Issue Focus:

Differentiation

Fall, 2002 Volume 15, Issue 1
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Publisher’s Perspective

Dorothy Knopper

As we prepared for this issue, editor Carol Fertig and I discussed what differentiation meant to each of us. Carol said, “When I was in graduate school, differentiation was mentioned frequently. No one ever defined it, but everyone else seemed to know what it was so I pretended I did, too. It wasn’t until I was actually working in the field that I truly came to understand its meaning.” I shared a similar experience when the word differentiation became so popular in gifted education several years ago. No one seemed to be able to define it, but somehow we knew it stood for good classroom practices for gifted children.

It did....and it does.

Differentiation is not a new educational concept. It stands for matching curriculum practices with specific abilities.....and teachers having the foresight and the courage to try something different, something outside the box of standard curriculum, personalized curriculum for unique needs.

What is the definition of differentiation? And what does it mean in practical terms for gifted children?

Carol compiled the following list of questions for our writers to consider as a basis for their articles. They are also appropriate for college classes and teacher discussions.

1. What does it mean to differentiate learning?
2. Is differentiation solely the responsibility of the classroom teacher? If not, who else is responsible?
3. Should a student be expected to differentiate some of his own curriculum?
4. What curriculum is already written that includes high-level differentiation?
5. How can we encourage publishers to incorporate high-level differentiation into their curriculum?
6. Is differentiation a philosophy or a technique?
7. What are the important elements of differentiation?
8. Do initial teacher education classes address differentiation? Should they? Or should that be saved for graduate school?
9. How can using differentiation be made more attractive to teachers?

What does differentiation mean to you? How is it used for your child? How is it used in your classroom? Share your thoughts/suggestions/questions? Write to: cfertig@earthlink.net ❖
Differentiation…How often that word is used in gifted education! How important the concept is to talented learners in the classroom! Are there ways committed educators and parents can take stock of differentiated opportunities available to the youngsters in their care? The answer is “yes.”

Differentiation can be a bit slippery to define in a practical way. Like the narrator in *Zen and the Art of Motorcycle Maintenance* who struggled vainly to define quality but could recognize it when he saw it, educators and parents can think about examples or indicators or “markers” of differentiation to make the important concept come alive.

According to Eyre (1997), “Differentiation is…recognizing individual differences and trying to find institutional strategies which take account of them” (p.38). But what do we mean by institutional strategies? To move from a definition to a useful marker, institutional strategies require further explanation. There are two levels of institutional commitment important for talented learners. For differentiation efforts to thrive, both levels of the institution—the classroom and the school—must recognize individual differences and respond to them systematically. The following four questions can help organize indicators or markers of differentiation to assure that the needs of talented learners are addressed.

**Question 1: Is there an institutional recognition of giftedness in children and adolescents?**

Each school has a culture that reflects the emphasis and priorities of its principal and teachers. Differentiation for the talented learner is more likely to occur in settings where the leadership of the school includes giftedness as part of the package. Educators and parents who want to get a feel for the level of institutional recognition at the school can do so by dropping in at the school office and chatting with the principal. Look for the following two markers to help you assess the likelihood of differentiation happening at the school.

**Marker A:** The school has written documents about the definition of giftedness adopted by the district, the specialized cognitive and affective needs of talented learners, and the services the school intends to offer to address those needs. This marker could be as simple as a homegrown school brochure available in the principal’s office or as elaborate as a flashy district Web site with a building-by-building summary of services for talented learners available.

**Marker B:** The principal of the school speaks knowledgeable about the school services in formal discussions with staff or in informal discussions with parents. When asked, the principal can describe the opportunities in general. The principal can also refer you to a gifted
and talented coordinator, a facilitator, or a teacher for more detailed information or for assistance.

Teachers work best when there is an expectation of and recognition for their efforts to differentiate. Knowledgeable principals who demonstrate an awareness of what is being done for talented learners are a key marker for institutional strategies of differentiation.

**Question 2: At the school level, are the services characterized by choices for learners?**

Choice is an integral part of responding to giftedness. Any appropriate opportunities for choice are positive in terms of student motivation (Shore & Delcourt, 1996).

**Marker A:** At the primary level, differentiated choices might take the form of selecting which learning center to visit. Alternatively, the choice might not be which learning center to visit, but rather how much time to spend there. Freedom of movement to things that catch a talented learner’s interest indicates choice at this age level.

**Marker B:** At the elementary level, differentiated choice might include the continued pursuit of a topic after the rest of the class has finished with it. Or perhaps, students are provided with opportunities to pursue a project independently outside the set curriculum. Being able to stick with a topic beyond the time allotted to it by the teacher or being able to pursue an interest not covered in the curriculum are indicators of choice at this age.

**Marker C:** At the middle level, differentiated choices might be illustrated by the opportunity for advanced work in school subjects in the student’s area of academic strength. Examples of choice through advanced work would be a flexible mathematics curriculum that allows a student to move ahead or the provision of advanced second language offerings at the school. Opportunities for students with interests and advanced skills in music, art, and theatre are examples of choices that can differentiate the school experience for talented learners. If the school follows the traditional middle school model, the adaptation of the advisor-advisee component of the school should include experiences that target topics relevant to emerging talents. Two examples of the choices within the advisor-advisee program are early career explorations and group discussions in a safe environment about the challenges of being talented during the adolescent years.

**Marker D:** At the high school level, differentiated choices involve opportunities to obtain advanced standing through Advanced Placement, International Baccalaureate, or concurrent enrollment options. Other kinds of differentiated choices may not be tied to particular courses in the school curriculum. For example, there may be opportunities for genuine research through mentorships and career shadowing through internships. Choice for adolescents is often indicated by a smorgasbord of opportunities available in the school and the institutional flexibility that allows a student to take advantage of them (Feldhusen, 1997).

To systematically address the needs of the talented learners, opportunities for choice need to go beyond the classroom adjustments made by dedicated teachers and become the shared responsibility of school leadership. If there is a school brochure about services for talented youth, return to its descriptions and examine them for multiple options rather than a single opportunity.

**Question 3: At the classroom level, is instruction characterized by a challenging curriculum?**

One way to conceptualize differentiation is through adaptations made in terms of the content, process, and product of the curriculum. This is a useful approach, but additional markers are needed to point the way. Determining the fidelity of differentiated curriculum is extremely complex. Thorough examination of curricular materials and an understanding of the interplay between curriculum, instruction, and assessment allow us to tackle this aspect of differentiation. There are, however, indicators that do not rely on deep analysis of curricular theory and application that educators and parents can use.

**Marker A:** In recent years, the federal monies directed toward gifted children and youth have funded a series of curriculum development efforts. Javits funds have been used to develop challenging curriculum units in language arts, science, and social studies (Van Tassel-Baska, et al., 2001). If such curriculum units are available in the classroom, and the teacher has implemented them, then differentiation by curricular challenge is more likely to be in place.

**Marker B:** Student products that demonstrate in-depth learning are clues that differentiation is occurring. These products represent a mirror of the opportunities available to talented learners. Teachers who can share an example of a challenging task and its accompanying, high level rubric or assessment are more likely to be tuned in to the
curricular needs of these learners.

**Marker C**: Evidence that students are encouraged to read material well above grade level is one indicator of a challenging curriculum. Within classroom models of service for talented learners, above-grade-level texts are particularly important in elementary school. In pullout models of service, reference and trade books should be in the classroom. If no substantive textual materials are used in the pullout model, the instructional opportunities may not be meaty enough to meet the needs of talented learners.

**Question 4**: Is the importance of continued motivation to learn recognized at both the classroom and school levels?

The continued motivation to learn is a crucial goal of effective differentiation. Talented learners who have had the opportunity for differentiated instruction and differentiated curriculum are more likely to express pleasure with their learning experiences than those stifled by an unresponsive school environment. Markers for the motivational aspects of differentiation are less tangible than a brochure, appropriate texts and curricular materials, or imaginative student products; however, motivational markers are no less important.

**Marker A**: In conversation, the principal and the teacher refer to the importance of intellectual passion, the excitement of being on the trail of an idea, the thrill of motivated students engaged in lively conversation or discussion.

**Marker B**: In the classroom or the school, talented learners appear curious and intent about their lessons and their assignments. Evidence of curiosity is particularly important if students are engaged in independent projects or self-selected investigations. In conversation, students can tell you what they are studying and where this might next lead them. In the classroom, not every talented learner will be highly motivated all of the time, but there is evidence that at least some of them are keen to know more about their topic.

Differentiation for talented learners involves two key issues: 1) recognizing individual differences and 2) responding to these differences at both the classroom and school levels. Research shows that differentiation works for talented learners. We also know that not all teachers who report that they are differentiating instruction in the classroom are doing so effectively. Concerned educators and parents can engage in quick stocktaking of their individual schools to see if effective differentiation is in place. Markers of differentiation can be pursued informally through perusal of school brochures, conversations initiated with school principals and teachers, arranged visits to classrooms with an eye toward curricular materials evident and student products on display, and unobtrusive observation and chats with students to take the temperature of their enthusiasm for their current learning experiences. Addressing the needs of talented learners matters. Some straightforward indicators will help us to recognize differentiation when we see it.

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**References**


Strong and effective curriculum for the gifted is not easy to develop. It requires a collaborative team of people with appropriate expertise, an experimental setting where the trial and error of piloting and review can occur, and a mindset that is serious about program improvement. To allow for this, an investment of three years to design, develop, implement, and revise is acceptable. The following model is central to planning effective curriculum for gifted learners (Van Tassel-Baska, 2003).

The Instructional Design Model
A fundamental design model needs to be employed in developing curriculum for the gifted (see Figure 1). The model is meant to be systematic, yet recursive in its elements. These elements begin with an appreciation for who gifted learners are, how we identify them, and what basic curriculum dimensions are necessary for serving them (cell 1). After educators have a grasp of these issues, the model moves to an emphasis on philosophy and goals (cell 2). At this stage real planning may begin. First efforts need to focus on clarifying the fundamental purposes of a gifted program, how it fits in with a regular program of study, and what the important but broad learnings would be that gifted students receive. This phase of design needs to be done in a consensual way so that all relevant educators in a school district can agree with the outcomes of the planning effort.

At a more specific level, learning outcomes (cell 3) are derived from the stated student goals. These outcomes should be extensive enough to cover the intent of a given goal, yet be manageable in a program sense since each of them will need to be assessed to determine the level and extent of student learning that has occurred. Outcomes should be developed consensually among teachers working in the program at relevant levels. In a framework document, specification of outcomes can be across K-12, but in a scope and sequence guide, it may be useful to cluster the outcomes across proximate grade levels. Thus primary, intermediate, middle school, and high school outcomes may be treated separately. Further refinement by grade level may be done as needed.

