed for locating the point at which, not having achieved eminence, one is simply expected to settle for being an average person and somehow cast aside the curiosity, the racing mind, the sophisticated questions, the deep sensitivity? If we follow the practice of one standard for children and another for adults, what do we say to the maturing person? "If you haven't made it by a certain point/age, then you are no longer gifted"? How does this play, as a mental health question, over against all the effort we have put into the self-image of that student?

My favorite question for those who espouse a belief in defining gifted two ways at once concerns the poet Emily Dickinson. Her story is well known: the seven poems published in a minor magazine as a favor by a friend; the fifteen-hundred brilliant compositions tied in ribboned packets, filling the drawers in her house at her death. No eminence there. But surely Dickinson was, in her nature, a gifted person unrecognized in her lifetime. Now that Dickinson and Whitman are acknowledged to be the two major innovators in the creation of American poetry, her eminence is undeniable. Does this mean that Dickinson became gifted after she was dead?

The argument will no doubt be made that if we nurture all children properly, many more will achieve that elusive state of eminence. Even so, only a certain portion of the children we so carefully nurture through gifted programs will attain the highest ranks our society offers. The rest? It is for "the rest" that I wrote ***Gifted Grownups.***

I approached the study of these one hundred gifted adults armed with a set of informal criteria which had developed over twenty years of spotting misplaced gifted students in high school English classes. What did I look for? Speed, intense curiosity, sophistication of thought processes, sensitivity, concentration, energy, and humor. Working on the assumption that giftedness is a function of one's nature and not necessarily one's achievements, from among the many definitions available, I came to define a gifted person as one who has a finely tuned and biologically advanced perception system and a mind that works considerably faster than 95% of the population.

Each two to three hour interview I conducted was based on a series of index cards containing questions, statements, and quotes about being smarter than other people. The interviewees were asked to respond to only those cards which interested them, thus avoiding threatening questions. They commented, argued, and validated my initial theory that a smart kid remains a "smart kid" for life; only the costumes change, and the arenas in which they must work out their lives. After completing my study, I came to agree with Webb, Meckstroth &Tolan in *Guiding the Gifted Child* (1982) that giftedness is not a tacked on extra which can be set aside by gifted children on the journey to adulthood, "...the brain that drives them is so fundamental to everything about them that it cannot be separated from their personhood."

The implications of what these grown up smart kids told me about their lives are threefold. First, it was obvious that there are a great many gifted people who lack even basic knowledge about their own nature. Counterproductive actions in personal relations and employment can limit the personal happiness they may attain and blunt their possible contributions to the progress of society. Realizing that the discontinuities they experienced were not evidence of a problem, but an indication of competence opened the eyes of many of those I interviewed to their own true nature. Internet reviews from readers continue to affirm this.

Second, a gifted person must be studied in the various contexts in which people live: as a member of a family, a student in school, a participator in human relationships, a member of the workforce, and as a citizen in society. Here, both new and ongoing research can make a significant contribution, by looking at how persons with this particular nature (giftedness) function in these contexts. The study of these dynamic interactions provide much insight into how gifted adults can improve the way they run their lives.

The need for change is the third implication of what these individuals were able to tell me. As was stated above, we simply cannot afford, on either practical or moral grounds, to waste our precious human resources. While improving our schools' ability to nurture feisty minds, we need to move beyond the school setting to understand that multi talented young people may require many years to discover what they really want to do, and that for all their lives, they will seek stimulation and change. Recognition that giftedness exists throughout one's life can improve the situation of workers, of bright women and of senior citizens.

If the use of the informal criteria listed above successfully yielded persons who could be defined as gifted, (and they did) then it would seem that this method could have wide applications for use by others such as parents, teachers, employers, spouses, counselors and law enforcement personnel, as they interact with gifted persons of all ages. The mechanisms of these interactions need to be studied.

While depicting the lives of a cross-section of gifted adults, ***Gifted Grownups*** offers insight into families, schooling, friendships, marriages, aging and crime – all areas which impact the lives of children. I have come to the firm conclusion that one of the major ways we can help to ensure a better chance in life for our gifted children is to seriously begin the work of recognizing gifted grownups by using our professional expertise to assist them in recognizing themselves. We also need to include ourselves in these considerations. By acknowledging and working to resolve our own issues as gifted adults, think how much time and energy we could free to devote to our

children, either as parents or professionals. And to the degree that we help children and adults understand each other, we help society. Accepting this, I see a series of tasks before us in studying the gifted in families, as parents, as teachers, as young adults, in the workplace, with regard to mental health, relationships, women's issues and senior citizens.

For example, we need much more research on parental attitudes toward their own giftedness. At the Spring conference of the Pennsylvania Association for Gifted Education this year, I presented my book in the exhibit area. I lost count of the number of parents who said to me, "Oh no, not me. I'm not a gifted grownup. My husband/wife is the one the kids take after." Their tension and conflict around this question was painfully evident in their faces, their voices and their body language. In talking to parent groups, I have encountered this same kind of denial. It has also been confirmed by teachers in gifted programs. It seems imperative to me that if men and women are to be the best parents for their gifted children, they must be able to recognize and deal with their own issues as gifted adults. How much better for a family to be able to see that they are a dynamically interacting collection of high-powered individuals and can share both the pleasures and the problems of dealing with a world that does not always accept them.

Readers of this journal are well aware of the many daunting tasks which face us in gifted education, and I will not belabor them here. However, there is one area which I believe has received little attention, and that is the mental and emotional well being of teachers who are gifted grownups. If such persons are fortunate enough to be working in gifted programs, they may feel sufficiently challenged and stimulated even while enduring the stress of keeping such programs alive in today's cost-cutting climate. Others are not so lucky. They teach in schools with lockstep curricula where innovation and challenge, two essentials for a gifted mind, are regarded as "trouble making". We are aware that educators must engage in the ongoing process of awakening the general public to the needs of the gifted. In some schools that general public includes principals and administrators. In most districts, it includes the school board. But reaching out to colleagues who may be enduring health-damaging frustration is an important task of which we should be ever mindful.

As our young people move beyond conventional schooling into the adult world of college and /or work, they continue to need special understanding. Faculties beyond the average take the gifted person higher, wider and deeper, for longer. Multiple talents require time to be explored, and it can take at least until age thirty to sort it all out. The late John Gowan, (1971) educator and psychologist, said, "Their own longer deeper search for meaningfulness is the extra mile the gifted have to travel." Families can be helped by developing greater awareness of the extra mile a son or daughter may be traveling. Parents may have to be patient with a student who is caught in a non-stimulating college environment or who wishes to explore other learning options than conventional classrooms.

Young people themselves need to recognize the work of this period as a necessary and productive phase of their lives and accept their special needs. It helps if high school students can be made aware of this in advance. (An interesting question: In how many programs across the country are gifted students taught, in specific detail, about the nature of their own giftedness?) One interviewee who handled this period with grace, advises "staying in the moment and doing your best," as each new talent or job presents itself. Parents whose patience is being sorely tried by a child who seems unable to "settle down" need to remember their own twenties, and possibly thirties, honestly.

What happens when the gifted children we have nurtured so carefully as parents and teachers encounter the world of corporate America and attempt to negotiate its hazards from thirty to sixty-something? In the interviews, I found that where employment is concerned, gifted adults exhibit an intensity, an insistence on the integrity to do the work at its best, as well as chronic impatience with shoddy work and slow thinkers. Gifted adults work too quickly, get bored, and show it. They raise the standards for everyone else, and that is always resented. They have odd approaches to things, which irritates their coworkers. They ask for more work and make enemies. The idealism of the young person is still there, and can cause problems with authority figures or with fellow executives. In addition, the bright mind has difficulty in accepting the illogical and may be very stubborn in expressing doubts about a project or in criticizing others. And yet, because of heightened sensitivity, this same person may be unusually vulnerable to peer group rejection. College degree or not, gifted adults carry around in their feisty minds questions the books cannot answer . And sometimes they threaten the boss, because that odd approach turns out to be better than the boss's idea.

Which is why, when the downsizing begins (and this is not a new phenomenon) the smartest employees are often the first to go. Industrial psychologist David Willings told us in 1981, "Job performance is not a significant factor in promotability. Social acceptability, the ability to fit in, to think as the rest of management thinks; these are the factors which make a person promotable. The gifted employee is not readily promotable. This idea that the gifted will get ahead anyway, and if they do not, they were not really gifted, has no basis in fact."

In the search for maximum profit and efficiency, corporate America needs to be able to take advantage of how the most clever people really operate. It is worth remembering that what we needed in order to run the nineteenth and most of the twentieth century was the eminent few at the top -- and bodies to stand in front of machines and behind plows and tractors. For the twenty-first century, bodies won't do. We will need every fast-paced, flexible, curious, inventive systems thinker on the

planet to manage the high-tech civilization which is imploding in our midst. David Willings (1981) warns us that, "The gifted are a significant factor, if not THE significant factor in the national economy of any country and. . .most of the countries with which I am acquainted are recklessly squandering that resource."

Too often, employers regard gifted workers as unstable or troublesome and they fail to utilize their innovative approaches to improve company profits. Here is an area where researchers and authorities in the field of gifted studies could enhance the work of industrial psychologists for the benefit of all. The gifted adult threading a way through the maze of the contemporary employment scene may take comfort from one of the interviewees. "I play the game in industry more than I care to, but I have accepted the responsibility for playing the game for now. . .the challenge is to play to win!"

Nowhere in contemporary life is the challenge greater than for gifted women. A powerful statement by Linda Kreger Silverman (1993) could serve as a summary. "Most women are unaware of their giftedness; they are only aware of their pain -- the pain of being different from the way women are supposed to be." Even if she moves confidently beyond denial or lack of awareness of her gifts, a modern wife and mother is constantly challenged by personal and career responsibilities. Researchers as well as the individuals interviewed in my study call for change.

In "Why Doesn't Jane Run?" Jacquelynn Eccles of the University of Michigan (1985) warned we must not simply settle for advocating more career opportunities; we must become advocates for honoring motherhood as a profession worthy of the time and talent of smart women. To do this, we will have to change the way the modern workplace is organized, as radical as that may sound. In my own opinion, those who best understand giftedness have a special responsibility to help this to happen. Eccles says:

"Educational and occupational training systems are now designed to mesh well with the life-patterns of men. They also tend to operate on the implicit assumption that (1)late entry into such professions as medicine, law or sciences and (2) less than complete devotion to one's profession are bad ideas. [Are they not, in reality, simply different ideas?] Both of these assumptions need to be evaluated. . .In addition, educational and occupational support programs that are specifically designed for gifted women, who have different life patterns from those of gifted men, need to be developed. . . .Many women are influenced by their desire to spend significant amounts of their time raising their children. . .The assumption that late entry signifies lack of commitment should not be made."

Mother Nature has decreed that the healthiest children are born to mothers in their twenties. The male patterns of corporate society push women into their thirties and even forties to have children, a long-term disadvantage in women's and children's health, and not insignificantly, in health care costs. The workplace must change to provide for a variety of acceptable career paths so that bright women can nurture their bright children as well as their own need for meaningful work. The two accomplished authors of *Answers to the Mommy Track (1993)* put it quite bluntly. "If we want educated and well trained women to have children in this society, then we must supports the needs of these women and their husbands to take care of training, developing and educating these children." Nowhere more than here is it obvious that we can help the children by meeting the needs of the adults.

As our population ages, perhaps the second-greatest challenge in the study of gifted adults is our senior citizens. The high-powered brain/mind that drives a gifted person's life does not switch to low gear simply because the body ages or some chronological milestone has been reached. The persistence of curiosity, the need for stimulation and the drive to DO things does not fade. It cannot be satisfied by a steady diet of bridge, bingo and bus trips, which many well-meaning programs seek to provide. Whether high school dropouts or professionals with advanced degrees, the bright senior citizens I interviewed continue to have both the capacity and the need to learn and grow.

Families can help. Providing stimulating conversation, transportation to cultural activities, recognition of valuable skills, and encouragement to try new activities will not only enhance the dignity of the elderly gifted, but can prevent these valuable citizens from becoming isolated . At this age, finding peers who are still active can be especially difficult, so that younger people can be essential for intellectual companionship.

However, it is the educational institutions where older adults can provide a vital element in hard-pressed gifted programs. Grand parenting programs, if keyed to the special abilities of individuals, could provide the crucial recognition and acceptance which a tiny smart kid may require. Mentoring for special projects with older students by retired professionals is another way in which gifted seniors could serve children while serving their own needs. But how the aging process takes place in an unusually intelligent person is an area where significant research should be undertaken.

Before I began the research for this book, I expected certain things would be true about gifted people. What I did not expect was that no matter where I looked -- education, gifted studies, general psychology, industrial relations, business, social criticism -- all the voices would say the same things about the needs of gifted people and the needs of the twenty-first century. For example, a management consultant warns that a whole new civilization -- super industrialism -- will implode in our midst in the next forty years and that its chief characteristic will be

speed. At the same time, an educational researcher tells us that gifted people are complex systems thinkers who can move rapidly in the face of change. No one was putting voices like these together and letting them speak to a wider audience, and this has been one of the major reasons for writing this book.

Gifted Grownups is intended to be an aid to gifted adults in discovering themselves, and in gaining wider recognition for them in society, and by those who share their lives. In addition, it hopes to be a conscious-raising statement that encourages discussion and dialogue in those areas of society where solutions need to be worked out over many years. Not only families and schools, but government, industry, universities and the helping professions must be part of this process. Those whose expertise is specifically in gifted studies can make a vital contribution to the future welfare of gifted children and adults by spreading their knowledge beyond the choirs of academe and into the larger society.

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SHAKESPEARE IN THE CLASSROOM: THE BARD IS BACK!

BY ROSANNA DiMILLO SANDELL, M.A., J.D.

There is no doubt that the Bard is back like never before. First there was the overwhelming success of the movie about the poet himself, **Shakespeare In Love** (1999). And since this Academy Award winning film hit the screens, the interest of American audiences has continued to be pleasantly piqued with a succession of film adaptations of the Bard's works. For example, in **10 Things I Hate About You** (1999) we find a remake of **The Taming Of The Shrew**. The NBC-TV movie, **The Tempest**, shown in December 1998 is based on Shakespeare's classic story of the same name. Also in 1999, director Michael Hoffman gave audiences an adaptation of Shakespeare's comedy, **A Midsummer Night's Dream** -- critics called it a winner. In September 1999, **Hamlet** made its way to the prime-time air waves, and later in the fall of 1999, still another adaptation occurred with the movie **O** -- setting **Othello** in the milieu of the varsity sport field.

Not only have the hearts of the general public warmed to "Shakespeare Rediscovered," the truth is that educators and parents everywhere are secretly rejoicing at this resurgent mass interest in the Bard. To me, from the perspective of a former English teacher who taught Shakespeare electives for over ten years to high school seniors, this resurgence is no less than thrilling! It certainly seems to bury further into the past the memory of the disappointing day when the following exchange occurred between myself and a less-than-eager Shakespearean scholar:

Mrs. Sandell: Andy, how do you like reading Shakespeare?

Andy: I love him, Mrs. Sandell. In fact, I take my book home every night so that whenever I get insomnia, I just open it up, start reading it and within minutes I fall fast asleep!

This burgeoning interest in Shakespeare thrills me for other reasons, too. A few years ago, I began work as a classroom facilitator of elementary level gifted and talented students. At one point, I decided to teach a unit on Shakespeare, intending as the culminating experience a stage production of one of the Bard's plays. Prior to introducing this unit, I set out to find materials that would be suitable for children of that age group and intellect. Though there were children's publications that

did a good job retelling the stories of Shakespeare's plots -- e.g., the timeless **Tales From Shakespeare** (1807) by Charles and Mary Lamb, and **The Best of Shakespeare: Retelling of 10 Classic Plays** by Edith Nesbit (Oxford University Press, 1997) -- there were very few works that adapted Shakespeare plays in play form for children. The play adaptations I did find were a far cry from the original in that they contained little, if any, of the original play's language, poetry, punning and word play. And most were simply too long for young readers -- and young thespians. Though I knew I easily could develop a unit on Shakespeare without having the students perform one of his plays as a culminating experience, I realized from my experience with high school seniors that the way students would really become academically intimate with the Bard, the way they could really learn about him would be by becoming actively engaged in a production of one of his works. In other words, the ideal Shakespeare experience would have to involve student participation in one of his plays.

Years before -- and shortly after my disappointing exchange with young Andy-- I had adapted a number of the plays for high school students taking my Shakespeare course. Though during the semester, the students were engaged in the study of the original text in its entirety, the semester's culminating event was a production of one of the plays in slightly adapted form. The plays were staged in the school auditorium and were an optional event which teachers -- at their own discretion -- brought their classes. Yet thanks to the support of the majority of those teachers, the Shakespeare students always played to full-houses. Needless to say, the memory of those productions will remain among the fondest I have of my teaching career. I'm sure that my memories and feelings about the event are similar to those of the students who participated in or viewed the plays.

So after mentioning my resource dilemma to one of my colleagues (who had been one of those supportive high school teachers of the recent past) and at her subsequent suggestion, I embarked on a project of rewriting and adapting a number of the Shakespeare plays in a form that would be more palatable to the literary tastes of my younger students. And at the end of one summer not too long ago, I finally finished what I had set out to do: adapt some of the Bard's plays for children while incorporating portions of the Shakespeare's original language, poetry, punning and word play. The adaptations also strive to stay true to the plot and characters of the original, are short enough to keep a child interested from start to finish and contain enough speaking parts for the involvement of all students. But I knew that writing the adaptations would be the easy part. The real test would be if the plays could be read and acted out with relative ease by a group of real-life, "flesh and blood" children.

I had the opportunity to field test one of the adapted plays soon after I completed my project. The play I chose to work with first was **Romeo and Juliet**. I began by handing out the play packet to each student. (Accompanying each play is a play packet. In this small packet, one finds background information on William Shakespeare's life and times, basic play production information as well as Shakespeare songs and activities.) I began the unit by having the children read and listen to the background information on William Shakespeare and the Elizabethan era included in the play packets.

I then handed out the scripts, since the next order of business was to have students become familiar with the content and format of the play. A review of the play on a scene-by-scene basis was accomplished by the assignment of various roles to different students each day for approximately one week. One of the purposes here was to have students "try on" different roles on different days. One day a student might have been Juliet, on another Lady Capulet, and still on another she might take on the role of audience member. Props such as swords, crowns, trumpets and "dress-up" clothes were provided as students read their parts in front of the classroom.

At the beginning of the second week, after the students had become familiar with the play, I explained the procedure of "auditioning." I then broke the class into learning pairs. Students then chose a desired part from the play and then practiced the audition procedure with his/her partner. In the middle of the week, formal auditions took place and by the end of the week, students were assigned their parts.

Our first "read-through" occurred during week number three. Students were given yellow highlighting markers so that they could highlight their parts as we came upon them during the read-through. As we read through the script, members of the stage crew noted their responsibilities and the junctures on the scripts when those responsibilities would occur. During week numbers four and five, memorization of lines, in-class rehearsals and blocking took place. Rehearsals on stage took place during weeks four, five and six. And at the end of week six, after much hard work and good fun, the play was successfully produced in front of parents, students and teachers.

Since that first elementary school production, I have since helped stage three more of these plays with gifted elementary school students, the most recent production being a third grade production of **The Taming of the Shrew**. Though I thought I had seen and felt it all as an educator watching high school seniors "stand and deliver," I realize now I really hadn't. After the miniature-sized Romeos, Juliets, Mercutios, Petruchios, Katherinas (the list is endless!) had taken their final bows and after hearing the enthusiastic applause of the audiences after each performance, I knew I had reached a new level of gratification as an educator. In watching children perform Shakespeare (and being a catalyst to their efforts), I had mounted an educational summit equal to Mount Everest -- and felt the exhilaration commensurate with such an expedition!

Shakespeare and Gardner's Multiple Intelligences

To know that staging Shakespeare's plays with gifted and talented children teaches unequivocally to all seven of Howard Gardner's Multiple Intelligences has made it an even more gratifying endeavor for me. Howard Gardner has made all of us aware of the fact that children have a plethora of gifts and talents. In his seminal work, **Frames Of Mind** (1983), Professor Gardner postulates that intelligence is not a single entity. In his book, Gardner sets forth seven discrete intelligences: Verbal-Linguistic, Logical-Mathematical, Musical, Bodily-Kinesthetic, Visual-Spatial, Interpersonal and Intrapersonal. Using Shakespeare's plays as a vehicle of instruction, teachers are afforded a wonderful opportunity to develop the Multiple Intelligences of the gifted child.

