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Gifted education and the Middle School Reform Movement : finding the basis for collaboration through interdisciplinary instruction

Abstract

This review reflected on literature from gifted education and the middle school movement. Its purpose was to look for common beliefs as a basis for collaboration on interdisciplinary curriculum/instruction. Sources of information include personal observations and experiences, university library materials, and ERIC and World Wide Web searches.

A shared enthusiasm for interdisciplinary instruction and many of its benefits offers an encouraging sign for collaboration. Gifted education and the middle school movement share an understanding of the nature of interdisciplinary instruction and share the belief that students will benefit from higher achievement, increased connections, and strengthened learning concepts. However, caution is encouraged in being sure that definitions and objectives are agreed upon from the start.

The author concluded that the primary barrier to effective collaboration is the conflict between the position of middle school advocates on total heterogeneous grouping and gifted education's insistence on the importance of individualized differentiated curriculum. Exclusion of the following benefits sought by gifted ' education--challenge, student discovery of key concepts, and student ability to follow interests in depth--indicates that some stumbling blocks may impede effective collaboration.

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Gifted Education and the Middle School Reform Movement:

Finding the Basis for Collaboration

through Interdisciplinary Instruction

A Graduate Review of Literature

Submitted to the

Division of Education of the Gifted

Department of Curriculum and Instruction

in Partial Fulfillment

of the Requirements for the Degree

Master of Arts in Education

University of Northern Iowa

Cedar Falls, Iowa

Sandra H. Christ

July 15, 1997

This Project by Sandra H. Christ

Titled Gifted Education and the Middle School Reform Movement: Finding the Basis for Collaboration Through Interdisciplinary Instruction

has been approved as meeting the research requirement

for the Degree of Master of Arts in Education

July 21, 1997
Date approved

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July 21, 1997
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Abstract

This review reflected on literature from gifted education and the middle school movement. Its purpose was to look for common beliefs as a basis for collaboration on interdisciplinary curriculum/instruction. Sources of information include personal observations and experiences, university library materials, and ERIC and World Wide Web searches. A shared enthusiasm for interdisciplinary instruction and many of its benefits offers an encouraging sign for collaboration. Gifted education and the middle school movement share an understanding of the nature of interdisciplinary instruction and share the belief that students will benefit from higher achievement, increased connections, and strengthened learning concepts. However, caution is encouraged in being sure that definitions and objectives are agreed upon from the start. The author concluded that the primary barrier to effective collaboration is the conflict between the position of middle school advocates on total heterogeneous grouping and gifted education's insistence on the importance of individualized differentiated curriculum. Exclusion of the following benefits sought by gifted education--challenge, student discovery of key concepts, and student ability to follow interests in depth--indicates that some stumbling blocks may impede effective collaboration.

Table of Contents

In a time of drastic change it is the learners who inherit the future. The learned usually find themselves equipped to live in a world that no longer exists.

Eric Hoffer (1902–83) (Columbia Dictionary of Quotations, 1987-1985)

Introduction

For years gifted education has been providing programming and curriculum characterized by thematic real-life application of learning. Interdisciplinary study has been the norm, not the exception. When questions such as "Wouldn't this be good for all learners?" are surfaced, it is to a great extent the aspects of interdisciplinary learning that are implied (Xenos, 1992; Erb, 1994). It is no surprise, then, that the reform movement, especially at the middle school level, has professed a desire to provide this kind of academic opportunity for all students.

However, there is a tension that has been created between the two camps with an implication that, if in fact interdisciplinary instruction is implemented at the middle school level, there will be no need for special programming for gifted students. A collaborative effort in the area of interdisciplinary learning might be able to bridge the gap if common ground can be found and if the differences in vision and practice are not too great.

Background

Tension between educators of the gifted and middle school educators has emerged in the equity/excellence debate (Kaufmann, 1994). "For at its core, school reform [and thus the middle school movement], is an equity movement" (p. 4) while a key element in the mission of gifted education is excellence. The debate seems, to this writer, to be more political than educational, however. The connotations that accompany equity and equality provoke strong feelings in a democracy. When the quest for excellence is labeled elitism, its loss of favor in a democratic society is not surprising. However, providing equal educational opportunity does not mean treating children identically. Equity in education should strive to meet the differing needs of students (Schaffer, 1996).

This tension is something which I have experienced personally and is a prime impetus for this study. My regional education agency, which is effectively active in bringing reform strategies to participating schools, encouraged and facilitated the process by which an area school district dropped all identification procedures for the gifted and declared all students part of the gifted program. The same agency, when the position of gifted education consultant opened, had a choice between two applicants--the first with a master's degree in gifted education and many years of experience teaching and coordinating a gifted program and the second without a gifted education endorsement and limited experience with the gifted. The agency hired the latter.

