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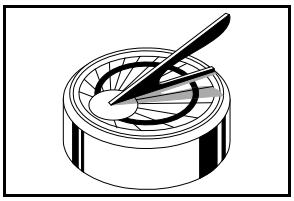

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The present economy and financial upheaval will not decrease support of gifted programs by determined parents and educators, but the continued onslaught of political correctness will eventually lead to their decline. This is the exact time in our nation's history for emphasizing the identification and development of the best minds from all areas of society. The history of the United States is replete with economic, political and military crises which eventually resulted in Americans exerting their best efforts to solve domestic and international problems. The new federal administration should help to meet current challenges of educating gifted students. Here is my list of proposals for improving this situation; each area would benefit by receiving increased financial (money well-spent in these hard times) and administrative support from federal, state and local governments.

- Extensive teacher training programs in the humanities, mathematics and sciences.
- Inservice training programs on identifying and educating gifted students for regular education teachers, parents, administrators and school board members.
- Special provisions in the No Child Left Behind program for gifted students, particularly the use of an appropriate curriculum and advanced tests that measure higher ends of achievement.
- Early identification and advanced programming for minority students who show promising academic potential.
- Educational support programs (implemented by teachers and parents) for minority and poor children who show academic potential. Such programs should include tutoring, mentoring, study skills development and learning incentives.
- Technology and engineering programs beginning in elementary school.
- Expanded number of science and technology courses in middle and high schools.
- Financial assistance, grants and mentorships that concentrate upon identifying gifted students needing assistance to attend college.

Science and Technology in Society —

- Long-term support for NASA expeditions, particularly a new moon mission and human exploration of Mars.
- Provide grants to corporations and research centers that will be used to set up mentorships and specialized training for high school and college level gifted students.

Please send me your own "wish list" of needs for gifted education. I will place it on the Gifted Education Press Web Site and discuss it in the future.

The articles in this issue concentrate upon principles of good teaching, general and mathematics education in Israel, using ebooks in gifted education, and a great Hero of Giftedness. Sanford Aranoff is a physicist who teaches science and mathematics courses at Rider University (New Jersey). He presents detailed examples of how teachers should understand and use the basic principles in their fields to effectively communicate with gifted students. I have received many positive comments from readers concerning Dr. Aranoff's previous discussion of effective teaching. Shlomit Rachmel (The Ministry of Education, Jerusalem) and Roza Leikin (Faculty of Education, University of Haifa, Israel) describe mathematics programs for gifted students in Israel. Christine L. Weber, Terrence W. Cavanaugh, and Nile V. Stanley, all of the University of North Florida in Jacksonville, have written an informative and comprehensive article on using ebooks with secondary level gifted students. Michael Walters completes the Winter 2009 issue with an inspiring essay on one of the greatest classical violinists, Itzhak Perlman.

Maurice D. Fisher, Ph.D., Publisher

To Educate the Gifted, We Need To Stress Basic Principles

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The quintessence of thinking is rational logic based upon fundamental principles. This must be our focus in educating gifted students. Of course, there is much more to humanity such as needs, emotions, stories, and feelings. We need to express stories and feelings in order to reach all students. However, we must stress logic based upon principles when we deal with gifted students. These include students of all ages, and especially university students. In order to clarify the logic, we must understand and expound on the principles.

What are the basic principle ideas of the subject matter of the course? This question must be foremost in the mind of the instructor, and the goal of the course. The focus of this paper is on physical science and mathematics instruction.

Professors unfortunately do not fully understand and apply this. None of my professors ever made this focus. They expounded on the ideas and mathematics while I tried my best to understand and take notes. Many textbooks display this deficiency. Others do mention principles, but give only partial emphasis.

This lack of stress on principles sometimes leads to incorrect thinking. In graduate school, I noticed errors in textbooks, due to the lack of focus on principles. After considerable effort overcoming opposition, I published papers[1] clarifying this. Errors in thought arose because people focused on details rather than the principles.

Svinicki[2] clearly stated my point: "**Emphasize a Few Key Ideas**—These central ideas, as in the most important material to be learned, need to be highlighted and stressed across the entire course as well as in each class session."

High school textbooks do a fair job of stressing principles. They put theorems in frames with green borders. Chapters begin with lists of vocabulary words. Teachers assign students to write the "vocab" words with the definitions. Professors can learn from this approach by writing the principles and definitions as vocab. The students would be required to write the vocab as homework and on quizzes. This activity would help thinking, and help when similar but different terms occur.

Some textbooks and professors erroneously assume gifted students do not require framing principles in boxes. The gifted merely process information faster, but still require clear displays of principles. We need to understand where to begin and focus attention. The instructor's responsibility is to lay this out clearly. We all need direction. The guide shows tourists where to hike. The instructor shows students where to go, starting from principles.

"What is the problem?" is a question I ask myself, as a student or a researcher, to help focus on the issue at hand.[3] The professor must do more, and generalize to *"What are the principles?"*

This stress on principles leads to a different mode of lecturing. The discussion would start with the conclusion followed by the reasoning. The common approach is, "Let's do this and this, and, presto, we get this." Conclusion first is the accepted practice for presentation of technical papers in industry.

If we look at ancient writings, we see that the authors understood the need to stress principles. The Five Books of Moses contains many commandments, epitomized in the Decalogue. The intelligent son of the Haggadah asks, "What are the laws and judgments…," clearly stating the need to reiterate principles with gifted students. We need to help students with the discovery of principles such as challenging them to suggest alternatives. We must never assume they know something already. The instructor must write each principle explicitly with examples.

The professor must also spend time on *"how-to"* instructions concerning how to solve a problem. Some students are not in the abstract level (Piaget). They can understand the principles only after we tell them how to do something. However, the gifted may also occasionally need how-to instruction.

Why do we fail to stress the principles? The answer may lie in the comments made by van Gelder[4] quoting M. Shermer who stated that people are "pattern-seeking, story-telling animals". If the professor makes the lecture like a story, and the students see the patterns, everyone is happy. Students want to hear stories and see patterns, and give approval to an instructor who satisfies them. The professor feels good when he/she lectures or writes stories and shows patterns. Politicians do not discuss each other's principles, but instead give

stories and respond by giving more stories. We have lost the ability of critically focusing on principles. We must challenge our students (and others) to explicitly state the principles.

All this prevents good critical thinking. Critical thinking means more than checking ideas. It means not being satisfied with stories and feelings but insisting on relating each discussion to basic principles.

The challenge to the instructor is that the converse of people liking stories is that if the stress is on the principles, people may not like it. This means that the instructor must tell stories and demonstrate patterns as well as discuss the principles.

Van Gelder said, "Critical thinking is hard." This means that students are not used to it and will not like it. This is a challenge. However, critical thinking is essential to properly understand the material. Treating the ideas as vocab may help to overcome this challenge. Another approach is to have more explicit discussions on critical thinking.

Education for a free mind is explaining principles. We all must keep this paramount. We must reexamine our lectures to be sure we are focusing on the correct principles. We must make sure our students understand this approach, and understand and use the correct principles. This is true for all students, not only the gifted.