Beginning with teaching-learning activities, resources, and strategies (cells 4-6), the model focuses strongly at the teacher level of classroom implementation via units and lesson plans. At this level, the use of archetypal activities linked to specific teaching models and the resources that employ them may be very helpful tools. No teacher has the time to develop curriculum for the gifted from scratch nor should it be encouraged, given that many good models and curricula exist. At this stage of development, it is important to ensure the linkages of these elements to the overall goals and objectives. One strategy to ensure the linkage is to identify at least one specific learning model for each goal in order to provide a pathway for coherent translation into classroom practice.

Classroom management techniques (cell 7) are also discussed as important elements of design. Attention to variables like grouping, pre-testing, and the use of contracts and IEP’s all contribute to the potential for successful implementation of a curriculum and also to the degree of flexibility employed in particular classrooms. Even a high-powered curriculum delivered in the same way to every stu-
dent fails to account sufficiently for differences within the population. This is especially true for gifted students with special needs where flexibility in curriculum implementation is essential for success.

The last stage of the design model involves assessment of learning outcomes (cell 8). At this stage of the process, we are interested in ascertaining how well students learned what they were supposed to learn, to what extent they grew and matured in the identified goal areas, and what aspects of the curriculum/instructional design process worked well and what didn’t. Student achievement, attitude, and teacher judgment all play into making the assessment stage of the process work well. Newer approaches to student achievement, such as performance-based assessments and portfolios, can be very helpful in judging how well the particular curriculum unit of analysis was implemented. Results of this stage of the process then should feed the next stage, that of revision and recursion.

Revision and recursion involves a careful evaluation by teachers and other educators of what has occurred as a result of implementing a particular instructional design module or unit of study. At this stage of the process, decisions should be made about the nature and extent of revision necessary to improve the model or whether other alternative models should replace it. Revisiting each cell in the design model is useful in deciding what revisions may be most appropriate. Assessment results may suggest a need for more activities to support a learning outcome, a more effective instructional strategy to teach a concept, or a broader array of resources. Careful assessment of each of these possibilities is important to improve learning the next time around.

**Figure 1**

An Instructional Design Model for Gifted Curriculum

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1. Learner
2. Philosophy & Goals
3. Learner Outcomes
4. Teaching-Learning
5. Resources
6. Strategies
7. Classroom Management
8. Assessment
Roles in Instructional Planning
Educators need to recognize that four essential roles must be performed during instructional planning (Kemp, Morrison, & Ross, 1998). These roles are not overlapping, but rather call for different types of expertise.

• **Instructor:** A person responsible for carrying out and coordinating the planning work. This person should be competent in managing all aspects of the instructional design process. In school districts, this individual could be a gifted curriculum specialist.

• **Instructional designer:** A person responsible for carrying out and coordinating the planning work. This person should be competent in managing all aspects of the instructional design process. In school districts, this individual could be a gifted curriculum specialist.

• **Evaluator:** A person qualified to assist the staff in developing testing instruments for pre-testing and for evaluating student learning. This person should be responsible for checking the accuracy of content treatment in activities, materials, and examinations. District-wide content specialists, librarians, or secondary teachers in relevant subject areas could assume this role.

• **Subject-matter expert:** A person qualified to provide information about content and resources relating to all aspects of the topics for which instruction is to be designed. This person should be responsible for checking the accuracy of content treatment in activities, materials, and examinations. District-wide content specialists, librarians, or secondary teachers in relevant subject areas could assume this role.

Too frequently, gifted programs have expected the designated gifted specialist to carry out all of these roles. Clearly such an expectation invites failure.

Premises Underlying Instructional Design Process
Kemp, Morrison, and Ross (1998) also identified seven basic premises that are important to internalize in the process of engaging in the instructional design process. These premises, as they apply to gifted curriculum development, are:

1. **The instructional design process requires attention to both a systematic procedure and specificity for treating details within the plan.** If it is necessary to process the curriculum plan, while at the same time attending to a design that is authentic to the specific details of delivering a teaching-learning activity.

2. **The instructional design process usually starts at the course development level.** Curriculum work is more coherent if it begins at the level of goal development and then branches off into specific areas of curriculum development.

3. **An instructional design plan is developed primarily for use by the instructor and planning team.** Initial documents need to be “user friendly” for teachers. Study guides for students can follow at a later time.

4. **While planning, every effort should be made to provide for a level of satisfactory achievement for all learners.** Even gifted learners have been shown to learn high-level material at different rates and levels of proficiency (Van Tassel-Baska, et al., 2002). Thus, variation and flexibility in curriculum development must be exercised.

5. **The success of the instructional product is dependent on the accuracy of the information flowing into the instructional design process.** Part of this refinement in the product can take place through having it critiqued by teachers early in the design phase. Another process is to “try out” sample lessons in classrooms, with designers present to record the “bugs” for revision work.

6. **The instructional design process focuses on the individual rather than the content.** Characteristics of gifted learners in general tend to guide the development process of curriculum for them rather than a set notion of fixed content. Further tailoring of curriculum will need to occur for special needs students and the highly gifted.

7. **There is no single “best” way to design instruction.** Individual teachers and educators are idiosyncratic in their approach to designing curriculum. While a common format is useful, different ways of achieving ends should be seen as a positive asset of the procedure.

One of the most neglected areas in our schools is adequate attention to gifted programs and the curriculum designs employed to deliver those programs. In order for such programs to improve, curriculum design features, roles, and premises need to be carefully considered.

References


What are some appropriate specific strategies teachers can use with high-ability learners?

Teachers who are not educated about the characteristics and learning needs of gifted students often fall back on the stereotypical beliefs about this population. They may believe that kids who are truly gifted are highly productive, always complete their work on time, and consistently get high grades. Teachers may also think that these students will “make it on their own” without much assistance.

There is some confusion between the two words “learn” and “teach.” These words are not synonymous. All schools must show that their students have learned the grade-level standards. That does not mean, however, that those standards were necessarily taught to all students. Some students will already know this material before it is taught in school. Students who have already mastered these expectations, or could do so in a shorter period of time than age peers, should experience differentiation of curriculum so that they will be appropriately challenged.

Advanced students are often criticized because they won’t do their work. I have rarely met gifted kids who won’t do their work. What they usually resist doing is the teacher’s work. Gifted kids would actually be thrilled to be allowed to use school time to do their work, which is defined as learning something they don’t already know! Many teachers assume that all students should complete all work, even if students already have mastery of the content.

All students have a right to learn new material every day they are in school. 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. That means that teachers must know how to provide learning experiences that stretch the capabilities of all students.

There are strategies classroom teachers of any grade level can use to create conditions in which gifted students consistently move forward academically.

Providing Consistent Challenge for Gifted Students

For gifted students, “compacting” the curriculum is imperative. Compacting occurs when the regular curriculum is condensed by first determining what is already known before instruction begins. Compacting also occurs when we allow students to learn new material in a much shorter time than is normally expected. Differentiation follows compacting by offering alternate activities for gifted students instead of the regular work.

It is not appropriate to offer extra credit for gifted students with the
assumption that they will first complete the regular work. Would anyone in your professional world be able to convince you that being on one more committee is a reward? The secret to motivating gifted students is to show them how to spend class time working on tasks that are different and challenging.

**Compacting and Differentiating for Gifted Students in Heterogeneous Classes**

Many teachers resist the notion of compacting and differentiation because they fear it will just create a lot more work. That fear will often cause teachers to ignore students who may benefit from these strategies. When teachers get into the habit of planning together regularly, they find they are able to plan the appropriate compacting and differentiation tasks in a remarkably short period of time. Differentiation strategies are best planned as part of the unit development, before the unit is ever taught. I recommend bribing colleagues by inviting a group of teachers to your classroom to share a common lunch period, while you provide free chocolate! I’m not kidding! Soon the job of planning for differentiation no longer seems overwhelming.

Some gifted students may resist your efforts to compact and differentiate for two reasons: they are afraid that the alternate activities will require them to do more work than their peers, and they worry that the results of those more challenging alternative activities will lead to lower grades. To entice these students to take advantage of differentiation opportunities, you must not allow these fears to come to fruition. This may be accomplished in the following ways:

1. **Pre-testing Content: Most Difficult First**

   Duncan was upsetting his 4th-grade teacher because he would not complete the work assigned to him. He was eligible to attend a program for gifted students once a week, but his teacher would not let him leave the classroom until he made up all the work he had missed. She feared his behavior would set a poor example for the other students. It never occurred to her that his resistance might be coming from the fact that he had already mastered more than 90 percent of the 4th-grade math curriculum. Mrs. Fetzer truly believed that Duncan was lazy and that his poor choices must lead to their related consequences. Deep down, however, she also realized that he was pretty smart. So she allowed me to demonstrate the Most Difficult First strategy, which allowed her to
Mixed Ability continued

observe how much math Duncan knew. This experience actually led to a change of heart regarding his participation in the gifted program.

When assigning a chunk of work for students to practice, notice which five examples represent the most difficult part of the assignment. Tell the whole class that you can’t tell just by looking at them which kids already know today’s material and therefore need less practice than others. So you are making this offer to all students: Anyone in the class who can complete the most difficult examples first, and do so neatly, legibly, and with no more than one error, is done practicing and can spend the rest of the practice time working on extension activities. Since you are offering the same opportunity to all students, most students perceive this is fair.

Grading
When you do the related math, you can quickly compute that four out of five correct is 80 percent, which is a B or C. These kids know if they did the regular work, they would most likely get an A. So their fear of lower grades becomes a reality. Because you realize these students will most likely get an A if they were doing the regular work, please be willing to add to that 80 percent a bonus of the number of points needed to provide the A. If you don’t, these students will not volunteer the next time Most Difficult First is offered.

What If Pre-testing Is Not Feasible Because the Content Is New?
For curriculum that is not pre-testable because it is new to the student, the Study Guide Method with Extensions Menu is used. Students work at their own pace to learn the required concepts as described on a study guide. They are not required to produce an actual product for each concept. Rather, they are permitted to simply learn the material and demonstrate their mastery at the same time other students are assessed. Their actual daily classwork comes from a menu of extension activities that extend the parameters of the required curriculum. Students are expected to create a product of their choice to demonstrate what they have learned.

