

2002

# Indivisible, with an education for all : differentiation strategies used in a multi-categorical classroom

Stephanie Elizabeth Francis  
*University of Northern Iowa*

Copyright ©2002 Stephanie Elizabeth Francis

Follow this and additional works at: <https://scholarworks.uni.edu/grp>

 Part of the [Curriculum and Instruction Commons](#), and the [Special Education and Teaching Commons](#)

*Let us know how access to this document benefits you*

---

## Recommended Citation

Francis, Stephanie Elizabeth, "Indivisible, with an education for all : differentiation strategies used in a multi-categorical classroom" (2002). *Graduate Research Papers*. 663.  
<https://scholarworks.uni.edu/grp/663>

This Open Access Graduate Research Paper is brought to you for free and open access by the Graduate College at UNI ScholarWorks. It has been accepted for inclusion in Graduate Research Papers by an authorized administrator of UNI ScholarWorks. For more information, please contact [scholarworks@uni.edu](mailto:scholarworks@uni.edu).

---

# Indivisible, with an education for all : differentiation strategies used in a multi-categorical classroom

## **Abstract**

This article focuses on a pilot study that examines the effectiveness of differentiation strategies when used in a multi-categorical classroom. The writer, a gifted and talented facilitator in a rural Iowa school district, team taught with two other teachers in a classroom where identified learning-disabled and gifted students were clustered together. The purpose of this clustering was to determine the impact of alternative strategies upon special needs students when implemented in a common learning environment. The writer concludes that with careful planning, differentiation can be a positive instructional strategy in a multi-categorical classroom. She also offers recommendations for educators and administrators to consider when implementing this type of model.

INDIVISIBLE, WITH AN EDUCATION FOR ALL: DIFFERENTIATION  
STRATEGIES USED IN A MULTI-CATEGORICAL CLASSROOM

A Publishable Article

Submitted to the

Department of Curriculum and Instruction

in Partial Fulfillment

of the Requirements for the Degree

Masters of Arts in Education

UNIVERSITY OF NORTHERN IOWA

by

Stephanie Elizabeth Francis

May 2002

This publishable article by Stephanie Elizabeth Francis

Entitled: INDIVISIBLE, WITH AN EDUCATION FOR ALL:  
DIFFERENTIATION STRATEGIES USED IN A MULTI-  
CATEGORICAL CLASSROOM

Has been approved as meeting the research requirements for the Degree of Masters of  
Arts in Education.

May 16, 2002  
Date Approved

William Waack  
Graduate Faculty Reader

5.16.02  
Date Approved

Connie J. Erpelding  
Graduate Faculty Reader

May 16, 2002  
Date Approved

Rick Traw  
Head, Department of Curriculum and Instruction

## Abstract

This article focuses on a pilot study that examines the effectiveness of differentiation strategies when used in a multi-categorical classroom. The writer, a gifted and talented facilitator in a rural Iowa school district, team taught with two other teachers in a classroom where both identified learning disabled and gifted students were clustered. The purpose of this clustering was to determine the impact of alternative strategies upon special needs students when implemented in a common learning environment. The writer concludes that with careful planning, differentiation can be a positive instructional strategy in a multi-categorical classroom. She also offers recommendations for educators and administrators to consider when implementing this type of model.

3211 160<sup>th</sup> Road  
Yale, Iowa 50277  
March 11, 2002

Dr. Tracy L. Cross, Editor  
Gifted Child Quarterly  
The Indiana Academy  
Ball State University  
Muncie, IN 47306-0655

Dear Dr. Cross:

I would appreciate your consideration of the enclosed manuscript for publication. I have written "Indivisible, With an Education for All: Differentiation Strategies Used in a Multi-categorical Classroom" in partial fulfillment of the requirements for a Master of Arts in Education of the Gifted from the University of Northern Iowa. I am currently the gifted education facilitator at Perry Elementary School in Perry, Iowa. I received my Bachelors of Arts in Education from the University of North Carolina, Wilmington.

The accompanying article focuses on research done to examine the effectiveness of differentiation strategies when used in a multi-categorical classroom. The article is written from the perspective of conclusions made through actual implementation in an elementary classroom that was specifically clustered with gifted students and learning disabled students. The manuscript is 35 pages long including the title page, abstract, text and references. Throughout the manuscript I have followed the guidelines established in the *Publication Manual of the American Psychological Association, Fifth Edition*.

If you have any questions regarding this manuscript, you may contact me at the address above, by telephone (641-439-5212), or by E-mail ([francisstephanie@perry.k12.ia.us](mailto:francisstephanie@perry.k12.ia.us)).

Thank you for your consideration of this manuscript.

Sincerely,

Stephanie Francis  
Enclosure

As educators, we are constantly pressured to raise the bar and target low achieving students by implementing new improved or best practice strategies. It is easy to become discouraged or leery of implementing new strategies in our classrooms because, as educators, we are generally realistic. Certainly we believe in our students, but often we are faced with monumental tasks to accomplish each day. Class sizes are not getting smaller, gaps in students' achievement are widening, and students enter and leave the general education classroom all day long for special services. Educators attend inservices that promote new strategies; but when the new day begins, there simply may not be enough time with the students to implement them. Inclusion and individualized instruction are specific strategies commonly discussed during inservices, but can methods like these make a positive difference for every student all the time? Is it possible to individualize curriculum with so many variables?

The administration and faculty of the Perry Public School District in rural Central Iowa were interested in ascertaining the positive impact these specific strategies could have on student achievement. The district was initially interested in observing the results of their study with a group of students who demonstrated a specific exceptionality: identified talented and gifted students. Therefore, during the 2001-2002 school year I was hired as the Elementary Talented and Gifted Facilitator. My main goal was to be the establishment of a relationship between the gifted program and general education classrooms for the purpose of implementation of differentiated curriculum that would challenge high ability students in the general education classrooms.

In order to build this relationship I worked closely with two general education classroom teachers from each grade, three through six. I helped these eight teachers to

write and implement differentiated curriculum in their cluster classrooms. One of the teachers at each grade level received students clustered for high academic ability in reading, the other for high academic ability in mathematics.