To educate, we need to stress basic principles by reviewing them, using them as vocab words, reiterating them by giving examples and doing problems, and by showing the application of the principles to familiar things. Examples of such familiar things will be discussed below, and include the Global Positioning System (GPS) and lasers. We need to give attention to students, making sure they understand, and prompting unresponsive students.

The remainder of this paper will discuss how some scientific leaders did not communicate properly due to the failure to focus on basic principles. The necessity of stressing principles is clear in other areas such as politics and crime. Although we say that we are trying to bring democracy to the Middle East, we fail to state what the principles of American democracy are. Our political leaders, current and aspiring, along with media leaders, need to examine what are the basic principles and goals of our country, and articulate and debate them. We need to educate our prisoners if we wish to reduce crime. Prisoners must understand the principles of moral behavior. The focus of education must be on basic principles – education for all levels, from the gifted to the average and to below average.

Examples of what we mean by stressing principles.

- We will start by saying how we introduce forces and molecules, stressing definitions based upon measurements.
- We will give examples from simple problems in high school and university courses.
- Richard Feynman (a mid-20th century famous physicist) failed to explain ideas to a gifted student, Robert Barrow, currently a Harvard professor. We will discuss the reasons, showing that it is due to not stressing basic principles.
- We will discuss how Albert Einstein (an early 20th century famous physicist) and others explained relativity. Their failure to properly discuss principles caused widespread misunderstanding and ignorance.
- Einstein and later Feynman developed and explained superfluidity, a clear example of quantum mechanics (the current theory of atoms) in the macroscopic world. The general public and most undergraduates are unaware of the power, beauty, and importance of the ideas behind superfluidity. This paper will discuss the reasons for this lack of knowledge, and demonstrate that it is due to these eminent physicists not focusing on basic principles.

Definition of force. Silbey[5] defines force as $F=ma$ (Newton's law). This is true only after we define force. This shows the lack of focus on basic principles. We define quantities in physics by measurements, and so we can define force by using a spring, for example. A formal definition can be "Force is the manifestation of the action of one body upon another."

There is another conceptual error in Silbey's definition. Newton's law was revolutionary, since for a millennium people thought that force is proportional to velocity; Newton said force depends on the *change* of velocity. When one defines force as $F=ma$, we lose sight of the important principle of physics that Newton introduced. *The educational principle here is giving counterexamples to our ideas*; not only say what Newton said, but what previous thought was.

What is a molecule? A student usually responds saying a molecule is a group of atoms bonded together. This definition is not one based upon fundamental principles. In science, we define things by something one does. A molecule of water is the smallest drop of water; break it, and we get hydrogen and oxygen. An atom is a molecule of an element; e.g., a molecule of the element helium consists of one atom. The statement "a molecule is a group of atoms" is not based upon fundamental principles, as it recalls Democritus' atomic theory. Reality consists of bits of information, not atoms.

Information. We can make an additional comment. A principle of physics is that information travels at the speed of light. Think about it. Information must travel to different locations, for if it did not travel, it is not information. The speed must be constant, for if not, there would have to be information about the variable speed, which is self-contradictory. Just by focusing our attention on fundamental principles, we understand the basic concept of the speed of information. Einstein postulated that the speed of light is constant, and this lead to the concept of the constant speed of information. No one has given any reason why the speed of information must be constant. As you see, the explanation is very simple! Pombo and Nieuwenhuizen[6] discussed the foundations of relativity based upon the conservation of information, but did not take the extra step mentioned here talking about the constant speed of information.

A chemistry problem. Here is a problem from a course in physical chemistry. The book's answer[7] is full of numbers and fails to clearly show the principles. The problem is, "A mole of sodium is added to water. How much work is done on the atmosphere by the subsequent reaction if the temperature is 25°C?"

The solution involves first writing the reaction:

$Na + H_2O = NaOH + ½\ H_2$.

Silbey then wrote the expression for the molar volume using the ideal gas law $V = nRT/P$, where n is the number of moles. We set $n = 1$, as we have one mole of *Na*, sodium. Silbey puts in the numbers, writes down all the numbers, and gets the result for the volume: 0.0245 $m^3\,mol^{-1}$, without explaining what the volume is.

Silbey continues: Work w is $-P$ times change in volume, which the text discussed. He puts in numbers, again writing all the numbers down, and gets the answer:

$w = -1.24$ kJ mol^{-1}.

A better way to write the solution is to stress basic principles. Silbey's example is how *not* to show a problem.

The equation for the reaction shows that one mole of sodium yields ½ mole of hydrogen, H_2.

The ideal gas law for ½ mole is $V = RT/2P$. This is the increase in volume due to the hydrogen that was created. Silbey failed to state this.

We get $w = -RT/2$. We put in the numbers and get $w = -1240$ J mol^{-1}, assuming the pressure was standard room pressure. Silbey did not mention the assumptions. Students should write all assumptions, and should not assume anything. Scientists have made great discoveries by putting extra effort in stating assumptions.

This is simple, clear, shorter, and of better pedagogical value. Silbey was so involved with numbers that he hid the principles. There was no need to get the volume 0.0245 $m^3\,mol^{-1}$ that he calculated but did not explain.

High school algebra. The accepted approach is for students to learn how to do things, and then to write the equations. For example, a teacher gave this problem: Given a rectangle, length $x-6$, width, and a smaller rectangle inside, length and width given, find the equation for the area. The correct way to do this, explaining all the principles, is to write several lines. The length is…, the width is …. Area is length time width, which is…. Same for the small rectangle. Subtract. The amount of space the teacher allowed for the problem was just enough to write the answer. The answer is not the only important thing. The various principles involved are also important, and students should explicitly write them down. Teachers do not understand the importance stressing basic principles. Teachers must tell students to do one step at a time, explaining each step. When teachers overemphasize *what* to do rather then *why*, students may get bored and tune out, and consequently later may miss significant things the teacher said. This situation is much more acute for the gifted student, who needs more *why* rather than *how*.

I remember my first math course as a university freshman – how different it was from high school, and how the professor explained things in a sensible fashion. There was no reason high school teachers could not have explained things clearer. The professor stressed principles which the teachers did not.

Richard Feynman was one of the most brilliant physicists of the mid-20th century. Barro, currently Warburg Professor at Harvard, was one of his students. Barro said[8], "What he taught was often way above my head." Why did Feynman fail his gifted student? Reading Feynman's lectures[9] in undergraduate physics gives a clue. Feynman was brilliant, had deep insights, and was a wizard at the most obtuse calculations. However, the stress in his book is not on fundamental principles. I have had professors like Feynman. They explain all types of complicated things, and fill the board with equations, but leave out the fundamental principles. We should examine Feynman's teaching carefully, to learn lessons on how to teach or not teach gifted students.

Albert Einstein, one of the most brilliant physicists of the early 20th century, had a failure similar to Feynman. Regarding his theories of physics, Hawking[10] said, "In the 1920s there were said to be only a dozen people in the world who understood it." Einstein did not teach at college and so never had the need to express fundamental principles to young intelligent minds. This could be why Einstein could not explain it better to the public. Listening to Einstein's lectures, we hear that he talked about conversion of mass into energy, repeating that mass changes, without saying what mass is. To quote Einstein[11], "*Mass and energy are the same thing. This is an unfamiliar thing to the average man."* Einstein did a wrong thing that teachers of even gifted students do, and that is to berate the student, using the word "unfamiliar." Einstein could simply have said that $F=ma$ defines mass, and that as speed increases we need a larger force to further increase the speed.