The tension between the area G/T teachers and the director of educational services was not completely resolved by a fact-finding/conflict resolution session facilitated by the director of the agency. The working relationship has improved somewhat; we know we share some goals and philosophies, but we are acutely aware of our differences. For a time, the same director of educational services and I carried on a purposeful but informal dialogue concerning our differences. We found that, while we both have the best interests of students at heart, we have a basic disagreement on how to proceed. Her position is that all students are gifted. My position is that all students have gifts, but there are quantitative variations. I think that it is damaging to the public perception of education when groups of educators cannot agree on terms, like gifted, which get bandied about in the media. We lose valuable support this way.

Because of my personal experiences, I have been sensitive to the evidences of tension which I have seen threaded through both gifted education and middle school literature. For example, in a survey of middle school educators it was reported that those educators considered their reform efforts sufficient to address the needs of gifted students without special programs (Gallagher, 1996). Even Beane, a primary visionary in the middle school movement, has added to the tension when he wrote "Arrangements such as gifted and talented . . . would be eliminated as variability in activities and materials is developed within **thematic units**" [boldface added] (1990, p. 5). It seems that the very technique that could bring gifted education and the middle school together has taken on the appearance

of a double edged sword. Educators of the gifted are aware that the rationale for providing gifted programming is often criticized and debated on the grounds that such a provision is not equitable and that, to provide equity, these practices and ideas recommended for the gifted should be made available for all students (Xenos, 1992). One can find an implication of a tension concerning elitism in the following statement which came across my desk in a bulletin from the National Association of Secondary School Principals: Any ". . . attempts to focus middle level G/T programs on elitist concerns should be discouraged. They are inconsistent with the general education and exploratory nature of middle level education" (Toepfer, 1989, p. 2).

While equity appears to be the essential issue for middle school educators, educators of the gifted are looking for provisions for excellence. These sometimes have been hard to find. Kaufmann (1994) points out that presently ". . . appropriate learning opportunities for gifted learners in middle schools are scattered and uncoordinated. Many have been eliminated altogether" (p. 1). When looking for appropriate opportunities, educators of the gifted have been concerned by statements which over generalize the limited need for academic depth in grades six through eight (Wiles, 1992). Gifted education literature reflects a concern that middle school educators, though well-intentioned, have a vision which does not recognize the variability of educational needs of gifted students. If the need has gone unrecognized, it is not surprising that the track record of the middle school is one of failing to recognize and serve the needs of

gifted students in the regular classroom for decades (Kaufmann, 1994). This situation is also worrisome to gifted education teachers.

Educators of the gifted are acutely aware of the reality of day-to-day instruction. "National studies indicate that little appropriate differentiation of instruction for academically diverse learners currently takes place in classrooms. . . . Embracing diversity is our challenge in education, not pretending singularity" (Tomlinson, 1995). This tension and its effects are surely damaging to any synergy that might be developed in combining efforts. The challenge, as the pragmatists might see it, is to find common ground away from professional idealism so that the interests of the students can be best served.

One of the lessons of history is that change is inevitable. We have only to consider the effect of technology on jobs and workers around the world. Classrooms also will continue to change. Whether this change brings about improved education for all students depends to a large degree on cooperative and collaborative efforts of teachers. Working together to find common ground in areas as important as interdisciplinary instruction certainly means that both middle school and gifted education teachers must work together toward a common goal. Both must share an understanding about the purpose of interdisciplinary instruction and its importance to all students. Unless we share context and meaning, it may be impossible to find the common ground needed to benefit the students. Teachers have a responsibility to continue to learn how to improve education.

Although, perhaps, there are other areas in which gifted education and middle schools could find common ground, interdisciplinary curriculum and instruction has been selected because it has been recognized as a key element (Swain, 1992) of both programs. The Carnegie Council on Adolescent Development (1995) identified it as the third of its eight principles for transforming the education of young adolescents. Also, in gifted education literature it is referred to as being "at the core of the pedagogy of gifted education from kindergarten through high school" (Tomlinson & Callahan, 1993, p. 6). It seems appropriate to ask what is keeping educators of the gifted and middle school educators from finding common ground in collaborating on interdisciplinary curriculum. A first step toward this collaboration may well be making sure that both sides mean the same things when they are talking about interdisciplinary instruction.