Note: In this method, because there is no evidence of previous mastery, students do earn a grade for their alternate work. It is imperative that the rubric for earning a grade for their project work is clearly understood before any work begins on the project. Furthermore, students must clearly understand that they are not being required to do more work than the rest of the class.

Teachers’ Concerns about Fairness and Chaos
In order to try something different with students, teachers need to know that the strategies will flow smoothly in the classroom, will be relatively easy to manage, and will not create resentment from other students or parents. It is important to remember that fairness does not mean giving all students the same work. Fairness does mean giving all students what they need to consistently move forward in their own learning. Contracts are signed that stipulate expected behaviors. Teachers must spend time with the students who are engaged in alternative assignments so that those students don’t feel abandoned and so they know help will be available for them when they need it. When teachers and students understand that the pre-set rules of behavior must always be followed, students will become increasingly responsible, and concerns about chaos will dissipate dramatically.

Cooperative Learning
Another appropriate time for differentiation is in cooperative learning activities. Students who have demonstrated prior mastery or the ability to learn more rapidly than age peers should be grouped together to work on alternative tasks. Surprisingly, when advanced students are removed from heterogeneous groups, other students emerge as leaders, and all students tend to become more active learners.

The dilemma of whether and how to provide appropriate compacting and differentiation for gifted students is not a viable choice. Schools that fail to differentiate find that their highest ability students are turning to homeschooling and charter schools. If public education values the retention of the most capable learners, those students and their parents must know that gifted students are valued as much as average and below average students. Parents can offer to help teachers with these methods by locating and organizing available extension activities. Teachers can try strategies such as these, one at a time, gaining confidence as they go. Small steps can accumulate to produce big, impressive results. The time to start is now. ❖
What are some appropriate reading strategies for advanced readers?

Differentiating reading instruction to match the individual differences and readiness levels of all children is a demanding task that faces teachers. Advanced and gifted readers have the ability to read beyond grade level, and thus, they risk receiving less instructional attention when concerned teachers struggle to meet the needs of students performing below grade level. While it is critical that all children receive the support necessary to read at least at grade level, students who have achieved this goal must be challenged to continue developing advanced proficiencies. We would be remiss if we failed to make appropriate provisions to accommodate the needs of at-risk readers. We are equally remiss if we do not offer appropriate instructional differences that respond to the needs of gifted learners.

Teachers require support and strategies to challenge advanced readers at their highest readiness level. The Advanced Academic Division of the Texas Education Agency created a task force to investigate the reading needs of gifted students and produced a publication, *Reading Strategies for Advanced Primary Readers*, designed to provide teachers with alternatives and replacement tasks to use in differentiating lessons for advanced readers. This book of interactive, practical strategies includes compacting, tiered assignments, flexible grouping, graphic organizers, thinking prompts, and vocabulary techniques assembled from teaching experiences. (E-mail gted@tea.state.tx.us for more information about the process or materials from this reading initiative.)

For decades, educators have assumed that well-intending adults push children who read early or at advanced levels. The accompanying conventional wisdom is that these students plateau and read at grade level by 3rd or 4th grade. Indeed, advanced readers who are limited to a grade-level reading program can regress in their pace of progress. However, when advanced readers are taught with resources and instruction commensurate with their needs and abilities, regression need not take place. By eliminating work on skills already mastered and progressing through the language arts curriculum at an accelerated pace, students generally continue to extend their reading proficiency (Gentry, 1999; Kulik & Kulik, 1996).

The lack of challenging materials is one factor that discourages the continued reading development of advanced readers. No matter how bright students are, they are less likely to demonstrate advanced or gifted performance if learning experiences are limited to the regular, grade-level reading curriculum. Duke (2000) found informational texts almost nonexistent in 1st-grade classrooms, yet gifted readers demonstrate a voracious appetite for nonfiction. Chall and Conard (1991) continue to research the match of text difficulty to reader readiness. Their research shows that the reading texts for advanced readers “…provided little or no challenge, since they were matched to students’ grade placements, not their reading levels.” Chall, who also researched text difficulty in 1967 and 1983, noted, “This practice of using grade-level reading textbooks for those who read two or more grades above the norm has changed little through the years, although it has been repeatedly questioned” (p.111).
Another factor that discourages the continued reading development of advanced readers is educators’ attitudes regarding the rights and needs of gifted students to learn differently. Adjusting instruction to match the needs of gifted readers involves more than flexibility in methods and materials; it requires a belief that each child has the right to progress as rapidly as he or she is capable. Teachers must be committed to respond to the reading interests and needs of learners that extend beyond grade level. Indeed, Jackson and Roller (1993) commented that the most sophisticated, enthusiastic, and precocious readers are those children who have driven their parents and teacher to keep up with them. Consider the Staff Discussion Questions in Figure 1.

Assessment
Assessment is a key component when instructing advanced readers. It guides advanced instructional objectives and documents an appropriate pace and level of learning. Reading instruction that matches the individual differences and readiness levels of all children involves pre-assessment, authentic analysis of reading comprehension, students’ self-assessments of learning, and the development of portfolio products that substantiate advanced performance.

Pre-assessment—Pre-assessment is vital when addressing advanced reading needs. Results from pre-assessments must be employed to guide teachers’ use of curriculum compacting, tiered assignments, and flexible groups. Pre-assessment is needed to accomplish the following:

- Determine instructional reading levels/skill needs.
- Group students flexibly by readiness and the skills that need to be learned.
- Analyze application of reading strategies.
- Provide information for selecting and pacing appropriate instructional materials.

The types of assessments that can be used as pre-assessments are:

- Checklists
- Interest inventories
- Observations
- Performance tasks
- Process interviews
- Reading tests
- Records of independent reading
- Running records
- Students’ self-evaluations
- Teachers’ selected reading samples
- Writing samples

Comprehension—Comprehension of the gifted primary reader should largely be assessed authentically. A test in which students list the name of the main character and bubble-in the main idea limits the gifted student’s opportunities to demonstrate more advanced interpretations. Comprehension tasks are more likely to engage high-level thinking when they require students to generate responses rather than choose among descriptors, as in a forced-choice response. Oral summaries via tape recorders, creation of a hyperstudio stack for use by other students, reading/writing logs, and other creative, open-ended options provide broader opportunities to demonstrate comprehension depth/complexity.

Metacognition—As children read in school, they need to be guided in their development of metacognitive or self-monitoring strategies so that these important skills become an internalized part of their regular reading behavior (Cecil, 1995). Metacognition is referred to as thinking about thinking. It invites children to bring their thinking to a conscious level and provides a window that increases adults’ understanding of students’ behaviors. A parent reported that her gifted 2nd-grade daughter did not want to participate in a discussion about a book she had immensely enjoyed, because “I have already discussed it with myself.” Since gifted readers are so consciously involved in introspection, teachers should continue...
usually analyze students’ behaviors and talk with them to make sense of what is occurring in learning situations (Abilock, 1999).

Teachers prompt metacognitive responses through reflective questions. Children respond orally to these metacognitive questions or write brief responses to explain their thinking. The last four questions in Figure 2 approach a more complex interpretation particularly appropriate for advanced and gifted students.

### Metacognitive Questions

1. What can you tell me about your reading?
2. What did you think was easy to do and hard to do?
3. What changes would you want to make?
4. What is the most important thing you learned from this?
5. What do you do when you are reading and you find a word you do not know?
6. When might it be a good idea to reread something?
7. Why do you think that is so?
8. How did the author cause you to infer/conclude that?
9. What evidence can you use to support that?
10. If you did not know, what would you do to get the most information?

### Self-assessment through rubrics—Rubrics

Rubrics increase students’ responsibility for their own learning when they assess their work before it is graded or shared with others. Rubrics are guidelines to quality. They provide a clearer view of the merits and demerits of students’ work than grades alone can communicate. Rubrics show students how they are responsible for the grades they earn rather than continuing to view grades as something that is imposed upon them.

The criteria on a rubric should inform students what attributes to include in a product to demonstrate their understanding of the information they acquire. Each level should communicate to students what to do to achieve at a higher level. Criteria must accent content rather than just focus on appearance and how to complete the product. With advanced and gifted learners, the emphasis should include depth and complexity, as exemplified by the following chart. Teachers fill in their preferred grade scale or an evaluation scale, such as less than expected, appropriate work, very well done, and outstanding work as the level of proficiency develops from low to high. See Figure 3.

Teachers continue to be pleasantly surprised at the accuracy of students’ self-assessments. When clear targets are provided through rubrics, most students understand what to do to achieve. After modeling and successful experiences with multiple rubrics, some gifted learners may be able to develop their own rubrics and other methods to assess their independent reading and study projects.

### Portfolios—Portfolios

Portfolios offer a concrete record of the development of students’ talents and achievements during a year or more. In classrooms where all students develop portfolios, the portfolio process enables each student to be noticed for the pace of learning growth and the level of products he or she produces. In this manner, portfolios increase inclusion instead of exclusion by providing multiple opportunities for children from every population to demonstrate talents and gifted potential. Portfolio assessment allows schools to honor the diversity of students and discover the strengths of each learner.

Primary-aged children can learn to be responsible for organizing and managing a portfolio of their work that documents agreed-upon criteria. Children learn to file their selected work in the back of their portfolio so it approximates a chronological order and clarifies growth over time. Increasing emphasis on students’ self-reflections and making judgments about their products is one of the values of portfolios for all children.

However, portfolios will not document achievements of advanced and gifted children if they are limited to grade-level tasks. Only to the degree that portfolios include children’s highest levels of performance on a wide array of challenging, beyond grade-level tasks can the portfolio process substantiate gifted-level work. Negotiate together a short list of response products advanced students can select among to demonstrate their interpretation and understanding after reading fiction or nonfiction text.

### Gifted Readers Like...

A classic study by Dole and Adams (1983) surveyed gifted students to elicit their perceptions of the most important attributes of good reading materials. These attributes included:

- Sophisticated beginning-to-read books
- Nuanced language
- Multidimensional characters
- Visually inventive picture books
- Playful thinking
- Unusual connections; finding patterns and parallels within and among books
- Abstractions and analogies
• A blend of fantasy and non-fiction
• Quantities of information about a favorite topic
• Books about gifted children

Use this information as a guide to prepare questions for surveying gifted students in your class or even all gifted students in your school. What do they most like or dislike about reading? What do they most want in books and stories? What makes them pick up a book and want to read it? We can better customize reading instruction to challenge advanced readiness levels and motivate gifted learners when we understand how to more closely match their preferences and interest.

The result of ignoring gifted readers is educationally and emotionally unjust to these children. The Gifted Reader’s Bill of Rights is proposed here to prompt your thinking about the reading rights and needs of gifted students.