Here are further examples with Einstein's gravitation. Since mass changes geometry, space near mass is not Euclidean, but curved. We know that the distance between two points on an arc of a circle is greater than the straight line between the points. Moving along the arc takes longer. This explains why space curvature causes time dilation, the slowing of time due to gravitation. This effect is significant for the GPS. Since everyone knows about the GPS, it is important for educators to mention Einstein's theories in this context. This is especially true for the gifted student, who needs encouragement and inspiration. *We need to use the familiar to demonstrate principles.*

We can mention here another important pedagogical principle. *Look at extreme situations.* Einstein failed to look at the extreme geometry, a black hole, where space becomes a closed curve. In the Euclidean universe, we imagine traveling forever in a straight line. It also takes forever to reach the surface of a black hole. Consequently, we cannot speak about the "inside." Because Einstein did not stress the basic principle that mass changes geometry, people even today confuse things, talking nonsense about the *inside* of a black hole.

Superfluid helium is an example of quantum mechanics in the macroscopic world. For example, heat a sample, and instantly the entire sample will be warmed. The subject does not appear in introductory courses, as it should. Einstein (with Bose), and then Feynman, explained the ideas. We picture helium gas as hard spheres moving around. As the gas cools, the motion slows. At −271°C, the atoms move so slowly that they lose their individual identity, a cooperative quantum effect. The idea of losing identity is an important principle of physics.

A laser is another example of a cooperative effect. Let the students' minds wander as they try to imagine other cooperative effects (e.g., ant swarms). Laser light is very different from other light. *Educators need to stress cooperative effects.*

Wheeler–Feynman absorber theory. When Feynman was young, he wrote a paper with his mentor, John Wheeler. I will rewrite their problem in a different way to make it clear. The force of gravity of the sun on the earth does not point to where the sun is, but where the sun was 8.3 minutes ago, the time it takes light to go from the sun to the earth. We call this the retarded force. (Students find "retarded" hilarious.) If we solve the equations, we get a solution that the force of gravity points to where the sun will be 8.3 minutes from now, the advanced force. Wheeler and Feynman focused on electromagnetic forces, and gave a type of answer concerning why advanced forces do not exist. Einstein pointed out that their work does not apply to gravitation. To my knowledge, no one has given a good answer.

By the way, it is interesting that the speed of gravitation is the same as the speed of light, which is an electromagnetic phenomenon. The discussion above about the speed of information clarifies this.

The advanced force issue disappears if we look at some basic principles of mathematics and physics. Solutions of equations in physics are limited by things like boundaries. Sounds depend upon the shapes of the music instruments. We can reject the advanced force by something similar to boundary conditions, saying that this violates causality, a principle of physics. The same reasoning applies to rejecting the solution of gravitation for a particle entering a black hole.

In summary, to succeed in educating, especially the gifted, we need to focus on fundamental principles. We need to clarify our thoughts and examine the material we are teaching to be sure that we indeed understand what the fundamental principles are, and are discussing them in class, and as parents with our children. This approach will help us be better teachers, especially for the gifted, better able to present material to the public, and better understand science and mathematics.

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Education of Gifted Students in Israel: General and Mathematics Education

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1. Recent Trends of Gifted and Talented Education in Israel. In the past decade in Israel, awareness has increased concerning the importance of developing high ability students as the springboard for a democratic society – strong in its scientific advancements, industry, high technologies, humanities, and the arts. The new policy for promoting education for outstanding and gifted students in Israel was crafted by a steering committee of the Ministry of Education (Nevo, 2004). The following positions were accepted for developing the talents of outstanding and gifted students in Israel. It is commonly agreed that the State of Israel's human capital is the primary quality resource at its disposal and that neglecting the potential for unique talent impairs the ability of these students to improve themselves and contribute to society.

Education of outstanding and gifted students in Israel should fulfill the equity principal, i.e., provide each student with equal opportunities to fulfill his/her potential. Equal opportunity in education requires the differential investment of resources in accordance with the special characteristics and needs of each and every student. Education of outstanding and gifted students should address the diversity of the fields in which human talent is manifested, e.g., general cognitive skills, special intellectual abilities (as mathematics or sciences) or arts or sports-oriented skills. Their education should also address the dynamic qualities of high intelligence so that human talents that can be enhanced and shaped. These special characteristics and needs require a unique learning environment and distinctive study tracks with respect to pedagogic methods, and appropriate teachers and curricula.

The Division for Outstanding and Gifted Students in the Israeli Ministry of Education emphasizes (Rachmel, 2007) that the main expectations from graduates of gifted education programs are in the achievement spheres relevant to students' talents. These expectations include excelling as adults in philosophy, science, technology, art, literature, law, business and other fields. In each field the graduates of the programs are expected to manifest perseverance, creativity and originality, curiosity, intellectual courage, intellectual or artistic integrity, the ability and desire to continually learn and develop, the ability to think under conditions of uncertainty, the ability for multidirectional thinking, efficient consumption of information, and a broad perspective and awareness of ethical implications. Graduates of programs for these students should be socially committed people, with a high level of morality and humanity. The committee determined that education programs for outstanding and gifted students should seek to encourage these qualities.

2. Distinguish Israeli Gifted and Talented Aspects when Compared to Other Countries. The professional literature dealing with gifted children does not provide a uniform and clear definition for the concept of giftedness. Some educators distinguish between "gifted" children, who excel in scholastic areas, and "talented" children, who excel in the areas of performing arts, or sports. The Division for Outstanding and Gifted Students considers the following areas of giftedness: *General scholastic ability*, usually determined by IQ test; *Artistic talent*, including music, visual arts, dance, and writing arts; *Specific scholastic field of excellence*, including, for example, mathematics, computers, languages; and *Talent in sports.*

Following Nevo (2004), the Division for Outstanding and Gifted Students uses the following statistical definitions. *Gifted students* are the top one percent of the population in each cohort, in each of the areas of giftedness as defined above, on condition that they also meet the criteria of motivation and creativity above the cohort median. In terms of IQ, this refers to an IQ of 135 and above. *Outstanding students* are the top five percent of the population in each cohort, in each of the areas of giftedness as defined above, on condition that they also meet the criteria of motivation and creativity above the cohort median. In terms of IQ, this refers to an IQ of 125 and above.

The pool of talents is not uniformly distributed throughout all cities and schools in Israel. A uniform, nationwide definition of giftedness (a "national norm") could lead to a situation where in certain localities or geographical regions, very few (or very many) gifted students will be found. It was ultimately decided to adopt a mixed policy with regard to the definition of gifted children. Outstanding students (the top 5%) will be defined on a local basis – the outstanding students in the school or the locality. Gifted students (the top 1%) will be defined on a national basis. "Super-gifted" or "extremely gifted" or "genius" children constitute a subgroup of gifted children which numbers only a few students in the entire country who exhibit a highly rare talent. In the area of intelligence, this refers to an IQ above 155 (there are only 10-15 such students in each cohort). Super-gifted children are both different from other students and from regular gifted students. Frequently their unusual abilities are self-evident.