Following are some activities I used to engage students in projects that not only pique their interest in the Bard's work but also nurture their own Multiple Intelligences.

Verbal-Linguistic

Dramatic sequences from the play are read to and by the class. Students keep a journal that one of the characters from the play (e.g., Puck from **A Midsummer Night's Dream** or Juliet from **Romeo and Juliet**) might have kept. Students E-mail letters to students in Stratford, England, Shakespeare's birthplace, via the KEYPALS program:

http://www.collegebound.com/keypals/europe/main. htm .

Students create a unique version of the Shakespeare play (e.g., one that takes place years in the future, on a different planet or perhaps, a version that has a completely different ending than the original). Students conduct interviews with one of the characters in the play (for example, with Romeo just after he has seen Juliet for the first time or with Petruchio as he develops his plans to "tame" Katherine). They develop a list of homophones and then create jokes with puns in them just as the Bard himself might have done. A passage from either the original or the adapted text is memorized, and students recite the memorization to each other or to students in the younger grades. Life boxes (a shoe box containing four to six items a specific character might use daily or as a keepsake) are created. Students then demonstrate the boxes and explain why they chose particular items for their character.

Logical-Mathematical Intelligence

Students build and paint sets for play production from refrigerator and other appliance boxes. Students do many calculations with English currency values (e.g., converting U.S. dollars to English pounds). Venn diagrams can be created to illustrate the personality traits of two different characters from one play or from two different plays. Students apply their skill at liquid measurement to create an Elizabethan repast for themselves and their classmates. A board game is created which is based on the characters, events and setting of the play.

Musical Intelligence

Students create and sing Shakespeare songs to the tune of familiar nursery rhymes. They can design their own versions of Elizabethan instruments such as the lute and the tambourine to accompany their voices. Students listen to music of the Elizabethan period. (Two wonderful CDs we used are **Early American Music Festival** by the Early Music Consort, Decca Record Company, 1998, and **Instruments of the Middle Ages and Renaissance** by Vanguard Classics, Omega Record Group, 1997.) Music from Broadway musicals based on Shakespeare's plays, such as **West Side Story** and **Kiss Me Kate** is played in class and listened to.

Bodily-Kinesthetic Intelligence

Students play charades or do pantomimes using events from the play. They stage scenes from the play or the entire play for audiences. Dances which characters in the play might have performed can be choreographed by the students. An Elizabethan game day can be held where students play versions of games Shakespeare himself might have played like lawn bowling, tennis, marbles, juggling and "futeball" (a combination of American soccer and football).

Spatial Intelligence

Students create a travel brochure highlighting places to see in the London of Shakespeare's day. They can design a playbill advertising the play under study. Students draw a scene from any of the plays or create a stage setting for a scene from the play in diarama. Students draw a map of where the action of the play takes place or what the inside of the house or bedroom of one of the play's characters would look like (e.g., What items would Puck's [from **A Midsummer Night's Dream**] room contain? What posters might be on his wall?)

Interpersonal Intelligence

Students write down and reflect on topics and incidences from the play in their journals. Students write editorials for the "Shakespeare Sun-Times" (a newspaper created by the class containing articles highlighting the major events of the play). Students participate in panel discussions and generate solutions to problems that existed in the play and to similar problems that exist in the world today (e.g., unfounded hatred between people causes devastation of lives in countries today, such as in Kosovo, as it did to the individuals in the play, **Romeo and Juliet**). Students create a list of self-improvement tips for

various characters from the plays (such as Falstaff from **The Merry Wives of Windsor**, Katherine from **The Taming of The Shrew** or Oberon from **A Midsummer Night's Dream**). Students negotiate a peaceable solution for dilemmas existing between various antagonistic characters such as Oberon and Titania in **A Midsummer Night's Dream**.

Intrapersonal Intelligence

Students reflect in journals or diaries on events in the play or relevant topics pertaining to the play that the teacher might assign. Students might be asked to reflect on questions such as, "If you could have special powers such as Puck and Oberon, how would use them to help others?" or "Have you ever felt like any of the characters in the play? If so, when and what happened?"

Conclusion

A unit focusing on Shakespeare with a play performance as the culminating event is also a wonderful way for teachers to assess what Gardner and his colleagues at Harvard Project Zero called "Genuine Understanding." In his book, **The Unschooled Mind** (1991), Gardner says that genuine understandings occur when "students are able to take information and skills they have learned in school or other settings and apply them flexibly and appropriately in a new or at least unanticipated setting." According to Gardner, some ways a student may demonstrate that he or she has genuine understanding are through a project, an exhibition or a presentation of some sort. Hence, the performance of an adapted Shakespeare play, along with its related discussions and activities, not only becomes a great learning modality but also a good way to assess for genuine understanding.

Ultimately, by using a Shakespeare play as the "engine" that drives an interdisciplinary study while incorporating multiple intelligences, my students have been afforded the opportunity to learn in an engagingly fun way. I know, too, that their study of Shakespeare in elementary school has served as a foundation for a later and more in-depth study of the Bard from Stratford-On-Avon!

Yet before any teacher can embark on such a powerful learning adventure with a Shakespeare play as the driving force, he or she must accept that using the Bard's work in an adapted or abridged form is more than "okay": it is a vital and even important way to introduce young people to the Bard's works.

As historian, Lawrence W. Levine, points out in his book, **Highbrow/Lowbrow: The Emergence of Cultural Hierarchy In America** (Harvard University Press, 1990) from colonial times through most of the 19th century in America, Shakespeare had been everywhere and considered our country's "great author." His plays were adapted, abridged, abbreviated and then produced across the country. In this way, Levine comments that "Shakespeare was not only domesticated; he was humanized."

But near the end of the 19th century, the tide turned. Purists insisted on unabridged treatment and production of Shakespeare's plays. The public became rapidly disenchanted, then indifferent. Soon Shakespeare was back on the shelves and, except for intermittent resurrections in publications of the College Board Examiners, remained there for quite some time.

The fact that Shakespeare was, by his own making, a playwright first -- one who wrote for actors and not the professorate, for audiences comprised of groundlings as well as academicians -- has been re-acknowledged in recent times. As Yale University English Professor Harold Bloom writes in his bestseller, **Shakespeare: The Invention Of the Human** (Riverhead Books, 1998), "In the midst of ruined high culture, there comes out [once again] a deep public love of Shakespeare. . .Milton and Chaucer are doomed because they depend on the mediation of scholars. But Shakespeare is invulnerable in the way are Austen and Dickens." And, one reason for this, adds Bloom, is the Bard's "great humor" and characters to whom the masses can relate.

Shakespeare's works have once again been domesticated and humanized for American readers and audiences. Using Shakespeare in abridged form as a teaching tool, as a vehicle for learning not only about Shakespeare but other life lessons is seeing a resurgence in America's schools today. In New York City, there is the "Sharing Shakespeare" project for students who are deaf or have a limited grasp of the English language. In Los Angeles, Hobart Boulevard Elementary teacher Rafe Esquith started a Shakespeare program in his school 13 years ago. Here students (who are often from homes where English is a second language) gather after school to memorize lines and "get the feel"for Shakespeare. A Shakespearean production is the group's culminating activity, and is always well-received by audiences comprised of old and young alike.

Esquith says, "It's not really about acting. It's about language, working as a team. It improves the kids' skills in everything. It strengthens their minds." He sees the study and production of Shakespeare's plays as an invaluable vehicle for instruction, "because he tackles the big issues -- love, violence, jealousy, comedy and humorous situations in a language that nobody else has ever duplicated."

I am very fortunate to have had numerous opportunities to use the production of a Shakespeare play as a vehicle of instruction. I have seen its ability to nurture team-building, its ability to help children learn more about poetry, vocabulary, word play and the lovely language that is Shakespeare. I've seen first hand how it's helped these students better understand themselves and

the world around them. Most importantly, I've seen the children have a great deal of fun as they learned and have realized that the experience helped to foster a heartfelt interest for a life-long learning of the classics -- and this has been most gratifying of all. ❧ ❧ ❧ ❧

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POEMS BY MILLICENT BORGES

Middle Spirits

(Written for the first female professor at California State University, Long Beach -- Dr. Virginia Ringer, who taught philosophy.)

The ones who knew you stand
ankle on ankle
around the cherry blossoms,
near your classical air.

To warm marble,
to trace sculpture marks,
to find arms strong unbreakable
to meet prominent eyes
which did not lose
out to a bony skull,
we stand here, in mourning.

We would have wished
better for you, our lady
soul. A stronger finish
for a strong woman.

Instead, we remember how
in class we watched you,
every semester, tell the story
of the prisoners

while you marked
on the blackboard with a paltry
bit of yellow chalk. You told of three
World War II prisoners

confined to cells of lapis excilis,
the stones of no worth,
darkness, save for
a slot of yellow light
seen through the underbelly

of the door. The first was an athlete
in his twenties. For days
his eyes dampened the gravel floor.
and when his tears were gone,
he dried up: an angel in perfect form.

The second, a middle-aged man,
sure of his demons,
tried to crawl to the way out,
by scraping for the tunnel
he knew, like air, must exist.

The skin peeled back
from his nails, and he applauded
hollow sounds until the food
sent under the door was too brittle
for him to swallow.

The third, you said, was a woman,
well into her eighties,
a philosopher at the Sorbonne.
She sat in a solitary cell
until her eyes grew accustomed
to the new darkness: A teleological fish
being hatched.

For two long years she scrawled
on the walls mapping continents,
diagraming poetry, working through old
long-forgotten logic problems.
All that she could remember.

"I'll survive on my knowledge, "
she said to no one.

The sharp point of her contraband
pencil shining in the shadows.

And when the officials opened the
cell door after the war, she had
to be fitted with special goggles
because the sun was now too severe
for her to bear.

Today, your students are sure,
that you exist. Strong somewhere.

Between the men and the angels,
on a cold stone wall, we see you
scratching out the formulas of Lucretius,
reciting the attributes of atoms;
we see you building cities in our souls.

Lee-Man

(for Dr. Lee, based upon the poem "Berryman" by W.S. Merwin)

I will tell you how it was in the afternoons just into fall:
the "back to school week," as we then called it.

"Ask the tree--Who am I?" He said, "You can do that facing south."
"Sit underneath with your notebooks and lean against the rough trunk.
Replace your question with your pen."

The second time, he suggested sitting north and asking the tree,
"Where do I come from?" but this time he said, "Change the order of the words
while you are writing."

He indicated that we then should then face west and ask, "What am I doing
here?
in front of the tree or on this earth?" Right there on the grass
he told us to kneel down and turn around until we could face east
and were humble enough to ask the same tree, "Where am I going?"

It was in the early days of the semester before we had written our sonnets
and our villanelles – before Adrienne had made us cry and before Andy
had dressed up like Harvey the invisible rabbit, before Tina had visited
the farmer's market and Karen had cried over her own adjective-ridden poem.

He was far older in lives than the rest of us, yet he once called me an "old
soul,"
then he laughed his little elfin laugh and nodded.

"Rubber poetry," he snapped out while beating a shamanic drum.
With a tilt of his feet, his heels dug into the linoleum like an over-turned
boat.

As for small press publishing, he said to take it and take it some more.
"Frame the rejections and still send more poems -- 2 a week!" he cried, "2 a
week!"

He said that the great presence behind all poetry was magic and that
we should listen to our true voices, "First line best line, first word best
word –
and write write write!"

On the last day of class he invited us to ponder over the question of whether
or not
we were poets. "A poet," he said, "is not necessarily published or skilled,
but self-defined and bound to his occupation. He will die if he is not able
to write."
"Are you poets?" he cried, never wanting an answer, just another poem.

EDGAR ALLAN POE (1809-49) AND THE NATURE OF CREATIVE GENIUS

BY MICHAEL E. WALTERS CENTER FOR THE STUDY OF THE HUMANITIES IN THE SCHOOLS

" 'What a number of ideas must have been afloat before such an author could arise!' " In a letter to John Neal from Edgar Allan Poe, p. 3, **The Unknown Poe** (1980). Statement by Shelley about Shakespeare.

Recently, I had two wonderful experiences that led me to reread one of the favorite writers of my teenage period, Edgar Allan Poe. The first was a visit to his cottage which is located in Poe Park in the Bronx, New York. When I was there, no one else was visiting so I had the house entirely to myself. It was as if I had been caught up in a time warp. There were moments when I could sense that Poe was there with me. The second experience was a one person performance about his life in the Levinger Theater at Lehman College, not too far from his cottage. The actor was John Astin who was one of the main characters in the television series, The Adams Family. Mr. Astin performed poems like "The Raven," and segments of Poe's stories by placing these works in the context of Poe's life. This dramatic biography enabled the audience to understand Poe's writings as reflections of his personality.

When I read Poe's writings again, I was stunned by not only how they held up as literature, but they also gave me insight into this author's creative genius. The most immediate response for an adult reader of Poe is to appreciate his range. He was intellectually a Renaissance Man -- his interests and writings included the entire spectrum of the humanities. It is important to observe the intellectual and cultural aspects of his personality since he was both a man of the arts and sciences. Also, he blended the emotional and the cognitive, the theoretical and the sensual. Penguin Classics has published a collection of his stories called **The Science Fiction of Edgar Allen Poe** (1976), edited by Harold Beaver. Besides the collected stories, the Introduction and Commentary (at the end) are important for appreciating and understanding Poe's holistic personality. In the Introduction, the editor describes the scientific developments and accomplishments of the early nineteenth century. The fields of chemistry and electro-magnetism laid the groundwork for the scientific discoveries of the twentieth century, e.g., quantum physics. Poe was a student of the "Calculus of Probabilities." In the middle of the nineteenth century, the British mathematician, James Clerk Maxwell, applied this Calculus of Probabilities to understanding the role of energy and chance in the structure of matter. In the commentary to this book, Beaver describes the intellectual and cultural influences on Poe's stories, e.g., the balloon experiments of individuals such as the Montgolfier brothers. The activities of these balloonists, and journalistic accounts of lunar observations via telescope (made by the British astronomer, Sir John Herschel) were the foundation for the short story, **The Unparalleled Adventure of One Hans Pfaall** (1835).

The implications of studying the writings and personality of Poe are important for gifted children. Poe's life and work will provide them with significant insights into the study of creativity. This trait is more than the simple process of brainstorming and "trick dog" techniques such as using one's perceptions. Creativity is stimulated by encountering ideas, and it derives from a cocoon enveloped in intellectual and philosophical contexts. It was Poe's reading about scientific developments and their philosophical implications that resulted in all of his writing. Ideas were the "meat and potatoes" of his thoughts and aesthetic processes. This is similar to the recent work of Howard Gardner (**The Disciplined Mind**, 1999) concerning the idea that intelligence should be nurtured by a grounding in such disciplines as music, biology and history.

"An objection will be made – that the greatest excess of mental power, however proportionate, does not seem to satisfy our idea of genius, unless we have, in addition, sensibility, passion, energy. . . ." **The Unknown Poe**, p. 38.

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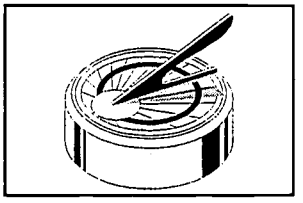

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In the spring of 1989, I published an article in GCT magazine entitled **The Future of the Gifted in the Year 2000** (March/April 1989 issue) which emphasized that: (1) the gifted field must develop strategies for identifying a broader range of giftedness; and (2) a "core knowledge-based" humanities, mathematics and science curriculum is needed in our schools to meet the intellectual needs of the gifted. I also stated that many of the authors who wrote for ***GEPQ*** ". . .must be heeded at a more serious level than is apparent in the last decades of the twentieth century. These authors are very much concerned with the lack of national direction in developing a rigorous and appropriate curriculum for the gifted." Although the gifted field has made progress in organizing various research programs in identification and curriculum development during the last ten years, there is still much to be done in broadening the definition of giftedness, improving identification procedures and designing a comprehensive differentiated curriculum.

Since we started ***GEPQ*** in 1987, this periodical has included many articles by authors who strongly support improved identification procedures and a rigorous curriculum for the gifted. Some of the articles that appeared in the early 90's were as follows: **Let's Invest More in the 'Life of the Mind'** by Norman Cousins (Winter 1990), **Identifying Giftedness and Academic Ability Through Performance** by Paul Brandwein (Summer 1990), **Illinois Investment in the Future: Illinois Mathematics and Science Academy** by Stephanie Pace Marshall (Fall 1990), **Designing the Curriculum for a Residential High School for Students Gifted in Arts and Science** by A. Harry Passow (Summer 1991), and **Identifying and Programming for Minority Gifted Students: Structure of Intellect Research** by Mary Meeker (Fall 1991). During the early '90's, Michael Walters wrote humanities articles on such individuals as Thomas Wolfe, Shakespeare, Carl Sandburg, Jack London and James Michener.

We will continue publishing articles of similar high quality and interest during the coming years. In the current issue, Susan Winebrenner discusses the types of training and information that teachers, parents and administrators should receive about gifted education. She is well-known by teachers across the nation for her informative workshops and consulting work with school districts. A revised edition of her widely read book, **Teaching Gifted Kids in the Regular Classroom** (1992, Free Spirit Publishing, Inc.), will be published during the fall of 2000. Robert Schultz, an assistant professor at Texas Tech University, has written an interesting article on perfectionism and science education. This issue also includes a review of Ben Carson's biography, and an essay by Michael Walters on the poet and author, Sidney Lanier.

Maurice D. Fisher, Ph.D., Publisher

WHAT TEACHERS, PARENTS AND ADMINISTRATORS NEED TO KNOW ABOUT GIFTED STUDENTS[1]

BY SUSAN WINEBRENNER
EDUCATION CONSULTING SERVICE BROOKLYN, MICHIGAN

As I travel around the country on speaking engagements, I observe the significant changes regarding programming for gifted students. Pullout programs have virtually disappeared in many states. Any program for gifted children that is associated with the word special is rejected as elitist, a word that appears to have the power in and of itself to bring an end to a gifted program. Programs for gifted students are sacrificed in the name of budget crunches, at the same time as the appropriated funds for other students with *exceptional educational needs* are greatly expanded.

In my opinion, the most significant explanation for the disappearance of gifted programs is our democratic country's devotion to the concept of egalitarianism. This term is unfortunately interpreted to mean that everyone should get exactly the same educational experiences, instead of everyone should have an equal opportunity to actualize their learning potential. Before making crucial decisions regarding the place of gifted education in 21st century schools, educators' vocabulary, beliefs and practices should be reviewed.

VOCABULARY

The term gifted has rightfully been expanded to include students with exceptional abilities beyond the academic areas into the areas of the fine arts, leadership, and bodily-kinesthetic skills. Of course, in many schools, there already are ample opportunities for students with gifted ability in non-academic areas to express their gifts in special programs and competitive opportunities. Students whose gifts are in the academic areas have just as much need to experience learning opportunities that are more complex and abstract than those appropriate for age peers. We need to be less concerned with the label of *gifted* and more willing to advocate that all children regularly experience challenging learning opportunities.

There is a call in education for *equity and excellence*. If we define equity as equal opportunity for all students to learn at their challenge level, and excellence as opportunities for all students to reach their own learning potential, maintaining appropriate programs for gifted children is certainly compatible with school and district goals.

It may seem politically incorrect to expect something special for children who already seem over-blessed. The prevailing belief is that *all students* can learn. However, the prevailing practice is to focus on the learning needs of those students who are not working up to grade level standards, thereby giving much less emphasis to the learning needs of those students who will lead their classes in scores on state or standardized tests.

Gifted children are not special. All children are special. But gifted children do need different educational opportunities so that they can actually learn in classes that are geared for age appropriate learners. If we accept the concept of learning as forward progress from one's entry point into a learning curve, it becomes obvious that those students who already know what is about to be taught will not be learning as much as those students who are novices in that same content.

The final vocabulary issue surrounds the idea of enrichment, acceleration, and/or extensions. For many years, activities for gifted students were labeled enrichment. The accompanying assumption was that only gifted learners could benefit from an enriched curriculum or program. Of course, we now realize that all students deserve an enriched curriculum. Only gifted children who are already able to handle material too advanced for their age peers consistently need extensions of the regular curriculum or acceleration into a higher level of content.