Definitions

Therefore, the definitions in this paper are perhaps more essential than in other reviews of literature. To say that there are a number of words used synonymously with interdisciplinary is an understatement. Educators involved in collaboration must be careful not to assume that the terms are interchangeable. Experience teaches that even slight differences of interpretation can have far-reaching consequences. The following definitions are used in this paper:

- differentiated instruction--instruction that is modified in content, process, product, or leaning environment to meet a student's learning needs

- interdisciplinary instruction--instruction that cuts across disciplines lines to facilitate the study of more than one discipline at one time
- gifted education--a program that provides appropriate educational or instructional opportunities for students identified as demonstrating advanced abilities/high potential
- middle school--school organized to serve grades 5-8 with a focus on serving the needs of early adolescents
- curriculum and instruction--an organization of studies, in this paper used interchangeably to mean both construction and application of learning structures

All of the following terms have been found in articles on interdisciplinary instruction. The greatest differences in the terms appear to be of degree. The degrees increase from the simple combinations which do not move outside the disciplines to the complete transformation of the school and its curriculum. For ease of handling I have established three categories for the synonyms of interdisciplinary curriculum/instruction which follow:

Limited . . .

- maintains current disciplines and may be sporadic
- comprises multidisciplinary, sequenced, shared, threaded, content charted, webbed, correlated, connected, nested and parallel

Structured . . .

- dissolves discipline lines periodically to allow the merging of disciplines
- comprises problem-centered and concept-connected

Holistic . . .

- most student-centered, dissolves disciplines entirely
- comprises integrated, integrative, fused, transdisciplinary, immersed, networked

Assumptions

The author of this review of literature has assumed that the following beliefs could be shared by educators of the gifted and middle school educators as they search for common ground. First, gifted students require differentiated programming to meet their learning needs. Second, all students vary enough in their developmental levels, skill acquisition, and emotional needs to require individualized curriculum at least some of the time.

Purpose

The purpose of this review of literature was to examine, from the viewpoints of both gifted education and the middle school, the definitions and understandings of the benefits of interdisciplinary instruction. Key questions that were asked are the following:

- In the understandings of interdisciplinary curriculum and instruction used by gifted education and the middle school, which are more prevalent--commonalities or differences?

- Are the expected (anticipated) benefits professed by gifted education for interdisciplinary curriculum and instruction the same as those claimed by the middle school?
- What are the stumbling blocks to real collaboration beyond definitions and expectations for interdisciplinary curriculum and instruction?
- What are the indications that real collaboration can happen between gifted education and the middle school?

Methodology

This review of literature looked at recent writings and research on interdisciplinary curriculum and instruction in documents published by and representative of gifted education and middle school, as well as general education. Information was gathered from a variety of sources: ERIC search, World Wide Web educational resources such as MCREL, university library search of published books, and a collection of materials that have been distributed to teachers in schools.

Definitions, functions, and benefits of interdisciplinary instruction were compared. Additionally, information was gathered to point out problems which may stand in the way of collaboration. The synthesis of this information was applied to the question of whether there is a chance for finding sufficient common ground to allow effective collaboration between gifted education and the middle school at least in the area of interdisciplinary curriculum. The discovery of common ground might mean that

there is hope for establishing a true working relationship in the name of effective education.

Analysis and Discussion

Support for Interdisciplinary Instruction

The review of the literature uncovered very little opposition to interdisciplinary instruction. Glowing endorsements of the practice have come from all areas of education including gifted education and the middle school (Carnegie, 1995; Erb, 1994; Kaufmann, 1994; Stevenson, 1993; Vars,1993; Worsham, 1992; Xenos, 1992). Interestingly, this support has been building over a number of years. In the 1930s the "Eight-Year Study" documented benefits of interdisciplinary instruction that ranged from a better attitude toward learning to subsequent higher achievement in college (Kain, 1993). Progressive educators have continued to recommend interdisciplinary instruction, and support has mushroomed with the growth of the constructivist reform movement (Lake, 1994). The call for its use has come from such diverse national educational groups as the National Council of Teachers of Mathematics (NCTM), National Council of Teachers of English (NCTE), and National Science Teachers Association (NSTA) (Beane, 1993, p. 21). This call has impelled progress toward "seeing subject areas, not as abstract and distinct, but as sources of knowledge and skill that might be used for larger purposes" (p. 21).

