



Lincoln Public Schools

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To: School Committee
From: Mary Sterling
Re: Report on Differentiation and Advanced Learning Opportunities
Date: February 4, 2010

Our district has an ongoing commitment to differentiated learning. Two years ago, our district increased emphasis on differentiated instruction in mathematics and more recently, in reading and writing. This report highlights three dimensions of instruction that are critical to successful differentiation in daily classroom learning and offers examples in our district in mathematics and English Language Arts. A specific section of the report addresses our progress in making advanced learning opportunities available to students. It closes with suggestions for the work that lies ahead to build our capacity to engage and teach all learners in all content areas.

DIFFERENTIATION

We understand differentiated instruction to mean teaching that addresses the full range of learners in terms of pace, level of difficulty, choice, and focus. These considerations in teaching are important -- and challenging -- to incorporate into daily classroom practice. Dedicated teachers spend their whole career refining their skill in planning and instructing in order to account for variations in learner readiness and capacity in the context of whole group, small group, and individual learning. The following three dimensions of instruction are necessary to differentiate effectively: assessment, curriculum and content knowledge, and classroom instruction.

Assessment

In the professional literature, it is commonly stated that differentiation is grounded in assessment (Tomlinson, McTighe, Heacox, Wormeli, Winebrenner). The kind of assessment that is most useful in guiding teachers' efforts to differentiate is known as "formative" because it is embedded in classroom practice and it *informs* a teacher's planning and instruction. Formative assessment strategies give teachers timely and relevant information to assist them in knowing their students and planning instruction.

In Lincoln, we have increased the use of formative assessment through measures such as "Recognizing Student Achievement (RSA)" in Everyday Math, the use of "running records" in primary reading instruction, and the collection and analysis of data from the Common Assessments in writing K-8 and open response math questions, gr. 1-5. On an informal basis, teachers often use results of a homework assignment, notes taken during reading and writing conferences, or observations made during daily math warm-ups to make decisions about which students need more reinforcement, which students are ready for the next step in learning, and which students can move more quickly to extend their understanding. Differentiation based on formative assessment takes many forms and is supported by strong curriculum materials and time available to teachers to analyze the data from assessments to plan their teaching.

Curriculum and Content Knowledge

Deep knowledge of content and familiarity with curriculum is essential for a teacher to differentiate instruction skillfully. Such knowledge anchors teacher decisions in designing units of instruction, posing and responding to questions, and developing options for learning. For elementary teachers, this means knowing the content and curriculum for many subjects and

anticipating student capacity for conceptual learning given their developmental stage. Teachers of secondary students typically have specific content knowledge of their discipline but also find it necessary to know related curriculum in order to make connections for students.

Our work in the area of deepening teacher knowledge of content and curriculum in mathematics and English Language Arts has occurred in several ways during the past two years. In elementary mathematics, we began in the summer of 2008 with professional development to familiarize teachers with the *Everyday Mathematics* program. This focus continued through the 2008-09 school year in monthly meetings, facilitated by math specialists, when teachers not only became familiar with the program but asked regularly, “What is the math?” in order to dig into the conceptual roots of a math lesson. This year, elementary teachers have continued to develop their knowledge of mathematics and the curriculum with an emphasis on differentiation.

Middle school teachers began to learn a new math program – *Impact Mathematics* – through summer workshops in 2009 and ongoing consultation during the year. Middle school math teachers have met once a month as a district group, often led by the consultant, Faye Ruopp, who worked with them last summer. Ms. Ruopp has also conducted several cycles of consultation at each grade level to focus on the way the *Impact* program addresses key concepts in mathematics and how it provides opportunities for differentiation. In addition to the adoption of these two math programs, teachers have become familiar with and have used a range of ancillary materials to address both the needs of students who struggle and to meet the interests and capabilities of students who excel.

Recent efforts in English Language Arts began with summer sessions in August, 2009 on differentiated writing instruction, led by our ELA content specialist. Resources were introduced and discussions focused on the content and skill demands outlined in the Lincoln Learning Expectations for composition. Follow up in the fall focused on developing teacher understanding of the dimensions of skillful writing, assessment of individual learner growth, and discussions of resources and instruction to advance student writing. Our English Language Arts Assessment plan calls for the use of a literacy assessment system by Fountas and Pinnell, which provides detailed information about vocabulary, phonics, reading, and writing. Literacy specialists received training in this system during the fall of 2009 and are using it in their work with students and teachers. This approach to literacy assessment not only gives teachers formative information for instruction, it also serves to develop teacher knowledge about the integrated components of literacy development in young learners.

Classroom Culture and Instruction

Learning can flourish in the context of a classroom culture that promotes and accepts students working in different ways and at different paces. Differentiated learning can succeed in such a culture when teachers communicate high expectations and then provide different pathways to meet goals. They must also plan carefully to orchestrate learning at several levels and in several modes, often simultaneously. Differentiated instruction in the daily flow of classroom learning is anchored in a teacher’s knowledge of students’ relative strengths and needs, and depends on targeted planning, skillful management, and use of personnel and material resources.