During my collaboration with the general education classroom teachers, I noticed that the implementation of clustering and a differentiated curriculum excited the teachers and students because it offered a challenge to gifted students for a greater majority of the day and concurrently enriched the entire curriculum. I also began to notice that some of the teachers were using the differentiated curriculum strategies with students who were not identified as gifted, and those students were also demonstrating successful gains. Increasingly, I became motivated to study further the effects of differentiated curriculum on student achievement, both in current research and in the development of a pilot classroom model of my own. I felt the establishment of a pilot classroom would enable me to truly evaluate if, indeed, a differentiated curriculum could have a positive impact on student achievement, especially on students with identified exceptionalities.

The results of my research and the implementation of a pilot classroom are provided to the readers of this publication for the purpose of providing practical examples to illustrate the effects on student achievement and motivation of clustering and differentiation in a multi-categorical classroom. The purpose of this article is to focus on the needs and advancements made by the two major groups involved in the pilot classroom: gifted students and learning disabled (LD) students. Although there were several students involved in the pilot without exceptionality, I shall place major focus on the achievement results of students with identified exceptionalities.

## Differentiated Curriculum For All Students

In order to begin planning for my pilot classroom I considered several of the most common strategies used to challenge or group students of varying academic needs, as well as the definitions of a gifted, LD or twice exceptional student that my district uses. Then, as I considered my district's definitions of exceptional students, I tried to determine how an exceptional student's needs could be met through the implementation of specific strategies.

One of the currently accepted strategies is differentiated curriculum, and it seemed to be particularly appropriate for my use in the pilot study. Carol Ann Tomlinson (1999) defines this term as "modifying content, process and/or product for students (p.1)". The modification is implemented in order to meet the needs of a classroom of students who span the spectrum of learning readiness, personal interests, and culturally diverse backgrounds.

According to Susan Winebrenner (1992), one of the most effective environments in which to administer differentiated curriculum is a cluster classroom. She stated that cluster grouping is a way "to keep grouping gifted students together because they learn better in homogenous groups, while simultaneously grouping the rest of the students in heterogeneous groups because that seems best for them" (p. 125). Winebrenner pointed out that, in typical cluster classrooms, five to seven gifted students are assigned together with one teacher who has special training in the teaching of the gifted. The rest of the students are then heterogeneously mixed in other classrooms. The rest of the teachers have a heterogeneous mix, but they do not have any gifted students. This type of organization I deemed to be possible in my specific situation.

A commonly agreed upon definition of a gifted student is one offered from the U.S. Department of Education's Marland Report of 1988. It states, " 'gifted and talented students' means children and youth who give evidence of high performance capability in areas such as intellectual, creative, artistic, or leadership capacity, or in specific academic fields, and who require services or activities not ordinarily provided by the school in order to fully develop such capabilities" (Davis & Rimm, 1998, p. 19). This definition is used in most of the school districts in the State of Iowa as the basis for identification.

The LD students in our district are identified as those students who perform two to three grade levels below their age-mates. These students receive Individualized Education Plans (I.E.P.) if their norms fall below 25% on curriculum-based assessment instruments. Students are normed in our school district in the areas of reading, written expression and mathematics.

For the purposes of our pilot classroom, a student was considered twice exceptional if he or she was identified as LD and also displayed frequent behaviors characteristic to a gifted student. A twice exceptional student also could have been placed into this pilot classroom if he or she was identified as gifted but displayed behaviors characteristic to a LD or behaviorally challenged student.

Both gifted and LD exceptionalities have laws which mandate the modification of their curriculum. Public Law 94-142 provides for specific modifications to be made for special education to receive a free and appropriate education in the least restricted environment. The Iowa Plan, adopted by the State Board of Education (1974), mandates classrooms "to provide qualitatively differentiated educational programs to meet the unique needs, interests and abilities of the gifted and talented in the state of Iowa"

(Monroe, 1978, p. 3). Iowa Code Section 257:43, another state mandate for gifted education in Iowa, states: “Each school district shall incorporate gifted and talented programming into its comprehensive school improvement plan (Iowa Code, 2001, p. 2430)”. The statute requires that school improvement plans include specific gifted and talented programming provisions. These provisions include: (a) multiple selection criteria for identifying gifted and talented students from the total student population, (b) goals and performance measures, (c) a qualitatively differentiated program, (d) staffing provisions, (e) an inservice design, (f) a budget; and (g) qualifications of personnel administering the program. Each school district also must review and evaluate its gifted and talented programming.

#### *Meeting the Needs of Gifted, LD and Twice Exceptional Students*

Classroom teachers can be bombarded with best practices advice for their teaching. Sometimes it is difficult to know which strategy will be most effective to increase student achievement in a particular classroom unless there is experimentation or is ascertained through personal trial and error. Certainly, there is no one panacea. However, research does indicate that there are several strategies that are best to use with students labeled as gifted, LD or twice exceptional. In order to be an effective in increasing student achievement, I considered the current research.

Karnes and Beane (2001) stated that “specific research concerning high ability students with learning disabilities began following the passage of PL 94-142, when the expanded emphasis on the education of students with disabilities created an interest in students who were gifted but also demonstrated learning disabilities”(p. 27). Baum and Owen (1988), in a study of 112 high ability or LD students in grades 4-6, found the major

characteristic distinguishing high ability/LD students from both LD/average and high ability (non LD) groups to be a heightened sense of inefficacy in school. The high ability/LD students in their study also displayed high levels of creative potential, along with a tendency to behave disruptively and to achieve low levels of academic success. Looking at these findings, I concluded that an optimal classroom setting for a twice exceptional student would be one that focused on strengths, encouraged creative potential and allowed for alternative modalities of expression in order to decrease disruptive behaviors.

Some guiding principles for modifying learning environments for gifted learners were expressed by Maker and Nielson (1996) who believed that the environment should be: (a) learner-centered rather than teacher or content centered, (b) focused on independence rather than emphasizing dependence, (c) open to new ideas and exploration, (d) provide for options in grouping and high mobility, and (e) promote acceptance. On the other hand, conditions to provide for an optimal classroom environment for LD students should include: a) keeping visual aids to a minimum so students are not distracted, b) making learning concrete so it can be hands-on, c) providing projects rather than isolated skill review, and d) utilizing technology whenever possible (Winebrenner, 1996).