The Understanding of Interdisciplinary Instruction

The general definition of interdisciplinary instruction is instruction that cuts across discipline lines to facilitate the study of more than one discipline at a time. This definition does not, however, even begin to describe what interdisciplinary instruction looks like in actual practice. It was explained in more detail by the Carnegie Foundation for Adolescent Development (1995) as it decried the current discrete discipline arrangement in middle schools because "students have few opportunities to make connections among ideas in the different academic disciplines" (p. 76). They further insisted that "A primary task for middle grade educator . . . is to . . . concentrate their efforts . . . to create a meaningful interdisciplinary curriculum" (p. 76). Their reports called for a de-emphasis of memorization of a large quantity of information and more "depth and quality of understanding of the major concepts in each subject area as well as the connections between them" (p. 76). The definition as presented is really a combination of what interdisciplinary instruction is and is not.

It has become obvious that the implementation of interdisciplinary instruction is no small order. There is no manual which is a generally agreed upon bible to which teachers and curriculum developers may go when they want to begin the process. In fact, the literature review has revealed calls for and examples of everything from the most simplistic joining of processes by two teachers in separate rooms to total school development of instruction around a series of themes containing no discipline separation at all (Beane, 1990; Fogarty, 1991; Lake, 1994;

Lawton, 1994). Somewhere between these two extremes is experimentation with limited, structured, and holistic interdisciplinary instruction as an attempt to tap into the promises made for this seasoned educational practice. Interdisciplinary instruction has its roots in Dewey and the Progressivists and has received more recent impetus from the Constructivists of the reform movement (Beane, 1991; Lake, 1994).

Middle School Rationale for Using Interdisciplinary Instruction

The middle school movement has become the ultimate proving ground for interdisciplinary instruction (Vars, 1993). The literature of the middle school movement reveals that so many different configurations of the process have been and are being tried. Leading writers and theorists in the middle school movement like James Beane (1990, 1993) and Gordon Vars (1993) write widely in support of the holistic, integrative form of interdisciplinary instruction. However, the state and national journals of the middle school associations reveal experimentation with and implementation of the more limited forms (Stevenson & Carr, 1993; Vars, 1993). This section is quite short because the reviewed literature related to the middle school focused more on implementation than the rationale for using interdisciplinary instruction.

Gifted Education Rationale for Using Interdisciplinary Instruction

In contrast, there was more discussion in gifted education literature concerning the rationale. One of the strongest advocates for the holistic model of interdisciplinary instruction is Barbara Clark (1992) with her Differentiated

Integrative Curriculum Model. Clark promotes the use of other models commonly used in gifted education that also facilitate the components of interdisciplinary curriculum. Those cited are Betts' Autonomous Learner Model, Renzulli's Enrichment Triad Model, the Richardson Foundation's Pyramid Project, and the Purdue Three-Stage Enrichment Model.

Clark's holistic approach concerns itself with building a responsive, individualized learning environment that focuses on the physical and socio-emotional environment as well as meeting cognitive needs (Clark, 1992). It is necessary to point out that the focus is clearly on meeting individual needs of students. Thus, the gifted education rationale for support of interdisciplinary curriculum is different from that of the middle school. A significant reason for this difference might be that gifted programs must exist within the framework of the larger school curriculum. Gifted education advocates, however, are taking beginning steps in the process of setting up schools for the gifted with holistic interdisciplinary curricula (Lopez, 1997).

Since gifted education programs have been focusing for years on the use of the aspects of interdisciplinary curriculum such as real-life learning, student constructed knowledge, and application of learning skills, most of the gifted education journals do not carry articles espousing the benefits of interdisciplinary instruction as do the middle school journals. Instead, articles tend to focus on the necessity of appropriate differentiation applications within heterogeneously grouped classrooms. One could infer from this observation that many articles in

gifted education journals are taking a defensive posture toward what gifted educators fear could be widespread misapplication of interdisciplinary instruction. This difference of focus concerning differentiated instruction, then, becomes the first major stumbling block to collaboration.

Benefits from Interdisciplinary Instruction

What middle school educators see as the benefits of interdisciplinary instruction include the following:

- social behavior improvement (Davies, 1989)
- student motivation and attitude toward learning improvement (Walker, 1996)
- self-respect improvement (Lawton, 1994)
- student interest and intellectual curiosity increase (Walker, 1996)
- student participation in active learning (Vars, 1993)
- academic development for the individual (Erb, 1994)
- student achievement increase (Walker, 1996)
- student learning gains (Lawton, 1994)
- conceptual connections for students (Stevenson & Carr, 1993)
- own meaning construction and learning control for students (Lake, 1994)
- skill development & application (Vars, 1993)
- higher level thinking, decision making, and problem solving skills practice (especially if students are involved in the overall planning (Vars, 1993)
- subject matter coverage in greater depth (Stevenson & Carr, 1993)
- life-long learning & real world experience promoted (Lake, 1994)
- support for teachers collegially and administratively (Jacobs, 1991)
- teacher awareness of student performance increased (Worsham, 1992)
- parental involvement and community support opportunities (Davies, 1992)

The above list was gleaned from that portion of the reviewed literature related to the middle school. Perhaps the list is so extensive because the middle school literature refers to multiple definitions of the word interdisciplinary in all three categories: limited, structured, and holistic. It is a daunting list of expectations, but there is some research documentation that all of the above

expectations are achievable (Lawton, 1994). There is no evidence, however, that the same expectations could be achieved in the implementation of limited interdisciplinary instruction as in the more holistic versions.

