Academic Competitions as Tools for Differentiation in Middle School

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Curriculum differentiation has been a central strategy in gifted education, allowing gifted students to explore and pursue different and higher level activities beyond regular classroom instruction (Renzulli & Reis, 1997; Rimm, 1997).

Differentiating the curriculum has been a challenging task for classroom teachers, but it has become even more challenging after the No Child Left Behind Act (2001), because the emphasis in programming and funding in schools has shifted from realizing the individual potential of every student to raising all students to the same level of minimum competency. This change has been felt more deeply in schools that have difficulty meeting these minimum standards and are likely to face the sanctions by this accountability movement.[1]

Under these circumstances, it has become more important for those interested in gifted education to use every means of differentiation available, especially those that depend only minimally on mainstream programming and funding. In our experience, we have seen that academic competitions can provide wonderful opportunities for differentiation at the middle school level. Here we want to relate our experience along with research to document how they can be effective tools for differentiation, situating our discussion within Maker's (1982) framework of differentiation in content, process, product, and learning environment.

Differentiation in Content

Academic competitions can expand the scope and depth of content, allowing gifted learners to explore subject areas far beyond the opportunities available in a regular classroom. Too frequently, especially in this era of high-stakes testing, classroom-based learning opportunities are focused on ensuring that students reach minimal competency standards, and little attention is paid to those who have already mastered those standards. However, in academic competitions, it is possible to make the depth and breadth of content limitless. A good example is students' preparation for National History Day. In this competition, students are guided toward extensive primary research in archives, in general and special libraries, and through interviews with experts on the topic. We frequently hear from university professors, who serve as judges for National History Day, that the level of research in this competition equals or exceeds that of the work of their undergraduate students. Recently, one of our students researched Roosevelt's struggle to lead America out of isola-

tion prior to World War II. She spent 2 days at FDR's presidential library and later obtained a personal interview with the author of a new book exploring the relationship between Roosevelt and Churchill. Another persistent student, studying the history of planned cities, took the direction of interviewing William Levitt, founder of Levittown, PA. A few years later, an eighth-grade student, researching Harvey Cushing's medical procedures in neurosurgery, received special permission to explore the medical archives at a local university.

Differentiation in Process

Differentiation in process can take place in academic competitions in two principal ways. The first is the expectation of higher order thinking. Many academic competitions achieve this by immersing children in the essential structure of the discipline (Bruner, 1960). In these competitions, students' role models are real-world historians, mathematicians, or writers. Children use the methodology of experts in the field. After acquiring a working knowledge base, they collect, analyze, synthesize, apply, and evaluate data. For example, in a high-quality mathematics competition like MathCounts or Math Olympiads, students who are able to perform well are those who have accumulated the tools of a mathematician. Competent in computational skills and familiar with problem-solving strategies, they proceed to solve complex problems that require them to think critically and creatively. As another example, in their preparation for National History Day, participants are expected to mirror the historical research process of professional historians. After choosing a topic, students research extensively, locating and absorbing as many primary and secondary sources as their time and energy allow. Then they look at their topic according to the parameters of the National History Day theme, such as "Triumph and Tragedy in History." They analyze their topic from this perspective and synthesize their work into one of several possible formats—performance, documentary, paper, or exhibit. In the final stage of the competition, professional historians evaluate these products. In the process, students genuinely experience being a historian.

The second way of differentiating in process is to give gifted students the opportunity to work on challenging tasks in groups with their intellectual peers. Such group work often enhances gifted students' enthusiasm for learning and helps them produce work that better reflects their potential (Feldhusen, 1989). We have witnessed this stimulation both at the preparation stage and at the final event of academic competitions. For example, in the Future Problem Solving competition, groups of students work on contemporary real-world problems. By reading books and magazines, and by talking to experts, students gain working knowledge in topics such as childhood obesity, global warming, and healthcare access. Participants are then placed in teams of four and given a future scenario related to the topic. Using the six-step Creative Problem Solving method modeled by major government and business think-tanks, students assess the given situation, identify an underlying problem, brainstorm a variety of solutions, and finally settle on the most workable one.