Identifying outstanding students and gifted students is done on the basis of a variety of reliable and valid assessment tools. These include Questionnaires for preschool teachers; Observation in preschool; Questionnaires for teachers, parents and students; Portfolios; Achievement tests; School grades; Intelligence tests; Tools for evaluating motivation; and Tools for evaluating creativity.

The Division for Outstanding and Gifted Students recommends the nurturing of gifted children as early as possible, and to continue nurturing them until the end of Grade 12. However, it is known that the age at which a specific talent develops and appears is not identical for all types of talent. Therefore, it is impossible to determine a standard age that will apply to the range of human talents.

The methods of nurturing gifted children that exist around the world can be classified according to the basic approach relating to the capabilities of gifted students. ***Acceleration*** enables students to learn and advance at an accelerated pace in any topic within the areas of their talents. Possible types of acceleration include: Early entry into school, skipping grades, compacting the curriculum, studying at a personal pace, accumulating academic credits during the course of high school studies, and finishing a bachelor's degree before joining the army. ***Enrichment*** allows gifted students to simultaneously study a larger than usual number of topics and subjects, and can therefore be nurtured by adding study subjects across the board throughout their entire course of studies. Some examples are studying several foreign languages, intensive study of computer applications, studying various schools of art, and adding branches of specialization in sports. Gifted students can take courses in an extra-curricular framework and can also study in integrated frameworks. ***Deepening*** enables gifted students to study topics in greater depth than usual. Some examples are studying mathematics not only through formulas and applying them to specific cases, but also through understanding the set of axioms upon which they are based; studying music not only by acquiring a specific technique but also accompanied by a physical and/or cultural understanding of the essence of the music. Gifted education in Israel is usually based on all of the above methods. The choice between them (or their combination) should be made according to the nature of the specific program, the capabilities and tendencies of the gifted students taking part in it, and the skills of the teachers in the program.

3. Issues related to Gifted and Talented Education in Israel

3.1 Programs for Outstanding and Gifted Students in Israel. The Division for Outstanding and Gifted Students currently operates several unique programs for nurturing gifted students: Special classes in schools, programs consisting of a "weekly enrichment day" and several specialized schools, after–school enrichment classes and a virtual school. *Special (self-contained) classes* for gifted students operate in elementary and secondary schools around the country. These classes consist of an expanded curriculum for studying the topics of the regular national curriculum with added depth and breadth, while also providing varied enrichment and acceleration opportunities according to students' needs. *Weekly enrichment day programs* enable gifted students to study once a week in a unique program suited to their abilities and needs. Programs are held in 52 regional centers to which students arrive by means of organized transportation. Enrichment day programs cater mainly to elementary school students only (Grades 3-6). The centers are spread throughout the country, and encompass all sectors, including the Jewish, Arab and Druze sectors in mixed populations. In these programs, students study various disciplines not included in the regular, formal curriculum with other students who are similar to them in their cognitive abilities and fields of interest. The Ministry of Education sponsors several *specialized secondary schools* that nurture specific talents such as music, performing arts, visual arts, and sciences in unique programs. These schools are selective, accepting students who possess an above-average general scholastic ability, and exhibit excellence in a specific field. *After-school classes* are intended for students in Grades 3-9. This program exposes outstanding students to different fields of knowledge not included in the formal curriculum.

The Division for Outstanding and Gifted Students operates *virtual schools* that offer ten semester courses ranging from the history of mathematics to environmental ethics and natural medicine (in Arabic) to gifted students from secondary school, primarily from the outlying areas. Students perform various tasks via the internet and also meet periodically with their instructor on a personal basis. The Division also sponsors *interdisciplinary youth conferences* which focus on concepts, such as time, changes, and relativism from different perspectives. These conferences are open to all gifted and outstanding students.

Gifted high school students may choose an elective track which combines their high school studies with *concurrent enrollment in academic studies* at various institutions of higher education. Outstanding and gifted students in secondary schools, mostly from the outlying areas, are offered a *summer program* in Tel-Aviv University that exposes them to various subject areas in an experiential manner. Students take courses with university instructors and work with them on various research projects.

3.2 Training Teachers for Outstanding and Gifted Students. Unique pedagogical training is required for teachers who teach these students. Professional development programs for the teachers of the gifted include treatment of the Theoretical perspectives on giftedness and excellence, Issues in identifying outstanding and gifted students, Cognitive components of excellence and giftedness, Social-Emotional components of excellence and giftedness, Issues in defining and identifying creativity, Learning and cognition, Models and methods of instruction and nurturing outstanding and gifted students, Special populations among outstanding and gifted students, and Instructing them as a unique profession. The objective is to reach a point where teachers who wish to teach in these unique programs must receive in-service training which will grant them a certificate as a master teacher for teaching outstanding and gifted students.

4. Gifted and Talented Education in Israel in Mathematics

4.1 Characteristics of Programs. In Israel, educational programs for students highly able in mathematics are coordinated by the Ministry of Education or by non-profit organizations. Israeli Universities also are involved in promoting mathematics education of high ability students.

The programs for students who excel in mathematics are mainly devoted to the fulfilling students' mathematical potential defined by the combination of their ability, motivation, beliefs and learning opportunities or experiences. Thus, most of those programs are directed to students' high abilities in general and address their individual differences in particular. They are aimed at raising students' motivation, giving special attention to their internal motivation through the development of interest in mathematics, enjoyment from solving mathematics problems and being involved in mathematical explorations.

In the field of mathematics education, the schools manage special mathematics classes, special mathematics ability subject groups (mainly starting at 7^{th} grade), mathematical circles, and competitions. Additionally, various out-of-school activities are developed for students who are outstanding in mathematics. Among those activities are Mathematical clubs, Mathematical olympiads, Student conferences and Integration of public school students in university courses. Students can save their academic credits for academic enrollment during a period of 7 years.

The programs for mathematically promising students are aimed at improving mathematics capability and reputation, developing the individual's competencies and creativity, helping ordinary schools and teachers to improve the teaching of mathematics, and encouraging highly educated parents of the gifted to facilitate the education of their students.

Each framework for the advancement of mathematically outstanding or mathematically motivated students combines deepening and enrichment – and sometimes involves acceleration. These frameworks fulfill several interrelated principles: Mathematical activities in which the students are involved lead to construction of *mathematical connections,* including connections between representations of the mathematical concepts, different mathematical tools and concepts from the same field or different mathematical topics. Mathematical activities for high ability students are challenging and allow students to master appropriate difficulties (Figure 1).