The expectations for interdisciplinary instruction from the literature of gifted education are the following:

- student discovery of key concepts and principles (Tomlinson, 1996)
- student established challenging standards for success (ibid.)
- student produced knowledge (ibid.)
- learner engagement slightly beyond comfort zone (ibid.)
- integrated individual growth (Clark, 1992)
- pursuit of interests in depth with a minimum of time limitations (ibid.)
- individual or group work as appropriate for students (ibid.)
- appropriate differentiation for individual students (Tomlinson & Callahan, 1993)
- affective benefits from appropriate differentiation (ibid.)
- differentiation, individualization, and multiple modes of instruction. (ibid.)
- less fragmentation of curriculum (Jacobs and Borland, 1986)
- satisfaction of collegial collaboration (Jacobs, 1991)

Perhaps the reason that this list is shorter than the previous one is that the focus is on a specific group of students and the reference is only to the more holistic version of interdisciplinary instruction.

Commonalities and Differences in Expected Benefits

Before a comparison of the two lists of benefits is presented, it must be pointed out that neither list is necessarily exhaustive. Rather, the list might be considered representative of benefits expected. The comparison of the lists sheds some light on commanalities and differences between gifted education and the middle school movement in their views on interdisciplinary instruction. First of all, a comparison shows that advocates of interdisciplinary instruction in both middle

school and gifted education have much in common in their expectations for interdisciplinary instruction. One can see the repetition of such ideas as achievement, connections, concepts, growth/development, and learning/knowledge, to name a few. These then might provide a strong basis for agreement upon which to establish an interdisciplinary curriculum collaboration between gifted education and the middle school movement.

However, some differences are evidenced in the middle school list with its emphasis on student attitude/behavior improvement and the external benefits with parents and community. There would be little doubt that educators of the gifted would agree that these are worthwhile benefits to seek. However, they do not appear as major factors in the reviewed literature related to gifted education. A rather significant difference can be noted when one examines those factors that appear exclusively on the gifted education list. They include: challenge, key concepts, interests in depth, differentiation, and individualization. These are not insignificant expectations. They could be considered prime considerations in any program for gifted students. Thus, procedures for using interdisciplinary instruction that exclude these may be regarded as the stumbling blocks which impede full and effective collaboration between gifted education teachers and middle school teachers.

Common Ground

This review of literature set out to find common ground for collaboration between gifted education and the middle school movement. In

answer to the first question which asked about commonalities/differences in understandings the reviewed literature has revealed substantial common ground. It has been pointed out that both educators of the gifted and middle school educators strongly advocate for the implementation of interdisciplinary instruction (Kaufmann, 1994; Vars, 1993). They both understand such implementation to involve (a) active student learning in a real-life context, (b) authentic assessment, and (c) the promotion of life-long learning skills (Stevenson & Carr, 1993; Tomlinson, 1996).

In answer to the second question related to the existence of common benefits expected by both gifted educators and middle school educators, there appeared to be enough items in common for a beginning to collaboration even though there were some divergent items on each list. The common ground was seen in gains in student achievement, connections, concepts, growth/development, and learning/knowledge, to name a few.

However, a reflection on the above two lists proved helpful. As the lists were contrasted, it was important to keep the perspective that all of the listed benefits are expected and not necessarily achieved. It is only reasonable to expect that the benefits derived from implementation of the more limited forms of interdisciplinary instructions would be different from the implementation of the more holistic forms. As an advocate for the education of gifted students, it is important to me that when students are assigned to heterogeneous, interdisciplinary classes they actually receive the benefits intended.

An examination of some of the literature related to interdisciplinary curriculum can be a first step in discerning the firmness of the common ground. Research supporting the idea of connectedness resulting from interdisciplinary learning has come from recent brain research (Majoy, 1993). The brain processes information searching for meaning and pattern. In fact, it may resist learning fragmented facts that are presented in isolation (Caine & Caine, 1991). Other research is not quite so straightforward in implication. Many of the research studies on achievement have indicated that students in programs using interdisciplinary instruction do as well as or better than students in schools using traditional instruction (Lake, 1994; Lawton, 1994). However, we should be reminded that much of the research on the effectiveness of interdisciplinary curriculum has been conducted with a small number of students and that variables which may have affected the results have not always been factored in (Lake, 1994). Although common ground exists, it has not appeared to be firmly established.