The Gifted Reader’s Bill of Rights

- The right to read at a pace and level appropriate to readiness without regard to grade placement.
- The right to discuss interpretations, issues, and insights with intellectual peers.
- The right to reread many books and not finish every book.
- The right to use reading to explore new and challenging information and grow intellectually.
- The right for time to pursue a self-selected topic in depth through reading and writing.
- The right to encounter and apply increasingly advanced vocabulary, word study, and concepts.
- The right to guidance rather than dictation of what is good literature and how to find the best.
- The right to read several books at the same time.
- The right to discuss but not have to defend reading choice and taste.
- The right to be excused from material already learned.

Adapted from Rubrics and More! Kingore, 2002

<table>
<thead>
<tr>
<th>Complexity</th>
<th>Too simple or not appropriate</th>
<th>Simple information; limited critical thinking</th>
<th>Information shows critical thinking; compares and contrasts</th>
<th>Beyond expectations level; analyzes from multiple points of view</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content depth</td>
<td>Needs more information or more accurate information</td>
<td>Needs to add depth or elaboration</td>
<td>Covers topic well; develops information beyond facts and details</td>
<td>Precise; in-depth; supports content</td>
</tr>
</tbody>
</table>

References


Bibliographies of Books for Gifted Readers

Every teacher is familiar with the question of how to deal with students who function at a much higher level than the rest of the class. These students are always the first to ask the provocative questions, often finish in-class exercises with ease, and take on the majority of work during group activities. Unfortunately, the desire to cater instruction to the higher-level student is all too often overlooked because of the necessity to reach the average to lower end students who make up the majority of the class.

During my five years as a teacher in an extremely diverse high school, I constantly struggled to challenge gifted students. Differentiation theory suggests that teachers create learning centers, be available for individual instruction, be open to self-evaluation, and modify instruction when appropriate. In reality, however, the application of these ideas often becomes unclear. With class sizes becoming larger and student populations becoming more diverse, teachers strive to engage as many students as possible. This often occurs at the expense of the most talented.

In my teaching experience, the master teachers I have witnessed who manage to reach upper-level students advocate the importance of enrichment in their instruction. In these classrooms, enrichment activities make up a significant portion of the students’ overall grades. These teachers recognize that enrichment activities enable a deeper understanding and an individualized extension of the concepts being taught, thereby allowing students to create a curriculum of their own. It is in this environment that gifted students are adequately challenged and allowed the chance to reach their full potential. Although I have seen the success of enrichment in other classes, constraints on time and resources made it difficult to find compelling and challenging activities for gifted students in my own classroom. It was a constant struggle that I faced throughout my career as a teacher.

Recently, in an effort to offer more services to gifted students, the Duke University Talent Identification Program (TIP) created a new series of independent learning products that can be used at home or in the classroom. Duke TIP has always acknowledged the importance of enrichment in the lives of gifted students. For over 20 years, Duke TIP has offered classroom-based summer courses on college campuses throughout the United States to ensure that students with greater abilities are able to reach their full potential. By providing challenging and rewarding activities in courses that go beyond the three R’s, TIP has created a library of enrichment courses that would add to any classroom where a teacher would like to offer a differentiated curriculum. Steven Pfeiffer, Executive Director of Duke TIP, says the program “provides in-depth learning in academic...”
areas infrequently covered in most high schools in America.” Now, in addition to its campus-based summer courses, Duke TIP has partnered with multimedia company erroyo, to launch a series through which high-appeal topics will be offered as courses on CD-ROM. Duke TIP opted to use CD-ROM technology for enrichment courses for the following reasons:

1. **Pace**—Computers can be used to match a student’s pace. The student can use the computer and work through the course when it fits his schedule and can work through the material at a pace that doesn’t bore him.

2. **Flexibility and Interaction**—Students find different ways to interact with the technology and are able to learn from it in their own unique ways.

3. **Confidence and Challenge**—Working independently with the courses and answering questions correctly while interacting with the computer creates gratifying outcomes and builds individual self-confidence.

The call to meet the needs of a diverse group of gifted students led to the creation of a range of courses in three disciplines to appeal to students’ interests. The courses offered in the first series are:

- **Clues in Crime**—Students join a professor of Forensic Science at New Haven University to learn the techniques behind solving the most puzzling crimes. Students are taken into her lab and taught the methods of investigative research. Real life exercises allow students to put theory into practice. After learning these skills, students take a stab at solving a true-to-life crime scene investigation as a member of the Forensic Science Unit.

- **Peace and Protest**—Students follow a Duke TIP faculty member while she explores the memories and realities of America in the 1960s. Why was the decade so turbulent? What events came together to set the mood of the nation? What legacies did this decade have on our nation, and how do they still affect us? After learning about the history of the decade and engaging in interactive exercises, students will realize that it is more than an anthology. It is an experience where they’ll encounter the music, movements, and mores that changed the American landscape.

- **Switched on Sound**—In this course, students take a journey through 20th century music. Students learn to listen to music with the ear of a critic and find ways to make connections between movements in ways never imagined. Historical events and images are integrated into the course to tie these moments in music together.

Each course culminates with a chance for students to submit original work for evaluation and receive a certificate of completion from Duke TIP to be included in their college portfolios.

As Duke TIP begins to roll out the first courses, it hopes to test the success of the new series with educators and students. By bringing designs that push the limits of interactivity, creating exercises that engage and assess learners, and using the best rich media techniques, Duke TIP anticipates that its newest project for challenging gifted students will be successful.
The Future Problem Solving Program (FPSP) is a yearlong curriculum project with competitive and non-competitive options. Developed in 1974 by E. Paul Torrance and his wife Pansy, FPSP is an international program involving 250,000 students around the world.

The most basic skill that can be taught in today’s schools is problem solving, especially skills in solving future problems. In fact, the teaching of future problem solving skills may really be the key to successful teaching of the other basics such as reading, writing, and arithmetic. Many children are not motivated to master these basics unless they can see the connection between them and their future lives...

(Torrance, Torrance, & Crabbe, 1983, p.1)

Designed to help students enlarge, enrich, and make more accurate their images of the future, the Future Problem Solving Program engages students in learning. FPS equips today’s young people with the vision and skills needed to anticipate, understand, and solve the problems of tomorrow. FPSP is interdisciplinary, and its components meet the creative thinking, creative writing, leadership skills, and academic aptitude needs of gifted students. FPSP is also a practical way to provide differentiated instruction in the classroom.

Additional goals of the program are rooted in curriculum and instruction. They include:
- improvement of critical and analytical thinking skills.
- increase in creative thinking abilities.
- extension of students’ written and verbal communication skills.
- development of research skills.
- increase in teamwork skills and responsible group membership.

FPSP features three competitive components: Team and Individual Problem Solving, Team and Individual Community Problem Solving, and Scenario Writing. All components are offered to students in grades 4-12. There are three divisions: junior (grades 4-6), middle (grades 7-9), and senior (grades 9-12).

Action-based Problem Solving is non-competitive and open to students in grades K-9.

Fundamental to all FPS components is the six-step FPS creative problem-solving model.
1. Identify Challenges—generate challenges or issues related to the future scene or need area
2. Select an Underlying Problem—focus on one problem area
3. Produce Solution Ideas—generate solution ideas to the underlying problem
4. Generate and Select Criteria—create criteria to evaluate the merit of the best solution ideas
5. Apply Criteria to Solution Ideas—evaluate using criteria to rank order the solution ideas
6. Develop an Action Plan—Based on the highest scoring solution idea, develop an action plan explaining how the solution will work and describing how the problem will be solved

**Team and Individual Problem Solving**

Team and Individual Problem Solving features four topics completed at various times over the course of the academic year. The 2002-03 topics are sports medicine, e-commerce, nanotechnology, and DNA identification. A fifth topic, worldwide communication, is selected for the International Conference. Annually, students select the topics from three strands—science and technology, business and economics, and social and political issues.

In both the Team Problem Solving and the Individual Problem Solving components, students research a topic to gain background information and to understand how or why this topic is important for the future. The team or individual receives a future scene or imagined future. The future scene is a “what if” situation and presents a glimpse of what will happen, related to the topic, in 20 to 40 years.

A four-person team applies its research as it moves through the six-step FPS model. Students record their ideas in an 11-page booklet. All aspects of communication in this process are fundamental.

The first two topics are considered practice problems. Teachers/coaches are free to spend as much time as needed on each of the problem-solving steps. FPSP coaches are encouraged to introduce a variety of generating and focusing tools, and creative and critical thinking strategies, providing students with different options to stimulate creative possibilities and select innovative and effective solutions. Once a team completes a booklet, it is evaluated and scored by certified FPS evaluators. These evaluators score student work and return it with feedback, including suggestions for improvement.

Students work cooperatively in a group. Team members establish group goals, learn the strengths of individual members, and depend on those strengths in competition. Team members learn to communicate and work with different personalities. Above all, team membership develops leadership.

Individual Problem Solving allows one student the same opportunity afforded in Team Problem Solving. Perhaps more challenging than Team Problem Solving, the Individual Problem Solver must examine the future scene and make inferences and decisions without the benefit of other group members.

**Team and Individual Community Problem Solving**

Problem solving through community service prepares students to face the world of tomorrow. Students in both team and individual Community Problem Solving attack real-world problems through both community service and service learning.

The 4th-grade students at John S. Armstrong Elementary School (2002) in Dallas, Texas decided they wanted to help the 90 “Lost Boys of Sudan” who were brought to their city. Realizing that these 20-year-old boys faced a variety of problems, the students sorted these problems into six main categories: transportation, education, jobs, basic needs, socialization, and health and safety. These amazing 4th graders decided to teach the “Lost Boys of Sudan” about basic life in America. They taught the boys about the Dallas transit system and how to use maps. They also shared their knowledge about working with money, cooking simple foods, and working on a computer. When the 4th-grade class was learning about budgets, they invited the “Lost Boys” to the classroom and helped them develop a monthly living budget. The 4th-grade students obtained job applications from Pizza Hut and helped the boys fill them out. Three girls created and performed a skit called “Job Interview Do’s and Don’ts.” The 4th graders invited the boys to a cooking class that turned into a dinner. Each student contributed two tasty recipes to create a cookbook for the boys.

This group of 4th-grade students accomplished amazing results by applying the basic skills they were learning in the classroom to a community issue. Community Problem Solving provided the vehicle to accomplish the tasks.