Elementary teachers on both campuses have a daily practice of leading morning meetings, which strengthen the culture of the classroom as a community of learners. Emphasis is placed on respect for the individual and for the group as whole so that everyone’s approach to learning is valued and individual differences are accepted. They often use morning meeting as a launch to the work of the day, outlining choices and options along with expectations for all students. In the course of a school day, some teachers organize lessons in “centers” or “stations” so that individuals and small groups of students can rotate through learning tasks with independence and purpose, assisted by teachers and teaching assistants at specific points. In some primary

classrooms, a “workboard system” for language arts is used to arrange learning for individuals and small groups as determined by assessed needs.

Small group work and individualized learning occurs in many classrooms in mathematics and Language Arts, particularly at the elementary level. It is typical for elementary teachers to group flexibly in order to work with groups of readers using leveled texts. Additionally, teachers have been making more use of small group work in math; re-grouping as needed depending on skills in new units of learning. Small group work in any subject not only offers an opportunity for instruction targeted to specific students and specific skills, it also furthers teachers’ efforts to know their students well and plan subsequent instruction based on that knowledge. Individualized learning occurs in Language Arts through the choice of independent reading books and individual writing conferences. In mathematics, challenge options for individual students to pursue are available throughout units of instruction. Individualized math practice for student who need reinforcement is available through FasttMath at many grade levels.

Differentiation depends on a rich and accessible selection of resources of different kinds and levels. Our district is fortunate to be able to purchase and use high quality math programs and Language Arts books and materials for our core curriculum. We have also researched and funded additional resources to extend and enrich our current curriculum. In mathematics, teachers frequently select options for students embedded in the daily lessons of *Everyday Mathematics* and *Impact Mathematics*. Ancillary math materials for students who need more practice or a different approach to a concept, include FasttMath, *EverydayMath* Skills Links, Math Mates, Triumphs, Kathy Richardson materials, games, and Math applets from the Internet. These materials are typically in use in many classrooms. For students who are ready for more challenge in mathematics, some options are used from the core curriculum but more often, ancillary materials provide enrichment opportunities. Our district subscription to Drexel University’s Math Forum make the “Problems of the Week” available to students in many grade levels. These problems are themselves leveled by difficulty so that students can challenge themselves at more than one level. Continental Math League problems are also a main resource for the kind of non-routine problem-solving that extends student thinking in intermediate and middle school grades. *Groundworks* is a source of problem-solving challenges for younger students. Resources from the Internet are preselected for particular topics and used to enrich learning.

A wide range of English Language Arts materials are available in all schools and are used in classrooms throughout the district. As part of the core literacy curriculum, selections of leveled texts are essential for small group work and are used on a daily basis. *Lexia* – a computer program focused on developing phonological skill – is used with readers in primary grades as needed. Practice materials to develop specific skills are also available in print formats. Recently, we have begun to acquire a collection of “mentor texts,” which are literature books that highlight specific writing traits and /or illuminate certain paths to reading comprehension. Teachers use these mentor texts as compelling examples in writing and reading “mini-lessons.” Our students are expected to read independently at home and at school. We support and challenge readers of all levels through extensive collections of books in our school libraries, and collections in classroom libraries.

This discussion of differentiation has focused on teachers’ capacity to differentiate learning in the classroom through assessment, strong content and curriculum knowledge, and instructional and management strategies. However, differentiation in our district is also strongly supported by math specialists, literacy specialists, and teaching assistants. Math specialists have partnered with teachers to learn our new math programs and to use assessment data effectively. They lead district and school-based grade level meetings to focus on deriving data from assessments, to introduce new resources, to discuss needs of specific groups of students and plan differentiated approaches. Math specialists work in classes, often with pre-selected small

groups or individuals as the daily instructional needs arise. Math specialists also do some small group work outside of class for short term intervention or enrichment. Literacy specialists play a role similar to that of math specialists in being both a resource to teachers and an additional teacher for students. They participate in district and grade-level meetings which focus on assessments, materials, and use of strategies to reach different learners. Literacy specialists frequently meet with small groups of students who need extra support in strengthening decoding, fluency, and/or comprehension. Finally, teaching assistants are an important asset in differentiating instruction in our elementary classrooms. Principals have deployed teaching assistants to support instruction when math and literacy are being taught, particularly in the early grades. In their planning, teachers anticipate when an assistant will be in the classroom so that more learners at different levels can be reached during mathematics or literacy instruction. The district provided professional development for teaching assistants to acquaint them with the essential components of our elementary literacy and mathematics programs and to provide them with guidance on strategies to meet different needs in student learning.

ADVANCED LEARNING OPPORTUNITIES

The discussion of differentiation has focused on instructional practices embedded in the daily life of the classroom and has included references and examples of differentiation for learners who are ready for advanced learning opportunities. This section will offer a brief review of the district's commitment and guiding principles for meeting the needs of "high achieving students," and will provide some examples of opportunities available to them.

In June, 2008, Lincoln Public Schools Task Force on High Achieving Students issued a report in which one of the three top recommendations directly addressed the need for differentiation.