Considering the Stumbling Blocks

Stumbling blocks to the real collaboration referred to in the third question are those differences for which it will be difficult to find common ground. The review of the literature has indicated that the differences have appeared in the mission of gifted education to serve the needs of excellence for the individual and of middle school education to serve equitably the needs of all of the students. Recalling the lists of anticipated benefits from interdisciplinary instruction, one could infer that the main focus of the middle school list was

improvement in overall competency through learning gains, conceptual connections, behavior improvement, etc. In contrast, the focus of the gifted education list could be inferred to be specifically on the individual with student established challenge, student discovery of key concepts, student following interests in depth. All of these differences in expected benefits must be scrutinized to determine the degree to which they might be a threat to collaboration. They may be major stumbling blocks because they involve each group with its core educational mission.

First, consider the idea of challenge. Challenge comes in being stretched to work at least slightly beyond the comfort zone (Tomlinson 1996). Common sense tells us that what is a challenge for one may not be a challenge for another. Many reformers believe that if high expectations and high standards exist in a classroom, everyone is well served. Gifted educators believe that a common content, common set of activities, and common product will fall short of challenging students who are very advanced (Kaufmann, 1994).

This introduces another stumbling block: the contrast between the gifted education focus on key concepts versus the middle school emphasis on student interest themes. Beane suggests that theme development be directed at the interest level of students [in groups] and organized around the "intersecting concerns of early adolescents and issues in the larger world" (1990, p. 4). With the diversity that gifted students bring to the classroom there is little indication that their diverse interests would be met. I cannot help but visualize the gifted students who are

mature beyond their years and who do not often share the concerns of other adolescents. Another consideration about concepts is that they have a way of being key this year but not next year. Kaplan's work in gifted education on interdisciplinary instruction focuses strongly on the necessity of themes being significant (1986).

The themes themselves are cause for concern. Examples of interdisciplinary units and themes available in middle school journals--"An Interdisciplinary Gender Equitable Mathematics Project" (Mosca & Shumarak, 1995)--are very often topical and do not usually display the relevance which an interdisciplinary topic demands. Topics that have been used in my own school are planets and the Revolutionary War. Kaplan has emphasized the necessity for themes which are not topical, not limited by time and space, in order to avoid stifling the learning possibilities for the most rapid learners (1986). In addition to the current indiscriminate mix of topic and theme organization, a worrisome indication is that, in fact, the planning is often done at the activity level, not at the objective level (Palmer, 1995). With an emphasis on the activities and not the objectives, there is the danger of pointless busywork, which may distort the content of a discipline (Brophy & Alleman, 1991). On the surface, topics, concepts, and themes look somewhat similar. Collaborators on interdisciplinary instruction need to go beneath the surface to the actual application and its effects upon student learning.

Complicating matters for the education of the gifted is the belief of the more holistic middle school advocates that students who feel held back by having to collaborate should be permitted, only on occasion, to undertake a solo investigation (Vars, 1993). My experience has been that solo investigations are an important option for many gifted students whose interests and concerns do not parallel those of their age-mates.

For the stumbling block of following interests in depth, I would like to speak from personal contact with gifted students who have been involved with very early developed interests. One student of mine became interested in junior high school in the Russian language. Because the only available mentor possessed a rudimentary knowledge of the language, the student created his own study. He saw this study as a challenge and developed his own strategies for pursuing the complexities of the language. This study continued throughout high school as a part of his talented and gifted program. It was supplemented with affective activities and learning, but he diligently pursued his passion. He even sought out Russian speaking people who came into the area. When he took a college placement examination at Northwestern University in Evanston, IL, he performed well enough to be placed as a third year student in their Russian language program. The rest of the story is interesting, but what is important here is that he was allowed, encouraged, and supported in following his own interest, which did not fit neatly into the school curriculum. More importantly, he was able to follow it to the extent he desired. I think that this kind of story

illustrates a real student-centered process. Gifted education advocates are adamant about keeping these opportunities alive for gifted students (Tomlinson, 1995).