Differentiation in Product

In academic competitions, product differentiation can be achieved by setting expectations with unrestricted levels of excellence. In this way, academic competitions can introduce gifted students to standards of excellence that far exceed typical classroom performance. In the regular classroom, the work and performance of gifted learners are often at the top—the best grades, the most creative projects, the best written reports. But, when these same students enter a competition, they may realize that quality standards in their classrooms are relatively low when measured against the work of their intellectual peers across the city or state. At the same time, they may recognize that the quality of their own work is also inferior. In our experience, it has been interesting to watch gifted students face this moment of truth. Naturally, they often struggle to cope. For some, the first reaction is disappointment, and sometimes, they conclude that they are not very smart after all. But, when guided properly, they can be helped to understand that this quality level should become their own standard of excellence. Research confirms that when highly gifted students are given appropriately challenging educational experiences, they learn to set higher educational goals for themselves (Benbow & Lubinski, 1997). Without appropriate challenge, gifted students frequently adopt standards of performance far below their ability (Rimm, 1995). They cannot or do not excel because they do not know what excellence is. Often, gifted learners enjoy a false sense of accomplishment and self-confidence because their experience with comparable intellectual ability is limited to their own school settings. Competitions that provide differentiation in product expose mediocrity and reveal to gifted learners the true standards of excellence for children of their own ability levels.

Academic competitions can introduce gifted students to higher standards not only in performance but also in effort and work habits. This is

so important for gifted learners who tend to coast through their academic coursework in the regular curriculum. When these learners coast, not only is their achievement level often below their potential, but also they develop poor work habits that can hinder them from realizing their potential even in the long run. Research suggests that few individuals have managed to create outstanding accomplishments without undergoing long periods of intense and careful preparation (Walberg & Zeiser, 1997). Therefore, gifted learners must discover that effort is as great—if not greater—a factor in success as ability. In this respect, academic competitions can introduce gifted learners not only to high-quality work but also to superior levels of task commitment (Renzulli, 1978). For example, students competing in National History Day learn this lesson at every level of the competition. During their first year of participation, students may do well at the school or district level. But eventually, when they arrive at the state or national level, they may discover that their work is inferior to that of other students. It becomes obvious that if they wish to achieve higher standings the following year, they must invest considerably more time and effort toward all aspects of the competition. Student experiences in the MathCounts problem-solving competition are similar. Students who score high at the classroom or school level may discover that they simply cannot compete well at the regional or state level without extended effort—working and reworking numerous practice problems.

More importantly, once gifted students realize the importance of effort and a strong work ethic, they can be supported in adopting these qualities as personal attributes. Walberg and Zeiser (1997) found that accomplished adolescents and adults developed healthy work habits early in life. For these traits to become habits, they must be reinforced through a long period of time. Therefore, gifted learners need experiences that inspire and press them to their maximum capacity—experiences that teach them the value of industry, fortitude, and self-discipline. Academic competitions can teach children that increasing competence and knowledge are every bit as important as winning, and provide nearly as much personal satisfaction. In other words, academic competitions can help students develop a healthy goal orientation (Dweck, 1986). Another important point to make here is that earlier is better: the later these lessons are taught, the more likely teachers and parents will have to first undo bad habits before instilling good ones (Damon, 1995). Therefore, it is critical that these constructive attitudes and good work habits are instilled as early as possible. The middle school years are not too soon to learn good habits of mind that will last a lifetime.

It is interesting to note, and it follows our experience, that gifted students can rise to the challenge of rigorous academic work—the type that builds a strong work ethic. They must be inspired and they must be helped to understand the connection between hard work and success. Student experiences in the Future Problem Solving Program are a good example. In order for student teams to do well in this competition, they must study large bodies of research related to real-world problems. The competition requires training in creative and analytical thinking. Furthermore, students must learn to articulate their thoughts and ideas in succinct, coherent writing. The process is demanding and after the first round of training, some students line up to quit. They have never been pressed this hard. But, after some gentle consolation and encouragement, they are guided back into the team where they discover through a 5-month period that attacking and solving real-world problems is not easy but immensely gratifying. These students learn that one cannot be creative simply by spouting off a few facts that no one else knows. Real creative problem solving requires tough training and preparation. One would think that, after one dose of this level of work, teachers would be unable to field a problem-solving team the following year. But, without fail, despite all of the hard work, the experienced problem solvers are back the next year for more of the same. Hard work is exhausting; yet, it also bears an enduring sense of accomplishment.