BELIEFS

Whether or not separate special programs for gifted students exist at a school, gifted students have the right to experience what all other students experience regularly: challenging learning opportunities that move eager minds beyond what they already know to experiences that require effort and energy to understand and master. When parents advocate for what their gifted children need in school, it is important not to ask for anything special. Rather, they should ask any teacher regarding any student, "What evidence do you have that this child is working at his or her challenge level in your classroom?"

Your school or district has made promises, as stated in your philosophy or mission statements, that include phrases such as:

"All students will be challenged in their learning situations."

"All our students will be expected to actualize their learning potential."

[1]This article is based on a shorter version that was originally published in the Oct. 1999 issue of **The School Administrator** magazine.

"All students will enjoy high self esteem as an integral part of their schooling experience."

All parents have a right to ask this question of all their children's teachers. "What evidence do you have that my child is working at her challenge level in your class?" All teachers have an obligation to answer that question. This means that teachers must know how to provide learning experiences that stretch students' existing capacities. To offer a *one size fits all curriculum* is inadequate.

Actualizing one's learning potential is not as easy as it sounds. It cannot be done until the teacher knows the value of challenging all students to move into uncharted waters. Gifted students often don't come close to their learning potential, especially when they are *given* high grades for work they know took little to no effort.

Including those with academic learning abilities that exceed those of their age peers will provide gifted students with equal opportunities to receive the benefits of the promises made to all students. Therefore, nothing *special* is expected, even though something *different* may be needed.

PRACTICES

There are at least three assumptions we can make to begin a plan to re-enfranchise gifted students in contemporary education.

1) Most classroom teachers and school administrators have very little training in meeting the learning needs of gifted students in heterogeneous classrooms.

2) Most teachers are currently drowning in a flood of expectations for accountability regarding progress for students who are working significantly below expectations.

3) Appropriate staff development methods can significantly increase teachers' ability and willingness to differentiate curriculum and expectations for gifted students.

LACK OF TRAINING

First, it continues to be a matter of fact that most teachers enter the field with absolutely no course work in how to recognize and teach gifted students. This reality reflects the general lack of awareness and concern with the topic of gifted education at most teacher training centers in this country. We could also infer that this topic does not have much attention from lawmakers and other politicians as well. Whereas new and experienced teachers are highly likely to have had at least one college level course in teaching special education students, very few of those same teachers are even remotely knowledgeable about the exceptional capabilities and learning behaviors of gifted students.

Gifted students actually learn differently from age peers in three important ways: (1) they learn new material in much less time than age peers; (2) they tend to remember forever what they have already learned; and (3) they perceive ideas and concepts at more abstract and complex levels than age peers.

Since so few teachers are aware of these realities, their behaviors toward gifted students are likely to reflect stereotypical beliefs.

The first belief is that gifted children are highly productive students who should always get high grades. They will *make it on their own* without much assistance from teachers. This belief is related to another: that students who are not productive in school cannot be gifted. If I could characterize a single issue that frustrates gifted children, their teachers and their parents, it is this issue of whether the student will do *his work*. This frustration arises from what I call, "the confusion of pronoun syndrome." I have rarely met gifted children who won't do their work. What they usually resist doing is the teacher's (his or her) work. Gifted children would actually be thrilled to be allowed to use school time to do their work, which I define as learning something they don't already know!

This is the first issue I try to clarify with teachers I train. The concept is somewhat shocking since most educators have never considered the notion of "Whose work is this, anyway?" Content and pacing differentiation are vitally necessary if gifted children are going to be able to get what they need to actually learn new material on a regular basis.

The second belief is that gifted students' work should always be exemplary, neat, beautiful, and excellent. Great frustration is experienced by all gifted students, their parents and teachers when the children sometimes do messy, careless work. Many teachers find it difficult to juxtapose the notions of highly intelligent with highly messy and completely disorganized. Professionals in gifted education have slowly come to realize that such profiles may actually describe the existence of a learner who is *twice exceptional*. These children are gifted with a learning disability, ADD, or some other type of learning challenge. The student is often described as an *absent-minded professor*; a student who can verbalize magnificently, but who refuses to write anything down. And even if such a student is not twice exceptional, sloppy, messy work is often a sign of frustration over being expected to do tasks that hold no challenge for the learner.

The third belief is that gifted children should always want to *go for the gold*; be excited about going above and beyond the expectations for age appropriate learners. Many teachers offer work for extra credit and are perplexed and frustrated when

some gifted children don't take advantage of that opportunity. Parents often encourage this practice by asking teachers to give their children *more* to do at home in the evenings, weekends, or over the summer months. No rational person, at any age, willingly does *more* than others are doing simply because more is better. I don't support the notion of extra credit. I don't ever suggest activities teachers can offer for extra credit. What gifted children need is something different that extends the regular curriculum into areas or levels which they can find challenging.

FOCUS ON LOW-ACHIEVING STUDENTS AND ACCOUNTABILITY PRESSURES

There is no doubt that in the decade of the 1990's, the attention in education shifted to low-achieving students. As many states insisted that these students would be accountable for taking the same tests as students who were average or high achievers, the cry has gone out, "Get those test scores up for the lowest achievers." Most educational decisions that were made in that decade were focused on achieving that goal. Low-achieving students don't do so well in same ability classes – place them in heterogeneous classes. If mixed ability classes are better for struggling students, they must also be better for gifted children – let's put them all back into heterogeneous classes. And as long as they're there, let's use them to help the less capable students raise their achievement levels. And let's teach the entire class as one group, making sure the curriculum is the same for everyone. All these decisions may be helping the low achievers, but they have been the source of intense frustration for gifted children and their parents. With the advent of alternative schooling methods, such as home schooling and charter schools, many of our most capable students have left public education. If we don't do something to keep them with us, the top 5% of the students will no longer come from the 95th-99th percentiles!

These differences make *compacting* imperative. Compacting is the practice of condensing the regular curriculum for advanced learners to allow them, at the beginning of any unit of work, to demonstrate previous mastery, or their ability to learn the required material at a faster pace than age peers. In order for compacting to work, teachers need to learn how to develop and use appropriate differentiation activities that stretch gifted children' minds into more abstract and complex types of thinking. That's actually my definition of gifted; being able to handle learning tasks that are more appropriate for students 2-3 years older than those at a given grade level or course level.

The second point of this article is to make sure readers are aware of the incredible pressures that are being exerted on teachers across our country to demonstrate the buzzwords of *accountability* and *the reaching of standards*. Every group I encounter feels this pressure, which may actually lead them to pay even less attention to their gifted students. The push is on to be able to have all students demonstrate they can achieve grade level expectations or standards. In some states, teachers' job evaluations are tied to this expectation. At first glance, that seems like a laudable expectation. After all, we have standards that we are expected to attain in our own jobs and responsibilities. However, the numbers of children who start school with woefully inadequate readiness from their first five years of life has increased dramatically in recent years. Significant numbers of children come to school daily with such heavy emotional baggage that it is nearly impossible for them to concentrate on cognitive learning tasks. Expectations for achieving grade level standards extend to these children as well. If you are a classroom teacher facing this situation, the needs of students who are working at or beyond the top end of expectations will not appear very important to you because they will not bring your class test scores down. This is reality for most classroom teachers today.

Many teachers acknowledge the reality that highly capable learners need challenging learning opportunities. Their fear, however, is that once they pre-test and find some students who already know the material they are planning to teach, there will be additional demands on their planning time to locate and set up extended learning experiences. Many teachers worry that there is simply not enough time available for them to accommodate gifted students' needs for compacting and differentiating the curriculum. However, there is often a fear in some teachers' minds that they won't know what to have the eligible students work on in the time that is created by compacting. For teachers already feeling overworked and stressed out, this prospect may not be very pleasant.

This situation provides an opportunity for parents to help. You might suggest topics related to your child's interests, and indicate your approval that part of the time the youngster spends on differentiated activities in school be related to the areas of interest. This would be an example of a differentiation method called enrichment or extensions. I believe it is also appropriate for such students to spend part of their homework time working on a specified section of the project at home. This arrangement helps the teacher extend classroom differentiations into a differentiated homework opportunity. Again here, the key is to not ask the teacher for ***more*** work for your youngster, but for different work that will interest and challenge her.

However, when students need acceleration of content in addition to or in place of extension, such as in subjects that are very sequential like reading or math, a different type of intervention is indicated. A student might be allowed to work with a group of students from a higher grade for the subject areas in which he is significantly advanced. In rare cases, where a youngster's entire learning level is significantly advanced from age peers, radical acceleration or double promotion is another option.

APPROPRIATE STAFF DEVELOPMENT

The third focus of this article is in regard to staff development. There is an enormous range of staff development opportunities between districts and states for helping teachers learn how to become as effective as possible with all types of students. Remembering from my first point that very few teachers or administrators have experienced any gifted education training before entering the field, much training is needed while teachers receive in-service courses. And that brings us to the really good news: once teachers learn how to challenge their gifted students in ways that do not bring unmanageable burdens to the teacher, joy and excitement abound. Teachers say things like, "I wish I had known about these things earlier in my career" or "I just can't wait to get back to my students to try some of these things with them." I've even heard the second comment during summer training, when one would not expect teachers to be anxious for school to start! The training I do contains several sections which are all designed to make appropriate interventions for gifted students totally *teacher-friendly*.

The first concept I deliver is that it's OK to differentiate for gifted students because they are as divergent from *normal or average* as are children in special education. We talk about all of the help and funding that are easily accessible to make differentiation available to students who have trouble learning. Teachers come to understand that accommodations for gifted children must be made for the same reason – that what is appropriate for age peers is simply not appropriate for them in their areas of strength. Not because they are special, not because they are tomorrow's leaders, not because their parents know how to make wheels squeak, but simply because of their differences in readiness for learning. I have seen teachers and administrators alike experience the proverbial "Aha!" as this understanding occurs.

The second idea we discuss is that traditional identification methods are far from perfect. Sometimes, they identify gifted students. Sometimes they identify high achievers as gifted. Sometimes they miss highly gifted students whose deficiencies appear to give silent testimony that giftedness could not possibly co-exist in this youngster. Therefore, from my perspective, the only fair way to identify gifted children in any classroom is to let the gifted identify themselves by their actual learning behaviors. The simple method that allows this to happen is for the teacher to describe, to the entire class, the manner in which students are invited to demonstrate they either already know the upcoming content, or can learn it in a much shorter time than will be needed by age peers. At that point, any students who can demonstrate they meet the expected criteria are indeed eligible for differentiation activities pertaining to the specifically designated content. What always happens is that some gifted children aren't able to meet the criteria, some children meet it who aren't usually perceived as gifted, and everyone wins.

In teaching teachers, it is very important to allow adequate time during training workshops for them to plan the actual activities they will offer to their students. Therefore, I suggest that teachers, working in job-alike groups, plan learning activities to increase the interest, meaningfulness and relevancy of the work for all students. When all students perceive their work as exciting, there is little or no resentment toward children who are doing the differentiated activities.

A matter of intense concern is classroom management. In order to try something different with their students, teachers need to know that the technique will flow smoothly in the classroom and will be relatively easy to manage. I spend considerable time demonstrating methods that help students understand exactly what they are supposed to do on a given day in class. Methods are demonstrated to help teachers keep records of which students need which option on any given day. We discuss ways to help students improve their own organizational skills and take more responsibility for managing their independent working time. I demonstrate ways in which teachers can spend time with those students who are working on differentiated tasks, so those students don't feel abandoned by the teacher and so they know help will be available for them when they need it. Behavioral guidelines for students working more independently are suggested, and we talk about the consequences for students who are unable to follow those guidelines. By the time teachers leave the workshop, they have concrete plans about which strategies they will use, and how they will manage those options.

Finally, we talk about ways in which teachers can continue to support each other as they work to implement compacting and differentiation opportunities in their classrooms. The research on staff development concludes that lasting change is more likely to happen when teachers have peer support during the entire implementation process. I strongly encourage the formation of school-based study groups, led by teachers in the workshop and open to all interested teachers in their building. Meeting together at regular intervals during the school year, teachers select methods to try, help each other with implementation, and have group discussions on the pros and cons of each method. Without such a support system at a school, teachers who attempt to use methods they have learned in a workshop are likely to abandon that method as soon as they encounter any barriers to success. With the study group members available to each other, the likelihood of being able to work out glitches as they occur is very good. Therefore, the likelihood of lasting, effective changes coming from teacher training methods is also greatly enhanced.

Educators will often state their belief that all students should have their self esteem needs met as part of their learning experience. But self esteem actually is enhanced when success is attained with something a person perceived would be difficult or challenging. (Rimm, 1987). Development of high self esteem

requires that students be allowed to challenge themselves in an environment in which their mistakes and struggles, as well as their successes, will be allowed and appreciated.

When students get high grades and other kudos for products they know required little or no effort, their self confidence is undermined, and they learn to always find the easiest way out, postponing their exposure to challenge in many creative ways. Many really fear that if they try something challenging and are not instantly perfect at it with little or no effort, others might conclude that they are not really very smart after all.

Another consideration linked to self esteem is that youngsters have to feel acceptable just the way they are -- that one doesn't have to change to become more *normal*. Gifted children, especially as they enter adolescence, often go into hiding regarding their intellectual abilities because they perceive messages from others in school that they would be better off if they were more like other children, and less different. Classes need to provide safe havens for gifted students to demonstrate their exceptional learning ability without feeling weird or unacceptable.

Regular grouping practices do not automatically provide for the needs of gifted students. Although totally heterogeneous grouping appears to be a beneficial arrangement for most students, gifted children do not thrive well if they are purposefully separated from each other, so that one or two can be placed in each class as role models or leaders. When gifted children are grouped together for part of each school day with learning peers, they are much more likely to demonstrate their capabilities because they have others like themselves who can validate they are OK just the way they are. As Dr. Ellen Winner of Boston College writes, "Gifted children are often socially isolated and unhappy, unless they are fortunate enough to find others like themselves."

The practice of cluster grouping can provide for this grouping option without returning to the former practice called tracking. Tracking is the practice of grouping *all* students together with students of similar ability. Cluster grouping, on the other hand, only groups together students who can benefit from such grouping. I am recommending the practice of purposefully clustering academically gifted students together in groups of 4-6, and placing them in an otherwise heterogeneous group.

There are several benefits from this type of arrangement. Teachers are more likely to offer the types of curricular modifications gifted children need, and all children in the class are equally eligible for those modifications, if it can be demonstrated that previous mastery has been attained or that exceptional talent with a particular topic is observed. Gifted children are more likely to take advantage of those opportunities because they will not have to work alone when they do.

For further information about cluster grouping, contact the ERIC Clearinghouse on Disabilities and Gifted Education at 1-800-382-0272. The e-mail address is ericec@cec.sped.org and the Internet site is http://www.cec.sped.org/ericic.htm -- ask for ERIC Digest EDO-EC-95-1. For a list of districts using cluster grouping successfully, send a fax request to me at (517) 592-3436 and I will fax or mail you the list.

CONCLUSION

The programs we should seek for gifted learners are those that deliver the promise made by most schools: to provide consistent daily opportunities for challenging learning experiences for all students. This goal automatically requires providing differentiation of content, pacing, and grouping practices for the most capable students. These differentiation opportunities are always available for students who struggle to learn. The precedent for differentiation is in place. Since gifted learners are just as atypical from average as are children with learning problems, the differentiation they need is highly defensible. Let's be sure this concept is understood in our children's schools.

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But I want first of all—in fact, as an end to these other desires—to be at peace with myself. I want a singleness of eye, a purity of intention, a central core to my life that will enable me to carry out these obligations and activities as well as I can. I want, in fact—to borrow from the language of the saints— to live "in grace" as much of the time as possible. I am not using this term in a strictly theological sense. By grace I mean an inner harmony, essentially spiritual, which can be translated into outward harmony. . . . *Anne Morrow Lindburgh, 1906- (author). From* ***Gifted From The Sea****, 1955.*

DECREASING PERFECTIONISM BY USING SCIENCE IN THE CLASSROOM

BY ROBERT ARTHUR SCHULTZ, Ph.D.
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It is the spring semester. Kathy and Bill are talking about their move from the middle school to the high school next year.

"Why are you so worried about scheduling classes, Bill?," says Kathy. "I don't understand it. We are going to be ninth graders at the high school. But you're worried about what courses to take all the way until graduation?"

"It's really important to me and my dad that I get into a good law school like Brown when I'm done with college," pleads Bill; "I want to make sure I get all the courses that will give me a head start on college. I have to make the best grades in the hardest classes, or I'm nothing."

"But Bill, what about clubs and sports? And we get to learn how to drive next year too?!", says Kathy.

"I know, Kathy. But all that stuff is secondary to me," states Bill; "I have to worry about classes. You see...Oh, never mind. I can do all the fun stuff in high school, too. Watch and see."

This conversation takes place in many schools across the country. Most of us, with the best of intentions, recognize high ability—even giftedness—and do our part to encourage these tendencies. Unwittingly, we may be promoting perfectionism and misguiding gifted children into career paths we think are successful rather than allowing personal interests and experiences to guide children's decisions.

In this article, the difference between excellence and perfectionism is discussed to help teachers and parents identify these tendencies in gifted individuals. Then, discussion turns to science as it typically exists in the curriculum of American schools, and a vision of how it could be used to battle perfectionism is presented. Finally, problem based learning is discussed as a promising method of teaching science and shaping curriculum appropriate to the individual needs of gifted students in K-12 settings.

Excellence versus Perfectionism

Children displaying unusual abilities tend to stand out in the classroom or home environment. As adults notice their high abilities, expectations rise and children are often perceived as capable of lofty achievements. When adults praise remarkable achievement, the emotional stakes for youngsters increase, often leading to perfectionism. "This characteristic has been identified as a strong drive to achieve that results in striving students who are content only with A grades and top test scores" (Whitmore, 1980, p. 146).

Some individuals view perfectionism as a positive psychological tendency. The qualities of resiliency or "stick-with-it-ness", continual self-reflection, and self-correction contribute to the positive assessment of the perfectionist in this scenario. Individuals displaying these tendencies often take pride in their work, meeting deadlines, and thoroughly completing projects. High self-esteem provides motivation and confidence to tackle uncertain and broadly described goals. In my view, however, this set of tendencies describes striving for excellence rather than perfectionism.

Perfectionism involves one or many of the tendencies listed below. Individuals displaying these tendencies, either separately or in combination, are inhibited from taking part in even non-challenging activities for fear of failure; in student language this often means earning an A- or B, or having a GPA lower than 4.0!

People with perfectionist tendencies:

- are set in their ways and often hyper-critical.
- often feel dissatisfied with or even guilty about good work.
- argue about one or two points on a test, even when they don't affect the grade.
- are resentful of critiques of their work.
- work alone, because no one is as good as they are.
- compulsively compare scores with those of other good students.
- are critical of, and refuse to associate with non-straight A students.
- procrastinate (each new project contains the threat of failure, and so starting is put off). Procrastination also presents an ego-saving insurance policy—if I don't have enough time, I can't do perfect work!
- get upset if something started cannot be finished.
- avoid new experiences because they pose a threat of making mistakes or failing.

Adapted from Adderholt-Elliott, 1987

Perfectionists rely on quantity rather than quality to feel a sense of accomplishment. "Ten awards is (sic) better than one award; Who's Who Among High School Students, National Merit Scholar, President of the Student Council, President of the Band, and President of the Sorority is (sic) better than being just one of these and doing the job well" (Piirto, 1999, p. 485).

expectations of others, while constantly agonizing over how to be best at everything. The perfectionist often perceives living as a series of coping strategies aimed at protecting a fragile self-identity. Perfectionism by this definition is unhealthy.

How can gifted individuals fight off the plight of perfectionism? Much of the answer lies in the training of teachers and provisions for a supportive classroom environment. Individuals trained to identify perfectionist tendencies can begin to include options that foster and nurture healthy risk-taking activities.

Science as a content area provides a unique opportunity for teachers and students to safely explore and take risks during the elementary and secondary school years. Science can be a means of battling perfectionism. In the following section, some pitfalls to student risk-taking are described from pre- to secondary school. However, I do not assume to have solutions to all obstacles that could be encountered.