As indicated by the Community Problem Solving evaluators at the 2002 International Conference, “Sometimes we are fortunate enough to be in the

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right place at the right time to experience something special. This time, a group of 4th graders and some ‘Lost Boys of Sudan’ happened to be in Dallas—TOGETHER. We wept when we saw the video showing how these young Americans and these old (but young) immigrants bonded in the most amazing ways. The compassion and commitment exhibited by these young people inspired all of us to become better people. Everyone who encountered this team was changed by their presence in our lives. Very special students in very special circumstances with very special results mandate this very special recognition.”

Scenario Writing
Many gifted students are identified as gifted in creative writing. Scenario Writing is especially intriguing and most appropriate for these students. Scenario Writing encourages students to develop and submit futuristic scenarios—word pictures of the future.

Edward Cornish, President of the World Future Society, explained in 1977: “A scenario may sound exotic, but in its simplest form, it is very common. It is simply a series of events that we imagine happening in the future. Our everyday thinking is filled with little ventures into the mysterious world of tomorrow, or next week, or next year. And these ventures are scenarios.”

For the purposes of the Future Problem Solving Program, a scenario is a story that might take place as a logical outgrowth of actions or events that took place earlier. It is a prediction of the future and is written as though the future were the present. The scenario is a short, short story in which one possible outcome of the future is developed through character(s) and plot. Students are encouraged to use the FPS model to examine challenges, select a problem area or conflict, and produce a resolution or plan of action.

In Scenario Writing students create their own vision of the future. Competitive scenarios:
• are set at least 20 years into the future
• have a recognizable relationship to one of the five Future Problem Solving Program topics for the current year
• are no longer than 1,500 words

Action-based Problem Solving
Action-based Problem Solving is the Future Problem Solving Program’s component designed specifically for use in the regular classroom. It introduces the classroom teacher and students to creative problem solving, higher-level thinking, and action skills in a hands-on, non-threatening manner because it is non-competitive. The concepts behind each problem-solving step are taught in short, but challenging, sound bites—making the concepts easy to understand and apply. Action-based Problem Solving actively engages all students in learning, constructing meaning, and applying both knowledge and process to real-life situations. It is performance based and has real-world applications for authentic learning. It is designed to guide students into community action.

Action-based Problem Solving provides a model that is effective in the regular classroom for all students and can be implemented as:
• a strategy for use in the inclusion model.
• a curriculum in exploratory classes.
• an extension of any curriculum unit.

Assessment is integral to Future Problem Solving. FPS promotes continuous improvement through its evaluation process. Each component offers authentic assessment of the product produced, such as a problem solving booklet, a community problem-solving project, or a written scenario.

Problem solving in FPS is like problem solving in the real world—there is not always a line between right and wrong. Instead, there are alternative options with different levels of effectiveness. For example, imagine a scene where community leaders are discussing alternatives for decreasing the rising crime rate. Solution ideas may include: building more prisons, creating more extensive punishments for offenders, mandating a greater focus on rehabilitation, developing education programs to eliminate crime before it happens, changing laws to make them more lenient, prescribing extensive counseling for criminals, or increasing the number of police officers in the community.

This brief list of solution ideas does not begin to cover the hundreds of solution ideas already proposed, nor does it address the ideas yet to be developed. The point is there are several responses to one situation. If you don’t believe this, try to coordinate a night out with six of your best friends. Ask them to be at a specific place at a specific time and see how many alternative options or “solution ideas” are offered.

There are relatively few “plug and play” curricula
for differentiation. It is up to the teacher to adapt or develop differentiated instruction. A teacher can use FPS components to differentiate instruction in a variety of ways:

- Facilitating inquiry and discovery through generating and focusing exercises
- Encouraging active investigation
- Providing collaborative learning environments
- Using advanced reading or research materials
- Calling on students to think at a greater level of complexity
- Helping students work like experts in a field
- Providing choices of ways students might express their learning
- Providing task and product assignments at high levels of complexity and abstractness

Although the motivation of gifted and talented children is inescapably a complex problem, there are some very obvious things teachers can do to improve the motivation of such children. They can provide opportunities for doing something with what is learned, be more concerned about what they are learning, adapt the difficulty of the task to the ability and expertise level of the learner, teach in ways that give opportunities for using a variety of mental abilities in acquiring information, recognize and reward a variety of kinds of excellence, including social adjustments and character, and give greater purposefulness to what students are expected to learn.

(Torrance & Sisk, 1997, p.46)

Future Problem Solving components are excellent vehicles for differentiation. Teachers have the opportunity to adjust the level, pace, process, and product of the curriculum to accommodate the unique needs of individuals and groups of students.

During planning, a teacher should generate specific lists of what students should know (facts), understand (concepts and principles), and be able to do (skills) by the time the unit ends. Then the teacher should create a core of engaging activities that offer varied opportunities for learning the essentials she has outlined. These activities should lead a student to understand or make sense of key concepts and principles by using key skills.

(Tomlinson, 1999, p.40)

The content in Future Problem Solving is relevant and authentic; the process is purposeful, balancing critical and creative thought, promoting cognition and metacognition; and the product is issue centered, encouraging the application of key skills and understandings to real problems and audiences. Above all FPS provides flexibility in meeting the needs of gifted students.

Perhaps a 14-year-old Georgia FPS participant says it best:

FPS is built to channel creativity and critical thinking, and through its guidance, I now find myself to be an assertive, confident, and productive young adult. Unlike other academic competitions, FPSP is an open chasm, with no wrong or right answer, ready to be filled with whatever a willing participant should choose. FPS emancipated me from typical schoolwork that I felt...consisted of absorb-and-repeat memorization practices. Within the two-hour time limit I sat with a booklet, I was able to take charge of the world and its problems, while simultaneously learning exactly how my brain functioned and what it was indeed capable of, for no other outlet had ever stretched my cognitive capacity in a similar way before. In the FPSP, I have broached philosophical, scientific and social categories that are unfortunately not typically trusted with a child or preteen. Approaching uncommon core curriculum based on current issues and human need was not frustrating, but invigorating, and necessary in curing my lacking enthusiasm for school and math class. …FPS has made me a reader, a researcher, a writer and a thinker.

References


How to start a Shakespeare club.

Editor’s note: Nelson and Daubert’s Shakespeare Club is an excellent example of differentiation within a program. While their club includes students of all ages and abilities within a school, it is still readily able to meet the needs of gifted students because of the open-ended way in which it is structured.

“Oh for a muse of fire, that would ascend the brightest heaven of invention.” (Henry V, Prologue)

It felt as if we hadn’t had a field trip since the turn of the century. The kids and the teachers needed a day out! We needed something in the area that was remotely educational. In desperation we ransacked the faculty lounge and finally found a flier from a local high school drama department offering a performance called Will’s Window. It was close by, it was inexpensive, and it was a three-hour break from the regular school routine. The teachers were sold! What was the play about? We didn’t know or care! Off we went to see a Smoky Hill High School play that turned out to be the beginning of Belleview Elementary’s love affair with the Bard!

Will’s Window presented scenes from several of Shakespeare’s plays. Our 3rd graders were fascinated, and in the days following the field trip they let us know that they wanted more. This was the teachable moment to end all teachable moments, and we set about the difficult job of pulling together resources for teaching Shakespeare to elementary school students—not an easy task. At our local library we found cartoon video versions of Romeo and Juliet, Macbeth, Twelfth Night, and Hamlet. With every play they saw, the students’ enthusiasm increased, and for the remainder of the year our work revolved around Shakespeare in all curricular areas. Our school year ended with a mini-Shakespeare festival and the germ of an idea of forming a Shakespeare Club at the beginning of the following school year.

The Belleview Shakespeare Club was created because of the students’ inability to let go of the unique experiences the performance of Will’s Window had generated and also because of the determination of the teachers to keep the excitement, enthusiasm, and passion alive. We knew a good thing when we saw it, and this was too good to let slip away just because the students had moved up to 4th grade. We had experienced something amazing together, and it had bonded us in a way that a traditional curriculum rarely, if ever, does. A month or so into the new school year we organized a reunion with our old students and hinted that we would be discussing Shakespeare. When we saw how many of our former 3rd-graders showed up, and the level of their enthusiasm, we knew we had to provide an outlet for the Shakespeare mania that was taking
hold in our school. The Shakespeare Club was becoming a reality.

“Though this be madness, yet there is method in’t.” (Hamlet, 2.2)

Neither of us had organized a club of any sort before, so we were not sure what to do. Then we realized that we could not do anything if we did not have the support of the parents, so our first step was to let the parents know about our plan to start a club and to ask if they would support such an enterprise. The response was overwhelmingly positive, so we followed that letter with a short survey asking what day would work best for them and what would their preference be for a meeting time—before or after school. With all the data in hand, we proudly announced in the school newsletter that the Shakespeare Club would meet every Thursday in the media center at 7:30 am. The Shakespeare Club had officially arrived!

We had about 20 students our first year and almost 20 actively involved parents. The enthusiasm of the students was catching on, and their parents were not immune any more than we had been. A close-knit group of aficionados formed and provided a solid base for our club in the years to come.

From the modest beginning of 20 members 5 years ago, the Belleview Shakespeare Club has grown to almost 100 students. We have outgrown the school’s media center, and we have moved into the gym. We have changed in stature in the eyes of the school community too. When we started we were regarded with wry amusement. “How cute! Shakespeare for young children!” was an often-heard phrase—which rankled at first but later provided the inspiration for the title of our book, Starting With Shakespeare: Successfully Introducing Shakespeare to Children (Teacher Ideas Press, 2000). Thus validating that old adage—he who laughs last....!

Although the number of students has grown tremendously, the meetings still follow a similar format each week. We start with a couple of theatre games, which also serve as “mixers,” enabling the students to get to know each other. Students who, although not remotely connected to the original Will’s Window group, come to the club because they have heard about the plays from enthusiastic friends, or siblings have caught the Shakespeare fever and want to join in the fun. The theatre games break the ice and help meld new students with veterans. We always try to balance active with more passive activities, so after the theatre games we have a movie clip or lines to learn and perform for each other.