The fourth and fifth stumbling blocks need to be considered together because they are so closely linked: individualization and differentiation. It will be recalled that the middle school list of expected benefits from interdisciplinary instruction was very much oriented to common competency gains: learning gains, conceptual connections, behavior improvement, etc. In contrast, the gifted education list focused heavily on the individual. The concern of gifted education educators, in this case, is that, while educators raise floors and expectations in classrooms, they are not talking simultaneously about raising ceilings (Tomlinson & Callahan, 1993). Individualization and differentiation are about providing instruction that meets students at their level. If educators truly want all students to learn, then appropriate learning opportunities need to be included for all students (Tomlinson, 1995).

The advanced learner may need a faster pace, more abstract or complex content presented in ways that require more advanced thinking, and more advanced applications than a peer (Kaufmann, 1994). VanTassel-Baska (1994) pointed to the differences in curricular offerings that serve the needs of gifted students: variable time frames, content, process, and product. She further pointed to gifted students' appreciation and understandings of systems rather than only the elements of those systems. It is important to note that the gifted student population

is heterogeneous within itself. While it may be possible to cluster students of similar abilities and interests in the general population, this is not usually the case with gifted students. Individual differentiation, therefore, appears to be a primary stumbling block in establishing collaboration between gifted education and the middle school movement.

The Reality of Application

Can collaboration be a reality between educators of the gifted and middle school educators in the area of interdisciplinary instruction? The answer to the fourth question posed as a part of this literature review might be found by examining current occurrences in the field which would tend to bode well for a collaborative effort. Consider the following titles from gifted education literature: Toward a Common Agenda: Linking Gifted Education and School Reform, (Kaufmann, 1994) and "Contributions of Gifted Education to General Education in a Time of Change," (Tomlinson & Callahan, 1992). These writings have indicated an understanding that collaboration is important. They are examples of a growing awareness in the gifted education community that gifted education has knowledge and experience to offer in a collaboration with the rest of the educational community. Current articles in gifted education journals have even been carrying the reduced-tension message that there have been adequate demonstrations that gifted education can exist in a middle school setting (Gallagher, 1996).

Current articles from the middle school community also have been sounding collaborative: "Talent Development and Grouping in the Middle Grades: Challenging the Brightest Without Sacrificing the Rest" (George & Grebing, 1995) and "With Equity and Excellence for All" (Fipp, Barry, Hargrave, & Countryman, 1996). These articles address the tension between the gifted community and middle school advocates. The collaboration between such gifted education advocates as Feldhusen and middle school advocates is especially cited (Ruder, 1994). It is also encouraging to note that a national survey of middle school teachers has found that they realize that the middle school curriculum is not challenging for gifted students in the heterogeneous classroom. Even more encouraging was the stated agreement by the middle school teachers with the idea that middle school teachers need more preparation on meeting the needs of gifted students (Gallagher, Coleman, & Nelson, 1995).

Even though there have been some encouraging signs, it is necessary to be aware that good intentions alone will not be able to accomplish effective collaboration. A case in point is The Carnegie Middle School Project (1994-1995) that was designed to achieve just the purpose this paper has been addressing—providing differentiation for gifted students in the heterogeneous, interdisciplinary classroom. A pilot project in the State of Texas examined the extent to which trained teachers could effectively implement advanced instructional techniques and curricula for gifted students in a heterogeneous middle school environment (Guerrero, 1995). This pilot project was designed to

provide the needed link between gifted education and the middle school. Recognizing that implementation is dependent upon the teachers, the project provided for extensive year-long in-service training for teachers aimed at advanced educational programming that is appropriately challenging for all students, including advanced and gifted learners within the middle school environment. What they found at the conclusion of the study was that while the general level of instruction improved, there was little to no evidence that instructional differentiation strategies for advanced learners had been adopted. Furthermore, there was evidence that teachers generally underestimated their students' readiness for more sophisticated instructional experiences (Guerrero, 1995).

Such research is doubly worrisome when one understands that most teachers do not receive such extensive and focused training in providing advanced differentiation strategies. There is little guidance in middle school literature which offers concrete guidance in how to do so (Tomlinson, 1995).

Current literature and activities in the field may give encouragement to any prospective collaborators. There are signs of genuine willingness to attempt to overcome the stumbling blocks to effective collaboration. However, this is not the time to forget reality; success is not guaranteed just because people work together. Collaboration may call for compromise and hard work. Educators need to be really committed to providing what is best for students.

Conclusions

The following conclusions are based on the synthesis of information from the literature review which focused on four questions as posed in the purpose statement of this paper:

1. Interdisciplinary instruction is an appropriate place to begin a collaboration between gifted education and the middle school movement because of the commonalities in the understandings of its nature.

2. Gifted education and the middle school movement share enthusiasm for interdisciplinary instruction because of what its implementation may be able to achieve for students. A common ground for collaboration is established by the indication that many anticipated benefits are sought by both groups.