The Withering Spirit of Exploration

"It has always seemed to me that ability to think critically and creatively is the prime cause for every important discovery that man has made." Albert Einstein

Toddlers freely explore their world causing much angst for many parents; fortunately toddlers are cute and that goes a long way toward appeasing an aggravated adult! As the child's understanding of cautionary language grows (e.g., Hot!, Ouch!, No!), the child's tendency to explore freely is tempered by parents concerned about safety and well-being. Children learn that risk-taking has either physical (pain) or emotional (punishment) consequences. When children reach school, they typically have elementary teachers with built-in aversions to math and science; as a result, their playful, imaginative, exploratory spirit withers further. At the secondary school level, science instills fear and anxiety in the minds and hearts of students as the world is examined through abstract vocabulary words, often poorly written tests, and fill-in-the-blank laboratory workbooks. Memorization and college preparation are primary focal points, with little emphasis on understanding and creative insight.

Textbook or Encyclopedia?

The process of doing science is grounded by an innate tendency to explore and take risks. Unfortunately, this spirit of exploration is not encouraged by textbooks or many classroom teachers.

Texts have a limited amount of space to present a vast quantity of material. Rarely is the overall process of discovery included with details of the tremendous number of mistakes made while researchers experiment. For example, Alexander Graham Bell worked on several ideas from 1872 until 1876 that ultimately led to a patent on the telephone – (see **www.jefferson.village.virginia.edu/albell/albell.html** for additional information). Yet, school texts, regardless of grade level, present two paragraphs or less describing the discovery of the telephone.

This is but one example of the encyclopedic method publishers employ when preparing science texts used in schools. Their goal or theory is to provide broad resources for teachers who may choose specific topics to explore in detail. Unfortunately, teachers do not seem to be privy to this design plan. Textbooks often account for the entire curriculum presented to students.

In a similar manner, classroom teachers typically provide detailed laboratory experiences (copied from the accompanying laboratory manual), often grading students' on their responses to structured guidelines and fill-in-the-blank questions. Students learn there are correct answers that must be found to earn credit. Making mistakes or exploring alternative possibilities during the laboratory activity, decreases or eliminates a student's ability to earn credit.

Mistakes are Learning

This is not an appropriate way to present the process of science to students. We make many mistakes on a daily basis that help clarify our understanding of ideas and events. With practice we can pare away superfluous possibilities in order to gain an accurate understanding about a phenomenon, or to find direction for additional exploration. In other words, mistakes are much more prevalent and productive than "correct" answers. Why isn't this process approach used in schools?

Many teachers are not comfortable teaching science, especially in the elementary and middle grades. Science instruction requires special content competencies that are not part of most elementary teachers' training. They often take only the minimum science requirement for graduation—frequently limited to a single course. They tend not to take courses in each science content area because of time limitations or personally perceived weaknesses in science knowledge and understanding.

Interestingly, most elementary science texts present material in a cross disciplinary manner, integrating biology, earth science, chemistry, and physics. But, since this is not the way the content areas were taught to them in their teacher preparations courses, most elementary teachers lack confidence in teaching science, even if they have had science courses from all content areas. Additionally, teachers are burdened with the requirement of

accountability. In typical classrooms, especially at the secondary level, credit is earned through testing. Science areas are separated from one another into specific curricular offerings with little or no integration, and taught by content specialist teachers. Gifted students may have a deep interest or passion in one area of science that can be nurtured by further study; but traditional sequencing of courses (i.e., earth science, biology, chemistry, then physics) preclude this option for most.

In this system, students are often physically moved in an assembly-line manner through science offerings. Each course is highly restricted in content and students are evaluated on the basis of what they do not know compared to others, rather than how they can apply what they do know. This is very disheartening to gifted learners who exhibit creative or perfectionist tendencies.

On A Positive Note

The study of science provides ways for individuals to explore the world around them and wonder at the mysteries yet to be uncovered. Science provides the opportunity to play around and make grand mistakes, while at the same time developing critical thinking (and tinkering) skills through the processes of analysis, synthesis, and evaluation.

Science is semi-structured risk-taking. When science is presented as an uncertain way of exploring, a parent or teacher can discourage perfectionist tendencies in children. "An environment where risk taking is valued, in which trust is developed, and where mistakes are seen as cues to aid learning relieves students of the need to be perfect" (Clark, 1997, p. 147).

Science is the process of mucking around—identifying problems, testing hypotheses, and drawing conclusions. To do science is to make mistakes, document the outcomes, learn from them, and then try again. Students gain understanding by following a trial-and-error scheme. Successful scientists revel in their mistakes, gaining conceptual understanding and applying this in interesting and novel ways to new explorations. If children recognize that much of the work in science involves making mistakes and then trying again, they will be less likely to become paralyzed perfectionists.

Science Standards and Gifted Education

The science education standards (National Research Council, 1996) provide a unified view regarding the teaching of science in K-12 schools. Representatives from all areas of science and science teaching contributed to and refined the standards based on outcomes necessary for entry level success in science occupations.

Examining one set of standards, parents and teachers of the gifted can observe that "best practices" in science teaching aligns very well with "best practices" in gifted education. The argument that gifted education is elitist loses all credibility when this alignment is pointed out.

The **National Science Education Standards** envision change throughout the system. The program standards encompass the following changes in emphases:

Less Emphasis On:	More Emphasis On:
Developing science programs at different grade levels independently of one another.	Coordinating the development of the K-12 science program across grade levels.
Using assessments unrelated to curriculum and teaching.	Aligning curriculum, teaching, and assessment.
Maintaining current resource allocations for books.	Allocating resources necessary for hands-on inquiry teaching.
Textbook- and lecture-driven curriculum.	Curriculum that includes a variety of components, such as laboratories emphasizing inquiry and field trips.
Broad coverage of unconnected factual information.	Curriculum that includes natural phenomena and science-related social issues that students encounter in everyday life.
Treating science as a subject isolated from other school subjects.	Connecting science to other school subjects, such as mathematics and social studies.
Science learning opportunities that favor one group of students.	Providing challenging opportunities for all students to learn science.

Source: National Research Council, 1996, p. 224.

Is Change Possible?

The information presented thus far makes a strong case for changing practices in teaching science in schools. Many programs have been developed that address issues of change. Several involve federally funded grant monies providing support and expertise to elementary teachers wanting to include science more appropriately in their classrooms. However, the benefits of most of these programs are temporary. Once the funding period is over, classroom practices tend to drift back to textbook and worksheet focus.

Curriculum must be developed that considers the varied needs of students and teachers in the science classroom. It must be diversified to include all broad areas of science in an integrated manner, while also enabling students to take responsibility for their learning. Moreover, the material must be developed with an open-architecture to allow all students (including the gifted) to self-pace their learning.

We must encourage teachers to develop a different philosophy of teaching than the one held by most of those currently practicing. We need to focus on placing responsibility for learning, assessment, and evaluation into the hands of the learners themselves. The teacher in this setting acts sometimes as an expert mentor; other times, as a communicator and negotiator finding expert mentors for students. Classroom management becomes classroom leadership in this setting; and control evolves into a sense of community spirit and fairness for all involved in learning.

Can this frame of thinking be put into practice? Yes. Education programs at institutions across the country have adopted the National Science Education Standards (1996) as guidelines for teacher preparation. In addition, training in the special needs of gifted learners is an emphasis area for many of my colleagues in the teacher education field at both the preservice and in-service level. As educators become more aware of the individual needs of students in their classrooms, and professional development aligns with best practices articulated in the professional literature, teaching practices will change.

In Practice: Problem Based Learning (PBL)

Is there any type of curriculum that currently exists that can be used to help guide this evolutionary process? Yes. An interesting approach to science teaching has been adopted from the training programs for physicians. It involves clinical exploration and diagnosis of a patient's malady based on information that is not provided in complete detail. The approach places responsibility for attempts to solve the problem directly into the hands of students; thereby, increasing the need for risk-taking tendencies and learning through a series of mistakes. This approach holds much promise as a means of battling perfectionism in gifted students in the science classroom.

One of the newest teaching approaches in science education uses unclearly defined problems. Students are provided the task of deducing what components are missing from the original information and then attempting to solve a problem. This framework was developed in the medical education community to train doctors to include both the patient's experience and the doctor's diagnostic abilities in identifying and treating a sickness.

PBL provides students challenging opportunities to explore an issue, with an open-ended architecture. Rather than providing a discrete set of procedures to be followed, PBL provides possibilities as open as the imaginations of the students for dealing with an issue. Students generate procedures to test various aspects of the unclear problem. Mistakes are encouraged as a way of limiting possibilities, and clearly articulating the problem at-hand.

Assessment involves multiple layers of achievement, including: the process used to develop and articulate the problem; procedures developed and their use in defining the problem, ongoing documentation of understanding and thinking processes, and plausibility of the final outcome as well as report generation based on the entire process. In this model, the student is placed in the realm of the scientist. Prior experiences, as well as beliefs, are challenged as the student dabbles with the information provided in search of a plausible solution to the dilemma.

Note that solutions to the problem are only one aspect of assessment and evaluation. This is where PBL used in the science classroom differs from that used in the medical training field. In medicine, the outcome (identifying and treating the "disease") is of paramount concern. Treatment provided that does not match the disease can be harmful or fatal to the patient. In the science classroom, the student in relation to the process used to reach it weighs the outcome (even if incorrect). The goal in K-12 classrooms should be plausibility in relation to the process used to reach the outcome. PBL offers one example of curriculum that promotes the exploration and process of science rather than discovery of correct answers. Additional work must be done to adequately adopt PBL for K-12 school settings and meet the needs of varied ability learners in these settings. After all, there are no quick fixes to education—a process that continually changes based on the interactions of all stakeholders involved.

This may not sound very "scientific"; since most of what is taught in K-12 schools revolves around correct and incorrect answers. Nevertheless, this open-endedness is pivotal to fostering thinking skills in students. Again, few of the discoveries made in science were developed on the first trial of the experiment. Most, if not all, discoveries came about during a process of trial-and-error that lasted months or years, in many different laboratories. In scientific research, the one constant is that multiple failures lead to clearer understanding about a phenomenon. This should be the goal of science teaching in K-12 schools. Yes, answers are important. However, consistently producing correct responses teaches little, and more likely increases perfectionism.

Teacher Resources

Jones, C.F. (1994). **Mistakes that worked**. New York, NY: Doubleday & Co. For grades 4-6, this book provides an introduction to the idea that scientists often stumble on discoveries while working in their laboratories in search of very different answers.

"The Great Idea Finder" available on-line at: **http://www.ideafinder.com/facts/fsp.htm**. Invention facts and myths are explored through web-pages describing mistakes that led to discovery of very familiar products.

"Inventure Place" in Akron, Ohio. Home of the National Inventor's Hall of Fame. A wealth of information is available for teachers, including histories of inventions and a searchable database. Visit their website at: http://www.invent.org.

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BOOK REVIEW FROM GIFTED EDUCATION NEWS-PAGE – JUNE-JULY 1999

Gifted Hands: The Ben Carson Story (1996) by Ben Carson with Cecil Murphey. Zondervan House Publishing, Grand Rapids, MI.– As a world renowned neurosurgeon, Ben Carson is known for his leadership in conducting difficult brain operations on children. His most notable accomplishment occurred when he led a team of 70 individuals in successfully completing the separation of seven month old babies joined at the head. This autobiography would be particularly inspiring for minority children because the author grew up in the Black ghettos of Detroit and Boston. (Most of his public schooling occurred in Detroit except for two years in Boston's schools.) Carson describes difficult years in elementary school until the school nurse identified his vision problems in the middle of the fifth grade. After being fitted with glasses, his performance in the upper elementary grades improved until he progressed to the top of his class in junior high and high school.

The major positive forces in his young life were his mother and older brother, Curtis, who later became an engineer. Mrs. Carson was determined that her sons would perform well in public school, attend college and be successful in life. In addition, she instilled ethical principles in Ben and Curtis through her religious teachings and involvement in church activities. She organized their life outside of school so that study and reading took precedence over everything including television. As a single parent, she was under serious economic and psychological pressures. In this regard, Carson says that she would leave home (after placing her children in the care of reliable neighbors) for weeks at a time to "visit friends." But years later he discovered that she voluntarily entered a mental institution during

these periods to receive psychiatric treatment. Mrs. Carson did not want to expose the children to her mental problems -- instead, she provided them with a stable home environment which eventually involved reclaiming a small house that she had rented to another family in order to pay the mortgage.

This combination of a strong-willed mother, bright children, and concerned educators produced amazing results. Ben became a high academic performer in junior high and high school. He graduated near the top of his class and became colonel of the Detroit ROTC high school brigade. At the final ROTC ceremony during his senior year, General William Westmoreland and two Congressional Medal of Honor winners attended and talked with Ben. Later he was offered a full scholarship to West Point. But he was not interested in a military career -- instead, he set his sights on attending medical school and becoming a psychiatrist. Yale University offered him a 90 percent academic scholarship where he successfully competed against some of the best pre-med students in the country. After finishing his undergraduate work at Yale, he was accepted at the University of Michigan Medical School. His interests turned to neurosurgery and upon completion of his four years of medical school, he went to Johns Hopkins University for his internship and five years of residency as a neurosurgeon. He is currently director of pediatric neurosurgery at the Johns Hopkins Hospital and has a worldwide reputation in this field.

Teachers, students and counselors should read this book and use it as an inspirational resource for study in the medical sciences. Besides providing details of the operation that separated the Siamese twins, the book contains the stories of many other surgical patients. Carson ends with the "Think Big" keys to success which emphasize talent development, learning the importance of time, hope, honesty, insight, being nice to people, knowledge, books, in-depth learning and God.

Sidney Lanier (1842-81) and the Tales of King Arthur by Michael E. Walters Center for the Study of the Humanities in the Schools

In 1880, the American poet Sidney Lanier retold the Tales of King Arthur in a way that was specifically for young males. This book, **The Boy's King Arthur** (1880), was for almost fifty years a popular literary staple for adolescents which influenced the social values of several generations of American males. For example, individuals such as General Pershing (W.W. I) and General Patton (W.W. II) were impressed with this book as teenagers. To understand the qualities that appealed to young male readers, it is helpful to briefly describe the life of Sidney Lanier.

He was born in Macon Georgia in 1842. As a child he organized military types of activities, and he perceived White Southerners as knights who continued the values of chivalry established in England in the Middle Ages. During the American Civil War he and his brother fought in the Confederate Army. Sidney was at first a calvary officer in Virginia but was transferred to a blockade runner as a signal officer. He was captured and spent four months in a cruel prisoner-of-war encampment at Point Lookout, Maryland.

After the war, Lanier returned to his home in Macon, Georgia as a penniless and sick Civil War veteran who suffered from tuberculosis for the rest of his life. For a short while he practiced law but the lure of writing and literature attracted him to Baltimore in 1873. There he was associated with two institutions that had national reputations -- the Peabody Conservatory of Music and the Johns Hopkins University. At Peabody he became a renowned flutist despite his tuberculosis. In addition, he taught comparative literature at Johns Hopkins, and was considered to be one of the leading poets in the United States, e.g., "The Marshes of Glynn" (1898). Near the end of his life, he edited children's books and wrote popular poems for children and adolescents. His last literary achievement was **The Boy's King Arthur** (1880).

The values expressed in Lanier's King Arthur book were derived from his personal experiences in Georgia and during his participation in the Civil War. The first value was a sense of duty -- although one might be defending a losing cause. What mattered was the courageous expression of one's duty for a higher ideal rather than winning. For Lanier, Confederate soldiers were like the knights of King Arthur's roundtable. The second value was concerned with defining manhood by using physical courage to express ideals, e.g., the Southern cause was not primarily driven by slavery, but by the desire to maintain a culture which included chivalry and the ideals of Arthurian romance.

Lanier sought through his book on King Arthur to: (1) present the Confederate value system to the entire younger generation of Americans; and (2) justify the Lost Cause of the Confederacy. It would be interesting for gifted students to study the degree to which Arthurian romances still influence American culture. For example, is Star Wars the Arthurian romance of today's adolescent generation? Perhaps the values that Lanier perceived in the Arthurian romance have a wider universal appeal than we are aware of.

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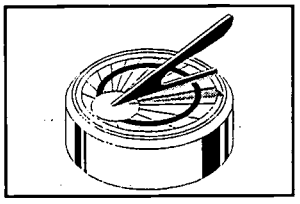

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In April I visited Capitol Hill to refresh my memory about one of this nation's greatest institutions, the Library of Congress, and to join in the celebration of its 200th anniversary. Gifted children can increase their understanding of many areas of American society by studying the origins and development of this national treasure. For example, they could learn about how Thomas Jefferson gave it a major boost by selling his personal collection of over 6,000 books to start the LOC. (Today it consists of more than 27 million volumes.) The United States purchased Jefferson's books over the objections of many Federalist members of Congress who thought the range of topics covered was too broad and unfocused. In celebration of its 200th anniversary, the Library of Congress will display about 90% of the original Jefferson titles -- 3,300 books are copies that serve as replacements for originals destroyed in an 1851 fire. It would be interesting for gifted students to study and classify some of these titles in order to draw conclusions about Jefferson's interests, particularly the influence of the Age of Enlightenment on his reading habits.

The architecture of the Jefferson Building of the Library of Congress exhibits brilliant craftsmanship on both the external facade and inside the Great Hall and Main Reading Room. (The style is a mixture of the Classical Greek, Baroque and Federal schools of design.) Particularly impressive are the beautiful domes, marble columns and stairways, and statues and paintings. Along the walls of both of these rooms, one sees statues and paintings of the great thinkers of world history and their quotations on philosophy, law, poetry, religion, science, etc. Of course, another major area of study for all gifted students would be to learn about the Library's collection of books, papers, musical scores, audio recordings, films and pictorial materials. The CD ROM entitled, "Eyes of the Nation" (1997), would help students to delve more deeply into these archives.

In this issue, Paula Olszewski-Kubilius, Director of the Center for Talent Development at Northwestern University and her colleague, Lisa Limburg-Weber present an excellent discussion of resources for high school gifted students. The problem of teaching mathematics to the gifted is ably addressed by Semyon Rafalson, a high school teacher of mathematics who received his doctorate in this field from Leningrad State University. He emigrated to the United States from the former USSR in 1989. This issue also includes a review of the ***Iowa Acceleration Scale*** (1998) by Dan Holt who is known for his work on studying humor in gifted children and using MI theory in gifted education. Michael Walters concludes with an article on The Actors Studio and cooperative learning.

Maurice D. Fisher, Publisher

HERE COMES HIGH SCHOOL: UNDERSTANDING AND PLANNING FOR YOUR CHILD'S EDUCATIONAL FUTURE

BY PAULA OLSZEWSKI-KUBILIUS AND LISA LIMBURG-WEBER
CENTER FOR TALENT DEVELOPMENT
NORTHWESTERN UNIVERSITY

By the time their children begin high school, parents have had a great deal of experience with the educational system. They have probably interacted with teachers dozens of times over many different issues, and received both positive and negative responses. Parents may feel they are quite well versed in the organization and structure of schools, chains of authority and decision making, and communication patterns. They know whom to call for each particular problem. But, just when they have figured things out, parents of adolescents must readjust their thinking and orient themselves to a different organizational structure—the high school.

High schools are generally larger institutions than elementary and middle schools. There are more students and teachers to contend with. Teachers are not organized or grouped by grade, but by departments that correspond to subject areas. Students' schedules are typically more complex, and they have many more choices about the classes they take and the activities they participate in. Counselors assigned to provide academic advising usually have hundreds of students to deal with, with a wide range of abilities and problems. There may or may not be a home room teacher, and usually, counselors provide the link between home and student.

At the same time that students are dealing with a more open, complex environment, there are more decisions to make, and the potential impact of those decisions (i.e. which courses, what extra-curricular activities, which groups of friends) on a child's future seems much greater.

For parents of a gifted child, there is the added concern of whether the high school curriculum will be adequate, whether the child's placement will be appropriate, and whether the school climate will support continued achievement. A major worry for parents is the effect of the peer culture on their child's achievement.

How can parents handle all the changes brought by the transition to high school and insure that their gifted children get the most out of secondary school? Two concepts are critical—knowledge and advanced preparation/planning. Parents need the following kinds of information in order to enable their child to get the most out of high school:

1. Knowledge about their child's specific areas of academic strength and potential; and
2. Knowledge about the various types of programs that can develop their child's academic abilities and are appropriate for the high ability learner and about ways to get access to such programs, whether through the local high school, through other community institutions or resources; or through other programs nationwide.

Parents equipped with this knowledge will be able to more effectively chart their child's educational course—and avoid shipwrecks along the way.