“The club has grown in number and in ambition each year. The first year was the trial run to see if the students’ enthusiasm and the teachers’ energy would last. Both did! To add fuel to the fire, we wrote, and were awarded, a school district foundation grant. This grant enabled us to purchase Shakespeare books, and we created a very attractive “Shakespeare Corner” in our school’s media center. At the start of the second year, we decided to aim for a modest performance for parents at the end of the year. The K-3 students were the chorus, dressed in our first club t-shirt! The chorus told the story of Twelfth Night in the form of a rap we wrote. The 4th and 5th graders performed four scenes in “Shakespeak” (real text) at appropriate times during the rap. There was no stopping now! The second grant we received was for costumes, and our next performance was a dinner theatre production of A Midsummer Night’s Dream. Due to popular demand, we added a “community performance” of our show and received rave reviews—and more club members! Last year more than 80 students performed an original play called Avon Academy, and with the aid of the wireless microphones we got with our most recent grant, we wove four Shakespeare plays into one—the setting being Avon Academy, a private school run by Shakespeare characters. It was a huge success and, more importantly, great fun! We are just about to start the 5th year of the Belleview Shakespeare Club, and we are expecting our numbers to exceed 100. The students are so eager to begin that we had a group show up for the first meeting three weeks before the start date. We have come a long way since Will’s Window.

“Is not the truth, the truth?” (Henry IV, 2.4)

The needs that our Shakespeare club meets at Belleview are manifold. The exposure to classical literature goes without saying, but in addition to the academic benefits, students learn cooperation skills as they work toward a greater goal. They develop a sense of the accomplishment of something greater than themselves. One person does not a Shakespeare play make. They learn to rise
above the traditional expectations of their age level. The students know that they are being included in a select group that “gets” Shakespeare, that it is a subject usually reserved for grown-ups, and by meeting the challenge they become bigger persons than anyone ever expected. It is very gratifying to have parents thank us, on behalf of their children, for the time and effort we put into the club. The most touching was the parent of a child who struggled with academics and had met with failure after failure. She thanked us for giving her child a place to shine, be the equal of his peers, and begin to repair his damaged self-esteem.

“Fearless minds climb sooner unto crowns.” (Henry VI, 4.7)

The stories, characters, and language of William Shakespeare meet the unique needs of gifted students by providing challenge and variety, a vehicle for instruction in language arts, and a focal point for a stimulating interdisciplinary unit. Since gifted students require open-ended learning opportunities tailored to their specific mode of intelligence, exploring the plays of the Bard can lift them onto the shoulders of a genius. Whether preparing a theatrical performance, analyzing characters or plots, exploring the poetic rhythm of the words, or just understanding the complex stories and their historical contexts, there is much to be gained that a traditional novel study cannot hold a candle to.

If anyone doubts the benefits of exposing young children to Shakespeare, they are most welcome to come and see our club in action and to talk to the students who are 100 percent involved. Any doubts we had (and they were few) were dispelled by a note we received about a year ago from a mentally handicapped child who was part of the original Will’s Window group. His note came during Teacher Appreciation Week almost five years after he was part of the desperation field trip to the high school play. He wrote, “Thank you for telling me about Shakespeare.” That was all we needed to keep us inspired and committed for many years to come.

“The skies are painted with unnumbered sparks. They are all fire and every one doth shine.” (Julius Caesar, 3.1)

Educator’s interpretation: The schools are full of inspired learners. They are all enthusiastic and every one doth shine. ❖
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What do teachers really feel, deep down, about gifted and talented children?

Fifteen years ago, two American scholars surveyed two groups of teachers. The first group had been teaching for several years; the second was a group of young people still in training to become teachers. The scholars gave the groups a series of short written descriptions of hypothetical students who varied along three dimensions—brilliant to average, studious to non-studious, and athletic to non-athletic—and asked the teachers to rank the students in order of desirability.

Not surprisingly, both the veteran teachers and the trainee teachers ranked students of average ability much higher than gifted students, while athletes were consistently preferred to non-athletes. Disturbingly, however, both groups preferred students who did not study to students who did! The brilliant, studious non-athlete—the classic stereotype of the gifted nerd—was right at the bottom in terms of teacher preference (and perhaps in teacher tolerance).

When I first read reports of this research (Cramond & Martin, 1987) I thought, with a sinking heart, “If American teachers have such unfacilitative attitudes, heaven knows what we’d find if we did this kind of research here at home in obsessively egalitarian Australia.”

Well, someone went ahead and did it. Two colleagues of mine, Neil Carrington and Stan Bailey, decided to run a comparison study using Australian preservice teachers (Carrington & Bailey, 2000). However, they changed the research design slightly. Aware that Australia is even more sports-conscious than America (We don’t just idolize sports stars, we worship them with religious fervor.), they felt there was little point in including the athlete/non-athlete comparison. That Australian teachers would prefer sports-loving kids could be taken as given. Instead, they included gender as a variable—both the gender of the teacher and the gender of the hypothetical student. As with the Cramond and Martin study, these trainee teachers were asked to rank, in order of preference, eight hypothetical students who varied according to gender, ability (average or gifted), and attitude to study (studious or non-studious).

The results were even more disturbing than those of Cramond and Martin. Young people training to be elementary school teachers greatly preferred their students to be of average ability, relegating gifted students to the bottom of the rankings. However, for young people training to be secondary school teachers (in Australia secondary means 7th through 12th grade) the child’s level of ability was less important than his or her attitude to study. Students who enjoyed studying appeared at the bottom of the pecking order regardless of whether they were gifted or average.

Interestingly, however, the gender of the trainee teacher was a factor influencing preference. Female preservice teachers greatly preferred gifted non-studious boys to gifted non-studious girls, while for male preservice teachers it was exactly the reverse. As Carrington and Bailey point out, perhaps the fact that a member of the opposite sex could perform well in school with a minimum effort was seen as more acceptable. However, for both elementary and secondary teachers, regardless of gender, the least acceptable student was the gifted, studious girl.

The boy with the book
I am a professor in the School of Education at the University of New South Wales (UNSW), one of Australia’s most prestigious research universities. We differ from other universities in our strong gifted education focus. We have a Master of Education program specializing in gifted education, and we offer two elective courses in gifted education in our undergraduate teacher-training program. These electives are popular; more than half of the trainee teachers studying with us decide to take them.

I conduct a little experiment in the first class of our “foundation” gifted education course. One of the first things I do is to ask these trainee teachers to draw a quick sketch of what comes into their mind when they think of the phrase “gifted and talented children.”

Around 75 percent of them, regardless of their gender, draw a boy. Although Australia is a strong multi-cultural nation, in virtually all the sketches the child is shown as Caucasian—even when the trainee teacher is Asian or black. The student in the
Our Gifted

drawing is usually well dressed and well groomed. Many sketches show the child with a big head. Often, he is shown carrying a book. (The exception to this is the sketch drawn by young people studying to be music teachers—they show him with a violin.) And these are the trainee teachers who choose to take the gifted education elective. Goodness knows what perceptions are held by the students who choose not to take it!

The class goes very quiet when I show them the results of this little investigation. They find it disturbing that their perceptions of gifted and talented children are so stereotyped in terms of race and gender. As the course progresses, and they begin to learn about different types and domains of giftedness, and the prevalence of underachievement among gifted students, many of them refer back, ruefully, to the view of the gifted child that they held at the beginning—the academically gifted white male with his nose stuck in a book, assured of success and ready to take his place among the power elite.

I find it disturbing to think that the trainee teachers who choose not to take the gifted education subjects, or who may want to but cannot because of a timetable clash, may well possess similar attitudes and may graduate into a teaching position with these attitudes unchallenged.

The effects of training on attitudinal change

Teachers with a special interest in gifted students are well aware of the difficulties of advocacy within an apathetic or overtly hostile school environment. Attempts to establish special programs for gifted students are frequently met with opposition from parents and other teachers. Many express their objections by claiming that special programs are elitist, undemocratic, unnecessary, of low priority, or a drain on already limited funding. Both in Australia and in the United States, ability grouping of gifted students has been criticized as engendering arrogance and conceit, depriving average ability students of appropriate role models, and engendering a hothouse atmosphere leading to stress and burnout. Many opponents of gifted education claim that gifted students who are accelerated will lose their academic advantage in later school years, experience difficulties in social and emotional development, and become elitist in their attitudes towards age-peers.

Unfortunately I don’t have room, in this column, to respond to these commonly held but inaccurate perceptions of gifted programs. (I addressed some of them in the Winter 2001 issue of Understanding Our Gifted.) Accusations of elitism and anti-demo-

cratic conduct arise from ideological and political standpoints, rather than from educational or psychological concerns, while a sizeable data bank of empirical research conducted over the last 60 years attests to the value of ability grouping and acceleration for intellectually gifted students. Rather, I’d like to describe what happened in a research study I conducted some years ago. The research study was designed to change teachers’ attitudes towards the gifted by exposing them to research findings which contradict the misconceptions outlined above.

Here at UNSW we have a postgraduate teacher education program called the Certificate of Gifted Education (COGE), which has been offered annually since 1991. COGE comprises 80 contact hours of lectures and seminars conducted during three school vacations over the Australian school year. In between the three on-campus weeks, course participants complete five essay assignments.

The COGE program features, as visiting professors, many of the leading international scholars in the field of gifted education. Many come from the United States and Canada. The curriculum content of COGE focuses on sound practices in identification, curriculum development, and program design, which arise out of established research in the education and psychology of the gifted. Teachers are exposed to recent international research on issues such as standardized achievement and IQ testing, teacher and peer nomination, ability and achievement grouping, and acceleration. They meet and interact with gifted and talented students who discuss frankly and freely, aspects of their own educational programs that have helped or hindered them. There is a strong emphasis on providing participants with factual knowledge that they can use to rebut the misconceptions that may still be held by colleagues in their own schools.

The teachers, school administrators, and school counselors who enroll in the COGE program come from all over Australia, New Zealand, and Southeast Asia. More than 700 Australasian educators have graduated from the program since its inception.

At both the start and close of the program, we ask the COGE participants to complete a standardized 34-item Likert scale questionnaire which measures their attitudes towards a number of issues in gifted education, including identification, development of special programs, and the social and emotional development of gifted children. This enables us to make an objective assessment of attitudinal changes.

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Each year, I am astonished and delighted at the powerful changes that occur in teachers' attitudes over the course of the 12 months of COGE. The wariness of ability grouping and acceleration diminishes significantly or disappears. The reluctance to use objective assessment and the over-reliance on their own personal judgments about children are replaced by a thoughtful consideration of a variety of assessment procedures as they begin to realize how flawed their own judgment can be. The intensive coursework they do on developing intellectually challenging, academically rigorous, and highly enjoyable curriculum for gifted students empowers them to see that they can make a difference to these students' learning.

As well as completing the questionnaire, COGE participants are encouraged to write down their impressions of the course. Here are some typical comments:

"I liked the emphasis on the fact that every child, including the gifted, needs enrichment, but that gifted students need something beyond that, that addresses their developmental advancement."