#### Planning a Pilot Classroom Model

Since I had seen the impact on achievement in students of varying ability when their teachers provided differentiated activities, I began to think about the benefits my gifted students could gain if they were provided differentiated activities with increased frequency. Subsequently, I chose a cluster classroom using differentiation as a way to

provide full-time gifted education to my students. However, I did not want to limit student achievement to gifted students, and I already had observed that some LD students were benefiting from differentiation in their heterogeneously mixed classrooms. Therefore, the idea for this pilot classroom was generated by one question: Does differentiation work for every student, in every classroom? Since I theorized that it could, I approached my administrators in the Spring of 2001 with an idea that would be new to our district. It would offer a special needs classroom clustered with students identified as gifted, learning disabled and twice exceptional. The classroom would offer differentiated curriculum to all the academically diverse students in the classroom, thereby providing an opportunity to evaluate the potential of differentiation in the promotion of student achievement. This pilot classroom would utilize current philosophies like those of Winebrenner (1996) who believed that “the students we teach best are those whose learning style matches the teaching style we use. Sometimes we underestimate the learning capabilities of students who don’t learn the right way. In fact, there is no right way. The only way for each student is the one that works” (page 41).

My hope was that, if the pilot classroom increased student achievement for every student, the other teachers would be able to see the value of meaningful lessons and the ease with which they can be offered. I also hoped that they subsequently would develop the desire to use such lessons in their classrooms for the benefit of all students.

With the backing of our administration, I approached two teachers. One was a general education classroom teacher who would have taught gifted fourth graders in her classroom in 2001-2002. The other was a special education teacher who would have taught fourth grade LD students in her semi-contained classroom the same year. I found

that they had team-taught together previously, and they willingly agreed to try such a pilot program.

The movement toward inclusion of students with disabilities into general education classes has become an important trend in education (Chow & Kasari, 1999). I felt the best way to evaluate the effect of this trend on student achievement was to establish one pilot classroom that would administer the differentiation of curriculum to students of varying abilities.

Vaughn, Elbaum and Schumm (1996) found inclusive classrooms to have a positive impact on the peer relationships and self-concept of students with learning disabilities. However, I agree with Vaughn that simply placing students (LD, gifted or otherwise) in an inclusive environment cannot alone facilitate achievement. Placement cannot be enough. The strategies by which these inclusive classrooms are taught must also be evaluated.

### *Some Assumptions and Goals*

Before developing our class list and lesson plans, the participating teachers sat down to evaluate the assumptions and goals of each of the involved staff members. This meeting consisted of the two classroom teachers, the school principal and me. Each of us shared our assumptions concerning the pilot and agreed on several goals.

We assumed, first of all, that it would take time for students to adjust to the classroom demographics. We also assumed that our classroom would have an open door policy to parents, students, and staff, for potential learning. Finally, we also assumed that, initially, some strategies would be difficult because typical fourth graders are already ingrained to offering only teacher acceptable responses to teacher prompted

activities. On the basis of these assumptions, we decided it was imperative that we work closely together to clearly communicate with parents and staff.

There were three teacher-oriented goals for the pilot program. The first goal was to integrate special education and gifted students into one semi-contained classroom. The second goal was to use a differentiated curriculum in order to offer individual learning opportunities. Third, we would promote the acceptance of inclusion and differentiation for use in other classrooms.

Three goals were established for all of the students. First of all, they would work to become independent learners. Second, they would improve intrapersonal and interpersonal skills. Third, they would improve achievement scores on Iowa Test of Basic Skills (ITBS) in mathematics and/or reading.

#### *Selecting the Pilot Classroom Students*

According to Lyon (1996), approximately one-half of all children receiving special education services nationally, or about 5% of the total public school population, are identified as having a learning disability. Our classroom would have substantially more than the typical 5%. Our student participants were enrolled in fourth grade and consisted of 8 students with identified learning disabilities, 8 identified gifted students, 1 twice-exceptional student, and 7 students without exceptionality. The seven students without exceptionality were placed in our room to match our classroom numbers to the other four sections of fourth grade; they were the only students in our room without I.E.P.'s. The students with I.E.P.'s had the right to certain modifications in curriculum, but they were all held to the same school policies regarding grading scale as any other fourth grader in the district. For the seven students without exceptionality we chose

students who were referred by their third grade teachers as possessing higher than average potential in reading. And, since the pilot program's fourth grade general education teacher had been the cluster teacher for reading during the 1999-2000 academic year, we decided that gifted students coming into this pilot classroom would be those with higher than average ability in the area of reading.

In our district we follow principles of Renzulli's Schoolwide Enrichment Model by broadening the scope of our identification philosophy, focusing on student need and defining gifted behavior as one that shows potential to develop three traits: well above average academic ability, creativity, and leadership. "Research tells us that gifted behaviors can be developed in a far broader spectrum of the school population than the small percentage of students who are usually identified by high scores on intelligence or achievement tests" (Renzulli & Reis, 1985, p. 3). Using the Renzulli Principles, then, Perry's elementary gifted program services approximately 10-12% of the school population.

Our pilot population proved to be extremely diverse, both academically and economically. Our pilot demographics resulted in 30% gifted, 30% learning disabled and 40% non-exceptionality. Even with its diversity, I assumed from the beginning that our pilot would be successful in challenging learners of all abilities through the use of one differentiated curriculum.

#### *Faculty, Administration and Staff Roles and Responsibilities*

In order to put differentiation, clustering and inclusion truly to the test, the pilot classroom project was implemented in August, 2001. Twenty-four students walked into one fourth grade classroom at Perry Elementary School to encounter a new type of

classroom setting. They were greeted by their teachers and young peers whom until that day they had never met.

The two teachers with whom I would work were chosen on the basis of prior knowledge and experience with exceptional learners. The general education teacher was already working as a cluster teacher and had received specialized instruction in the needs of gifted students. The special education teacher had been teaching LD and twice-exceptional students for seven years through self-contained instruction in a resource room. Both teachers engaged in study team sessions on the topic of differentiated strategies that I provided for teachers. We were pleased that our administration allowed us the freedom to collaborate because we knew we would be working with students whose academic and behavioral needs would necessitate our specific expertise.

Staff participants of our study included: (a) our elementary principal, (b) me, the school talented and gifted facilitator, (c) one general education classroom teacher, (d) one special education teacher, (e) one full-time classroom associate, and (f) one part-time classroom associate. Our principal accepted responsibility for handling some of the public relations, providing support for materials and scheduling, and informing special teachers of the unique demographics of the class. As the gifted education facilitator, I was responsible for providing planned differentiated units of study, consulting and assisting in writing curriculum, assisting in public relations, providing staff development, assisting with assessment, and acting as a liaison between teachers and administration, as needed. The two classroom teachers, with the help of the classroom associates, were assigned to develop and administer the majority of the differentiated lessons, assist with

developing I.E.P.'s, conference with parents, assist with public relations, and answer questions from staff.