A valuable result of immersing gifted students in the essential structure of disciplines and differentiating three main aspects of learning—content, process, and product—is that students often discover the inherent joy and satisfaction in these disciplines. Following trails of historical research is rewarding. Wrestling with complex math problems is energizing. Testing scientific hypotheses is stimulating. Crafting thoughtful narratives, essays, or poems is emotionally and intellectually uplifting. Consequently, many students feel connected to these disciplines and decide to have further educational and vocational pursuits in these fields.

Differentiation in Learning Environment

Academic competitions can differentiate the learning environment by creating a positive peer culture among the participants both during contest preparation and at the culminating event. All participants are expected to invest considerable time and effort dur-

ing preparation for the contest. At their meetings during preparation, it is normal—even necessary—to share what they have learned or done. Without the fear of being ridiculed for their interest or additional learning in academic topics, students easily can share their progress and ambitions for further work. In such a supportive group of like-minded peers, their enthusiasm for learning and academic excellence thrives.

In addition, most academic competitions gather students from various schools for a culminating event at the end of the competition. By providing opportunities for participants to interact with each other, these events can create an encouraging atmosphere for students with great academic ambitions. Gifted students, when among their intellectual peers who also are pursuing academic excellence, find out that it is "cool" to be smart, to love school, to love academic achievement. In this environment, they meet students whose primary aspiration is to excel in intellectual areas. Some want to become world-class mathematicians. Others want to write the great American novel. And still others believe they are the one who is destined to find the cure for a life-threatening disease. Many gifted students are relieved to find out that it is acceptable to be intellectually vibrant among their peers at these events, even though they may have to hide their intelligence back at their schools.

Interactions in these settings can electrify the contestants. Walberg and Zeiser (1997) noted that motivation and ability to learn will increase in situations like this, due, in part, to the novel experience of a peer culture that does not actively reject intellectual values. Academic competitions can promote healthy intellectual values that gifted learners can sometimes carry over into their regular classroom settings. For many, the interactions at these gatherings initiate a broader network of intellectual peers. This network nurtures their intellectual interests even after they return to their schools where academic pursuits may not be held in as much regard. Young writers at the Power of the Pen (a middle-grades writing competition in the state of Ohio; http://www.powerofthepen.org) often find enduring connections to fellow writers who, like themselves, have the kind of insight and feelings that are not always shared by their age peers back home. Instead of feeling odd or unusual, these gifted writers come to realize that there are other young people who think, feel, and respond the same way as they do.

Importance of Adult Guidance, Supervision, and Support

As can be seen, academic competitions can be great opportunities for differentiation. However, the degree to which individual students will realize these opportunities depends heavily on the guidance, supervision, and support of an adult—be it the coach, teacher, or parent. Although not specifically related to the context of academic competitions, there is research indicating the benefits of various forms of adult support, such as mentoring, for gifted students' academic, emotional, and career development (Siegle, 2005). Students, on their own, cannot be expected to acquire and exhibit all of the skills and emotional maturity necessary to produce superior work. The adult establishes the conditions that are needed for students to maximally benefit from participating in academic competitions. Like talented, aspiring young athletes, gifted students need a coach who can teach them and show them how to realize their academic potential. Without a knowledgeable guide, students will not learn how to explore topics in depth. They will not learn how to analyze, synthesize, or evaluate content at a high level if a teacher does not provide training. Student teams will not learn how to work as a harmonious, productive group unless an adult is with them explaining the intricacies of group work and productivity. We cannot expect young adolescents to have the maturity to smoothly navigate the emotional and psychological challenges of the competitive process. The adult should become the students' pillar of support, inspiring, empowering, encouraging, and consoling, as needed. In sum, the adult is the bridge connecting students with the benefits of competitions.

Clarifications and Caveats About Academic Competitions

In this discussion about academic competitions, we want to include a few words of clarification and caution. First, these competitions are not designed and beneficial only for those who are identified as gifted. We discuss them here as a form of differentiating curriculum for those whose gifted-level exceptionality necessitates such differentiation, but that does not mean that they are exclusively for the identified gifted. In fact, not infrequently, they provide opportunities for those who have not previously shone to find and develop areas of giftedness.