Understanding Your Gifted Child's Strengths and Potential

The process of planning a child's education and preparing him or her for success—in high school, college, and beyond—begins early. Most parents of a highly able child become aware during their child's primary school years that he or she may require special placement or programs to be appropriately challenged in school. Understanding each child's special constellation of gifts and talents is key to beginning the long-term planning process.

How do parents ensure that they understand their child's area(s) of giftedness? Most parents rely heavily on two sources of information: school grades, and scores on in-grade achievement tests (such as the Iowa Tests of Basic Skills, the California Achievement Tests, etc.). If their child is presenting straight-A report cards and receiving above average scores on achievement tests, parents usually do not see a need for further scrutiny of the child's abilities. Grades and achievement test scores certainly are important ways of evaluating children's current levels of achievement and progress through the years. However, exclusive reliance on these measures can result in an incomplete picture of academically gifted children's areas of strength.

The grades that gifted children receive in school can be deceptive in two ways. First, gifted students who are underachieving in school (because of boredom, a bad match between the child and the curriculum, or other issues) may well show a pattern of poor grades, even if both their understanding of course material and their potential to achieve are very high. For these students, poor grades may be a symptom not of poor ability, but of above average ability masked by other issues.

Second, gifted students who are achieving highly in school may show a pattern of excellent grades across every subject area. Parents, however, may have a hard time discerning whether

such a child is actually working up to his or her ability level in every academic area. Achieving all As in grade-level schoolwork can be a sign that the child is well-placed in school and is working hard. But there is another possibility. A child may be getting good grades because, given that child's ability level, the assignments are very easy and the class pace is slow. Such a child may be capable of handling much more advanced or fast-paced school-work.

Similarly, in-grade achievement test scores provide only part of the information parents need to understand their gifted child's abilities. Such tests are designed to measure whether children have mastered grade-level content in specific subject areas; thus, they contain only a small number of questions that would be difficult for the average child at that grade level to answer. What these test scores don't show is how much higher the child might have scored if the test contained a larger number of difficult questions.

For instance, sixth-grade students who score very highly on the mathematics portion of an achievement test (say, in the 95th percentile and above) are essentially demonstrating that they have mastered most or all of the mathematical concepts that the test makers expect sixth-graders to have learned. But there still may be significant differences among the sixth graders who score at this level.

One sixth grader scoring in the 97th percentile in mathematics, for instance, might be well-placed in his current math class. "Alex" might benefit from some additional math enrichment activities, but in general, he is being adequately challenged with grade-level mathematics instruction.

Another sixth grader with an identical score, on the other hand, might have much higher potential in mathematics. "Sarah" may have "hit the ceiling" of the test; in other words, she answered all of the sixth-grade questions correctly, but because the test did not include seventh- or eighth-grade questions, she was unable to demonstrate the extent of her advanced understanding of mathematics. Sarah might be capable of moving directly into an accelerated, honors-level algebra class in seventh grade—two years earlier than expected—but the test does not distinguish between her abilities and those of Alex.

Because grades and in-grade achievement tests are only two pieces to the puzzle of understanding the gifted child's academic strengths, parents must consider other ways of gaining information about their child's potential and needs. Some parents choose to have their children individually tested by an educational specialist experienced with gifted children. This option yields extensive and often very helpful feedback on the child in a number of areas. It is especially important that parents seek individualized professional assistance if they suspect that psychological issues such as depression or anxiety, lack of motivation, or family stress may underlie their child's pattern of poor school achievement.

Unfortunately, expert individual psychological/academic assessment can be time consuming, expensive, and difficult to locate. Off level testing, through one of the national level talent searches, is a much less expensive and readily available option for most families.

An off level (or "above-level") test is any test given to a younger-than-average student for the purpose of assessing above-average ability. In this country, the ACT and SAT (college-entrance exams) are used as off level tests for children in sixth through eighth grades, and the EXPLORE test (developed as a test for eighth-graders) is used as an off level test for fourth, fifth, and sixth graders. These tests, when given to students who are two to four years younger than the average test taker, contain enough difficult items to give a more accurate picture of the gifted child's abilities and potential.

If the sixth graders in our example had the chance to take the SAT, "Alex" may have scored a 300 on the mathematics portion of the SAT, while "Sarah" might have scored a 700. These SAT test scores would make the difference between Alex's and Sarah's abilities much clearer—and would help parents and teachers more effectively plan appropriate educational options for both children. Might both children still be considered "gifted"? Certainly. But their needs, in this particular subject area, are very different.

Off level tests such as the ACT or SAT can be accessed most easily through an established Talent Search program. Currently, four university based centers for gifted education in the US offer a yearly Talent Search for gifted students in fourth through eighth grades: Duke University, Johns Hopkins University, Northwestern University, and the University of Denver (see below for contact information). Students sign up for tests in the fall and take the tests in the winter of each year, and high scoring students are recognized in special Awards Ceremonies each spring. Across the country, over 100,000 gifted students each year use the Talent Search testing process to help them and their families better understand their academic achievement and potential.

Some Talent Search programs send students not only test scores but also extensive counseling materials designed to help them and their families move into the next stage of planning for their educational futures. For instance, the Center for Talent Development at Northwestern University sends each student a personalized Long-Range Academic Planning Form, along with lists of recommended high school course sequences that correlate with students' exam scores. CTD also provides students with contact information for hundreds of special programs. Such material can help parents focus on the next big

task after the child's abilities and talents have been assessed and understood: planning for high school and college.

Planning for Your Gifted Child's Educational Future

By the time your child is in middle school, the path he or she plans to follow in high school, including specific courses s/he plans to take, should be articulated in writing. This exercise will make it very clear what classes and opportunities can be provided by the high school and which ones need to be obtained via other institutions and organizations that exist outside of school.

Planning should take place with the following goals in mind:

1. Produce an articulated sequence of courses within each major subject area (language arts, mathematics, social science, science, and foreign language). Include courses at the highest level possible given your child's interests and ability levels, and areas of talent.
2. Outline outside-of-school educational options and extra-curricular activities, if needed to provide advanced courses or extra opportunities.
3. Indicate experiences and preparation in the form of volunteer work, paid jobs, or course work, that will prepare your child to be able to pursue several different college majors at selective institutions of higher education and that will give your child experience with different careers he/she is interested in.

Seek the assistance of teachers and department chairs from your local high school in devising your plan. Ask specifically about the courses available within a subject area, those recommended for high ability students, and options for taking advanced courses if they are not available in your local school. If you plan for your child's school to recognize or give credit for courses taken elsewhere, it is especially important for you to stay in close communication with school officials about your plans.

As part of this planning process, parents and students must also familiarize themselves both with other programs which may be appropriate for their children, e.g., Advanced Placement (AP) courses, the International Baccalaureate Diploma Program (IB), dual enrollment programs, study abroad programs, distance learning programs, mentorships and internships, contests and competitions, and early college entrance programs. A brief description of each type is provided below, as are lists of programs.

Finally, families should begin to accumulate knowledge about activities within the local community that can augment your child's high school program, including courses at the local university, courses through a cultural institution such as a museum, opportunities for significant volunteer work, etc. Talk to other parents of very able children to obtain information and referrals and use community listings of programs.

Below is an example of such a plan in the area of mathematics for a student such as Sarah, from our example above, who is talented in math:

8th grade: algebra (provided in school) -- summer after 8th grade: algebra 2 (need to seek a summer program)
9th grade: geometry (taken in school) -- summer after 9th grade: volunteer in community math tutoring program (to explore interest in a teaching career)
10th grade: Pre-calculus that includes trigonometry, graphing and functions (taken in school) -- summer after 10th grade: AP Statistics (need to seek a summer or distance learning program)
11th grade: AP Calculus (taken in school) -- summer after 11th grade: seek a career-shadowing program in the area of engineering or computer programming; research programs available at different colleges and universities
12th grade: College level math course (e.g., Linear Algebra, Differential Equations or Discrete Mathematics)—taken at local college, university summer program or via distance learning program
Extra-curricular activities: participate in school math club and Mathematics Olympiad competition.

Program Options for Academically Gifted Students

1. In School Options

Advanced Placement Courses (AP)—The AP program is conducted by The College Board. AP classes are college level courses which students take while in high school. The courses are typically taught by high school teachers at the student's school. By completing the course, students earn high school credits. To earn college credits, students must obtain certain scores on the AP exam (typically at least a 3 on a scale of 0 to 5) which is given in May. Students can prepare for an AP exam via independent study with a teacher or mentor and can take AP exams without having completed an AP course. There are currently 32 AP courses available from The College Board. Check with your local high school regarding AP courses offered. AP courses can also be taken through a distance education program, such as the Center for Talent Development's (CTD) LetterLinks Program, or through some summer programs. For more information you can also contact The College Board at Columbus Avenue, New York, NY 10023-6992, 217.713.8066, or http://www.collegeboard.org/

Dual Enrollment is a program that exists by legislation in certain states (currently 22). It is also referred to as post-secondary option. Dual enrollment allows high school students to take college classes through a local university or college, while they are still enrolled in high school. Check with your local school administrators or with the gifted education

coordinator for your state for more information about this option. Dual enrollment legislation varies by states and stipulates when such courses can be taken (typically during grades 11 and 12), how many courses can be taken, eligible colleges and universities, fees (most often covered by high school), credits earned, etc.

International Baccalaureate (IB) is an international program that exists within select high schools throughout the world and consists of courses that students take during the last two years of high school. Students who complete the full program earn an IB diploma. The IB program has its own curriculum which includes a theory of knowledge course, a creativity, action, and service requirement, a research project, and academically rigorous set of courses which emphasize second language proficiency, and a formal examination requirement. The IB program is considered academically challenging and rigorous and is highly regarded by colleges and universities. It may be especially attractive to students who anticipate earning a degree abroad or who are planning an international career. To find out which high schools in your area offer IB, contact your local superintendent or the IB organization at the North American and Caribbean Regional Office, 200 Madison Ave., Suite 2007, New York, NY, 10016, 212.696.4464, e-mail IBNA @ibo.org, website: http://www.ibo.org

2. **Options Beyond the Local School**

Talent Search programs (described above) are offered through gifted education centers at four universities. All of these centers also offer summer programs for gifted students, as well as a other programs.

Center for Talent Development (CTD)
Northwestern University
617 Dartmouth Place
Evanston, IL 60208
phone: (847) 491-3782
fax: (847) 467-4283
http://www.ctd.nwu.edu

Institute for the Academic Advancement
of Youth (IAAY)
The Johns Hopkins University
3400 North Charles Street
Baltimore, MD 21218
phone (410) 516-0337
fax: (410) 516-0200 Registration
(410) 516-0325 Info Service
http://www.jhu.edu/~gifted

Rocky Mountain Talent Search (RMTS)
University of Denver
2135 East Wesley
Denver, CO 80208
phone: (303) 871-2533
fax: (303) 871-3422
http://www.edu/education/ces/ces.html

Talent Identification Program (TIP)
Duke University
Box 90747
Durham, NC 27708-0747
phone: (919) 684-3847
fax: (919) 681-7921
http://www.tip.duke.edu

Distance Learning is defined as any educational situation in which the teacher and instructor are not face to face. There are many different forms of distance learning courses including traditional by-mail correspondence courses; two-way, interactive audio and video classes; classes using the internet; and CD-ROM based courses. The advantage of distance learning courses for gifted students is that they can be done on the students own time. Gifted students can use these programs to take courses that are unavailable in their local schools, to take more advanced courses, to take advanced courses early, and to take additional courses for enrichment. Several Talent Search centers offer some form of distance education. Other sources include universities offering college level courses on-line, as well as commercially available high school level courses.

Summer Programs are a good way to supplement a student's school curriculum. There are many summer programs across the US, including those offered through the Talent Search centers (see above). Summer programs offer gifted students the opportunity to take advanced classes earlier than usual and to supplement their school course work with enrichment courses. Summer programs differ widely in the challenge level of the courses, the length of the program, and additional features beyond the academics such as recreational and cultural components. Students interested in obtaining school credit for courses taken during the summer should also investigate whether the program is accredited. Currently, among the four Talent Search centers, only the Center for Talent Development has received accreditation for its programs.

Study Abroad can help students acquire first-hand knowledge of another culture and increase facility with a foreign language. Study abroad programs include summer and academic year programs. While most study abroad programs are not specifically marketed to gifted students, if chosen wisely, they can be an excellent educational option. Programs vary on a variety of dimensions such as living arrangements, costs, degree of structure, required classes, opportunities to travel, etc. For a listing of over 200 programs for students, ages 12-19, see the following book: Council on International Educational Exchange, *The High School Student's Guide to Study, Travel, and Adventure Abroad*, 5th Ed. New York: St. Martin's Press, 1995.

Full Time Early College Entrance is a viable option for some gifted students. A great deal of research has been done on early college entrants and has shown that they excel academically in their college studies and do not experience problems socially. There are currently 11 early college entrance programs at various institutions in the US. In many of these programs, students simultaneously complete high school course requirements while taking college classes. Three of the 11 programs admit students as much as 3 to 4 years earlier than usual. Most colleges and universities will admit students as full time students one or two years early.

The Early Entrance Program at California State University
phone: (213) 343-2287
e-mail: rmaddox@calstatela.edu

Simon's Rock College
84 Alford Road,
Great Barrington, MA 01230
phone: (413) 528-7312
http://www.simons-rock.edu

The Clarkson School
Price Hall, Clarkson University,
P.O. Box.5650, Potsdam, NY 13676
phone: (315) 268-4425
http://www.clarkson.edu/~tcs

The Early Entrance Program at the University of Washington
Guthrie Annex II, NI-20,
Seattle, Washington, 98195
phone: (206) 543-4160
e-mail: cscy@u.washington.edu
http://weber.u.washington.edu/~cscy/eepblue.htm

The Program for the Exceptionally Gifted at Mary Baldwin College
Staunton, Virginia 24401
phone: (540) 887-7039
e-mail: PEG@cit.mbc.edu
http://www.mbc.edu/academic/undergraduate/peg/

The Texas Academy of Mathematics and Science
phone: (940) 565-3606
http://www.tams.unt.edu.

The Advanced Academy of Georgia (AAG) at the State University of West Georgia
Carollton, GA 30118
phone: (770) 836-4449
http://www.westga.edu/~academy

The Texas Academy of Leadership in the Humanities (TALH) at Lamar University
Dr. Mary Gagne at (409) 839-2995.

The Residential Honors Program at the University of Southern California
Penny Von Helmolt at (213) 740-2961.

Special Residential Math/Science High Schools are special high schools in the US designed particularly to meet the needs of students who are interested and academically talented in science or mathematics. These schools are supported by state education moneys and most often, tuition and room and board are free. Most serve students in grades 11 and 12 only. These schools offer an advanced and highly specialized curriculum, e.g. research opportunities, in math and/or science. They also offer a unique and unusually supportive social environment for gifted students. Currently, there are 10 such schools in the US:

The Alabama School of Mathematics and Science
Executive Director: Dr. David J. Laurenson
1255 Dauphin Street
Mobile, Alabama 36604
Phone: (334) 441-2100
Fax: (334) 441-3290
http://www.asms.net

The Arkansas School for Mathematics and Sciences
Director: Dr. Robert Peters
200 Whittington Avenue
Hot Springs, AR 71901
Phone: (501) 622-5100
Fax: (501) 622-5109
http://www.asms.k12.ar.us

The Illinois Mathematics and Science Academy
President: Dr. Stephanie Pace Marshall
1500 West Sullivan Road
Aurora, Illinois 60506-1000
Phone: (630) 907-5027
Fax: (630) 907-5976
http://www.imsa.edu

Indiana Academy for Science, Mathematics, & Humanities
Executive Director: Dr. Tracy L. Cross
Wagner Hall
Ball State University
Muncie, IN 47306
Phone: (765) 285-8125
Fax: (765) 285-2778
http://www.academy.bsu.edu

The Louisiana School for Math, Science, and the Arts
Executive Director: Brother David Sinitiere
715 College Avenue
Natchitoches, LA 71457
Phone: (318) 357-3174
Fax: (318) 357-3299
http://www.lsmsa.edu

The Maine School of Science and Mathematics
Director: Dr. Dottie Martin
77 High Street
Limestone, ME 04750
Phone: (207) 325-3303
Fax: (207) 325-3340
http://www.mssm.org

The Mississippi School for Math and Science
Director: Mike Neyman
P.O. Box 1627
Columbus, MS 39701
Phone: (601) 329-6118
Fax: (601) 329-7205
http://www.msms.doe.k12.ms.us

The North Carolina School of Science and Mathematics
Executive Director: Dr. John Friedrick
P.O. Box 2418
Durham, NC 27715
Phone: (919) 286-3366
Fax: (919) 286-7249
http://www.ncssm.edu

The Oklahoma School of Science and Mathematics
President: Dr. Edna McDuffie Manning
1141 North Lincoln Blvd.
Oklahoma City, OK 73104
Phone: (405) 521-6436
Fax: (405) 521-6442
http://www.ossm.edu
e-mail: e-manning@ossm.edu

South Carolina Governor's School for Science and Mathematics
President: Dr. Leland H. Cox, Jr.
306 East Home Avenue
Hartsville, SC 29550
Phone: (843) 383-3900
Fax: (843) 383-3903.
http://www.gssm.coker.edu

Contests and Competitions offer students an opportunity to augment their school programs with extra-curricular programs. Benefits of competitions include an opportunity to work on an independent project, feedback on one's standing within a field relative to other students, evaluative feedback from professionals who work in the field, and a chance to win awards and cash prizes. Two very good resources for information on competitions and contests written specifically for gifted students are:

Mary K Tallent-Runnels and Ann C. Candler-Lotven (1996). *Academic Competitions for Gifted Students: A Resource Book for Teachers and Parents.* Corwin Press: Thousand Oaks, CA.

Frances A. Karnes and Tracy L. Riley (1996). *Competitions: Maximizing Your Abilities.* Prufrock Press: Waco, TX.

Internships are exchanges of work for learning. Internships are ways for gifted students to learn about career fields and to do substantive, real-life work in an area. Through internships, students can have contact with individuals who can provide advice on educational and career decisions. Internships can be set up locally through your school by connecting a student with a community member. Many internships exist within corporations and businesses; while most of these are for college aged students, increasingly more of them are for high school-aged students. For a list of internship opportunities, see the book:

Gilbert, Sara Delaney (1997). *Internships. The Hot List for Job Hunters.* Indianapolis, IN: Macmillan.

A good source of information for students, parents and educators regarding all of the program options listed above is the magazine, *Imagine*, which is written specifically for gifted students of middle and high school age. It profiles specific programs and often includes articles written by students who have participated in them. It also contains information about college planning and selection and a profile of a different college or university in every issue.

Imagine—The Johns Hopkins University, The Johns Hopkins University Press, 2715 North Charels Street, Baltimore, Maryland 21218-4363, 410.516.6857.

More information about these programs can also be obtained from the Center for Talent Development's website (www.ctd.nwu.edu), or by requesting CTD's publication: Designs for Excellence (see contact information, above).

As you arm yourself with knowledge about opportunities for talented students during the high school years, remember that it is critical that parents stay very involved in their child's education. Your wisdom and knowledge is needed to help with issues such as which courses to take, how to manage competing activities, how to juggle time and commitments, and how to manage stress. Your input into planning your gifted child's education can help him or her make choices that will literally last a lifetime. ☎ ☎ ☎

"To those intelligent people, it must seem absurd to liken mathematics to music as an art to be savored and enjoyed even in one's leisure time. Yet that is how it should appear and could appear if it were playing its proper role in our (otherwise) civilized society. Just as an appreciation of music is a hallmark of the educated person, so should be an appreciation of mathematics. . . ." From the Foreword: Mathematics in Our Culture by Professor Peter Hilton, 1996. In **Mathematics: From the Birth of Numbers** (1997) by Jan Gullberg.

HOW TO TEACH MATHEMATICS TO GIFTED STUDENTS

BY SEMYON RAFALSON, Ph.D.
JOHN JAY HIGH SCHOOL BROOKLYN, NEW YORK

There is no doubt that gifted students (in particular, students gifted in mathematics) need special attention from both parents and educators. What is more, such students need the support of the whole nation. Although every gifted child will not necessarily grow into a famous scientist or other professional, the probability of such an event is substantial. The nation should take exemplary care of gifted children as they are very likely to make future breakthroughs in one or more areas of human endeavor. In sum, gifted children are a national treasure.