"The talk from the child who had been accelerated, being able to interact with him and his parents, and seeing how natural and happy and confident he is—this, combined with the presentations and papers about the follow-up research on accelerated students, really changed my whole attitude towards acceleration."

"If you're in a school where you are the only person who supports gifted education you feel so alone, and you begin to really doubt yourself. At COGE we were with teachers and school principals from all over the country who shared our views and were interested in the same things we were interested in. Now I know how gifted children feel when they're allowed to be in special classes."

"The course has opened a new world to me. I am now able to understand my own deliberate underachievement as a child, and I can see it still happening to gifted kids in my class and my school. By understanding myself better as a child and as an adult, I feel I'm in a better position to help the kids I teach to avoid the same mistakes."

There is no doubt that the Certificate of Gifted Education changes teachers' attitudes and practices. The problem is, however, that like UNSW's undergraduate courses in gifted education, only teachers who are already interested take the course!

Musings continued

Training for all?
Wouldn't it be wonderful if school districts or state education departments could find the funds to allow every teacher to have substantial training in gifted education? Certainly we can't guarantee that it would result in the substantial attitudinal changes that we have noted in the COGE students (After all, these are teachers who have already made a significant commitment of time and money to undertake this training; one could almost predict that they want to change!), but at the very least it would assist teachers to identify some of the "hidden" gifted children in their classes and improve their skills in curriculum.

But since this is unlikely, couldn't the education faculties of more of our universities develop courses in gifted education for trainee teachers? Then, when these trainees graduated, they would have a better understanding of their responsibility for identifying and responding to the academic needs of gifted students.

It gives me great pleasure to tell you that the University of New South Wales has decided that, starting in 2003, every trainee teacher who enrolls with us will take a compulsory course (28 contact hours) in gifted education within his or her degree program. Quite simply, they will not be permitted to graduate as a teacher without having learned something about how to recognize and teach gifted and talented students. I hope very much that other Australian and American universities will follow suit.

Perhaps the greatest gift we can give to a gifted child is a teacher who recognizes the gift, who is not threatened by it, and who works with skill and confidence to foster it. ❖

References


Miraca U.M. Gross is Professor of Gifted Education and Director of the Gifted Education Research, Resource and Information Centre (GERRIC) at the University of New South Wales in Sydney, Australia.
Surfing the Net

Using the Web to Differentiate

Sandra Berger

My office phone rang insistently. It was a teacher who had just been assigned a class with several highly gifted students, a few students with severe learning disabilities, and 30 additional students who varied in their abilities from those who “get it” the first time to those who need several repetitions of any concept. During the first week of school, she questioned the principal about the number and variety of students in her class, and the principal just said, “You’ll do fine.” Fine? She wondered how. This teacher, and many others like her, have received little if any training in differentiating curriculum for a mixed-ability class, but they find themselves confronted by a vast range of abilities and skills that may actually grow wider as the year progresses.

The above scene was repeated frequently during the first six weeks of school as the calls kept coming. I heard from several teachers that many of the master teachers—those who mentor others—returned to the classroom leaving new teachers without support. Without mentors or training, how is a new teacher with a diverse classroom of 35 students supposed to learn the complex methods and strategies that are key to differentiation?

At a basic level, whenever a teacher reaches out to an individual or small group to vary his teaching in order to create the best learning experience possible, that teacher is differentiating instruction. But it helps to have examples or models.

Differentiation of Instruction in the Elementary Grades
ERIC Digest #E
Carol Tomlinson
www.ed.gov/databases/ERIC_Digests/ed443572.html

Standards-Based Teaching and Differentiation
Education Leadership (ASCD Journal article)
Carol Tomlinson
www.ascd.org/readingroom/edlead/0009/tomlinson.html

How Can Gifted Students’ Needs Be Met in Mixed-Ability Classrooms
Frequently Asked Questions
Carol Tomlinson
www.bctf.bc.ca/PSAs/AEGTCCBC/IRN/brochure.html

Differentiating Instruction for Advanced Learners in the Mixed-Ability Middle School Classroom
ERIC EC Digest #E536
Carol Tomlinson
ericec.org/gifted/gt-diges.html

Differentiating Curriculum for Gifted Students
ERIC Digest #E510
Sandra Berger
ericec.org/gifted/gt-diges.html

Gifted All Day, Every Day: Differentiation Strategies
Julie Luck Jensen & Kris McElligott

How to Differentiate Instruction—Baby Steps: A Beginner’s Guide
Kari Sue Wehrmann
www.ascd.org/readingroom/edlead/0009/wehrmann.html

ASCD Bibliography of Resources for Differentiated Instruction
www.ascd.org/educationnews/eric/differinstructionabs.html

Areas for Differentiation
Johnsen and Ryser (1996) describe several overall areas for differentiation: modifying content, altering the pace of instruction, creating a flexible classroom environment, and using specific instructional strategies.

Modifying content changes what the student needs to learn or how the student will access information. Organizing the curriculum around major themes and important ideas raises the level of abstractness from facts and definitions to concepts and generalizations, increases complexity, and provides variety. Major concepts in science include systems, models, and reductionism. Some key themes in mathematics include functions, patterns, scale, rates, and change (Boyce, et al., 1997).

Altering the pace of instruction is one way of modifying the teaching and learning process. When combined with curriculum compacting, high-ability students may avoid repetition by omitting material they have already mastered, allowing them to move at a faster pace. Teachers may use tiered activities as well as variable pacing, allowing students to move through lower order thinking more rapidly but allowing more time to respond fully on higher order thinking tasks.

Creating a flexible classroom environment that is
Surfing the Net continued

rich with resources and student-centered encourages students to maximize their abilities. In a flexible environment, they may take intellectual risks and work creatively in areas of interest.

Using specific instructional strategies, such as compacting curriculum and problem-based learning (see Understanding Our Gifted, Fall 2000), facilitates the acquisition of knowledge. As students discover new information, they can analyze their own progress and synthesize discoveries to see if new information “fits” the problem. Revision is part of the process.

The following specific instructional strategies have been linked to improved student achievement and have been shown to increase critical thinking, problem-solving abilities, and creativity (Johnson & Ryser, 1996):

- Posing open-ended questions that require higher-level thinking
- Modeling thinking strategies, such as decision-making and evaluation
- Accepting ideas and suggestions from students and expanding on them
- Facilitating original and independent problems and solutions
- Helping students identify rules, principles, and relationships
- Taking time to explain the nature of errors

Making modifications to mathematics and science content is one aspect of providing challenging learning opportunities and can be accomplished relatively easily by using Internet resources. However, there is one drawback to creating lessons around Web sites—Internet sources change frequently. Content that is perfect for a lesson may be changed over a period of months or may disappear altogether by the time teachers are ready to use it in a lesson.

SCIENCE

Chemistry: Kitchen Chemistry (grades K-3)
w w w . o w u . e d u / ~ m m g r o t e / p p / c h e m i s t r y / k i t c h e n / f _ k i t c h e n . h t m l

Using the materials available in any kitchen, kids can learn the basics of chemistry through activities such as Mapping Our Tastebuds, Cabbage Patch Spritzer, and Color Solutions from the Kitchen. Structure for these activities is adapted from the eloquent lessons presented in The pH Factor at www.miamisci.org/ph/

Chocolate Exhibition (grades K-6)
w w w . f m n h . o r g / C h o c o l a t e / e x h i b i t s . h t m l

Chicago’s Field Museum invites educators to “use the enticing subject of chocolate to teach your class about the intriguing relationship between nature and culture.” Click on Educators’ Resources to access 12 downloadable lesson plans, six of which focus specifically on the relationship between chocolate and the environment. Not only do these

lesson plans offer students a fun way to learn about botany, ecology, and agriculture, they also demonstrate how an everyday item we all take for granted is more remarkably complicated and interesting than most would guess.

Nebraska Earth Science Education Network (grades K-12)
w w w . n e s e n . u n l . e d u /
The Nebraska Earth Science Education Network enhances earth science education by providing lesson plans on various subjects including astronomy, geology, mapping, soils, water, and weather. Each submitted lesson gives a recommended grade level and contains objectives, materials needed, procedures, and conclusions, depending on the activity.

The Catalyst (grades 9-12)
w w w . t h e c a t a l y s t . o r g /
The Catalyst provides online chemistry resources. The resource links page contains dozens of links organized by subject such as organic chemistry, periodic tables, history of chemistry, experiments, teaching, and supplies. Other highlights include a teacher’s forum, links to other high school chemistry pages, a question and answer section, a bulletin board, and more.

K-12 Plant Pathways to Science (grades K-3 and 7-12)
w w w . a p s n e t . o r g / e d u c a t i o n / k - 1 2 p l a n t p a t h w a y s / T e a c h e r s G u i d e / T o p . h t m l

This Web site, from the American Phytopathological Society, contains a teacher’s guide for lesson plans covering a range of plant science topics from powdery mildew to nematode-plant interactions. Not all the lesson plans are new, but each provides comprehensive background information, materials and methods, lesson plan descriptions, additional references, useful diagrams, and more.

Fantasy Island Watershed Activity
w w w . r o d n e y s c i e n c e . f r e e y e l l o w . c o m / w a t e r s h e d . h t m l

The Fantasy Island Watershed Activity provides a hands-on and visual way for students to learn about water resource issues and the dynamics of watersheds. The activity is easy to complete, needing only a few materials including modeling clay and an eyedropper.

Materials World Modules (MWM)
w w w . m a t e r i a l s w o r l d m o d u l e s . o r g / a b o u t m w m . h t m l

The Materials World Program was created at Northwestern University to teach kids about science, math, and social issues by letting them investigate the objects that surround them in their everyday lives. This program shows students that science is more than a set of techniques as “students using MWM learn how principles of chemistry, physics, and mathematics relate to each other and how they directly apply to real problems and societal issues.” Each “module” includes a problem or question to be pursued by students, a prob-
lem-solving stage, and a final project. Each module allows students to solve problems scientifically while observing how scientific inquiry has real world applications.

Pathfinders: Science infozone.imcpl.org/kids_pathfinders.htm#science
The Indianapolis Marion County Public Library provides these educational subject specific pathfinders “that contain a list of library materials, Web sites, and other information about a topic.” The Science section includes topics focused on how the human body works, including the circulatory, digestive, excretory, muscular, nervous, respiratory, and skeletal systems. Each topic includes a detailed diagram and facts about the body system.