Second, our mention of only a few competitions in this article does not mean that we think these are the only high-quality competitions available. We have selected our examples from firsthand experiences in competitions in which we have participated many times, and that we have discovered to be valuable to our students. We refer

interested readers to *Competitions for Talented Kids: Win Scholarships, Big Prize Money, and Recognition* (Karnes & Riley, 2005) for a long list of competitions in a wide variety of areas as well as detailed information on each. Still benefiting from the book mentioned above, we also have included at the end of this article a list of national competitions that we think are more successful than others in providing differentiation in various areas (see Appendix).

Third, academic competitions should not be relegated to a single day or an event. They should not be used to show off raw talent, exalting one child over another, or pitting one school against another. These competitions should be used as means of fostering academic and psychological growth. Any awards ceremony should only be a culminating event, and most of the benefits should have been reaped even before the ceremony begins.

Fourth, it is definitely not our intention to promote competitions as a substitute for proper academic programming such as enrichment and acceleration. We believe that these contests can be unique opportunities to provide differentiation and great settings for gifted students to flourish.

Finally, we realize that there might be criticisms of competitions as extrinsic motivators undermining intrinsic motivation, or as sources of anxiety and stress. In this article, however, we have discussed academic competitions only within the framework of differentiation and avoided addressing issues outside this scope.

Conclusion

In an era of high-stakes testing and decreased emphasis on gifted programming, it is important that we identify and maximize opportunities to cultivate our students' giftedness and talent. Academic competitions can provide such meaningful opportunities. It is our intent through this article: (a) to help educators and parents identify competitions of value to gifted students, (b) to illustrate to educators and parents how to derive the greatest benefit from these competitions, (c) to provide guidelines for academic competitions that will enable these competitions to maximize their value, and (d) to issue a call for the creation of more academic competitions that would increase and broaden the participation of our gifted students in differentiated activities in a variety of fields. We believe that establishing such competitions is a cost-efficient way to provide the differentiation our gifted learners need to realize their potential. GCT

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End Notes

1 Please note that the U.S. Department of Education currently has a pilot program in a number of states implementing various growth models for value-added assessment, which is supposed to measure adequate yearly progress in terms of academic growth of students from one year to the next, instead of using minimum competency standards. However, the effect of this approach on gifted education will depend on the details of its implementation. It is too early to tell if this form of assessment will attract more attention to high-achieving gifted students and save them from being left behind. For further information about the pilot program, please see the following Web address: http://www.ed.gov/news/pressreleases/2007/07/07032007.html.

Appendix
A List of Academic Competitions

The following chart categorizes a number of national academic competitions available at the middle school level in six subject areas and rates their potential for differentiation in content, process, product, and learning environment. Ratings used in the chart are as follows: *very likely*—the structure of the competition itself provides differentiation; *likely*—with slight modifications the competition can provide differentiation; and *possibly*—the coach, teacher, or parent must make significant modifications to provide differentiation. Under the name of each competition, the chart also gives the competition's Web address, and specifies whether the competition provides *strong support, moderate support,* or *little support* in terms of guidelines and materials. Rather than a complete list of all national academic competitions available or an authoritative assessment of the competitions listed, this chart is intended to serve as a resource section that follows the criteria we have established in this article.