I would like to emphasize that the challenge of teaching mathematics to gifted children is a multilateral one that cannot be addressed in one article. The complexity of this challenge is further complicated by the fact that the methods used for teaching pre-adolescents and adolescents have to be somewhat different. Distinctions are necessitated by developmental stages in the thinking process. In this paper, I will focus on teaching algebra to gifted high school students.

The first obvious question that arises in connection with the mathematical education of gifted children is whether current textbooks provide the proper level of presentation of the required mathematics curriculum. In my opinion, and to my deep regret, the answer to this question is no. I cannot discuss here, in detail, current textbooks on high school mathematics. I can only point out their two major defects: (1) textbooks are over-saturated with diverse, disconnected concepts and facts; and (2) proofs of many statements are missing.

During the early fifties in the former USSR (from which I emigrated with my family in 1989) there arose the following situation in teaching high school mathematics. The level of high school mathematics schooling turned out to be insufficient to meet requirements of the leading universities and colleges of the country. In order to rectify the situation, the publishing house of the Moscow State University released a series of books and other instructional materials (many of them were written by Professor P.S. Modenov) in which many topics of the high school mathematics curriculum were considered in greater depth compared to standard high school textbooks on mathematics. The emphasis was placed on: (1) presentation of many topics in a logical, rigorous manner; and (2) analyses of typical mistakes made by high school graduates on college entrance exams. In addition, these textbooks contained many challenging mathematical problems at the high school level.

I graduated from high school in 1951 and in the same year entered the mathematical faculty of the Leningrad Pedagogical Institute. In the course of my entire pedagogical career, Modenov's books served me faithfully. In fact, these books made a good substitute for textbooks on methodology of teaching high school algebra (which did not exist in the USSR at that time) for prospective and acting teachers of mathematics. In particular, it was a remarkable accomplishment in the methodology of teaching high school algebra and trigonometry, that P.S. Modenov, working with S.I. Novoselov, developed a new approach to teaching methods of solving equations, inequalities, systems of equations and inequalities. Their approach was based on the theory of equivalency. It permitted the whole solution process to be made logically irreproachable. There is not a shadow of a doubt that these ideas are of exceptional value for students and teachers of mathematics worldwide. The books written by P.S. Modenov contain valuable methodological material related to many topics of the high school mathematics curriculum -- in particular, on systems of linear equations, on generalization of the concept of a power, on polynomials and polynomial equations, on different concepts of logic, on mathematical induction, on the theory of trigonometric and inverse trigonometric functions, etc. It would not be an exaggeration to state that the printing of numerous books by Modenov resulted in a tangible improvement in the quality of knowledge of high school mathematics in the former USSR (and even more so of gifted students).

In summary, the first important direction that deserves close attention from mathematicians and pedagogues (in connection with teaching mathematics to gifted students) should be writing special textbooks and other educational materials in which the topics of the high school mathematics curriculum are presented with consistency, logic and all necessary proofs. Publications of this type would be very helpful for: (1) acting and prospective teachers of mathematics; and (2) students who have a special interest in mathematics.

One of the major concerns for a teacher who is teaching mathematics to gifted students should be profound and multilateral development of these students' algebraic skills. Without student mastery of algebraic technique, it is absolutely meaningless to talk about their mathematical education. It is a very well known fact that many problems in geometry, trigonometry, analytic geometry, calculus, etc. can be reduced to algebraic problems, so that proficiency in high school algebra becomes a prerequisite for studying all of those subjects. Algebraic techniques have many aspects. Some of them are: the ability to perform transformations with polynomials, algebraic fractions, power and radical expressions, logarithms, ability to factor polynomials, mastery in solving equations, inequalities, systems of equations and inequalities, and proving identities and inequalities. No later than in grade 9, all gifted children should

remember formulas for $(a+b)^2$, $(a-b)^2$, $(a+b)(a-b)$, $(a+b)^3$, $(a-b)^3$, $(a+b)(a^2 - ab + b^2)$, $(a-b)(a^2 + ab + b^2)$.

The mastery of algebraic skills under discussion cannot be reduced to simply juggling formulas. A teacher working with gifted students must teach them to be logically consistent when solving a problem or proving a theorem. The teacher should be especially attentive when reading a student's paper or listening to a student's oral presentation. Every (even "small") flaw in logical reasoning should be detected by the teacher. The teacher cannot afford to be lenient in this respect. Not only geometric proofs require strict logic. Sometimes solving equations, inequalities, and systems of equations and inequalities require strict and even refined logical thinking. For a mathematical education of high quality, it is very important that a student be able to distinguish a conjecture from a proof, and a heuristic method from a rigorous proof. I think that thorough discussion and constant use of the method of mathematical induction will contribute a great deal to the development of gifted students' logical thinking.

A very important part in the mathematical education of gifted students should be played by so-called "word problems." Sometimes a "word problem" represents a real-life situation and students find that interesting. A teacher should teach his/her students how to make up a formal mathematical model adequate to this real-life situation. Thus, modeling is the first stage in solving every word problem. I am convinced that the adequacy of the mathematical model to the original problem is the key question. The second stage of the process of solving a word problem is to solve the algebraic model using algebraic techniques. There is one more aspect to solving a word problem that deserves attention. The point is that when a science or economics specialist has to solve a word problem whose plot comes from his subject area, this person is interested, for the most part, in solving the problem in letters (versus with numerical data). Replacing numerical data with parameters opens many opportunities for a solver. In particular, he/she can, by assigning specific numerical values to the parameters, verify the plausibility of the answer.

When discussing the challenge of developing gifted students' logical thinking abilities, I cannot ignore the inexplicable fascination of authors of some textbooks on high school mathematics with so-called "formal proofs" in geometry. When carrying out these proofs, students are urged to refer to numerous postulates regarding equality of numbers, congruency of line segments, angles, triangles, etc. Many of those postulates are completely obvious from the common sense point of view. Some postulates are in fact substantial theorems that have to be proved. This approach to geometric proofs is absolutely irrelevant in a high school setting. It would be appropriate only for mathematics majors studying a formal axiomatic system of geometry. A student's attention is shifted away from the search for creative ways of proving a statement towards the time consuming, tedious chore of referring to a proper postulate. I am convinced that formal geometric proofs should be banished from the high school mathematics curriculum once and for all. I will add here that the formality of the proving process interferes in a negative way with the creative solution of more difficult geometric problems. We, teachers of mathematics, must teach students to carry out informal geometric proofs logically and consistently. There is no doubt that the level of difficulty of geometric proofs should be increased.

I would like to direct the reader's attention to one more important aspect of teaching mathematics to gifted students. The high school mathematics curriculum contains too many different concepts from different areas of mathematics (algebra, geometry, trigonometry, analytic geometry, logic, probability, statistics). Teachers of mathematics have to resist the temptation of introducing too many different concepts over a short period of time. Even for gifted students, it is impossible to assimilate many concepts unless enough time is provided. The introduction of a new concept requires the utmost circumspection. Motivation is a very important first stage in the process of introducing a new concept. Probably, even more important, is to teach students how to make use of the new concept, and how to prove different statements related to it. In other words, students have to see the new concept at work. Only after this goal is accomplished, can a teacher move on to the next concept. The comparatively high level of students' performance in high school mathematics in the former USSR (at least in part) can be attributed to the fact that students have been given enough time to assimilate new concepts.

I will address one more issue of teaching mathematics to gifted students. A teacher of mathematics should teach his/her students to express mathematical ideas by means of very accurate, precise language. In connection with the correct language problem, it is absolutely necessary to conduct oral questioning of the students. Students should come to a blackboard and make a presentation. A teacher should pay close attention to the correctness of the student's logical thinking and correctness of language. And, what is more, a teacher should ask the whole class to listen carefully to the oral presentations of their classmates and detect any mistakes. Slovenliness in thinking or language is intolerable when working in mathematics. I also believe that comprehensive oral examinations should be instituted at the end of each term. Though this may cause some financial and organizational problems, nonetheless it is impossible to overestimate the benefits of such exams.

I consider it a very serious defect of the high school mathematics curriculum that solid geometry is not included. As a consequence, college freshmen majoring in mathematics, science or engineering have to study solid geometry in college, whereas they could begin learning solid geometry successfully while in high school.

Another important issue is concerned with avoiding boredom in the classroom. Teaching mathematics to gifted students should not be *made* boring. (This refers especially to middle school children.) To this end, when making a presentation of some new material, a teacher should highlight the basic, most important ideas of the topic at hand and facilitate understanding of those ideas by the students. Whenever relevant, a teacher can provide some levity in the classroom by offering entertaining mathematical problems, A teacher can stir students' enthusiasm towards mathematics by introducing interesting mathematical games. (Some of them are very rich in content.)

Next, I will discuss problems related to different kinds of mathematical contests, as part of the system of working with gifted students. In the former USSR, mathematical olympiads started in the 1930's. The mathematical olympiad became a traditional annual event; it involved gifted students from grades 5 to 10 (the last high school grade). In Leningrad, where I grew up and studied, mathematical olympiads were set up in three stages: school-wide, district-wide, city-wide. Winners of the city-wide contest received special diplomas and were given some privileges on college entrance exams. Long before the contest, the publishing house of the Leningrad State University published collections of mathematical problems to help students prepare for the olympiad. In many cases, high school teachers of mathematics organized after-school sessions to help students interested in mathematics better prepare for the olympiad. Some of the gifted students attended mathematical meetings at the Leningrad State University where mathematical sessions were conducted by highly qualified professional mathematicians. One has to acknowledge that mathematical olympiads in the former USSR enjoyed wide popularity.

Nevertheless, I would like to warn mathematical educators against excessive passion for the competitive aspect of mathematical contests. First of all, there is a type of gifted student who cannot concentrate well under the dual conditions of nervous stress and limited time. For these students, failure in a contest can be a serious psychological trauma. Secondly, I caution against problems whose solution is based on a "trick" that may not be familiar to the student. I think this kind of "trick" solution should be carefully avoided, since it can misdirect the proper intellectual development of gifted children.

I have to give due credit to some mathematicians from the former USSR who clearly recognized the danger of trickery. They published books that cultivate a serious approach to the problem of mathematical education of gifted students. One of these books is the excellent: **Mathematical Circles (Russian Experience)** by D. Fomin, S. Genkin, and I. Itenberg (in the series, Mathematical World, Vol. 7, 1996, ISBN 0-8218-0430-8, published by The American Mathematical Society). It suffices to list some of the topics covered in this book (combinatorics, Dirichlet's principle, mathematical induction, graphs, invariant, games, inequalities) in order to realize how seriously and profoundly the authors treated the challenge of educating mathematically gifted students. Even the names of chapters attest to the fact that the first concern of the authors is extending students' horizons in understanding mathematics and introducing students to research work in mathematics. At the beginning of each section, the authors introduce basic theoretical concepts and facts to the reader and solve some typical problems. Then, they list some problems for the reader. The book is full of methodological remarks and advice for both teachers and students. In the course of the entire book, a reader does not feel set adrift; he/she can always feel the friendly hand of the authors ready to help in a moment of quandary. At the same time the authors encourage the reader to be thoughtful, patient and persistent. It is especially commendable that all basic mathematical ideas related to each chapter are clearly presented.

CONCLUSION

I would like to emphasize that the challenge of teaching the mathematically gifted students is far from being simple, even if the following three necessary conditions hold: (1) the teacher has profound knowledge of the subject matter; (2) the students are from the same age group; and (3) the students have access to good textbooks on mathematics. I think that one of the fundamental principles in working with gifted students should be an inductive approach to discovering new statements. An inductive approach will introduce students to research work in mathematics. In search for a general statement, a teacher should encourage students to make transitions from particular cases to more general statements until the statement is formulated in full generality. Then, it must be proven with rigor and logic. One more point deserves the teacher's attention. Every mathematician in his or her research work encounters some "statements" that after thorough investigation turn out to be false. We have to teach students to be very critical when considering a new "statement." In particular, we should encourage students to make up counterexamples intended to disprove the new "statement." In connection with this suggestion, I recommend the following books of G. Polya to teachers:

Mathematics and Plausible Reasoning, Vols. 1 & 2, Princeton University Press, 1954.

Teaching mathematically gifted children is not "mass production." Gifted children are all different. They differ from each other by turn of mind, by methods they use to approach a problem and by speed of cognition. A teacher should be sensitive to the needs of different types of gifted children. In particular, a teacher should be concerned with the:

- development of the strong aspects of a student's talent; and
- helping to eliminate the weak characteristics of the thinking process, thereby facilitating mathematical development of the student.

IOWA ACCELERATION SCALE: A GUIDE FOR WHOLE-GRADE ACCELERATION K-8 (1998) (PUBLISHER: GIFTED PSYCHOLOGY PRESS)

A REVIEW

BY DAN G. HOLT, Ph.D. GIFTED EDUCATION CONSULTANT HUMMELSTOWN, PA

The term "acceleration" is a misnomer. The process is, or should really be, one of bringing talented youth up to a level of instruction commensurate with their achievement levels and readiness so that they are properly challenged to learn the new material (Feldhusen, 1989). In other words, there is no acceleration if all we are doing is meeting the already existing needs of the student. If we do not meet those needs, though, we are "decelerating" or hindering their achievement or learning process.

It is fairly well-accepted that the American education system was created in the image of the assembly line in order to produce "worker bees" to enable the great industrial machines of yesterday to produce widgets with the utmost speed and efficiency. The assembly line is fast, efficient, profitable, and a way of life. Graded schools arose in response to and met the challenge of the influx of children to city schools during the early years of the industrial revolution. We in education, having adopted this modus operandi, are still trying to produce well-educated adults with this method. Times and the requirements of our society have changed. We now have the ability and technology to create Individualized Education Plans (IEP) for every student in school...and we should. We continue to discriminate against students because of their age. An interesting law suit, recently filed (U.S. Department of Education, Office for Civil Rights: Levi vs. Santa Monica Community College Docket Number 09-99-2308 and the Los Angeles Unified School District Docket Number 09-99-1422): "...alleges discrimination under PL 94-142 (IDEA) because some gifted children's disabilities are masked and/or ignored when those children work at or above grade level. Disabilities which prevent a child from learning at the level and pace appropriate for the child's mental age should be addressed regardless of whether a discrepancy exists between the child's mental and chronological ages" (Sheard, 2000).

In other words, if chronological age is the only determining factor, then it is a form of civil rights discrimination just as it would be if a person could not get a job because that person is over the age of 60. If we as a society honor and respect the rights of the individual as much as we would like to think we do, then why do we continue to violate the rights of academically gifted students? We hold them back only because of chronological age while ignoring intellectual age.

Grade skipping is one expedient way to challenge gifted students, if done appropriately. In a ten-year longitudinal study of gifted students identified as mathematically precocious and who had been academically accelerated, it was found that there was no "...support (for) the common concern that gifted students may be harmed by accelerated experiences" (Swiatek & Benbow, 1991, p. 528). In fact, the vast majority of studies conducted on this topic over the past several years have indicated that regardless of the type of acceleration used, positive benefits have been noted for students (Benbow, 1991).

According to research, failing to accelerate students who meet the criteria for acceleration has detrimental effects on their education. There are strong indications that many students who remain in under-challenging educational environments will not fully use their considerable talents. They develop poor study habits, apathy, maladjustment, and may not complete school. We, as a society, seem to be more concerned with "equal" than we are with "appropriate." But the question remains, "How do I know if my student should be accelerated?"

The answer to that and many other questions regarding whole-grade acceleration or grade skipping is contained in the *Iowa Acceleration Scale: A Guide for Whole-Grade Acceleration K-8* (Assouline, Colangelo, Lupkowski-Shoplik, & Lipscomb, 1998). Presented in a format that is user-friendly and logical, the Iowa Acceleration Scale (IAS) is the first instrument to provide an objective procedure with which to address the questions related to grade skipping a student. A readable manual is provided with case studies, examples, detailed instructions for completing and interpreting the results, and a complete list of references. In addition, a Summary and Planning Sheet and questionnaire form are provided separately for individualized, cost-effective use with many students.

The IAS is comprised of eleven categories, each with a series of questions. Those categories include the following: Student Information, Family Information, Child Study Team Information, Critical Items, School History, Prior Ability and Achievement Test Results, Academic Ability and Achievement, School Factors, Developmental Factors, Interpersonal Skills, and Attitude and Support. The answers are assigned numerical values, and in the final category, the subtotals are combined to yield a "final score" which indicates the advisability of acceleration for that particular student.

Comprised of six sections, the IAS Manual covers the following information:

Section I covers background on the IAS, its purpose, and the advantages of using it. Those advantages include the following:

- A more objective view of the student
- An analysis of the major factors to be considered in making a decision
- Guidelines for weighting the relative importance of the major factors
- Documentation of the student's strengths and concerns
- A numerical range to guide the discussion and decision of

acceleration
- A standard of comparison with students who have had successful accelerations
- The support of the Belin and Blank International Center for Gifted Education and Talent Development which is just a phone call away.

Section II describes the "top ten" issues regarding acceleration, giving case vignettes to assist understanding of the issue.
Section III provides specific instructions on completing and interpreting the resulting scores of the IAS.
Section IV consists of examples of completed forms from actual cases.
Section V provides research documentation on whole-grade acceleration.
Section VI lists references for additional research on this topic.

Grade skipping is an emotional area, and therefore can be very difficult to accomplish in an objective manner. The IAS provides the uniformity and objectivity necessary in making such an important decision, while maintaining sensitivity to the student. I would suggest an objective third party be employed to question the various parties involved, and complete the IAS when the emotions are running high regarding the decision of the school and the desires of the parents and student. The IAS is a major step in eliminating the continuous lack of regard for the individual rights of students in America, especially those who are intellectually more mature than their peers.

The final question has to be "Why would you hold anyone, at any age, back in terms of advancing his or her knowledge and educational goals?" The IAS provides those of us concerned with appropriate education for *individuals* the tool with which to determine the most challenging placement of the student in our educational system.

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SHOWTIME FOR THE GIFTED BY MICHAEL E. WALTERS CENTER FOR THE STUDY OF THE HUMANITIES IN THE SCHOOLS AND NEW YORK CITY PUBLIC SCHOOLS

Recently, I was stirred by an experience that demonstrates intellectual synergy when I attended a revised version of Edward Albee's play -- ***Who's Afraid of Virginia Woolf?*** (first performed in 1962) -- at The Actors Studio in New York City. As I sat in this small and famous theatrical setting, I felt the presence of ghosts from the cultural past. Theatre in the United States from the 1930's to 1950's had a world-wide impact through such performers as Marlon Brando, Montgomery Cliff, James Dean and Marilyn Monroe who appeared on this studio's stage. Many famous directors and dramatists also perfected their craft there, and later they would go from theatre to the motion pictures. It wasn't just theatre but also the American cinema that stirred the world. The play was directed by Arthur Penn who was the film director of such classics as ***Bonnie and Clyde*** (1967). The theatre is purposely small so that the audience can achieve an intense experience. After each performance, there are discussions among the director, performers and audience.

The inspiration for modern drama comes from the pre-revolutionary Russian theatre (1890-1917) under the leadership of Konstantin Stanislavski (1865-1938) of the Moscow Art Theatre. Through his direction, it became the forerunner of modern theatre and cinema. In 1898, he produced the play by Anton Chekhov (1860-1904), ***The Seagull***. This was the start of Stanislavski's Method Acting which stresses psychological realism. The performers define a role by saying, "If I was this character, I would. . . ." In order for performers to achieve this realism, they must recall their own feelings and behaviors in a similar situation. Lee Strasberg (1901-82), a highly effective educator of gifted actors and actresses, taught Method Acting to several generations of performers at The Actors Studio from 1948-82.

The best examples of cooperative learning are experiences with intellectual synergy involving the interaction of gifted individuals working on a specific project in a holistic manner. Theatre and cinema are examplars of cooperative learning. Educators of the gifted need to study examples of these forms of intellectual synergy to truly understand what cooperative learning means for the gifted individual. First, it must take place in a context such as a project. Second, it includes the interaction of related disciplines such as directing, lighting, stage design and costume design. Third, it displays itself through a product such as a play or film. Members of The Actors Studio achieve results showcasing their giftedness by using their sensibility and productiveness. The ancient Greek theatre and Shakespeare's dramatic productions are also examples of giftedness via synergy. Let the show begin!

