MATH 381 Textbook Evaluation – 100 pts – Due Oct. 2, 2008
Laura Weakland

I. Overview and Comparison

Grade Level Chosen: 4th

Textbooks Chosen: 1. *Everyday Mathematics* (Wright Group)
2. *Investigations in Number, Data, and Space* (Dale Seymour)
3. *Math Expressions/Central* (Houghton Mifflin)*

* In order to adequately evaluate the textbook series and make the comparisons as accurate as possible, I evaluated a combination of *Math Central* (an older Houghton Mifflin edition) in person and *Math Expressions* online. *Everyday Mathematics* and *Investigations* were evaluated in their entirety in person.

	Textbook		
Topic	**1**	**2**	**3**
A. Standards	The *Everyday Mathematics* curriculum (Gr. 4-6) is organized into the following content areas: Numeration and Order; Arithmetic Operations; Data and Chance; Geometry, Measurement; Reference Frames; and Patterns, Sequences, Functions and Algebra. Woven throughout these areas are the threads of algorithms, estimation, mental math, number sense and problem-solving. It is not explicitly mapped to the NCTM standards as the *Investigations* curriculum is. However, you can find the standards blended throughout the curriculum. *For example*, in Unit 1 (Naming and Constructing Geometric Figures), Lesson 1.6 (Drawing Circles with a Compass) correlates to the NCTM content standards of Geometry and Measurement. In addition, because this is a national curriculum, there is no mention of the Michigan GLCEs.	In the teacher implementation guide, there is a section describing how the *Investigations* units were developed in conjunction with the NCTM standards. There also is a correlation chart that maps the units to the corresponding standard. *For example*, Investigation 3 (Ordering Fractions), Sessions 1&2 (Making Fraction Cards) correlates to the NCTM content standards – Number & Operations, Geometry, and Measurement. Because this is a national curriculum, there is no mention of the Michigan GLCEs.	There is no mention of national or local standards in the older version of the Teacher's Book of *Math Central*. In reviewing the online resources, the *Math Expressions* has a link for state correlations, but Michigan is not one listed and I couldn't find a reference to NCTM standards other than to say their textbook series is "standards-based." The scope and sequence in the Teacher's Book of *Math Central* is organized into the following content areas: Problem-Solving, Whole Number Concepts, Whole Number Computation, Estimation, Mental Math, Decimals, Fractions and Mixed Numbers, Integers, Ratios, Proportions and Percents, Reasoning and Communicating, Algebraic Reasoning, Patterns and Functions, and Technology. Even though it is not explicitly mapped to the NCTM standards as the *Investigations* curriculum is, you can find the standards blended throughout the curriculum. *For example*, Unit 5 (Basic Fraction Concepts) correlates to the NCTM content strand of Number and Operations.

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B. Basic Facts	In the "philosophy" section in the *Everyday Mathematics* Teacher's Reference Manual, it is stated that this curriculum emphasizes a balance between conceptual understanding while building a mastery of the basic skills and that it explores a broad range of mathematics, not just basic arithmetic. This textbook series uses a variety of ways to help children develop their knowledge of basic facts. These include: practice through games, Fact Triangles (flash cards), 50-facts multiplication tests, choral drills and mental math exercises, math boxes (review at the end of the lesson), fact extension practice, frames and arrows diagrams (visual representations), function machines, and home links (practice at home).	The *Investigations* curriculum is based on hands-on exploration of the materials with their peers to solve larger mathematical problems. The curriculum does not ignore the need for fluency and accuracy and knowing the 'basic facts.' However, it does not emphasize rote memorization but instead emphasizes building student's strengths in their number relationships. For example, in the unit on multiplication students use array cards, as well as cubes and other manipulatives to help with skip-counting and other multiplication patterns.	The Houghton Mifflin series stated their programs offer a balance of experiences – direct instruction and cooperative learning; hands-on activities and paper and pencil tasks; real-world applications along with investigations, projects, math games and basic facts practice. This leads me to believe that their program does not emphasize rote memorization as the only way to learn the basic facts.
C. Practice	The *Everyday Mathematics* curriculum includes "Study Links" which is their version of homework assignments or supplemental work. Each lesson begins with a follow-up from a previous lesson and review of the prior Study Link. The program also includes a Math Masters book that includes activities to support the daily lesson activities, the home Study Links, games, etc.	At the end of each session in the units, there are "follow-up" suggestions for homework or as an extended activity. There are also games that can be made and sent home for parents to work with their students. However, in working with teachers at my sons' school, they often supplemented their *Investigations* curriculum with other materials.	According to the *Math Central* Teacher's Book, this textbook series provides ample, ongoing practice and review. The series includes extra practice and enrichment worksheets, home-school connections, and extended practice with the math content via the computer.