EPA Global Warming Site: Climate Change Education Resource Database yosemite.epa.gov/oar/resources.nsf/websrch?openform
The United States Environmental Protection Agency (EPA) offers teaching resources on the interdisciplinary subject of climate change. The easy-to-use database allows teachers to narrow down their search by grade level; select whether they are interested in policy, impacts, or the science of climate change; choose the classroom subject (math, science, history, etc.) and the type of information (book, Internet lesson plan, video, etc.). Not all of the resources are directly available online, but most provide at least a Web site with a description and ordering information.

Weather Here and There (grades 4-6) archive.ncsa.uiuc.edu/Edu/RSE/RSERed/WeatherHome.html#Weather
The Global Education Project of the Resource for Science Education Program offers six lessons, geared for students in grades 4 through 6 that cover everything from characteristics of the Earth’s atmosphere to forecasting the weather. Each lesson contains the needed objectives, materials, background information, vocabulary, and evaluation.

National Teacher Training Institute: Lesson Plan Database (grades 7-12) www.thirteen.org/edonline/ntti/resources/lessons/science.html
The latest life science offerings at this site address DNA and RNA, pika camouflage, environmental issues, and adaptation. In addition to providing detailed instructions, each lesson plan includes a variety of features and resources such as links for in-class research and downloadable activity sheets. The lessons take about one class period to complete, and they require the use of educational videos.

ScienceNetLinks (grades K-12) www.sciencenetlinks.com
From the American Association for the Advancement of Science (AAAS), the 12 topic areas at this site include Nature of Science, Nature of Mathematics, Living Environment, and Human Organism. After selecting a topic, users should choose an age group and a section within the topic. Each topic has four sections: introduction, lessons linked to Web sites, online resources, and a benchmarks section with an outline of what students should know.

100 Top Science Sites (grades K-12) www.100TopScienceSites.com/
100 Top Science Sites gives exactly that, along with very brief descriptions. Although nomination criteria were not given, the highly respected Internet Scout Project has previously reviewed several sites listed. A nice alternative to normal search engines, visitors can choose to receive notification emails when the list changes or visit the site’s chat room.

Collaborative Projects (K-12) www.k12science.org/collabprojs.html
Many of these projects from the Center for Improved Engineering and Science Education (CIASE) have a life science focus such as Human Genetics, Square of Life, and Bucket Buddies. Each project offers the opportunity for students to collect real life data to share online with their peers. The presentation of projects is teacher friendly, with start and end dates for each semester and the appropriate grade level available on the main page.

Earth and Sky www.earthsky.com/
This companion Web site to the Earth and Sky Radio Series offers recordings of the award winning daily radio show plus supplementary science material. Search for specific science topics and retrieve relevant articles and past shows (and transcripts) on the topic. There is a great kids earth and sky section directed at younger children, plus a teacher’s lounge with virtual textbook, resources, and tips for using Earth and Sky in the classroom.

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The ideas expressed in this article are the author’s and do not necessarily represent the views of the CEC or ERIC Clearinghouse on Disabilities and Gifted Education. The URLs were accurate and working when last checked. The Internet is a dynamic place, and changes occur rapidly and without the server, the server might be temporarily down, or the URL might have changed. Try again later or truncate the URL.

References

Sandra Berger is the Information Specialist for Gifted Education at the ERIC Clearinghouse on Disabilities and Gifted Education in Arlington, Virginia. She is the author of College Planning for Gifted Students.
Many high-ability learners and their parents define dreams about preferred colleges or professions early in their student careers. Others find themselves seeking information that is more intuitive and based simply on following their interests and passions. No matter the style of approach, we need to support students to keep pathways and doors open. For all young people, but especially for high-ability learners who may aim for more selective and competitive schools, deliberate planning can assure finding the appropriate college matches. To position students so that they will have positive choices, it helps to provide them with four types of preparation: emotional, academic, testing, and postgraduate.

**Emotional Preparation**
Students need to build self-awareness skills. This includes the ability to recognize and to accept feelings, beliefs, strengths, weaknesses, and personal preferences. Once a student masters awareness, she needs to master the ability to self-regulate and to respond appropriately to a variety of situations. These skills include the ability to recover from negative emotions and situations, to control impulses, to delay gratification, and to make positive choices. Once pro-social behaviors are developed—that is, the ability to initiate and maintain friendships and to understand how “social systems” work—then a student is able to develop empathy and the ability to interact with others in a meaningful and productive manner. It is really only after all these skills are mastered that a young person has the requisite skills to effectively compromise, to problem solve, and to advocate for oneself.

**Academic Preparation**
To develop the independence necessary to succeed in college, students need to be aware of their academic strengths, weaknesses, and preferences. Also, they need the self-regulation skills necessary to maintain the motivation to succeed when studying both their chosen (favored) and their required (and perhaps non-favored) subjects. They also need practice in developing the skills of being independent, active, and self-directed learners.

According to the most recent admissions trends survey, grades in college prep courses continue to be the top consideration in admissions decisions. Therefore, since college acceptance has become more competitive in the last few years, it is suggested that young people take the most rigorous academic programs they can manage, while still maintaining healthy and balanced emotional and social lives. This translates to the need for college-bound students to maintain involvement in at least four core subjects (English, social studies, science, and math) throughout their high school careers, while acquiring the foreign language requirements necessary for acceptance.

For high-ability learners, it becomes imperative to advance in subject areas as they become developmentally ready. Therefore, honors courses, in-depth study opportunities, Advanced Placement (AP) courses, and, when appropriate, college classes, must be available to them before the actual college application process occurs.

**Test Preparation**
It is a well-known fact that strong preparation in core subject areas can increase test scores, especially the SAT-II (subject level tests) and the ACT. Likewise, the best way to improve verbal scores on college admission tests is to encourage students to read on a regular basis from an early age. By doing this, reading comprehension skills are increased, and vocabulary is learned incidentally. In addition, exposure to math and other subject level topics can directly impact scores on these tests.

As high-ability, college-bound students become savvier, they realize that scores on college admission tests are not static, nor do they indicate true ability and intellect. Therefore, young people are more open to take part in a variety of test preparation activities to consistently raise scores, hence maximizing chances of getting accepted into their colleges of choice. The following strategies can serve as effective test preparation tools:

- reviewing test-taking tips before the testing date
- correcting errors and reviewing concepts missed on tests taken previously
- taking practice tests and correcting errors
- utilizing online resources for reviewing testing concepts, practicing items, etc.
- practicing tests and learning test-taking strategies through commercial software
- taking formal test prep courses
- working individually with a test prep tutor
- integrating test preparation as part of the school curriculum

**Postgraduate Preparation**
At more competitive schools, it becomes important for high-ability students to have high achievement in a rigorous college-bound curriculum, in-depth involvement in extracurricular activities, community service, and demonstrations of leadership and/or initiative in one or more areas of interest. Following interests and passions in-depth is always far superior to superficial participation in clubs and activities merely to “build a resume.”

To assure sound postgraduate preparation, it is necessary for students to work with school per-
sonnel and/or parents to formally set personal and academic goals each year. It is imperative that high-ability learners, as freshmen in high school, make four-year plans to assure taking the right entry-level classes based on potential postgraduate goals, to assure the acquisition of all the requirements for graduation, and to begin or to extend work in extracurricular and service experiences. This process of refining goals, plans, course selection and extracurricular involvement needs to occur on an ongoing basis throughout high school.

The best advice we can give to our high-ability students is to focus their postgraduate planning on acceptance at colleges that are “good matches.” To decide if schools are good matches, young people must keep in mind several factors: academic environment (including philosophy of the school, potential majors, study abroad, internships, etc.), location, size (including teacher/student ratios), admission requirements, social environment (relationships with students, relationships with professors, dorm life, Greek life, activities available, etc.), physical facilities, expenses, and the availability of both need-based and merit-based financial aid.

To gather this information and to “make the match,” it is essential for students to research the thousands of options available to them. This research can be accomplished by utilizing print materials, Internet resources, and videos. Discussions with admissions officers at college fairs, during rep visits to area high schools, and on campus visits can also provide excellent decision-making information to students and parents. High school counselors are a vital resource because they know the student and can give personalized suggestions about schools to explore as well as processes to follow to narrow the list, to maximize acceptance, and to complete applications.

Pitfalls to Avoid

Students and their parents can spare themselves disappointment and unnecessary stress if they consciously avoid a few key pitfalls in the college planning process:

Selecting a college based solely on prestige of name. It is not unusual for students to be tempted to choose to attend what they perceive as “the best school” to which they get accepted, even if that school is not the best match. This can often lead to disappointment and a subsequent reapplication and transfer process.

Applying to schools based only on “who else is applying there.” Students who take this approach often forgo the necessary preliminary research to enable them to even know which schools will be a good match for them. Since the match is based on random variables, success at these schools can then become much more of a gamble.

Thinking there is only one pathway or timeline for achieving the perfect match. Many times students who have not always achieved at their highest possible levels during all years of high school give up on achieving because they believe “they have messed up, and there is nothing they can do to salvage it.” These young people and their parents need to embrace the concept that even very bright students can attend community colleges or less selective colleges to build solid freshmen transcripts. After a strong year in core subjects, students are then able to transfer to more selective schools. Some students find that alternative travel, educational, or work experience is necessary for them to gain the self-knowledge and awareness of what is necessary for a school to be “the best match” for them.

Exerting so much time and energy to “do the right things to be accepted” that burnout occurs. Sometimes students can be so focused on doing all the right things and getting all the right scores and grades, that they tire before they are able to enjoy the college experience for which they have prepared. It is important for students to maintain a healthy balanced approach to attaining their postgraduate dreams.

Using the “shotgun approach” to applying. Students who take this approach forgo the research process and apply to a high number of schools. They then intend to research schools once they find out if and where they are accepted. This causes a problem in two areas. First, these students end up writing essays and completing applications for many more schools than necessary because none have been eliminated from the list. This takes time and energy away from studies and extracurricular activities. Finally, there is a short timeline between receiving acceptances and having to notify colleges of intent to attend. Adequate research and/or visits to select the best match become next to impossible.

Losing sight of the definition of a “good school.” Many high-ability students mistakenly believe that a good school is the school with the most prestige attached to its name. However, to find “the best school,” the student needs to focus on the school that has the best personal match of requirements, needs, and preferences.

When the chosen college is an excellent match, a magical synergy occurs; this synergy allows that student to flourish, to maximize potential, and to reach personal and academic goals. Then the dream nearly all parents hold dear is reached...the dream of seeing their child truly happy.

Jean Strop is Counseling Coordinator and Gifted/Talented Resource Teacher at Cherry Creek High School, Colorado. She is a consultant and presenter on affective and academic programming for gifted and talented students.
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