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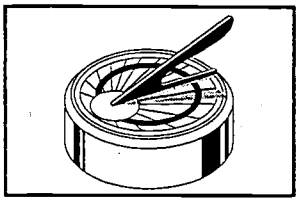

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Thanks to all of the authors who contributed to *GEPQ* during the 1999-2000 school year, to the members of our advisory panel, and to our old and new subscribers who continue to support this publication. May the new school year bring you much success in educating gifted children. I would like to welcome Dr. Colleen Willard-Holt to our advisory panel. She is an Associate Professor of Education at Pennsylvania University - Harrisburg, and the author with Dan Holt of Applying Multiple Intelligences to Gifted Education (1998, Gifted Education Press).

Here are some observations based on events this past summer that might have some bearing on educating gifted children. The nationwide frenzy related to the publication of Harry Potter and the Goblet of Fire (Scholastic, 2000) was phenomenal, which verifies the idea that children will read interesting and imaginative stories even at the risk of missing their favorite TV shows and Nintendo games. Can the imaginative formats and ideas from books such as the Harry Potter and the Hobbit series be adapted to classrooms? Wouldn't gifted children be less bored in classrooms that emphasize their imaginative sensibility and interest in reading books which stir their creative powers?

The concern expressed by parents in obtaining the best possible education for their gifted children is clearly demonstrated on gifted LISTSERVs such as TAGFAM, Ohiogift, and TAG-L. One viable alternative is to set up a stimulating home education program, and the first article in this issue by Lisa Rivero discusses her reasoned approach to homeschooling gifted children. Ms. Rivero is a homeschooling parent who has taught elementary gifted learners in the classroom. We are happy to announce the publication of her book, Gifted Education Comes Home: A Case for Self-Directed Homeschooling (2000, Gifted Education Press). The second article by Jenny McCampbell discusses the gifted and talented program at Michigan State University and the Dorothy Lawshe Endowment for Gifted and Talented Education. As an alumnus of this university and a graduate of the Honors College (where this program is located), I urge you to support this fund which provides numerous elementary, secondary and higher education opportunities to needy gifted students. Please contact Ms. McCampbell or me for more information about the endowment. In the last article, Dr. Michael Walters addresses the concept of standards in the context of his recent trip to Princeton University.

Maurice D. Fisher, Publisher

Radical Deceleration: Self-Directed Homeschooling for Highly Gifted Children

By Lisa Rivero Parent and Home Educator

Milwaukee, Wisconsin

For children who learn faster and more intensely than average, homeschooling may seem the perfect opportunity for parents to offer challenge, accelerate learning, raise the standards, and encourage excellence. When a child is working way ahead of grade level, doesn't that mean the child needs more challenge in order to continue learning? After all, these are the very students who, according to the government report, *National Excellence: A Case for Developing America's Talent*, should be started down the path to excellence when they are very young (1993). And why does the report make this recommendation? Not so that the children can eventually be wise or caring or even happy, but in order to "compete on equal footing with the rest of the world."

The children are, after all, *America's talent.*

But what if what we think of as the best of gifted education--acceleration, enrichment, pull-out programs, theme studies, differentiation--are mere shadows of the real thing? What if we are like the prisoners in Plato's cave, all of us--educators, parents, and students--afraid to turn toward the light behind us?

What if we're missing the point entirely?

This article challenges parents and educators of gifted children to think outside the cave, to re-evaluate words like "challenge" and "acceleration" and "standards" and "excellence," and, most importantly, to look honestly at our approach to our children's education and potential. It means questioning everything we thought was true about education. It also means taking an unflinching look at ourselves and how we see and use our children.

I know. I've been there. We requested and were granted early entrance to kindergarten for our son. He was placed in a gifted pull-out program in first grade, and he attended a private school for gifted learners for 1 ½ years. I served on our public school's gifted and talented committee and had the privilege of developing curriculum for and teaching highly gifted children in the classroom.

When we started homeschooling, our son had just turned eight. He took an achievement test so that we would know "where to start." He tested at several grade levels above his age-based grade. The temptation was to use those scores as indicators of specific areas in which he needed outside-directed, formal challenge, but other thoughts kept getting in the way. Although he had been working at an advanced pace in school, his level of schoolwork was nowhere near the level of his scores, and he had spent a lot of time, to borrow Herbert Kohl's term, not-learning (1994). We didn't teach him at home. So what he learned he had, for the most part, learned on his own--absorbing information silently but constantly as he went about the business of playing, reading, fantasizing, and living, learning perhaps in spite of rather than because of formal instruction.

I share this personal experience only to show how easy it would have been to bring the school acceleration model home, to purchase an advanced curriculum and take him through it, to segment learning into subjects and times, convincing ourselves all the while it was in his best interest, that we were providing the challenge he needs and starting him down that road to excellence.

Instead, using research, common sense, and gut instinct, we decided to take another path. After a few false starts, we slid comfortably into self-directed homeschooling. No textbooks unless he wanted them. No canned curriculum. No tests. No force. The result is a child who wakes up eager to start the day and goes to bed bemoaning that fact that human beings need to sleep. He literally skips through our errands and sings in the car. He's learning to socialize widely and meaningfully with children and adults of all ages.

What has happened is nothing short of a transformation from a child who nearly chewed the cuffs off his shirt from the stress of school to one who is, for the first time in a very long time, once again laughing and smiling.

"We had the experience but missed the meaning" - T.S. Eliot

After nearly a century of gifted education research and theory, there is still no consensus on just what to do with highly gifted children in the classroom. It seems that the only thing we know for certain is that we do not know, a fact that's been insightfully and painfully brought to the fore recently by several people brave enough to look critically at the field of gifted education from within (Delisle, 1998; Morelock, 1996; Piirto, 1999).

The ideas about gifted children that ring most true are also the simplest. Although their application is usually tempered by the pragmatism of the classroom and the seeming necessity of formal instruction, they offer a starting point for parents who are considering homeschooling a highly gifted child:

"[T]he higher the IQ scores of children the less likely they felt themselves to be in need of spoon-feeding from their teachers, and the more they wanted to take part in planning their own education" (Freeman, 1985).

"[M]any gifted children are idiosyncratic learners, assert their own opinions, learn through immersion in their own interest areas, and are chary with respect for authority from a very early age" (Maxwell, 1998).

"Moving a student fast through the curriculum assumes that there is a curriculum, a body of subjects to be mastered, when in reality there is not . . . " (Piirto, 1997).

"It has been substantiated that teachers prefer gifted children who are low in creativity to those who are highly creative" (Whitemore, 1980).

"[O]nly those who continue to merge work and play will go on to become adult creators" (Winner, 1996).

"One of the first challenges to creativity may be formal schooling" (Torrance & Goff, 1990).

"Self-selection of areas for study and research" avoids the problems of matching curriculum and development (Cohen & Kim, 1999).

"[T]he majority of gifted children appear to be introverted . . . . too much interaction drains their energy and they need to retreat from the world to recharge their batteries" (Silverman).

If we follow the logical implications of these statements we're led to self-directed education that takes place in a supportive and understanding environment, where the opportunities for socialization are carefully balanced with enough time for reflection, and where the child's internal timetables and rhythm of learning are honored. Such an education would always remember that curricula and learner outcomes are constructed tools that should be used only when they work and should never supercede the child's own drive to learn.

So why don't we practice what we preach? The short answer is fear. Fear of the unknown. Fear of what others might think. Fear of losing control and of granting control. Fear that such a scheme makes adults less important in the child's education than the child herself.

Comic Relief

How does self-directed homeschooling work? It's different for every child and family, but the gist of it is that the child owns and controls her own learning. Real control, not the shadow version.

A gifted child is characterized not only by precociousness but also by a strong sense of self-efficacy and divergent thinking (Winner, 1996). In other words, when free to learn as nature intended, the gifted learner will be highly self-motivated to follow her interests in challenging and new ways. Her interests may not be typically schoolish in nature, but learning will take place nonetheless.

As an example, our son, like many gifted learners, explores topics of interest passionately and single-mindedly until he quenches that particular thirst, then he moves on to the next challenge. For example, news of the illness of Charles Schulz prompted an interest in Peanuts comics. At one point, we had nearly thirty library books of Peanuts collections. This interest led to inquiries into France, World War I, flying aces, Beethoven, world literature, and baseball. He looked up the locations of French cities in a historical atlas and read about the real Red Baron. We watched *Citizen Kane* after seeing that Linus's sled was named Rosebud. He asked about references to *War and Peace* and *Gone with the Wind* and *Tess of the D'Urbervilles* and Andrew Wyeth. I've watched him spend several hours in self-imposed discipline of drawing and writing, anthologizing and studying. He wrote a daily historical newspaper based on World War I infantry experiences; he put on a one-boy presentation of "Citizen Beagle," and he wrote and performed a puppet show of "The World War I Flying Ace Meets the Red Baron"; he wrote letters to and from publishers in the guise of the "world famous novelist." He has moved onto studying other comics of this century and their reflection of history, from Superman of the 1930s to Garfield of the 1980s. His drive to compare and analyze has caused him to place comics within the context of popular culture and to notice patterns and similarities in some of the more famous "costumed superheroes," which has become one of his self-chosen areas of expertise.

My job in all of this has been to be available for lots of questions and discussion, to offer suggestions when appropriate and accept their refusal graciously, to assist in obtaining materials and resources. I also try to provide balance and growth by planning trips to museums and parks, arranging opportunities for social interaction, and questioning assumptions in a non-threatening way. We have the time and freedom to frequent different neighborhood libraries and to explore together the business of being a member of our community. He learns with other children and takes direction from other adults in book groups and community classes. Rather than limiting his exposure to the diversity of the world around him, homeschooling has greatly increased it.

If I were to record what he learned during his Peanuts period, as we now call it, it would be more than enough to cover our state's homeschooling requirements and, more importantly, would include valuable study skills and critical and creative thinking. Parents could choose to supplement this self-directed learning

in specific areas (for example math or handwriting or spelling), but the child"s goals come first. As David H. Albert, author of *And the Skylark Sings with Me: Adventures in Homeschooling and Community-Based Education* (1999), advises,

> Let them choose a path. Help remove obstacles in the way of the path. Help them understand what will be necessary to reach their own goals. Find resources/mentors who can help them along their chosen path. Then, *get out of the way*. Above all, love and listen, really listen. (personal communication, March 30, 2000).

What are the child's interests? Where do they lead? What inherent purpose might they serve for the child's needs? What concerns or problems may the child need to address through this self-directed activity (Cohen & Kim, 1999)? On a practical level, our son found a way to strengthen his left-handed writing skills (writing comics requires precision), while on a more intellectual level he is continuing an ongoing interest in learning more about the 20th century and how life has changed in the past 100 years. In the affective realm, he's learned much from reading about how Charles Schulz's own experience with grade acceleration and giftedness led to formation of the Peanuts characters, and he's dealing psychologically with the ideas of power and "super" power and wishful thinking. Socially, he's studying an age-appropriate subject that gives him something to discuss with his friends at the park. I could have never designed an interdisciplinary unit that would have addressed so many needs with such elegance, effectiveness, and delight.

Early, Late, Never, or Always?

A lot of attention has been given to the subject of school entry age for gifted children. The assumption is usually that later entry ages mean that the child will start school in kindergarten or first grade and will be older than his or her age peers.

But what about much later entry ages, at which time the student joins age-mates at their current level, whether that be junior high, high school, or even college? What if instead of shortening early childhood education for highly gifted learners we lengthen it?

That's exactly the argument given by David Elkind in his seminal work, *Miseducation: Preschoolers at Risk* (1994). He writes that, for gifted children, the structural imperative--the innate drive to realize developmental and structural growth--is extreme, and that once the concrete operations of conservation and quantification are mastered, the gifted child may move immediately onto realizing the formal operations that in children of average ability do not appear until age 12 or 13. His advice is startling in its simplicity:

> What intellectually gifted children need most, then, is not early formal instruction but rather a prolongation of opportunities to explore and investigate on their own. The task of the teacher of such children is not to instruct in the conventional sense but to do what the early childhood educator does, only at a higher level. (1994).

In other words, a gifted learner needs more of what we think of as a typically preschool and kindergarten environment, not less.[1]

Math is a good example of how Elkind's theories can be applied in a homeschooling setting. Students usually spend most of third through sixth grades practicing over and over again arithmetic--skills of concrete operation. Gifted children, however, loath drill and repetition, and may bypass this "practice" stage altogether as they move quickly onto the structural imperative of higher level thinking skills. Gifted learners are infamous for being able to understand algebraic concepts but not knowing their multiplication table.

What if there's another way? Thomas G. West proposes that for people for whom the "easy is hard and the hard is easy," we find a way to "teach math backwards." He asks,

> Would it be possible (or, to what extent would it be possible) to deal with mathematics in the language of images alone? Is it possible to pursue mathematics in a serious, conscientious, and productive fashion by using just the images and leaving the symbols and the logical rigor out of the process entirely (for awhile), bringing these back into the process at some later stage, primarily for documentation, communication, and verification? (1997).

He's not talking about accelerated learning (for example, he's not suggesting using college texts with preschoolers), but about an entirely different approach.

Whether or not West's approach is "practical" in a classroom, in homeschooling it is an approach that celebrates--not just accommodates--the unique way in which gifted children learn. It allows an eight year old to immerse herself in the beauty of geometry through exploration and discovery and wait a few years before being required to "master" multiplication. This not only preserves the joy of math but makes sense from a practical standpoint as well. If a twelve year old can learn the tricks of the multiplication table in a couple of weeks, why should she be forced to spend months at age eight on repetition and drill that go against her very nature?

The optimal age to start formal instruction may be even later than we think. Dorothy and Raymond Moore argue that children all have an age--unique to each child--in which they reach integrated maturity levels (IML). This is the age when their visual, auditory, haptic, and other systems are more or less in

line with each other and ready to adjust to the rigor and sequential nature of formal learning:

> In other words, the young child's brain with all of its senses and abilities to reason, simply is not ready for formal instruction until the age of 8 or 10. Some psychologists at Stanford, the University of California, and the University of Rochester suggest that, if we could provide good homes, 12 to 14 might be an even better school entrance age. (Moore, 1980).

For the gifted child, whose levels may be more out of sync to begin with (Terassier, 1985) and who may display stronger preferences for one mode of learning and be delayed in others, this IML age may be even later than for average-ability children. By not waiting until their systems have matured enough to handle long periods of close reading and other facets of formal learning, we instead notice issues of "underachievement" and "behavioral disorders" and diagnose the child as having ADD or ADHD or some other problem. The formal setting of school may also lead to repression of creative learning, which may in turn contribute to learning disabilities (Torrance, 1962).

Voices from outside the Cave

Parents of gifted children are often stereotyped as pushy, elitist, and ego-driven. Sadly, the view is not without some justification, but there are other voices, strong and confident voices, of parents who have quietly chosen a different road for their children. They work hard at parenting skills and developing a strong relationship with their children. These parents probably will not be the ones we hear about in the press because they are not concerned with displaying their children or with fighting school officials. They take a much different view of education from that of *National Excellence*, and they just might change people's minds about the "typical pushy parent of a gifted kid":[2]

On Challenge

"When Emily was in school, I used to say that she was bored because she wasn't challenged. Now I see that she challenges herself, for the most part, even in outside activities. For example, she elected to participate in a recent homeschool science fair, which was a positive experience *and* was a challenge." - Laura

On Acceleration

"I have no intention of accelerating my children through 'grades' even if they do accelerated work in individual areas. I don't want a 13 year old college student. I want a happy 13 year old who may be doing college level work and taking the occasional college course, but who is still a 13 year old child." - Karen

"I was grade skipped. This experience taught me that the schools don't know what to do for gifted kids, and I didn't want my son to waste his time." - Laurie

"I have serious reservations about a child 'graduating' at the age of 12 or 13 and going off to college. I think that the road from point A to point B should include many more side trips and fun excursions than are allowed for in a graded curriculum. We could have stayed with curriculum and been well on our way to high school now, but Meredith would have little more than surface knowledge of subjects and would probably not be nearly as enthusiastic about things as she is now." - Amy

On Standards

"When you get older, yes, there are professional standards, etc., but they are very goal-oriented, e.g., 'I want to be a neurologist, therefore I'd jolly well better know my subject well' type of thing." - Laura

On Excellence

"[I]t's my [daughter] who strives for excellence both in the academic sense and in her day to day existence. I really do just follow her lead and I help provide her with the resources . . . ." - Brenda

On the Gifted Self

"It could be said a gifted child needs intellectual stimulation as another child needs oxygen. This is true of Satchel, but he needs creative, philosophical, spiritual, and emotional stimulation the way others need oxygen, too." - Laurel

Advice to Parents who are Considering Homeschooling

"Don't tell anyone what grade your child is really working at; just use the grade his sports age-mates, etc. use if you must, but avoid that, too, if you can. This allows you the flexibility to do what you like without being hassled." - Sandy

"[L]et your child do it. Suggest to them that this is a tremendous opportunity for them to explore what they wish--then sit back and watch! (While being supportively close at hand, of course.)" - Laurie

"Consider how lucky you are to have a cushion of time to 'fail' because you have an advanced child. Use that as peace of mind." - Laurel

"I would remind them that while other children may be dancing to the beat of a different drummer, their child may well be dancing to the tune of a song they wrote, whilst accompanying themselves on an oboe!" - Fiona

The theme of preserving the child's integrity runs deep in these responses, as does respect for the child's role in her own education. Most striking is concern and respect for the child's self and an attempt to put into practice what Annemarie Roeper calls education for self-actualization rather than education for success (1996).

As the homeschooled highly gifted child moves into early adolescence, she has a better chance of approaching more formal instruction with her self intact. For some homeschooled gifted learners, traditional classroom education may not be a part of their lives until their college years, if ever. In the words of one homeschooling parent, "When a child is allowed to grow and learn at home, surrounded by the love of their family, the need to 'fit in' is done away with, and they are free to break the molds of society, to change the path of the world, one person at a time."

Kathy Wentz, owner of the Internet Unschooling List, writes of the possibilities:

> I do not wish to artificially extend a gifted person's childhood forever by any means, but I do think that it should not be seen as wrong to let a 16 year old act like a 16 year old. I don't see anything wrong with allowing them several years to do volunteer work or get an internship in their field or to start a business helping others figure out what is wrong with their computer or how to fix their car. These are all valuable experiences, and although they don't result in an early degree, may very well result in a young person really knowing what their long term goals are [rather than] not really knowing why they are going to college and beyond. (personal communication, March 31, 2000).

Self-directed homeschooling for a highly gifted learner is radical deceleration in the sense that no one else's foot is on the gas pedal. The child has the control and freedom to speed up or slow down, to back up to revisit favorite spots and to meander along a country road before zooming past vast landscapes, or to stop completely for awhile just to enjoy the view.

What can the voices from outside the cave tell us about the shadows? How can we move from the shadows toward the real thing? Perhaps the next step in our journey is to ask the children themselves and, most important, to listen.

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Footnotes

[1] I'd like to thank Kathi Kearney, founder of the Hollingworth Center for Highly Gifted Children, for bringing to my attention the application of Eklind's work to gifted children. Elkind more recently wrote, "What promotion does for

intellectually gifted children is to make a better fit between the child's level of intellectual development and the curriculum. . . ."
(Acceleration. <http://www.hoagiesgifted.org/elkind.htm>). However, "better fit" and "optimal fit" are sometimes two very different things.

[2] All quotations in this section are from parents who have at least one homeschooled child who either tests as or fits the profile of a highly gifted learner. All quotations are from private e-mail interviews in the month of March 2000.

Gifted Education Programs at Michigan State University

by Jenny MacRae McCampbell

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"We must open the doors of opportunity. But we must also equip our people to walk through those doors." Lyndon Baines Johnson

The above quote from President Lyndon Johnson is the underlying philosophy which has guided the development of the Gifted and Talented Education (GATE) Programs, cooperatively offered through Michigan State University and Ingham Intermediate School District since 1985. The GATE programs were envisioned, developed and implemented under the guidance of Dorothy Lawshe, who has been in the field of education for almost half a century. Ms. Lawshe designed the programs to meet the needs of students with exceptionally high ability and to find potentially gifted students starting at the elementary levels and then lay the foundation for those students to successfully participate in the Midwest Talent Search and various programs designed for Talent Search participants, leading to successful experiences in higher education. One focus of GATE programs is on professional development for area teachers and teacher education students so they gain an understanding of the characteristics of gifted individuals along with teaching strategies that will challenge their high academic abilities. Another focus is on finding and supporting traditionally underrepresented groups of students, i.e. low-income and minority students and girls in math, science and technology areas. The result is programs with high academic standards and a diversified student population in the programs, closely reflecting area demographics.