In School Programs	**Out of School Activities**	**Both In School Programs and Out of School Activities**
•Whole Class Grouping	**• Integration of Students**	**• Math Clubs**
• Streaming	**in University Courses**	**• Olympiads**
	• Virtual Courses	**• Student Conferences**

Figure 1: The programs for mathematically promising students

One of the main purposes of the educational programs for outstanding mathematics students is the development of their ***Habits of Mind***. From the psychological point of view (Costa, 1991), Habits of Mind are manifested in the individual's ability to behave intellectually when one does not know the answer, e.g., in situations involving dilemmas and uncertainties. These situations usually demand strategic reasoning, insightfulness, perseverance, creativity, and craftsmanship. Employing Habits of Mind means the inclination and ability to choose effective patterns of intellectual behavior. The psychological characteristics of Habits of Mind include personal persistence, the inclination to choose an effective strategy and the ability to apply this strategy to solving problematic situations. As persistence, creativity and high ability are also characteristics of intellectual giftedness (Renzulli, 2002), Habits of Mind in a mathematical context may be attributed to advanced forms of mathematical thinking. One of the characteristics of the concepts and ideas that may be considered as Habits of Mind within mathematics is their interdisciplinary nature, and the possibility of using mathematical ideas and concepts throughout the entire school curriculum.

Our programs for mathematically outstanding students combine *individual and cooperative* forms of learning. Learners study systematically and independently in the classroom and at home in order to develop their problem-solving competence. In addition, they are involved in cooperative learning activities in order to advance their problem solving skills by supporting each other. The balance between individual and cooperative learning may provide students with better opportunities for realizing their mathematical potential.

In these programs, learning is *active*, meaning that learners construct their individual knowledge through *mathematical explorations* and other forms of doing mathematics with emphasis on conjecturing. This leads to mathematical discussions, proofs and refutations. To allow active participation of the learners, we vary didactical priorities: priority of ideas when learning a new topic and performing non-

conventional solutions versus the priority of completing answers, and rigor and elegant proof when working with known ideas and performing conventional solutions. Our programs are aimed at the nurturing and supporting individual talents so that students have the opportunity and guidance to excel. Last but not least important, technological tools and environments are widely used in the mathematics education of gifted and talented students to give all of them opportunities to explore complex problems and mathematical ideas.

4.2 Training Teachers of Mathematics for Outstanding and Gifted Students. The teachers' role in the mathematics classroom is to stimulate students' mathematical reasoning, to set up their participation in mathematical explorations, to design situations in which students are required to prove mathematical statements, and to let them participate in competitions. The "devolution of a good problem" (challenging and appropriate to the students in the class) by the teacher is central in a didactical situation designed explicitly to encourage learning a particular content. Handling a mathematical challenge should be a part of the didactical contract – a set of specific rules that determine student expectations from their teacher and teacher expectations from the student. The teacher's role is central to promoting students' mathematical understanding by choosing appropriate tasks and providing expert assistance. However, a ***conviction loop*** in teacher education is usually apparent: *To be convinced (believe) that introducing challenging mathematics studies to students is real, teachers have to implement it in practice; to implement challenging mathematics in the classroom, teachers have to be convinced (believe) it works.* Teachers' knowledge and beliefs pre-determine their willingness and, moreover, enthusiasm regarding the teaching of challenging mathematics. Thus, one of the main purposes of programs for education of gifted and talented students in mathematics is to overcome this loop by developing teachers' knowledge and beliefs, improving their confidence in teaching challenging mathematics, and understanding the special role of mathematical challenge in the education of highly able students.

In order to motivate teachers' participation in courses and concentrate their attention on challenging mathematics, mathematical tasks for teachers have to be closely related to the secondary school curriculum as well as creating authentic mathematics-learning situations. In addition, professional development activities should involve problem-solving situations combining mathematical and pedagogical issues. To stimulate teachers' pedagogical reasoning, their courses should be based on the same principles involved in teaching mathematics to students. Teachers, like students, have to face difficulties and challenges when coping with mathematical tasks.

To Conclude

Israeli researchers, educators, and members of the Ministry of Education take an active part in international conferences and have numerous publications in professional and research journals. They broadly share their experiences with scientists from all over the world. For example, the Division for Outstanding and Gifted Students in the Ministry of Education hosted several delegations of Korean teachers and educators who are working with gifted and talented students. Korean delegates participated in workshops specially organized for them, in lectures and met with researchers from universities.

Another example of the international activities of Israeli researchers and educators in the field of gifted education is the 5th International Conference on Creativity in Mathematics and the Education of Gifted Students that was held in Haifa, Israel in February 2008**.** This conference has occurred every two or three years in different venues. Researchers from 26 countries responded to a request for papers at the 2008 conference. A detailed program may be found on the following website: http://cmeg-5.edu.haifa.ac.il/.

The conference included five symposia which created dialogue and discussion of some important issues. Each symposium resulted in an agenda for future research at different grade levels. They focused on selected issues related to the topic of the conference and were coordinated by members of the international program committee and invited experts. The Division for Outstanding and Gifted Students (Mrs. Shlomit Rachmel, Head) coordinated Round Table discussions focusing on educational policy related to gifted and talented students in general, and mathematics in particular. We consider this conference as being an expression of appreciation by educators from all over the world regarding the accomplishments of Israeli educators in the gifted education field, and hope that it will further advance this field in Israel.

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Using Ebooks to Enrich and Expand Literacy Experiences for Secondary Gifted Readers

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Introduction. The use of electronic text forms, known as ebooks, with gifted secondary readers holds promise for enriching and expanding the literary environment for many of these students. The gifted reader and the unique characteristics found in the modern gifted reader today must be understood in order to use ebooks effectively. The modern student in the classroom is a member of what is known as the Millennial Generation (Patrick, 2004), which includes children who were born between 1982 and 2000. Millennial students have radical differences from students from previous generations because of access to interactive communication technology resources like the Internet. Technologies, such as the Internet, have provided Millennials free and ubiquitous information that can be accessed twenty-four hours a day, 365 days a year their entire lives. One example of a distinguishing characteristic differentiating today's teen from previous generations is that on a weekly basis, many spend more time on the Internet that watching television [(1) 16.7 hours online (excluding email), (2) 13.6 hours watching TV, (3) 12 hours listening to the radio, (4) 7.7 hours talking on the phone, (5) 6 hours personal reading of books and magazines] (Yahoo, 2003).

Research on effective reading instruction supports the need for all students to interact with appropriately complex reading materials (Allington, 2002); however, for the secondary gifted reader, challenges in finding appropriate reading material are common. A recent study on third to seventh grade reading classrooms found that 75% of the classrooms involved provided no challenging reading materials or advanced instruction for talented students (Reis et al., 2004). The study also found that technology was rarely used even though there was access to the Internet in each of the classrooms.

A Pew Internet and American Life Project study found that the new ways students communicate and access information are not yet recognized by many schools and teachers (Levin & Sousan, 2002). Students often experience a drastic disconnect between how they personally use technology, such as the Internet, and how it is used in schools. In many situations, today's students feel that the assignments given at school actually discourage them from using the Internet as much, or as creatively, as they would like. The electronic book or ebook is a recent addition to "book" styles and is one that offers students, teachers, and schools an additional medium or tool in literacy experiences. Most people are familiar with some form of electronic book such as audio books as books on tape, books on discs, or books on MP3s. However, ebooks are not limited to audio representations. A modern definition of an ebook is a digital text file with the text displayed on some form of computer or electronic device (Cavanaugh, 2005).