Since research has indicated that inclusion is an escalating trend, we assumed we would find similar models from which to learn. Unfortunately, we found few classrooms that were specifically attempting to utilize differentiation in an inclusive environment. Therefore, much of our planning had to be done independently and, at times, by trial and error. Karen Cox and Jane Franchak, who have developed a similar arrangement in Highland Park, New Jersey, concluded that "inclusion classrooms are a good thing for all children not just those with disabilities" (Siris, 2001, p. 4).

### *Physical Environment*

The school system in which I am employed is located in a rural area in Central Iowa where one elementary building serves approximately 950 students in grades kindergarten through six. The students involved in this pilot were placed in a heterogeneous fourth grade classroom which shared two of the six rooms on the fourth grade wing of the building. The fourth grade population was comprised of 125 students divided into five classrooms.

The pilot classroom was called 4AE, because the class used two fourth grade classrooms (A and E). This name demonstrated that the students belonged to one class using two classrooms. We deemed our classroom as inclusive because students with learning disabilities spent 100% of the school day in the general education classroom with same-age peers. Some of the curricula were taught by direct teaching, using one of the classrooms; other curricula were taught by using flexible grouping, using both classrooms. Each teacher kept her own classroom, but the students were told that each

room belonged to all of them. Neither of the classrooms was used expressly for any one of the exceptionalities.

Research tells us that using a differentiated curriculum gives the teacher the flexibility to make modifications in content, process, and product (Winebrenner, 1996). Certainly, Class 4AE had the element of time in their favor because the two teachers would teach all of the curricula, and the students would not need to rotate to other teachers for instruction. The teachers had the option of varying the length of their lessons, dependent upon the needs of their students. They planned delivery of the content in a learner-centered, flexible environment. It should be noted that, initially, the students needed practice getting used to the new variables of having more than one teacher and having the teachers work as facilitators with less rigid structure than in their previous classrooms.

### Implementing a Pilot Classroom Model

The implementation of this pilot program was both challenging and time consuming. It required a period of pre-planning to prepare for and examine the effectiveness of differentiation. It also required careful selection and preparation of differentiated learning activities appropriate for students who were participating.

#### *Pre-Planning*

We spent several days during the 2001 summer preparing lessons for the 2001-2002 school year and learning about the students coming to us. Again, we agreed our pilot would build on current philosophies. Therefore, as we met to plan for the upcoming school year, we considered current theories in education and how they might be used to focus on the commonalties and needs of our prospective students.

Following current brain-based research, we referred to third grade teachers to understand the prior knowledge and interests of our students so that we could more effectively facilitate their learning (Westwater and Wolfe, 2000). Thus, we looked at these students not as labels, but as learners who learn in different ways. We relied heavily on Gardner's Theory of Multiple Intelligences (1985) to prepare our lessons so that we could provide opportunities for each student to develop his or her area of intelligence.

As we began writing curriculum for the pilot, we began to think about student grouping. We knew we would use flexible grouping within the classroom and also provide opportunities for students to learn with like-ability peers. However, rather than focus on long-term labels like *gifted* and *learning disabled*, we focused more on the present need of each student. In other words, when using cooperative learning strategies, students were grouped according to ability or need, not label. Often a LD student would perform at mastery level on a pretest and thus need to be grouped with gifted students for enrichment, or a gifted student would not perform well in a certain area and thus need to be grouped with LD students for extra review. We found that it offered great benefit for grouping and lesson planning that most of the students had established I.E.P.'s. Looking at the I.E.P.'s, we were able to provide learning opportunities for students in the grouping option that would facilitate their greatest potential and interest.

In order to review a few common characteristics shared by some gifted, LD or twice exceptional students, we compared characteristics in Susan Winebrenner's books, *Teaching Gifted Kids in the Regular Classroom* (1992) and *Teaching Learning Disabled Kids in the Regular Classroom* (1996). In these resources, we found that gifted and LD

students sometimes share the following characteristics: (a) intensity to learn, (b) total absorption in activities and thoughts, (c) strong motivation to learn specific things but no interest in others, (d) initiation of ideas that seem crazy to others, (e) unrealistically high or low self concept, and (f) impulsiveness or even hyperactivity. Awareness of these common characteristics helped us to focus on the students' strengths and similarities rather than on negative aspects of their needs.

### *Implementation of Differentiated Learning Activities*

As soon as the school year began, we realized that every day would present an opportunity to differentiate at least one lesson. We were pleased that we had planned so well before the school year because, in the first few weeks of school, the implementation of these strategies was quite new for the students and staff. Because of space limitations I can only share a small sampling of differentiated activities that we provided for the students. I have chosen to share some of the activities that we offered in the first few weeks of school because they became so important to the students' growth in academics and cooperative learning.

The first differentiated activity was one that encouraged a sense of community within the classroom. Many of the students that were involved with this classroom, even though they were so young, already had some feelings of isolation because of their exceptionalities. This feeling of isolation may have resulted from their placement in previous classrooms with few other exceptionalities. In order to avoid a sense of isolation, we chose to emphasize that every student shared the classrooms and the classroom teachers equally. To get started, we explained to them that during the year they would have the opportunity to work with all of the teachers and all their classmates at

some point. We never stated specifically that one of the teachers specialized in special education, but we did explain that I was the gifted education facilitator and would be present throughout the year to work with all of them.

To build upon the feeling of belonging, we started each day with a town meeting. With this meeting, we did the usual routine of calendar math, weather and lunch count. However, this meeting became more interactive and higher order by progressively becoming student led with options of in-depth study in mathematics and language. The students were asked to do class cheers and to memorize motivational poems like the one called "Do Good Anyway," written by Mother Theresa. Then the students worked together in pairs to lead the community meeting. Some were asked to bring in fun facts about the day or create problems for the rest of the class to solve. Providing non-threatening, non-mandatory options of enrichment easily differentiated the community time.

In classrooms that use differentiation it is important to note that not every lesson needs to be differentiated. Doing so would be overwhelming for everyone. We determined which units would require differentiation by using pretests or other subjective needs assessments. Since most of the students were either gifted in reading or LD, we determined many of the mathematics lessons could be taught using a direct approach.