3. Although there are encouraging similarities in a comparison of the lists of benefits, there appear to be some substantive stumbling blocks to effective collaboration on interdisciplinary instruction: challenge, student discovery of key concepts, students following interests in depth, and appropriate differentiation. These are missing from the middle school list of benefits, but they are integral to gifted education. Problems providing these strategies for gifted students may be at the core of any difficulties in collaboration. Furthermore, current practices do not show signs of providing these strategies even when the effort has been made.

4.. There have been signs of increased conversation that is dissolving the tension between the middle school movement and gifted education. However, one

can be quite sure that any transition to collaborative implementation of interdisciplinary instruction will come about only in small increments.

The literature review also led to other conclusions not directly related to the questions:

1. Educators of the gifted still need to be advocates for gifted students, especially in any transition between now and a time when there may be effective implementation of interdisciplinary instruction. Who else will insist on providing for them such strategies as differentiation when the necessary compromising in collaboration begins?

2. For collaboration to happen, both gifted education teachers and middle school teachers will need to make adjustments. Kaufmann sums up well the opportunity for and hesitancy about collaboration:

> Both groups have an interest in developing classrooms in which high expectations and rigorous curricula are the norm. In that setting, it would be possible to conduct research that examines (a) the impact of the enriched curricula on students whose readiness levels vary, (b) methods of providing for individual differences in such a classroom, and (c) strategies for raising both floors and ceilings in a single setting. To date there have been so few high-expectations classrooms and so little collaboration between the school reform movement and gifted education that we really do not know the degree to which rich classrooms maximize the capacity of learners of high ability (p. 9).

Perhaps collaboration will allow educators to state positively that interdisciplinary instruction is good for all learners, including the gifted.

Recommendations

Recommendations are first addressed to individual middle school and gifted education advocates who are (a) close enough to students to see their eyes glaze over in boredom and (b) still idealistic enough to care. The kind of collaborative heavy lifting needed with interdisciplinary instruction will best be accomplished by those who are optimistic enough to begin and persistent enough to see it through. I am confident that these educators exist, and I think that they will be the ones to bring about educational reform. My recommendations to those educators comprise the following:

1. Become aware of and contribute to the current conversation concerning collaboration between gifted education and the middle school movement. It is encouraging that articles by Erb, the editor of the Middle School Journal, have lately appeared in gifted education journals and articles by Feldhusen and Gallagher have been published in the Middle School Journal.

2. Seek education on (a) the nature of interdisciplinary instruction and (b) serving the individual needs of students. Requests for specialized training presented to teacher preparation institutions, especially those interested in building their student population, will most likely be heeded.

3. Begin collaboration by focusing on learning objectives and student needs. Establish a common ground of expectations and understandings of the degree of interdisciplinary instruction--limited, structured, holistic-- that will be attempted. Projects of this nature should be published. Inclusion of such projects in our journals will provide, for others interested in the process, effective building blocks, instead of the fragmented, topical examples that are now so common.

4. Be prepared to ask for and help develop inservice opportunities locally and for conferences. In my experience, information and teaching skill development provided by actual teachers is more enthusiastically received and more likely to be implemented than that from visiting experts.

5. Conduct action research concurrent with your collaboration to document student benefits and educational gains. Advertise your successes and progress to administrators, school boards, parents, and other members of the community. Early small successes may be the key to provisions for adequate time and support to expand the collaboration. Effective collaboration will not happen without a major investment of time and energy.

This literature review was motivated by very personal experiences. Thus, the most important recommendations from this paper are addressed to me. This literature review has provided a wealth of information for my return in August to my junior high school that is in the process of becoming a middle school. These recommendations contain my plans and hopes.

I will need to listen, listen, listen, and offer, offer, offer as I look for collaborative opportunities. If gifted education has much to offer to the reform movement, then I will have to find ways to offer it so that people will listen. If it is not heard, there is no chance that the information will be used. Also, I need to work with curriculum planning committees in my district to be aware of changes before they happen. Changes will surely impact the educational services for gifted students.

Fortunately, the gifted education program in my middle school is valued by the principal and staff. I need to continue to work diligently to insure that the gifted education program is serving the needs of gifted students identified by our program. This identification process needs to be continuously evaluated and updated to insure that it is the most appropriate for our student population. In short, I need to continue to learn how to make the gifted program in my school do what I say it does and make the system work for the students. In reflecting on my personal challenge, I recall the words of Bertolt Brecht:

> The world of knowledge takes a crazy turn when teachers themselves are taught to learn. (Columbia Dictionary of Quotations, 1987-1985)

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