Understanding physical components of ebooks is essential to teachers and students. Ebooks, like many other forms of computer technology, have three basic components – hardware, software, and the book's "textual" file. The hardware of an ebook is usually a computer, laptop or desktop, or other computing device, such as a handheld, PDA, or even a cell phone running specific software that displays the "book" onto a screen or audio representation. The software program is one which reads the "book file" and displays it on the device, such as Microsoft's Reader, Palm's eReader, and Adobe Reader. Today's ebook software programs can be highly interactive using applications such as interactive dictionaries, multi-color highlighting, margin notes, text searching, and even drawing in the book. The book format can also be accommodating to people with diverse needs through its ability to change print size and contrast levels. Some desktop or laptop ebook versions have a text-to-speech option that reads aloud to the student.

The use of ebook applications for the education of gifted secondary students has vast potential as literacy and technology merge. Siegle (2004a) explores the merging of literacy and technology in the 21st century and discusses the expanding notion of literacy that now includes technology use. He references the North Central Regional Educational Laboratory Competencies related to technology literate students, and finds what he calls "an interesting parallelism with the goals of gifted education" (p. 33). Siegle states: "The skills that educators of gifted and talented students have been advocating for the past half-century are now on the forefront of the literacy movement. We must embrace these skills through technology" (p. 35). Using ebooks is one method which can be integrated into the classroom to merge the areas of literacy and technology on an individual basis.

The Secondary Gifted Reader. Essential to preparing to use ebooks in gifted education is teacher knowledge of the gifted reader. Abilock (1999) identified a number of myths about gifted readers. For example, not all gifted learners are high achieving readers. Their talents may be nonverbal, artistic, athletic, or in the other multiple intelligences areas. Gifted readers, like all students, are not a homogeneous group. They have different background experiences, reading levels, learning and cultural styles, and varying interests. When gifted students enter middle and high school, reading may be set aside for other pursuits. The lure of computer games, text messaging, and recreation and social activities may take precedence. This interest in technology can be used for educational purposes as students find technology to be an attractive and motivating factor for learning (Coley, Cradler, & Engel, 1997). Also students' attitude toward learning can be increased in a technology rich educational environment (Sivin-Kachala & Bialo, 1994). Reading is a skill that needs to be constantly used and for those readers at advanced levels, the teacher is often responsible for providing appropriate educational opportunities. Tomlinson (1992) notes that middle school teachers tend to teach toward the middle ability

level of students, thereby not providing effective challenges for gifted students. Engaging gifted readers, who have been turned off to reading as adolescents by lack of attention or inappropriate reading material, is often a challenge for teachers.

Teachers must connect their secondary gifted readers with books that focus on content, characters, and issues that match not only their developmental needs but their personal interests. Although middle and high school gifted students can usually read adult texts, it is still important to provide materials that deal with age appropriate concerns. Also, teachers must remember that secondary gifted readers need opportunities to make choices about the books they read. Ebooks can supplement or fill in the gap left by traditional libraries providing students with additional opportunities to access age appropriate, developmentally appropriate works and to make connections to works such as stimulating literature. Currently is it estimated that there are over a million different online texts available free as ebooks, including classic literature, reference works, nonfiction, modern fiction, and more.

Gifted students have greater needs for larger amounts of books with increased depth, scope, and variety than might be found in most traditional school or classroom libraries. To optimize the benefits of differentiated instruction as proposed by Tomlinson by using an individualized approach, teachers first need to diagnose the individual student's needs and interests. Reading achievement tests like the *Nelson-Denny Reading Test* (Riverside Publishing, 1993) and *Reading-Level Indicator* (American Guidance Service, 2003) can estimate students' reading levels.

Hildebrandt (2001) offers a reading interest inventory that teachers can adapt to determine what subjects, books and authors students might like (http://www.ala.org/ala/yalsa/teenreading/tipsenc/reading_interest_survey.pdf). Ebook bookstores such as Amazon.com (http://www.amazon.com) and online book cataloging services, like LibraryThing (http://www.librarything.com), provide reading suggestions based on interests and past readings. Other reading interest surveys may be available from your school library. For example, the Reading Interest Survey from the DGN Library (http://www.csd99.k12.il.us/north/library/read/readinterest.htm) can help identify a student's preference for certain topics and whether they like to read fiction or non-fiction. Checking a student's interests and dialoging with other students and teachers can help identify and set instructional priorities and preferences for functional and recreational reading.

The Scales for Rating the Behavioral Characteristics of Superior Students (Creative Learning Press, 2004) can be used to find out which of your students are among those who have a technology interest, and who might therefore be more attracted to reading using such technology (Siegle, 2004b). Such an instrument supports the need to address students' interests and learning styles not only in reading but in technology use.

Issues/Problems Associated with the Secondary Gifted Reader. Investigations on characteristics of gifted achievers and underachievers found that about one-third of gifted students who graduate are actually underachievers (Peterson and Colangelo, 1996). Underachieving gifted students have lower attendance, more tardiness, and view the curriculum as boring and rigid. Teachers bemoan the fact that many gifted students are alliterate, that is they can read but choose not to, and do not find pleasure in reading. Compounding these issues is that reading for secondary students -- in fact, reading for students beyond the primary and lower elementary grades -- gets relatively little attention. Providing professional development and/or courses for teachers of the gifted in the new literacies, including topics such as ebooks or secondary readers, has not been a priority in the climate of No Child Left Behind up to now. Subotnik (2003) conducted a study to determine if children identified as gifted would demonstrate remarkable achievement as adults. She concluded that "being gifted" does not equate to "doing gifted." Gifted students who excel in reading, writing, and research are dependent upon teachers who provide resources, challenging work, and have expertise.

The New Literacies. Not only are today's students different from the ones of previous years, but today's concept of literacy is changing. Literacy is now a melding of what were once different literacies – including print and technology. Traditionally (or historically), the concept of literacy only focused on the ability to read words on paper from materials such as books, newspapers, and job applications, but this concept has undergone a paradigm change. Congress, with the 1991 National Literacy Act, redefined literacy as "an individual's ability to read, write, and speak in English, and compute and solve problems at levels of proficiency necessary to function on the job and in society, to achieve one's goals, and develop one's knowledge and potential" (NIFL, 1991). Reading literacy now goes beyond paper to include reading from computer screens and personal devices to include media, technology, and information literacies (Semali, 2001).

The Internet and other forms of information and communication technology (ICT) – for example word processors, web editors, presentation software, and e-mail – are all participating in redefining the nature of literacy today. In order for a student to become fully literate in today's world, he or she must become proficient in the new literacies of ICT. Jeff Wilhelm (2000) emphasizes this change in literacy in his writing concerning literacy and technology, as he states that for today's students "technology has everything to do with literacy…electronic technologies have everything to do with being literate" and that "…if our students are not reading and composing with various electronic technologies, then they are illiterate…right now…" (p. 4). Even the National Council of Teachers of English and the International Reading Association sponsor such a change in their Standards for the English Language Arts.