We also found that it was important to spend the first few days of the year practicing group and differentiated work with the students since it is a concept that too few students have mastered. It is unacceptable to assume that students, gifted or not, will be able to self-motivate or self-direct their learning completely. Therefore, we explained to the students that some of the activities throughout the year would require flexible

group work and defined what that should look like. We shared our rules for the classroom and allowed them to have their first practice.

For our first practice lesson I developed an activity in which students were grouped according to their preferred summer activity. Students were asked to choose from a list the activity on which they spent most of their time during the summer. Once they were in groups, they were presented with a cube that contained various modes of expression (write it, act it out, sum it up, or draw it) with which they could choose to show how they spent their summer. Giving the students these options was one way to allow them to demonstrate their area of preferred learning while sharing a little about themselves with their heterogeneous group. Next, they were regrouped according to similar modes of expression and asked to share again. This initial activity was very basic but also very fundamental in laying the framework for cooperative learning activities throughout the year.

Another area in which we differentiated content was the social studies curriculum, which required differentiation because of its required readings and because our students' prior knowledge and reading levels varied widely. The social studies curriculum included a study on the regions of the United States. We teachers decided to modify the curriculum so that the students would study the western region during the 2002 Winter Olympics so that we could include current events. The textbook scope and sequence of the general education curriculum taught the regions in a different order and did not include the Olympics theme. This small change proved that differentiation does not necessitate massive changes in curriculum. Simply moving planned curriculum to a time

that better reflects current events and student interest may be all it takes to provide one differentiated curriculum that is beneficial for all young people.

As defined previously, differentiation is the modification of curriculum process, product or content. Layered curriculum is one strategy for modifying curriculum. We used the layered curriculum technique for the Olympics social studies unit, and many other differentiated lessons. Kathie Nunley (2002) believed that “The simplest way to differentiate instruction and teach in mixed-ability classrooms is with a simple method called layered curriculum” (p.1). This method divides an instructional unit into 3 layers, called C, B and A. The C level consists of a wide variety of assignment choices which teach basic facts, skills, vocabulary, and technique. The B level offers an assortment of projects students can complete to demonstrate an application of the knowledge and skills gained in the C level. The A level requires students to analyze critically a current issue in the real world which relates to the unit of study. Students choose assignments in the various levels to earn a grade of a C, B or A.

To use the layered curriculum in our pilot, heterogeneously mixed teams of three students were given choices of products to put together for final assessment. Because it was the Olympics, we specifically showed what it would take for each team to earn a bronze, silver or gold grade for their work. We also assigned each team with a “home” western state. All of their work had to be done from the perspective of that state, not Iowa. During the course of their independent work time, we interrupted their study with a “disaster”. I gave each team a card including a disaster scenario that could happen in their state. The teams had 24 hours to figure out how they would survive the disaster. The next day I returned, and each team excitedly reported how they would survive. Even

students who lacked prior knowledge of western states or survival techniques were motivated by these activities. Differentiating the curriculum in this way provided an opportunity for learning to occur in a real-life, novel fashion.

Another lesson grouped students heterogeneously for a multidisciplinary, group research project on international holiday customs. Each of the team members had a specific role, with one student being the team leader. The groups worked together so well that they were asked to present to a sixth grade classroom that was also working on group projects. By December it was evident that the students were becoming quite able to work and learn with each other. 4AE started to hear comments from other classroom teachers and students in other classes. Some of the comments from students included, “It was great how those groups worked so well together,” and “I could tell who the leader was, but they all had a job that they worked hard at to help the team.” Opportunities like this gave the fourth graders a chance to belong to a group and do well. When other classes praised our class as a whole, we felt good knowing the LD students would have been self-contained in a resource room and may not have had this type of opportunity.

It is important to note that it is typical in our district that, when LD students leave their resource room for homerooms during the day, they go to different classrooms. Therefore, they rarely feel the sense of belonging that the pilot LD students possessed. Gifted students, on the other hand, are frequently distributed to many different classrooms and can only take part in stimulating conversations and extended projects with like-ability peers when they are together for brief times in my resource room. Therefore, the implementation of differentiated activities in 4AE gave gifted students the

opportunity to be challenged a greater part of their school day than the typical resource room pull out model.

### Results of the Pilot Classroom Model: Perceptions

Because we wanted to determine the pilot's success in increasing student achievement, we used a variety of assessment tools to keep track of student growth and the development of our program. Much of our evaluation was qualitative rather than quantitative since standardized testing results had not been received as of this writing.

Many of the students were assessed with rubrics that the students were given at the beginning of every project. After finishing projects, the students were able to discuss what other students did well by citing the rubric. This prompted metacognitive conversations for all of the students and helped us to assess how they were learning, as well as how much they were learning.

We kept track of how the students were meeting their I.E.P. goals and personal goals they made at the beginning of the year. We were delighted that in many cases students had accomplished much more than the goals they set for themselves. For example, one student listed a goal to read thirty words per minute at a third grade level by the end of the year. So far he is reading ninety-two words per minute at a third grade reading level. Another student cried at the notion of coming to school and having to read at the beginning of the year. With the specialized instruction that she received in the pilot, she began to feel good about school and felt more successful in reading.

We did not cluster students for mathematics in this classroom, but it was one area in which the school district wanted to increase student achievement. So we were pleased to note that many students, of both exceptionalities, increased their achievement and

desire to learn mathematics. Working in the pilot environment, one behaviorally disabled student was able to control his behavior to such an extent that he moved into the highest mathematics group offered. It seemed to be a repeating cycle in that, when his behavior improved, he accelerated in learning; when he accelerated in learning, he felt such success that his behavior was not an issue.

Our goals stated that we wanted to give the students an opportunity to increase intrapersonal and interpersonal skills. Simply grouping these students with exceptionalities together and encouraging them to work with each other gave everyday possibilities for them to improve interpersonal skills. We were able to cite specific instances where one student would ask a question, and then the next day someone else would come back with an answer that he or she had researched overnight. These occasions helped us to realize that the students were enjoying their learning experiences and cared for each other as individuals. They realized the impact they had on one another, and they became friends and co-learners. This type of question and answer opportunity also gave the gifted students a chance truly to become resident experts and to research questions by which they were also intrigued.

Our highlight for an intrapersonal skill being met was when a learning disabled student approached his teacher and said, "I only have six of my objectives met. I know I need eleven, so can you tell me when we will talk about the others in class?" This was a great intrapersonal achievement for this student. He realized the importance of making deadlines, and he realized he had the capability of meeting the requirements if he took responsibility.