D. Technology	*Everyday Mathematics* includes an Assessment Management System which is web-based software for the teacher to track students' progress. It also includes an Interactive Teacher's Lesson Guide that has grade-level specific materials for students and teachers. In reviewing the grade 4 Teacher Lesson Guide, I noted numerous references to use of a calculator, as well, in the daily activities.	In the Implementation Guide there is a section entitled "Materials and Technology" which makes reference to the use of calculators and technology in the investigations. Calculators are used in many of the units and students can use them as needed. However, students are encouraged to problem-solve in more than one way; with the calculator being only one of the ways. One of the 4th grade units on 2-D geometry required the use of the computer. The activity requires the use of software that is provided with the *Investigations* curriculum. (Unfortunately this unit was missing from the Porter collection for further review). I felt the technology connection was weak and would have liked to see supplemental activities (virtual manipulatives, websites for extra practice at home, etc.) sprinkled throughout all the units.	In the Teacher's Book, in the scope and sequence, technology is listed as its own category with two components: calculator use and computer use. In the back of the Teacher's Book, there was a page on "using the calculator" in the classroom, including information and activities designed to help students become familiar with the calculator. The computer use included a program called "Math Keys" and Internet use.
E. Problem-Solving	In the Teacher's Reference Manual, there is an entire chapter devoted to problem-solving. In this chapter, it is explained how *Everyday Mathematics* addresses problem-solving and also refers to the NCTM standards and to Polya's problem-solving model. In *Everyday Mathematics*, problem-solving permeates the entire curriculum and students also solve problems in real situations from the classroom and everyday life.	In the *Investigations* curriculum students spend a great deal of time exploring mathematical concepts that are interconnected instead of isolated facts. There also is an emphasis on placing the problems in a real-world context describing relationships that actually exist, instead of purely mathematical questions and problems.	Included in the *Math Expressions* scope and sequence was an entire category devoted to "problem-solving." Included in this sequence was instruction on problem-solving strategies (e.g., make a table, make a list, work a simpler problem, etc.) There are also sections on problem-solving applications and decision making. The series also emphasizes real-world connections and states "students learn mathematics that spring from real-life situations from home, school, community, and the information age."

F. Organization	*Everyday Mathematics* is a mathematics curriculum that helps students build an understanding of mathematics over time, first through informal exposure with concrete hands-on experiences and then through more formal and direct instruction with more abstract experiences. It also emphasizes repeating concepts throughout the curriculum. It also emphasizes cooperative learning, daily routines, and games to place the content in authentic and interesting contexts. The curriculum includes a Teacher's Reference Manual, a Teacher's Lesson Guide, Math Masters set, an Assessment Handbook, a Home Connection Handbook, a Differentiation Handbook, a 5-minute Math guide, a Student Reference Book, and a Student Math Journal. The material is very organized and logical and there is an abundance of resources for the teacher, as well as the student.	*Investigations* is a mathematics program that is organized into units ranging from 2 to 4 weeks in length. There is no student textbook. Each unit is bound separately. There is a teacher guide on implementation that explains the mathematical concepts of each unit, as well as how to implement the investigations/activities. The curriculum emphasizes working in a variety of groupings (whole, small group, individual), multiple perspectives and strategies, lots of communication woven throughout (orally, in writing, and using models, diagrams, pictures, etc.), concentrated efforts on a smaller number of problems until mastery, and using lots of hands-on manipulatives to enhance the mathematics instruction (cubes, blocks, measuring tools, calculators, etc). The materials were organized, but limited in reference material for the teacher in comparison to *Everyday Mathematics*.	The Houghton Mifflin series are organized by grades, by units. The package includes a Teacher's Book, a Student book, a Student book with manipulatives kit, Literature/Trade Book Connections, Practice Worksheets, Enrichment Worksheets, Reteaching Worksheets, Assessments, Overhead Transparencies, Math Center, Problem of the Day, Family Involvement, Manipulatives Kits – classroom, overhead, student, "Mathkeys" (computer software) and Cross-Curricular Connections. The layout seemed logical and organized.

II. Personal Choice

After evaluating the *Everyday Mathematics* textbook series, the *Investigations* textbook series, and the Houghton Mifflin *Math Central/Math Expressions* series, I would have to conclude that the Houghton Mifflin series would be my last choice; strictly on the basis of I didn't feel I could gather enough information to adequately evaluate it. If I were on a committee to select a new textbook series for my elementary school, I would have to request more information on this series. I can say in response to what I did see of the Houghton Mifflin series, is that I really liked their commitment to math across the curriculum with suggested activities/connections at the end of each lesson to other content areas, as well as their integration of literature/trade-books.

My second choice would be the *Investigations* series. Although I liked its extensive mapping to the Standards and its emphasis on games and hands-on exploration of the math concepts with their peers, I felt it was lacking in practice resources and technology.

My first choice would be *Everyday Mathematics*. As a potential "new" teacher in the classroom, it was inviting to me, because it was laid out so logically and seemed user-friendly and easy to

follow with a lot of guidance for the teacher. However, I have seen this program used in the classroom and the flip side to that is the teacher's over-reliance on the materials and not stepping away and evaluating and deciding what is working and what isn't based upon the needs of the students.

My first and second choices were close in selection and I think it would not hamper me to have to teach from my 2nd choice. I would just make sure to seek out additional resources as needed to fill where I saw gaps and to add supplemental computer activities. However, for my 3rd choice, as I stated before, I would need to gather more information about the textbook series before I taught from it. I can say the same for all the selections as well. Before I taught from any one of the series, I would like to take some more time to evaluate the textbook series and what they entail. I was also a bit concerned when I "googled" the *Investigations* and *Everyday Mathematics* curricula and found all the parental backlash about the programs. I couldn't find ANY positive parental comments about these programs. (Maybe those that are happy with them, never comment online?). If I were on a committee to select a new textbook series for my school, I would make sure that I was prepared to address any potential concerns. Is it because these programs are the "new new-math" and parents feel their children would learn best in the manner they learned and are most familiar with? I did not learn this way and as I learn about these new methods with lots of hands-on exploration in groups and with manipulatives, and multiple ways to problem solve, I can not help but think it is much improved over the rote-memorizations methods I was taught with.