The first standard is: *1. Students read a wide range of print and non-print texts to build an understanding of texts, of themselves, and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary works.* (NCTE, 1996, para. 2)

The availability of electronic texts, Internet access, and access to computer software today is increasing, thereby making it easier to integrate technologies into education. As educators, we must integrate these new technologies into our literacy curriculum for all of our students to prepare them for this technology enhanced literacy future. The International Reading Association (IRA) believes that much can be done to support students in developing the new literacies that will be required in their future. IRA (2002) states that students have the right to teachers who are skilled with the new literacies and integrate them into the instructional program, including the application of assessment that involves electronic reading and writing.

Teachers should provide opportunities for students to access and use these new literacies, integrating the technology into the instructional process. As Siegel (2004a, Conclusion section, para. 1) stated "The skills that educators of gifted and talented students have been advocating for the past half-century are now on the forefront of the literacy movement." The integration of electronic reading materials can be an effective tool for that literacy instruction for all students, including secondary gifted readers.

The Reader. As previously stated, gifted secondary readers are not a homogenous group. They have varying interests, reading levels, skill proficiencies, and learning styles. Reading levels can be estimated with commercially available tests such as the *Reading Level Indicator* (American Guidance Service, 2003) and *Nelson Denny Reading Tests* (Riverside Publishing, 1993), and interests determined with reading interest inventories. When it comes to individual reading styles and attitudes of gifted readers, there is much variation. In some situations students simply will not read ebooks because they prefer cuddling up to a real book. However, they may voraciously pursue a passionate topic of interest through ebook reading because of the tremendous speed they can search for information. Some students prefer to work independently while others are more social and enjoy networking with other students of similar interests. According to Subotnik (2003), gifted adolescents must be proactive in their own development in order to realize their potential as gifted adults and channel their interests into one's field of excellence. Also, they must seek mentors to guide their energies, a process that ebooks can stimulate.

Additional Reader Questions. ●What are the instructional needs of the reader? ●Is the student a self-directed reader? Other directed? Collaborator? ●Does the reader possess proficient library skills? Does he know how to locate and evaluate information? ●Does the reader know how to download ebooks or use ebook features such as multimedia, summarization, and highlighting?

The Access. Probably the most important factor to consider for gifted readers is one of access. Do they know what ebooks are? How to find them? Have the necessary hardware and software to read them? Often a lack of access to a high speed Internet connection can be a barrier. As Labbo, Murray, and Phillips (1995-96) point out, many schools lack up to date computers and support. Technologically disadvantaged schools and students run the risk of becoming an "information underclass."

However, there is a surprising amount of access to technology for students. Patrick (2004), then the National Education Technology Director, stated that a majority of today's teen students use computers, such as the Internet for school-related research. Patrick further explained that today's schools have become more technologically accessible. Citing 1994-2002 U.S. Statistics from NCES, she described some of the technological conditions of today's school to include that 99% of schools are connected to the Internet, 94% through broadband; that 92% of instructional rooms have an Internet connection, with schools having an average 5:1 student to computer ratio (Patrick, 2004).

Additional Access Questions. ●What is the current level of technology access in your classroom/library/school? ●What is the current state of access to an adequate collection of ebooks in a variety of reading levels, genres, and formats? ●What is the availability of a web-based cataloging and support system for easily locating and retrieving information? ●Do students have the abilities and rights to search for and access additional ebooks on the school network? ●Are electronic forms of text contained in part of the school library collection?

The Text. A variety of textual characteristics affect student reading performance. Walker (2003) identifies the pertinent text factors influencing student reading performance associated with traditional print: passage length, format, style, and organization, readability, information density, word choice, and background knowledge required of the reader. The new digital books redefine what is meant by text, so the pertinent text factors must be reassessed also. For a more in depth discussion of ebook text factors see Cavanaugh (2002) and Labbo, Murray, and Phillips (1995-96).

How to productively read ebooks presents new challenges, opportunities, and questions. Abilock (1999) was on the mark when she wrote that it is a myth that gifted readers don't need librarians. A number of ebook issues including access, intellectual freedom, retrieval, storage, and cataloging affect their ultimate widespread use. Schools need a support system or technology point person to assist with these issues in order to effectively use the digital library. Teachers need to consider how they could integrate ebooks to provide reading options by incorporating them as part of their classroom collections. A surprising number of ebooks can already be used as part of a school's required reading. In one analysis, it was found that from a district's reading list that 70% of the required

reading for eleventh grade, 16 out of 23 books were available as public domain ebooks (Cavanaugh, 2003).

Additional Text Questions. ●Are there enticing and engaging mechanisms for promoting a school wide ebook culture (e.g. ebook cafes, ebook discussion groups)? ●Is an ebook evaluation/research system for tracking and reporting access, user preferences, problems, and curriculum needs provided? ●Are there readers who have a reading disability or otherwise need print accommodations? ●Would the student reading comprehension be improved with text-to-speech software? ●Is there an awareness of the variety of ebook features?

The Teacher. Teachers need to capitalize on the accommodating features that are readily available on some ebooks. They can encourage student reading to be more productive by using features such as highlighting, note taking, interactive dictionaries, and even read aloud to the student. Teachers can assist a reader with a difficult text by using pre-reading ebook accommodations like advance organizers, study guides, and multimedia background building. However, sophisticated accommodations are not always needed for a successful reading experience.

More importantly the teacher should be a passionate, enthusiastic role model, an advocate for any form of book, including that of ebooks. A crucial question is whether the teacher has enjoyable experiences reading ebooks. Probably not, according to Kolloff (2002) and Powell-Brown (2003/2004). How can teachers expect their students to love reading and writing when they themselves do not have the passion for reading?

Campbell and Kmiecik (2004) investigated the greatest literacy challenges facing contemporary high school teachers in their efforts to improve the literacy levels of adolescents. Not surprising the top challenges were student motivation, interests, and attitudes.

Additional Teacher Questions. ●Does the teacher have access to and competence or experience with ebooks? ●Does the teacher know and read culturally responsive young adult literature? ●What technical support is available? ●What is the teacher's proficiency with library, web sources and emerging technologies such as laptops, palm pilots, and ebooks? ●Is the teacher an enthusiastic advocate for ebooks? Does she use a rich variety of text formats including ebooks in class? Is she able to present ebooks in multiple ways (e.g., read alouds, multimedia, literature circles, chat groups)? ●What is the teacher's ability to match ebook content to support the curriculum? To student interest and needs? To the level of teacher guidance for the reader?

Obviously, the hard reality is that teachers will have to take responsibility for promoting literacy by experiencing reading ebooks themselves and seeking professional development so that they can make informed recommendations for their students. They will have to mention ebooks in class discussions, encourage students to talk about aspects of using ebooks, and make ebooks available as an option for reading. They will need to guide students to websites that list hot ebooks such as ***Hoagies' Gifted Education Page Reading List*** (http://www.hoagiesgifted.org/reading_lists.htm) and online discussion groups like Wired for Words (http://www.wiredforwords.com). Halsted (1990) writes:

"For individual gifted students, books can be part of the educational program if an adult (parent, teacher, librarian, or other mentor) offers reading guidance, discussing what the student has read and making suggestions for related reading—always keeping in mind the student's interests, reading ability, and reading background. The goal is to expose the student to a variety of books of high quality and stretch the student a little beyond his or her previous awareness. Gifted students do not automatically know what good literature is; they need information and guidance to find the best" (p. 4).