Another mode of assessment was the number of office referrals. We noted that there were fewer office referrals from the pilot classroom than the teachers had reported with the same students in previous years. Having two teachers in the classroom most likely increased the use of proximity as a behavior modification strategy. We also noted that students who may have been prior behavioral problems benefited from seeing how other students reacted more positively to stressful situations. In essence, much more was learned by all participants from this pilot than just the planned curriculum.

At the time of this writing, the Iowa Test of Basic Skills results had not returned, so we examined an alternate standardized test that is given as a mathematics and reading norming device for all fourth graders in the spring and fall of each year. Results of the Fall 2001 Mid-Iowa Achievement Level Test (MIALT) of 4AE students were favorable but only indicate the gains made from the previous spring. We assume that greater gains will be demonstrated in the spring results of 2002 and also in the ITBS results. The results of the test scores indicated improvement on 71% of the gifted students' tests and 60% of the LD students' tests.

In addition to quantitative data, the student's anecdotal responses were also a very important component to our pilot assessment. In a survey given to 4AE students in the spring of 2002, many positive comments illustrated the pilot's impact on the students' academic achievement as well as growth in social skills. Eighty percent of the class indicated an increased sense of challenge and achievement using the differentiated activities in 4AE. Sixty percent of the class felt that the increased number of teachers in the classroom benefited their achievement; while the other forty percent felt increased numbers had neither a positive nor negative impact on student achievement. Eighty

percent of students felt increased efficacy in mathematics and reading, while twenty percent of the class felt decreased efficacy in mathematics and reading.

Fifty-five percent of the student surveys indicated that the students felt a sense of belonging in the classroom, and eighty-five percent hoped for the same students to be in their class next year. One very interesting result from the survey was the feedback given by the twice exceptional student. This student specified classmates by name, all LD, with whom he would not want to be grouped the following year. Interestingly, many other students, on that same survey, listed the twice exceptional child as being one of the best problem solvers in the class. Results like this indicated to me that labeled students were able to identify and build upon their strengths. Other students and staff also were able to recognize those strengths more easily when demonstrated through the alternative grouping and strategies practiced in 4AE.

#### *Responses/Perceptions of Future Participants*

Because it was a goal of my school to increase student achievement through the use of differentiation, it was important to me that the pilot was perceived by others in a positive perspective. I knew other teachers would readily agree to try strategies of differentiation if they saw them working in 4AE. Therefore, I collected data throughout our pilot year from students, parents and other teachers.

As a result of our pilot, many of the other fourth grade classroom teachers in the district did decide to use the differentiation strategies that were implemented by 4AE. Those teachers found that, typically, they differentiated curriculum for learners of average ability since the gifted students and LD students were clustered into 4AE. They

found that making modifications was not too difficult since they were teaching curriculum to students of generally the same learning ability.

Our school principal was very excited with the results of the pilot program. He subsequently has encouraged other special education and general education classroom teachers to collaborate. During many of the planning sessions in which he participated, he commented favorably on the efforts of our pilot. He said, "This is how education should be...Educators getting together to talk about successes---what is working or not working for kids. It is good to have this type of opportunity to get teachers communicating" (Wicks, 2001). Another aspect he discussed was the fact that parents had been very happy with the service their children were offered with no need to increase district spending for implementation.

Parent responses were typically very positive. We often heard that their children enjoyed the projects, liked having more than one teacher, and enjoyed being in a classroom with their friends. These comments were not surprising to me. The two teachers in 4AE worked very well as a team, shared many of the same philosophies, and made learning so much fun for the students. One of the parents of a gifted student remarked how his son never wanted to go to school in years prior to fourth grade. This year he was very motivated to come to school because he was interested in the various activities, and he had many of his like-ability friends in his class. One of the parents of a LD student stated during a parent-teacher conference that she did not think her son was disabled any longer. Certainly, in the classroom we were focusing on student strengths, so we were pleased to see this philosophy carrying over to parents. We thought it to be a

great benefit to have parents believing the best in their children and having such positive feelings about their children's education.

I also elected to get feedback from the fifth grade teachers for the purpose of ascertaining their perceptions of the fourth grade program. First, I briefly interviewed the special education associate who thought that the self-contained resource room would be a more effective environment because the students could work at their own pace, have a safe place to land, and receive counseling when needed. On the contrary, when interviewed, the teacher for the fifth grade special education resource room had very positive thoughts on the pilot. She thought the integration would be excellent because learning disabled students need to be with their age-mates as much as possible. Another concept that she brought up was the fact that presently, when her students go to their general education homerooms, they are divided into different rooms. Therefore, she confirmed our belief that our pilot offered learners a feeling of belonging in a classroom, rather than just feeling like a visitor among peers. She also felt that collaboration would decrease her personal feeling of isolation. In her current situation, this teacher has no collaborative preparation time with other fifth grade teachers. Therefore, the responsibilities of planning, teaching and assessing fifth grade LD students are hers alone. She thought that collaboration would be an excellent way for her to gain prep time and assistance in providing specialized instruction for her students.

The pilot's special education teacher noted that being in a general education classroom helped her to remember the pace at which most fourth grade classrooms proceeded. She felt that helping her students progress academically as close to "normal" as possible was beneficial. She also noted that, when the gifted students were pulled out

of the room, the learning disabled students were given a time to emerge as leaders and have extra time to finish projects. The pilot's general education teacher commented that the opportunity gave her the chance to do higher order thinking activities with the presence of the gifted students. She also felt the alternative approach allowed her to have a fresh outlook on her career and challenged her to keep up to date on best practices research. As the talented and gifted facilitator, I enjoyed the pilot because it gave my students the opportunity to be challenged a greater portion of the school day and to receive specialized instruction everyday. I believe the pilot project encouraged many general education teachers to consider the needs of gifted students and modifications necessary for their own curriculum.

The guidance counselor remarked how she enjoyed coming into 4AE because the students were very capable of completing independent and team-oriented projects. Her favorite aspect of the class was how well they helped one another to complete a task. In comparison to other classes she was surprised that a class with this many behavioral challenges could perform so effortlessly.

#### Retrospective Limitations of the Study

In retrospect, there were a few limitations to our study that posed problems when sharing our data with other classrooms, and most of them pertained to the factor of time. The first was the fact that the planning was so time consuming. We felt that the planning time was comparable to how much time we spent planning in our first year of teaching. However, we hope that in the next year planning time will be decreased. Even with extra staff, we did not always have sufficient time to do quantitative research or

documentation. Much of the documentation that we did was from standardized tests, anecdotal feedback and subjective analysis.