Name of the Competition	Level of Support	Differentiation in Content	Differentiation in Process	Differentiation in Product	Differentiation in Learning Environment
Mathematics					
American Mathematics Competitions http://www.unl.edu/amc	Moderate support	Very likely	Very likely	Possibly	Very likely
American Regions Mathematics League http://arml.com	Moderate support	Very likely	Very likely	Possibly	Very likely
Annual Math League Contests http://www.mathleague.com/contests.htm	Moderate support	Very likely	Very likely	Possibly	Very likely
Continental Mathematics League http://www.continentalmathematicsleague.com	Moderate support	Very likely	Very likely	Possibly	Likely
MATHCOUNTS http://mathcounts.org	Strong support	Very likely	Very likely	Possibly	Very likely
Math Olympiads for Elementary and Middle Schools http://www.moems.org	Strong support	Very likely	Very likely	Possibly	Very likely
Science					
Discovery Education's Young Scientist Challenge http://school.discovery.com/sciencefaircentral/dysc	Strong support	Very likely	Very likely	Very likely	Very likely
Invent America http://www.inventamerica.org	Strong support	Very likely	Very likely	Very likely	Very likely
President's Environmental Youth Awards http://www.epa.gov/enviroed/peya	Moderate support	Very likely	Very likely	Very likely	Very likely
Science Olympiad http://www.soinc.org	Strong support	Very likely	Very likely	Very likely	Very likely
Environmental Excellence Awards http://www.seaworld.org/conservation-matters/eea	Moderate support	Very likely	Very likely	Very likely	Very likely
ExploraVision http://www.exploravision.org	Moderate support	Very likely	Very likely	Very likely	Very likely
Writing And Language Arts					
Writing competitions generally do not provide the support or guidance to walk a student through the writing process. They can provide extrinsic motivation and the opportunity to explore the subject matter in depth. In addition, although writing competitions usually provide prompts or topic parameters, they do not provide writing instructions. Therefore, whether or not the competition becomes a learning experience for students or a means of differentiation depends upon either the child's own initiative or the guidance of an adult. Also note that writing competitions span all subject areas.					
Kids Are Authors http://teacher.scholastic.com/activities/kaa	Little support	Possibly	Likely	Very likely	Very likely

Name of the Competition	Level of Support	Differentiation in Content	Differentiation in Process	Differentiation in Product	Differentiation in Learning Environment
The Scripps National Spelling Bee http://www.spellingbee.com	Strong support	Very likely	Possibly	Possibly	Possibly
WordMasters http://www.wordmasterschallenge.com	Strong support	Very likely	Likely	Possibly	Possibly
Young Naturalist Awards http://www.amnh.org/nationalcenter/youngnaturalistawards	Strong support	Very likely	Very likely	Very likely	Very likely
Young Playwrights http://youngplaywrights.org/nationalcontest.htm	Strong support	Very likely	Very likely	Possibly	Possibly
Technology and Engineering					
American Computer Science League http://www.acsl.org	Little support	Very likely	Very likely	Possibly	Very likely
BEST Robotics http://www.bestinc.org	Strong support	Very likely	Very likely	Very likely	Very likely
Botball http://www.botball.org	Strong support	Very likely	Very likely	Very likely	Very likely
Fire Fighting Home Robot Contest http://www.trincoll.edu/events/robot	Strong support	Very likely	Very likely	Very likely	Very likely
Future City Competition http://www.futurecity.org	Strong support	Very likely	Very likely	Very likely	Very likely
International Student Media Festival http://www.ismf.net	Strong support	Very likely	Very likely	Very likely	Likely
USA Computing Olympiad http://www.uwp.edu/sws/usaco	Strong support	Very likely	Very likely	Very likely	Likely
Social Studies					
Doors to Diplomacy http://www.globalschoolnet.org/gsh/doors	Strong support	Very likely	Very likely	Very likely	Very likely
Freedoms Foundation National Awards Program http://www.freedomsfoundation.com/national.asp	Moderate support	Very likely	Very likely	Very likely	Very likely
International Schools CyberFair http://www.globalschoolnet.org/gshcf	Moderate support	Very likely	Very likely	Very likely	Very likely
National Geographic Bee http://www.nationalgeographic.com/geographybee	Strong support	Very likely	Possibly	Possibly	Possibly
National History Day http://nationalhistoryday.org	Strong support	Very likely	Very likely	Very likely	Very likely
Creative Problem Solving					
Future Problem Solving http://www.fpsp.org	Strong support	Very likely	Very likely	Possibly	Very likely
Let's Get Real http://www.lgreal.org	Moderate support	Very likely	Very likely	Very likely	Very likely
Odyssey of the Mind http://www.odysseyofthemind.com	Strong support	Very likely	Very likely	Very likely	Very likely
Young Game Inventors Contest http://www.ugames.com	Moderate support	Very likely	Very likely	Very likely	Very likely