This raises an exciting opportunity for teachers, "How can I better accomplish my instructional goals by using ebooks and traditional print?" Above all, teachers need to reflect on the challenge as well as seek answers to questions that promote a school wide culture favorable to ebooks.

Secondary Online Digital Libraries. With a plethora of online libraries available today, students should be able to find some books of interest to them. The range of freely available ebooks online rivals that of any library or bookstore from classics texts at Project Gutenberg (http://promo.net/pg) and the Electronic Text Center at the University of Virginia Library (http://etext.lib.virginia.edu/) to modern texts such as from the Kurt Vonnegut Library (http://vonnegut.cultish.org/). Not only are there classics, but also specialized texts like the World Fact Book from the CIA Publication Library (http://www.cia.gov/cia/publications/index.html), science textbooks like Christoph Schiller's Motion Mountain: An Adventure in Physics (http://www.motionmountain.net/), and magazines from the late 1800's at Making of America (http://cdl.library.cornell.edu/moa). There are also high interest collections such as science fiction from the Baen Science Fiction Library (http://www.baen.com/library/), and graphic novels or comic books in PDF format at WOWIO (http://www.wowio.com/index.asp). Online text versions are not the format limit; there are also a number of libraries that provide audio versions, usually in MP3 format, such as Audio Books for Free: http://www.audiobooksforfree.com/ and LibriVox (http://librivox.org/). A more extensive list of over 200 links to free online libraries with books appropriate for students and teachers is available at Online eBook Libraries (http://www.drscavanaugh.org/ebooks/). Additionally, ebooks are not limited only to digital viewing; for example, the print-on-demand resource LuLu (http://www.lulu.com) working with the Public Domain Reprints Service (http://www.publicdomainreprints.org/) will publish hard copies of pubic domain texts that are available from the internet.

Final Thoughts

The Association of College and Research Libraries (ACRL, n.d., no date available) reported that the amount of available information doubles every four years. Along with this increase in knowledge, the vast majority of new information (92%) is now stored on magnetic media. Film represents 7%, paper 0.01%, and optical media 0.002% (Lyman & Varian, 2003). Because of these trends, locating, evaluating, and using information are critical to becoming a literate individual. Teachers have a responsibility to nurture gifted potential in secondary readers. The new literacies, the melding of print and technology, raise the bar for achieving this literary excellence. Whether educators view ebooks as a challenge or an exciting opportunity depends on an interplay of the reader, access, text, and teacher.

The bottom line should not be a choice between digital pixels or wood pulp, but should instead focus on providing opportunities for students to use both. Teachers should experiment with electronic forms of reading and hopefully have pleasant, rich, and rewarding experiences with ebooks, which they can in turn pass along to their students. Teachers of gifted learners should develop and enhance their expertise in new technologies, such as ebooks, to optimize their students' potential for growth and achievement. They should also incorporate technologies into their teaching and student learning experiences so that all students are exposed to the wide range of forms and formats that "print" exists in today. Only then can we enrich and expand literacy experiences for these students.

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Itzhak Perlman – Gifted Violinist, Conductor and Teacher

Michael E. Walters Center for the Study of the Humanities in the Schools

The film, ***Schindler's List*** (1993), was an emotional experience both cinematically and musically. The narrative concerned the best and worst aspects of the human condition. The Nazi brutality was contrasted with Oscar Schindler's humanity. John Williams' Academy Award winning musical score included a violin solo played by Itzhak Perlman. The tragic element in this movie was represented by the inhumanity of the Nazis towards the Jews, while hope was shown by Schindler's commitment to human decency in the midst of demonic genocide. This music conveyed these tragic and hopeful elements by reflecting valleys of despair and courage.

Itzhak Perlman was born in 1945 in Tel Aviv, Israel. As a youngster he was inspired by a classical music performance on the radio by the Israel Philharmonic Orchestra, which served not only as a cultural outlet but as a means for inspiring Israelis to endure their agonies in the post Holocaust era. The founder and first conductor was the Italian Maestro, Arturo Toscanini. Perlman heard such conductors as Zubin Mehta and Leonard Bernstein lead this orchestra.

When he was four years old, he contracted polio. However, he made a remarkable recovery and learned how to walk with crutches. Even today he uses his crutches for basic mobility and performs seated. He is a poster person for the disabled-gifted. Perlman, as a teenager, emigrated to the United States to study at the Julliard School of Music now connected with Lincoln Center in New York City. He received instruction there from the outstanding violin teachers, Ivan Galamian and Dorothy DeLay.

In the 1980s and 1990s, he traveled around the world with the Israel Philharmonic. He performed in Warsaw, Budapest, Moscow, China and India. He has been particularly associated with the Detroit and Saint Louis symphonies. He has also taught at the Brooklyn College Conservatory of Music. Presently he is the artistic director and principal conductor of the Westchester Philharmonic in Westchester County, New York.

Perlman's interests extend beyond the realm of classical music. For example, he has made a CD album with Oscar Peterson, the jazz

pianist. One of his personal avocations has been playing the Eastern European Jewish folk music known as Klezmer which he perceives as a sacred duty to the memory of Holocaust victims. This music is intertwined with Yiddish culture and is played at weddings, Bar Mitzvahs and many other religious and cultural events. An example of its survival is that there was a Klezmer band at my own wedding, inspired by Itzhak Perlman's dedication.

His wife Toby is also a classically trained violinist who in 1995 founded the Perlman Music Program on Shelter Island Heights, New York. It is a significant contribution by the Perlmans to educating children and adolescents who are highly talented musicians. Students must audition by sending a tape or CD of their performances. The pedagogical approach emphasizes personal instruction and the development of musical talent in a rigorous but non-competitive environment. In addition, they are mentored throughout the school year. In this summer residential program for young exceptionally gifted string players, they perform "Work In Progress" concerts and may also make tours of Israel and China.

Itzhak Perlman has achieved recognition from many organizations. He has received numerous Grammy Awards for his chamber music recordings and has performed with Yo-Yo Ma at Academy Award presentations. Among his numerous Grammy albums were ***Vladimir Ashkenazy, Lynn Harrell and Itzhak Perlman -- Beethoven: The Complete Piano Trios*** (1987), and ***Daniel Barenboim and Itzhak Perlman -- Brahms, the Three Violin Sonatas*** (1990). He received the following national awards: Medal of Liberty from President Ronald Reagan in 1986, the National Medal of Arts from President Bill Clinton in 2000, and Kennedy Center Honors in 2003.

Itzhak Perlman is a continuing example of excellence and courage to the gifted community. The education programs he and his wife have set up clearly show the value of expert mentoring for highly gifted students.

CD Recordings Related to Jazz and Klezmer

Side by Side: Oscar Peterson and Itzhak Perlman (1994, Telarc).

In the Fiddler's House (1995, Angel Records) – Klezmer Music.

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