"Encourage and refine differentiation of instruction. Differentiation can be a powerful approach to meet the needs of all learners, including those who are ready for more advanced learning, whether self or teacher directed. "

The intention of Task Force members was to encourage a broad-based interpretation of differentiation in order to meet the needs of all learners in our schools. Differentiation as a way of teaching and organizing learning begins with the view that not everyone learns in the same way at the same pace. In such a context, the particular needs of students who are ready for more challenge at different times in their learning can be addressed and – importantly – be acceptable to them and their peers. The earlier discussion of the use of morning meetings to build a classroom culture that accepts differences in learning is part of our district effort to make it possible for all learners to feel confident in taking on challenges and persevere in building their own skill and understanding.

Also promoted in the report from the Task Force is the concept of "high barrier" and "low barrier" opportunities. "Low barrier" means that there are no special qualifications needed for students to undertake a learning task. These options are for any student regardless of current level of achievement. These options are available in daily math and English Language Arts classes in many forms. For example, all students are encouraged to try the math Problems of the Week, to excel in the daily mental math or warm-up, and to use any extra time during a math lesson to take on a challenge. In reading and writing, opportunities to read a more difficult book or to add complexity and creativity to writing are frequently encouraged in many classrooms. Outside of class, students are encouraged to join after school math clubs at certain grade and participate in math competitions such as Math Counts and the Math Olympiad. Middle school students are encouraged to submit writing to the Literary Magazine.

"High barrier" options are for students who meet multiple criteria that indicate a level of interest, skill, and capacity to make a sustained effort and be successful. In math, we have

offered short term enrichment groups with the math specialists for elementary students who qualify. We have also accelerated a few students with the capability, interest, and willingness to engage in higher level math. In September, 2009, we introduced the new math curriculum, which included an Advanced Algebra I course at grade 8, for which students had to have a teacher recommendation based on multiple assessment points. Finally, we have subscribed to the Virtual High School (see School Committee Report on VHS, Sept ?, 2009) in order to provide online courses to students in middle school. These courses are both “low barrier” – in that any student can express an interest and consider a course – and “high barrier” because they are rigorous and require additional time and self-organization beyond a student’s usual course load. The VHS courses can be in any subject; some are middle school courses and most are at the high school level.

The following displays shows a range of current opportunities, mostly “low barrier,” available to students in our district in several subjects. We are always in the process of refining these options to help all students make the most of their learning.

ADVANCED LEARNING OPPORTUNITIES

In Class Examples by Level

	Mathematics	English Lang Arts
Elementary	<ul style="list-style-type: none"> • Selected Math Journal sections • <i>Everyday Math</i> options • Continental Math League Problems of the Week 	<ul style="list-style-type: none"> • Choice of independent reading • Book discussion groups • Individual Writing Conferences • Self-selected Research Projects
Middle School	<ul style="list-style-type: none"> • Homework “Plus” • Drexel Math Forum: Problems of the Week • Selected sections of <i>Impact</i> • Advanced Algebra I 	<ul style="list-style-type: none"> • Choice of independent reading • Book discussion groups • Individual Writing Conferences

Outside of Class and After-School Examples

Elementary	<ul style="list-style-type: none"> • Math Team • Math Extension Groups • After-School Math Enrichment Projects • Science Share • State project
Middle School	<ul style="list-style-type: none"> • Science & Engineering Fair • Community Service Learning Projects • Math Counts • Math Olympiad • Literary Magazine • Virtual High School courses

THE WORK AHEAD

As a district, we have made progress in building the classroom and school cultures necessary to support differentiated learning for a full range of students. Teachers have developed skill in using formative assessment, have increased content knowledge and become familiar with new curriculum, and have refined classroom instructional strategies to support the learning of all students, including those who are ready for advanced learning opportunities. To continue

building our capacity to differentiate instruction, the work ahead involves the following list of areas, culled from discussions with principals, specialists, and teachers. Professional development is key to continued progress and should be organized in several ways to reach different teacher learning styles and current levels of need and interest.

- Continue focus on working with data to inform instruction PreK-8 in all subjects so that teachers increase skill in using assessment information as an ongoing basis for differentiation.
- Increase teacher skill in using the Fountas & Pinnell Literacy Assessment System, particularly in grades 3-6, to provide teachers with multiple data points to use in planning literacy instruction.
- Build teacher content knowledge in each strand of mathematics to support high quality planning and questioning.
- Refine current use of mathematics assessments in our core programs in order to be selective about which assessment measures are most useful for differentiation.
- Develop plans for a more articulated program of writing instruction, K-8, with attention to meeting a range of skill levels in young writers.
- Expand use of “Readers Workshop” in several grades to support differentiated reading instruction.
- Review use of small group and individualized learning in middle school grades and explore possibilities for flexible grouping integrated into the core curriculum.
- Provide opportunities for teachers to increase skill in classroom management and instructional strategies that specifically support differentiation.
- Identify homework practices that offer differentiated learning and expand teacher use of these practices.
- Involve Instructional Technology Specialists in working with teachers to explore possibilities for using technology for differing pace and choices.