The measures which the GATE programs have taken to deepen the pool of qualified students from traditionally under-represented groups is five-fold:

1. Develop elementary-level programs for students with high ability, including those with high potential, making room for many students in order to be as inclusive as possible; and develop programs for middle school and high school students which have high standards, while actively recruiting and supporting a diversified student population.

2. Incorporate K-12 teachers and pre-service teachers into the programs and provide them with specialized professional development. This system provides the teachers with first-hand knowledge and understanding of the characteristics and needs of high ability students, as well as numerous teaching strategies appropriate to the gifted and talented population.

3. Work very closely with targeted groups of parents as well as students to inform of them of special opportunities and to support their participation.

4. Actively develop adequate scholarship funds to provide assistance to all qualifying low-income students.

5. Develop a close alliance between a major university and K-12 education.

High Academic Standards and a Diversified Student Population

The area which most of the GATE programs serve is comprised of four counties surrounding Lansing, the capital of Michigan. The programs are supported and operated cooperatively by Michigan State University and Ingham Intermediate School District. While Dorothy Lawshe was a major player in initiating and implementing all of the programs between the years of 1985 and 1990, she has gradually turned them over to Sylvia Buie, Director of the Office of Talent Development at Ingham Intermediate School District and Jenny MacRae McCampbell,

Director of the Office of Gifted and Talented, a Division of the Honors College at Michigan State University.

Elementary Programming

The GATE programs involving elementary students are designed to cast a wide net when admitting students, in an effort to develop the talents and inspire as many students as possible.

Kids' College: Students completing fourth and fifth grades are accepted who have been identified as having above average academic ability and are recommended by a principal or teacher. Students in Kids' College study one of four areas of science for a two-week period during the summer, meeting for three hours each morning. There will be 350 students participating in this program in the summer of 2000.

MASCOT (Mathematics Augmentation Series: Cultivating Optimum Teaching): MASCOT is designed to service students who have completed sixth grade and who have been identified as having potential for learning advanced mathematics but who lack some of the skills necessary for total success. The emphasis in MASCOT is on explorations of mathematical concepts and problem solving. Students attend this program every morning for three weeks during the summer. Approximately 100 students attend this program each year.

Girls' Math and Science Conference: The math and science conference for sixth-grade girls is a one-day, Saturday, conference designed to stimulate the participants' interest in mathematics and science; to broaden their awareness of career options in mathematics and science; to motivate them to elect higher level math and science courses in high school and college; and to provide female role models and possible mentors. Approximately 400 sixth-grade girls in the four-county area attended one of two math/science conferences offered annually. A large effort is placed on encouraging the selection of minority students to attend and on being sure that school districts pay the fee for students who qualify for free and reduced lunch.

Secondary Programming

GATE programs for middle school and high school students place the emphasis on high standards for entrance (standardized test scores and high GPA), while actively recruiting qualified minority and low-income students.

Dimensions: Students who have just completed seventh and eighth grades and who qualified for the Midwest Talent Search by scoring at the 95th percentile or higher on a standardized achievement test are invited to apply to this non-residential summer program. The goals of this program are to help students reach a higher level of understanding in mathematics, science and communication skills; and to offer students new enrichment and accelerated learning experiences in the arts. The program lasts for four weeks, with students taking two academic and one arts laboratory from a variety of choices. Being a participant in the Midwest Talent Search (MTS) is not a requirement of Dimensions; however, most students have participated in MTS. Dimensions enrolls eighty to one hundred and fifteen students per year, all of whom live in the four-county region surrounding Lansing.

Mathematics, Science and Technology at Michigan State University (MST at MSU): The Mathematics Science Technology at Michigan State University is a two-week, summer residential program conducted on the campus of MSU. The program is for students who have just completed 7th or 8th grade and participated in a Talent Search. Students must be recommended by a teacher of mathematics, science or technology and must have proof of SAT or ACT scores. Minimum acceptable scores are-SAT Math score of 530 and a Total SAT of 1010 or ACT Math of 20 and ACT Composite of 23. Students from anywhere in Michigan or from any state or country may participate in MST @ MSU if the students meet the qualifying criteria.

Academic teams consisting of leading professors from Michigan State University and noted secondary school teachers develop the challenging courses for this program. These are courses which are not traditionally offered in secondary school. The academic teams of educators provide instruction in mathematics, engineering, astronomy, genetics, physics and technology. Each student selected for this program studies with two academic teams and also receives instruction from an outstanding instructor in one of three sports clinics or one of four arts clinics.

The goals of the program are to stimulate students to learn about new developments in career fields for which it is important to study mathematics, science and technology; to match the intellectual abilities of talented students with challenging course work that provides enrichment; and to allow students with similar academic abilities to live together for two weeks on the campus of a large university.

Cooperative Highly Accelerated Mathematics Program (CHAMP) is an academic year, commuter program conducted on the campus of Michigan State University (MSU). Students meet two and one-half hours once a week for instruction in mathematics. During the two years a student is in the program, the student studies four years of traditional high school mathematics, covering one year each semester. CHAMP students are taught by six faculty members from the Department of Mathematics at Michigan State University. Students identified for CHAMP attend public, private, or home school in the four counties represented on the CHAMP Consortium Committee. Students are in grades 7 – 10 in their regular schools.

A consortium committee made up of educators from the intermediate school districts of Clinton, Eaton, Ingham, and Shiawassee Counties and Michigan State University manages the Cooperatively Highly Accelerated Mathematics Program. The CHAMP Coordinating Committee manages the operation of the program, facilitates the identification of students and monitors the progress of students.

The goals of CHAMP are to identify $6^{th} - 8^{th}$ grade students who have very high academic ability in mathematics; to provide appropriate mathematics curricula and instructional pacing commensurate with the students' abilities; and to use collaborative planning and coordination to allow students to complete the traditional four-year high school mathematics program in two years within the framework of the regular school day.

Every student has taken the College Boards SAT Reasoning I Test and has minimum SAT scores of 530 on the mathematics section and a total SAT score of 1010. There are approximately sixty students admitted into the first year of the program each year.

High Achievers

High Achievers is a summer commuter program offering students an opportunity to enroll in university level courses for college credit. All courses are regular MSU course offerings; special sections are arranged so that only high school students enroll in those sections. The High Achievers sections are taught by outstanding MSU faculty members. There are five courses taught on the MSU campus in East Lansing, and in 2000 for the first time there is one class being taught in Grand Rapids by an MSU professor.

The goals of High Achievers are to allow high ability high school students an opportunity to earn college credit before graduating from high school; and to allow small numbers of high ability students to study together in a university setting.

The courses offered through the High Achievers program are offered during six weeks each summer. Courses currently being offered for study include Micro economics 201, Philosophy 200, Psychology 101 Introduction to Technical Computing 131 and Introduction to Literary Genres.

In order to be eligible for High Achievers, a student must be in grade 9, 10, or 11, have a 3.5 cumulative Grade Point Average and have SAT I Reasoning Test scores of SAT Math or Verbal - 530 and a Total SAT of 970 or ACT English 22 and ACT Composite 21. The program is non-residential and open to any qualifying student who can commute to where the courses are being offered.

Professional Development for Teachers and Pre-Service Teachers

Dorothy Lawshe designed many of the GATE programs to use local area teachers and MSU students from the College of Education as staff in order to provide those teachers with a thorough understanding through first-hand experience of the characteristics and needs of gifted and talented students. Once teachers become so familiar with gifted and talented students, they are much more likely to recognize them in their classrooms. Additionally, teachers are much more likely to recognize the potential of students who have not been identified as gifted. Before the teachers start working in the GATE programs they are given extensive professional development on teaching strategies to challenge these students, including critical thinking, heuristic problem solving and interdisciplinary teaching. After working with these programs, teachers understand the importance of giving challenging high-level work to their gifted students rather than using them to help teach the other students.

Heuristic problem solving is used to a great extent in MASCOT. It involves the students working in teams to solve an extensive problem. Through this method, students learn there can be a variety of ways to solve a problem. The teams of students then present their methods for solving the problem and the whole group discusses the advantages and disadvantages of the various problem-solving strategies used.

One of the teachers of MASCOT has stated repeatedly that her training in that program is the most effective training in mathematics she has ever received, even though she is a teacher who regularly searches out opportunities for her own professional growth. A real benefit of the training, she said, is that the teachers are able to apply what they have learned to small groups of able students right away, solidifying the new concepts for those teachers. This particular teacher is the only math teacher for all sixth, seventh and eighth grade students in her district because it is a small, rural community. She says she uses the techniques learned in MASCOT regularly with her teaching; this year her district received some of the highest math scores of any district in the four-county area on the state MEAP tests, beating out much more "prestigious" districts. The strategies taught in connection with GATE programs are designed to help all students use their full potential.

Twenty-four teachers are trained each year in the Kids College program; ten are trained each year for MASCOT; six are paired with professors in Dimensions; and in MST at MSU six teachers co-teach with professors; six other teachers and pre-teachers teach the sports and arts clinics; and twelve MSU students, most of whom are from the College of Education, serve as Resident Advisors, working closely with the students in class and out, day and night.

The results of the professional development through GATE is far reaching. Every one of the teachers and pre-teachers who has been involved with the programs then impacts many other students each academic year. Teachers who have worked in GATE programs are better able to recognize hidden abilities in their students and to help their students operate much closer to their full potential, using the strategies the teachers have learned in GATE. Additionally, the expertise of teachers who have participated in the professional development components of the GATE programs has been recognized by local districts. Several of the GATE teachers have been promoted to advanced-level positions and are viewed as leaders in their districts.

The cultural and economic diversity found in the GATE programs also presents the teachers with the opportunity to learn one of the most important lessons, which was described by Borland, Schnur and Wright (2000) of the Teachers College, Columbia University. The Department of Special Education and the Leta Hollingworth Center for the Study and Education of the Gifted at Teachers College, Columbia University operated Project Synergy, a research and development project. Through this project Borland, Schnur and Wright did an inquiry into the effects of the placement of five economically disadvantaged minority students from central Harlem, who were identified as potentially academically gifted, in a school for gifted students. They commented, "One clear lesson of this investigation is that the potential for academic giftedness can be identified, nurtured, and helped to blossom in all groups and schools in our society."

Targeted Groups of Parents and Students

The importance of a supportive, inclusive approach for traditionally underrepresented groups is seen in the results of a study by Stephanie Bell-Rose one of the officers of the Mellon Foundation. Bell-Rose analyzed volumes of data on African Americans who score very high on the SAT, based on information provided by the College Board, which administers the SAT. She found that the African Americans "are more likely to come from families with lower incomes and with fewer college degrees than white high scorers. They attend schools where fewer of the parents have college degrees or high incomes. And they are much more likely than white high scorers to attend school in large central cities, where educational opportunities are often more limited than in the suburbs." "The study 'makes a point that has really been lost,' says Linda Darling-Hammond, a professor at Stanford University's School of Education. 'Black kids who score well do so against greater odds than what white students have to face.'" Bell-Rose recommends that colleges "develop programs to deepen the pool of qualified African-American applicants." This same rationale can of course by applied to students from other underrepresented minority groups, as well as to students from low-income families.

In many cases simply identifying students from traditionally underrepresented groups for gifted and talented options is not enough. The experience in Lansing has been that there is a great deal of skepticism over a program such as the Midwest Talent Search among many in the minority communities. Even when the school district pays for the Midwest Talent Search for low-income students that doesn't guarantee that it will be a high priority for them to get to the SAT test site on the day it is given, unlike parents from suburban areas who will often go to great lengths to make sure their students are involved. There are many societal and cultural reasons for this difference in attitude; our job is to find more and better ways to inform and support all groups within our society of special opportunities available to them.

The GATE programs have always offered orientation and closing celebrations to help parents be involved, but there are now initiatives to take a more focused approach to inform and support families. In 1999-2000 a GATE Board member who operates a foundation in the most rural county served by GATE developed a program to give students in their county more incentive to participate in the Midwest Talent Search and follow-up programs. It was announced that there would be a recognition dinner for the 50 top-scoring eighth-graders on the Midwest Talent Search. Furthermore each of those students was given a scholarship of $500.00 to use toward a program that will further his/her education any time between then and high school graduation. The foundation also provided enough funds to bring the students and parents together four times during the freshman year and at least once a year after that in an effort to provide continuous support and encouragement.

Also in 1999-2000 Dorothy Lawshe worked with an African-American organization in Lansing to which she belongs to develop a program to inform and support parents. In the fall they worked closely with the Lansing Public Schools to identify thirty eighth-grade African-American students who had the potential for success on the SAT through the Midwest Talent Search. Members of the organization then met with the targeted students and their parents to talk about the advantages of participating in the Midwest Talent Search and subsequent programs. Organization members made follow-up phone calls to continue to encourage participation. After the test was taken, the parents and students were brought together for a Career Awareness meeting to inform them of the many careers that are available today. Program opportunities in the area, some of which are GATE programs, were shared; several of the students qualified for Dimensions and MST at MSU.

It is the strong hope of Jenny McCampbell, the current director of the Office of Gifted and Talented at MSU that similar programs can be started within other groups traditionally underrepresented in programs for the gifted. The cultural diversity within the GATE programs – particularly MST at MSU because it is the one residential program – is one of the

great advantages to all of the participants. As one student said on the recently completed Fourteen Year Follow Up Study, "I believe MST at MSU's biggest influence on me was the diversity of students in attendance. At age 14, I lived in a small town and had very little exposure to other cultures. Since MST at MSU I went on an exchange to Brazil. I believe this early encounter with many different cultural backgrounds set the stage for the exchange program to Brazil that changed my life."

Development of Adequate funds

One of the on-going issues for programs concerned about accessibility to all students is adequate funding. Not only does money need to be available for the scholarship needs of qualified low-income students, but also for adequate program support. Outside funding is necessary in order to keep overall tuition costs reasonable enough for middle-income families to be able to participate. The GATE programs are extremely fortunate to receive support from both the Honors College and the Office of the Provost at Michigan State University. Additionally, Dorothy Lawshe generated the support of two different foundations in the Lansing area when she first began developing the GATE programs. When Dorothy developed MST at MSU, the two-week residential program, she worked closely with the Office of Gifted and Talented for the Detroit Public Schools; they now give scholarships for twenty qualified students each year to be able to attend the program.

The Office of Gifted and Talented through Michigan State University has recently established the Dorothy Lawshe Endowment for Gifted and Talented in hopes of having sufficient funding for scholarships for low-income students in perpetuity and as a tribute to all Dorothy has contributed to the field of Gifted and Talented Education in Indiana, Michigan and at the national level.

Alliance between higher education and K-12

Dorothy Lawshe was hired by Ingham Intermediate School District in 1985 specifically for the purpose of approaching Michigan State University to partner in the development of gifted and talented programs. She was sought out because she had already established thriving programs in Indiana at Purdue University, West Lafayette, and Indiana University Northwest in Gary. From the beginning, Ms. Lawshe worked closely with the educators throughout Ingham County and those in her position in the four surrounding counties to ensure their involvement and support of the programs. She formed the Gifted and Talented Cadre in Ingham County and worked tirelessly with local district educators to inform them of the needs of gifted students. There was a great advantage to the fact that she was a part of K-12 education approaching the university for the development of programs as opposed to the university establishing such programs and then informing local district educators. The second organization Dorothy formed was the Gifted and Talented Education (GATE) Advisory Board. People from both the university and local districts were invited to become members, giving a strong linkage between the K-12 community and the university.

Michigan State University is a particularly appropriate institution for the GATE programs, due to its location close to Lansing and the fact that it is a land-grant college. The university has managed to keep tuition costs rising no higher than the level of inflation for the past six years in an effort to hold the costs down for its students. This has been accomplished while maintaining its position as a highly-regarded research university. The Office of Gifted and Talented, established in 1990, is a division of the Honors College, established in 1957. This is an ideal partnership since the GATE programs give so many pre-college students the extra boost necessary for them to qualify for such prestigious programs as the Honors College at MSU.

Two comments of former CHAMP students exemplify this importance: A Caucasian female who received her MS from Stanford said "By participating in CHAMP, I advanced more quickly in my high school classes. I also gained more confidence in my abilities and learned how to set and reach ambitious goals." An African American male finishing his freshman year at Princeton stated, "It [CHAMP] gave me a chance to experience 'school' in a different and more interesting format. Also, it gave me a chance to learn about material that I might not have learned about in school or would have waited a long time to do so."

An additional way in which the Honors College and the Office of Gifted and Talented at Michigan State University, along with the Office of Gifted and Talented at Ingham Intermediate School District, have worked to address the needs of high-ability students is by serving as an integral part of a team at Michigan State University developing on-line Advanced Placement Courses. On-line AP courses give students from rural communities and the inner cities access to high-level courses otherwise not available to them. In 1999, 43.5 percent of the high schools in Michigan were not able to provide any Advanced Placement courses to their students. Access to AP courses has taken on a greater importance in recent years since many of the nation's most selective universities give extra weight to the student transcripts which include Advanced Placement course work.

In conclusion, if we truly want to provide programs to meet the needs of gifted and talented students, we need to offer access to a broad spectrum of students and to create a network of support and services that will equip the underrepresented groups of students to walk through those doors of opportunity.

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Biographical statement for Jenny MacRae McCampbell:

Jenny MacRae McCampbell has been in the field of education since 1964, teaching in Wisconsin, Illinois, Michigan, and in Germany for the Department of Defense. She was the Consultant for Gifted and Talented and Professional Development at Clinton County Intermediate School District in St. Johns, Michigan, 1983 – 1998, and has been the Director of the Office of Gifted and Talented at Michigan State University since 1998.

An Excursion into the Land of Standards: Princeton University by Michael E. Walters Center for the Study of the Humanities in the Schools

Education is one of the major issues of the coming presidential election. Both candidates have made the need for an effective educational system a core topic in their campaign. The term "education standards" is one of the most used phrases in their rhetoric concerning the improvement of public education. However, the definition of standards is taken for granted, and without a proper definition, this phrase is reduced to a political platitude. Recently, I visited Princeton University and encountered an educational environment that gave me some ideas about the concept of standards.

One of the dangers of not possessing a conceptual framework for what is meant by standards is that the meaning becomes a political instead of an educational one. There is an urge for egalitarianism in the nation that could lead to just the opposite of standards. One of the necessary elements of any working concept of standards is what the ancient Greeks called "arete" or excellence -- and a truly gifted individual is a person who seeks to express and perform excellence in their intellectual and artistic endeavors. Princeton University has such a tradition of stimulating and promoting excellence.

Before and just after World War I, Princeton University had among its staff and students many examples of this need to achieve excellence. The President of Princeton during the first decade of the 20th century was one of the most gifted historians and statesmen the United States has ever produced, Woodrow Wilson (1856-1924). He was later the President of the United States during World War I and had a vision for world unity based upon self-determination and democratization. Most of the recent world events reflected by the emergence of new nations and the spread of democratization go back to Wilson's original insights for the League of Nations (precursor to the United Nations). During World War I, F. Scott Fitzgerald (1896-1940) and Edmund Wilson (1895-1972) were among the outstanding students at Princeton. Fitzgerald would become one of the greatest writers of our times. His novel, **The Great Gatsby** (1924), is an achievement on both on a literary level and as an expression of the American character to reinvent itself. His first novel, **This Side of Paradise** (1920), was about student life at Princeton. Edmund Wilson was one of the best American writers of non-fiction. His accounts of each decade of American life from the 1920's to 1960's are among the most important social documents written by an observer of the American scene.

From 1940 to recent times, Princeton has hosted an important American think tank (perhaps the archetypal one), the Institute of Advanced Studies. It was here that mathematicians and physicists created a nuclear age. Starting with Albert Einstein (1879-1955) and J. Robert Oppenheimer (1904-67), this institute was the intellectual soil for the scientific concepts of a new age. Recently, Einstein was chosen by Time Magazine as the most important individual of the 20th century. It was at Princeton that he lived and conducted research during the second half of his life. Currently, this institute is engaging in scientific research to develop new concepts for the 21st century.

There is a remarkable clothing store in Princeton called Landau's. The original founder of this store was a personal friend of Einstein and his family. His children not only continue the business, but have created a mini-museum in the back of the store based upon Einstein memorabilia. Among the objects on view is the original letter that President Roosevelt wrote to Einstein responding to the need to start the Atomic Bomb Project. When one visits an academic environment such as Princeton, one gains an understanding that standards have to include excellence in a community of the gifted.

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