Another limitation also had much to do with time. Initially some of the learners identified with behavioral disorders were very intense and consumed much of the special education teacher's time. Therefore, instead of always having two classroom teachers present in 4AE, the general education teacher was often left alone to teach. In a typical classroom this might not have been an issue, but we had clustered 4AE in a way that it contained students of very diverse exceptionalities. This pilot, therefore, was not always able to get the extra staffing support that it required. As the gifted education facilitator, I also had responsibilities in other grade levels, kindergarten through sixth grade. Therefore, I did not feel that I had as much time as I would have liked to observe, assist and assess the pilot.

This concern about time is one that is commonly shared by teachers. It seems I am always hearing a teacher's plea for just a little more time to plan or just one more chance to make a difference in a student's education. In this aspect our pilot was not different. We know that we provided an excellent service to those students, but the limitation of time prevented us from making an even stronger impact.

### Conclusions and Recommendations

We concluded our pilot to be a great success as based on observed increases in student achievement, social skills and motivation. Students progressively demonstrated an increased desire to be challenged and continually raised the bar on their own expectations for personal potential. It also was an opportunity that provided us, as educators, the chance to learn and feel a great sense of job satisfaction. Satisfaction came

from knowing that all of our students were being appropriately challenged with one differentiated curriculum. Teachers felt little isolation because the pilot required increased collaboration and opportunities to discuss positive student outcomes subsequent to implementation of specific strategies. Considering the “strategy du jour” that is promoted at every teacher inservice, the pilot program was a risk that we took. However, it offered us a chance to learn about the power of teacher collaboration and volumes about how children learn. We would encourage others to provide this type of programming for students.

As we looked back on our year we started to compile a top-ten list of recommendations for educators and administrators to consider before implementing this type of model:

1. Carefully choose common characteristics in the collaborating teachers.

The teachers in our pilot program were able to benefit their students because they did not need to be the “lead player on stage”. The teachers that work well with this type of model seem to share the characteristics of willingness to learn, dissatisfaction with status quo, desire to make the program work, flexibility, and self confidence.

2. Make sure the administration backs the program. Participating teachers will get questions from parents and well-meaning teachers. Their job is made much easier if the administration understands what they are doing, and why. Also, there are times that participating teachers will need flexibility with resources or time. Make sure that the administration is able to honor teacher requests.

3. Do not stress the differences between the gifted and the learning disabled students. Rather, try very hard to focus on their similarities and their needs.

4. Find a way to recognize students' needs and interests so that student centered activities can be provided. We found that having our students on I.E.P.'s was very beneficial in lesson planning.

5. Be prepared to give alternative assessments, always remembering to ask, "What do I really want this child to learn?" Also, in assessment, look at the long term. Some days it will be difficult to see if what is being done for these children is working. It is much easier to do a true assessment when looking at that child's accomplishments from the beginning of the year, rather than just the day or hour.

6. Take the opportunity to emphasize a community feeling in the classroom. Remember the students will most likely be very pleased that they have the opportunity to belong to a community of learners. Without an inclusive classroom, the alternative for the learning disabled student is likely to be a self-contained classroom with like-ability students and disbursement to varying home rooms where they will not make strong connections with others. The alternative for the gifted student is likely to be grouped heterogeneously, unchallenged by the curriculum for a larger portion of the school day.

7. Be prepared to share knowledge with others. Help others to see the reality of how the program is benefiting children. We found collaboration to be very beneficial to students, staff and families.

8. Be flexible in grouping. It should be accomplished in a way that gives each learner a time to shine in an area he or she can. The grouping does not always have to be heterogeneous or homogeneous.

9. Take advantage of the increased resources. This model really takes the pressure off being the only one responsible for planning. The special education teacher is not the only one responsible for providing the least restrictive environment for the learning disabled students. Too, the general education teacher does not have to solely understand, and teach to, the needs of all the diverse learners. The gifted education facilitator will also be able to share valuable materials that otherwise may have remained unused for the majority of the school year.

10. Carefully plan the roles that teachers and students will assume in the following school year. Because we felt our pilot study demanded too much preparation time for only one year of implementation, we would suggest making long range plans early in the planning stage.

## References

- Chow, V., & Kasari, T. (1999). Task related interactions among teachers and exceptional at-risk typical learners in inclusive settings. *Remedial and Special Education, 20*, 226-232.
- Davis, G.A., & Rimm, S.B. (1998). *Education of the gifted and talented* (4<sup>th</sup> ed.). Needham Heights, MA: Allyn & Bacon.
- Gardner, H. (1985). *Frames of mind*. New York: Basic Books.
- Iowa Administrative Code. (2001). *Program Plans*. State of Iowa: Department of General Services. Chapter 12 (257.43), Vol. 2, 2430.
- Karnes, F.K., & Bean, S.M. (2001). *Methods and materials for teaching the gifted*. Waco, TX: Prufrock Press, Inc.
- Lyon, G.R. (Spring, 1996). *Special education for students with disabilities: The future of children*. Retrieved March 15, 2002 from [http://www.ldonline.org/ld\\_indepth/general\\_info/future\\_children.html](http://www.ldonline.org/ld_indepth/general_info/future_children.html)
- Maker, J., & Neilson, A. (1996). *Curriculum development and teaching strategies for gifted learners* (2<sup>nd</sup> ed.). Austin, TX: PRO-ED.
- Monroe, E. (1978). *Guidelines for program development: A sourcebook*. Des Moines, IA: Department of Public Instruction, Curriculum Division.
- Nunley, K. (2002). *Layered Curriculum*. Retrieved March 15, 2001 from <http://help4teachers.com/layeredcurriculum.htm>
- Renzulli, J. S., & Reis, S. M. (1985). *The schoolwide enrichment model: A*

- comprehensive plan for educational excellence*. Mansfield Center, CT: Creative Learning Press.
- Siris, E. (2001, December 14). All for one. *Time For Kids*, 7, (11).
- Tomlinson, C.A. (1999). *The differentiated classroom: Responding to the needs of all learners*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Vaughn, S., Elbaum, B. E., & Schumm, J. S. (1996). The effects of inclusion on the social functioning of students with learning disabilities. *Journal of Learning Disabilities*, 29, 598-608.
- Westwater, A., & Wolfe, P. (November 2000). The brain compatible curriculum. *Educational Leadership*, 58, 49-52.
- Winebrenner, S. (1992). *Teaching gifted kids in the regular classroom*. Minneapolis, MN: Free Spirit Publishing, Inc.
- Winebrenner, S. (1996). *Teaching kids with learning difficulties in the regular classroom*. Minneapolis, MN: Free Spirit Publishing, Inc.

## Appendix



# GIFTED CHILD

q u a r t e r l y

## EDITOR

Tracy L. Cross

*The Indiana Academy for Science, Mathematics, and Humanities, Ball State University*

## ASSISTANT EDITOR

Jennifer Riedl Cross

## EDITORIAL ASSISTANTS

Barbara Spike

Marie Aquila

Jason Holland

## BOOK REVIEW EDITOR

Joyce VanTassel-Baska

## GRAPHIC DESIGN AND PRODUCTION

Prufrock Press Inc. and Jason LaM...

## ASSOCIATION EDITOR

James J. Gallagher

*University of North Carolina*

*at Chapel Hill*

## SUBMISSIONS

Please submit all manuscripts in quadruplicate, double spaced, accompanied by a short abstract (approximately 100 words, but not to exceed 150 words), and with citations and references following the guidelines set forth in the *Publication Manual of the American Psychological Association, Fourth Edition*. Send manuscripts to:

Dr. Tracy L. Cross, Editor

*Gifted Child Quarterly*

*The Indiana Academy*

*Ball State University*

*Muncie, IN 47306-0655*

## EDITORIAL REVIEW BOARD

Cheryll Adams, *Ball State University*

Dorothy Armstrong, *Grand Valley State University*

Linda Avery, *College of William & Mary*

Nancy Bailey, *Cody, WY*

Dorothy Battle, *Georgia Southern University*

Susan Baum, *College of New Rochelle*

Suzanne Bean, *Mississippi University for Women*

Camilla Benbow, *Vanderbilt University*

Ernesto Bernal, *McAllen, TX*

James H. Borland, *Columbia University*

Jill Burruss, *College of William & Mary*

Carolyn M. Callahan, *University of Virginia*

Barbara Clark, *California State University-Los Angeles*

Pamela Clinkenbeard, *University of Wisconsin-Whitewater*

LeoNora Cohen, *Oregon State University*

Nicholas Colangelo, *University of Iowa*

Laurence Coleman, *University of Toledo*

Mary Ruth Coleman, *University of North Carolina at Chapel Hill*

Dewey Cornell, *University of Virginia*

Bonnie Cramond, *University of Georgia*

Marcia Delcourt, *Western Connecticut State University*

James R. Delisle, *Kent State University*

Peggy Dettmer, *Kansas State University*

David Dixon, *Ball State University*

Felicia Dixon, *Ball State University*

Donna Enersen, *Lafayette, IN*

John Feldhusen, *Purdue University, Emeritus*

David Feldman, *Tufts University*

Donna Y. Ford, *Ohio State University*

Reva Friedman, *University of Kansas*

François Gagné, *University of Quebec at Montréal*

Shelagh Gallagher, *University of North Carolina-Charlotte*

Kristin Sanford Gillon, *Ball State University*

Betty E. Gridley, *Ball State University*

Miraca Gross, *University of New South Wales*

Patricia Haensly, *Western Washington University*

Norma Lu Hafenstein, *Denver, CO*

C. Lynne Hannah, *Cleveland State University*

Jean Hansen, *Hansen Educational Associates*

Nancy Hertzog, *University of Illinois*

Eunsook Hong, *University of Nevada*

Brian Hopewell, *Sea Education Association, Woods Hole, MA*

Scott Hunsaker, *Utah State University*

Nancy Jackson, *University of Iowa*

Paul Janos, *Seattle, WA*

Susan Johnson, *Baylor University*

Lannie Kanavsky, *Simon Fraser University*

Franca Kames, *University of Southern Mississippi*

Sandra Kay, *Monroe-Woodbury Central School District*

Margie Kitano, *San Diego State University*

Penny Kolloff, *Illinois State University*

Sharon Lind, *Lind Consulting*

Sharon Lynch, *George Washington University*

C. June Maker, *University of Arizona*

Sal Mendaglio, *University of Calgary*

Sidney Moon, *Purdue University*

Tonya Moon, *University of Virginia*

Alan Moore, *University of Wyoming*

Dan Mundfrom, *University of Northern Colorado*

Maureen Neihart, *Northwest Counseling Center*

Kathleen D. Noble, *University of Washington*

F. Richard Olenchak, *University of Houston*

Paula Olszewski-Kubilius, *Northwestern University*

Jean Peterson, *Purdue University*

Steven I. Pfeiffer, *Duke University*

Michael Piechowski, *Northland College, Emeritus*

Jonathan Plucker, *Indiana University*

Michael Pryor, *University of Calgary*

Frank Rainey, *Longmont, CO*

Sally Reis, *University of Connecticut*

Robert Rittenhouse, *University of Arkansas*

Ann Robinson, *University of Arkansas-Little Rock*

Nancy Robinson, *University of Washington, Emeritus*

Karen Rogers, *University of St. Thomas*

Pat O'Connell Ross, *U.S. Department of Education*

Rose Rudnitski, *State University of New York at New Paltz*

Michael Sanders, *Cleveland State University*

Michael Sayler, *University of North Texas*

Gina Schack, *University of Louisville*

Barry Schneider, *Ontario Institute for Studies in Education*

Marcia Strong Scott, *University of Miami*

Ken Seelye, *The Colorado Foundation for Families and Children*

Beverly Shackle, *Kent State University*

Bruce Shore, *McGill University*

Linda Silverman, *Gifted Development Center*

W. Barlow Soper, *Louisiana Tech University*

Julian Stanley, *Johns Hopkins University*

Robert Sternberg, *Yale University*

Rena Subotnik, *Hunter College*

Gloria Taradash, *Initiatives for Education, Inc.*

Carol Tomlinson, *University of Virginia*

Stuart Tonemah, *University of Oklahoma*

Joyce VanTassel-Baska, *College of William & Mary*

Vicki Vaughn, *Edgelea Elementary School*

Herbert Walberg, *University of Illinois-Chicago*

Karen Westberg, *University of St. Thomas*

Michael Woodin, *Philadelphia Center for Health Care Sciences*

Lisa Wright, *Columbia University*

Carolyn Yeuxhuk, *University of Alberta*