Development of the Curriculum for Use in a Primary Multi-Age Classroom Using a Curriculum Map

Rae Anne Besser Hansberry

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DEVELOPMENT OF THE CURRICULUM FOR USE
IN A PRIMARY MULTIAGE CLASSROOM
USING A CURRICULUM MAP

by

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MASTERS PROJECT
Submitted to the
Faculty of the School of Education
Advanced studies in Education
for the
Degree of Master of Education

Grand Valley State University
August, 1998
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Abstract

Curriculum maps for multiage classes are difficult to organize. This paper explores some of the ways that curricula has been organized in the past and a method developed by Heidi Hayes Jacobs. This method differs from other mapping strategies because it starts with the state standards and benchmarks and fits the curricula into this framework. This paper also explores the concept of multiage groupings to insure a better understanding of the history of grouping students in education, the philosophy behind multiage, as well as some of the benefits and detractors of this concept. The process for developing a curriculum map for a multiage class of six-seven-and eight year old learners is described in this project. It starts with the state standards and benchmarks based on the social studies and science curricula. Language arts and math components are added and finally the special projects, assessments and speakers. The appendices list literature, videos, activities and projects as well as technology ideas and a chart of the classroom curriculum map.
Chapter 1
Project Proposal

Statement Of the Problem

A curriculum based on state standards and benchmarks that incorporates social studies, science and math into an integrated thematic unit can be difficult to organize in a meaningful way. Teachers often begin organizing units by curriculum and then try to fit the standards and benchmarks where they might fit best. Curriculum mapping is a method of organizing the curriculum according to what is actually taught in the classroom. It begins by using standards and benchmarks to provide a framework for the yearly school calendar.

The primary purpose of curriculum mapping is to have a written record of what is being taught in the classroom. While the lesson plan documents what a teacher intends to teach, the curriculum map logs what is actually taught (Clough, James & Witcher 1996, p. 79).

Social studies, science and math concepts are then placed into the framework where they can most easily be taught.
Importance of the Project

There are several reasons why making a curriculum map is beneficial to the teachers, administrators, parents and students. First, teachers are always accumulating state, district and site-based goals and objectives in volumes of material that are often difficult and cumbersome to use. They need a format to organize this material in a meaningful manner that is more accessible. This new format must also insure that all standards and benchmarks are included in a comprehensive plan. Once this plan is in place, teachers will be able to store much of the paper work that takes up precious shelf space in the classroom. It also gives the teacher a “road map” of how to include everything so they are not panicking in May wondering, “How will I teach all this material?” This often happens because teachers do not have a time table for themselves and want to spend too much time on a favorite unit or two; then they find themselves running out of time at the end of the school year. With a multiage class, it is critical to be organized; thereby insuring that two to three years of curricula are presented in a manner that is understandable to parents and to students.

Second, administrators are comfortable with curriculum mapping and encourage their teaching staff to work on developing it in order to make it easier to conceptualize what they will be teaching.
This will also insure a uniformity within buildings and across the district in meeting the state standards and benchmarks. Such alignment does not limit all of the other things that teachers might teach. It does require, however, that local districts examine the “leftovers” of their curriculum to decide if the other topics are as essential and as worthy of classroom instructional time (Kane County ROE, 1998, p.4).

Many districts are allowing paid summer study time for grade levels to develop these maps together. This provides an incentive to learn how to construct them as well as time to do the necessary work.

Third, parents like to know what is to be studied during the year. A curriculum map can give this information to them. More and more parents are concerned that their children are getting all that they need in order to meet the rising demands of the business world. Parents are aware of the standards and benchmarks that their children are expected to meet more than ever before. Parents are also excellent resources themselves as well as thinking of additional resources that will enhance the program and perhaps fit into one of the units ahead of time.

Finally, students like to know what they will be studying during the year. A chart in the room shows the progress during the year and helps students look forward to other units that will be coming later in
the year. In a multiage setting, the students can see ahead to what they will be studying the following year.

Background of the Problem

In the past, when teachers used traditional basals for the reading program and text books for content areas, completing the curriculum was not as difficult. School districts provided the texts that met the district's objectives or those they felt children should meet. The teacher divided the text book into nine week sections and was assured that the materials would be covered in the 180 plus days required by the state for the academic year.

With the introduction of literature-based reading and thematic teaching, fewer and fewer teachers wanted to use dry text books. Problems then arose because teachers were not covering the materials nor the skills expected of them. Many were having difficulty meeting the standards and benchmarks set by the state, district and building. It is a much larger task to consolidate all this material and make it interesting for students, fun to teach, and yet meet the necessary requirements.

Research has shown that children learn best by doing and having hands-on activities as well as being involved in and responsible for their own learning (Bredenkamp, 1987). If we truly believe in these developmentally appropriate practices; then, we as
educators need to find a way to re-organize the curriculum so we teach to meet the physical, social, emotional as well as the cognitive needs of the young child.

The concept of developmental appropriateness has two dimensions: age appropriateness and individual appropriateness. A developmentally appropriate curriculum for young children is planned to be appropriate for the age span of the children within the group and is implemented with attention to the different needs, interests, and developmental levels of those individual children (Bredenkamp, 1987, pp.2,3).

Planning to teach children according to their needs is more work for teachers, but better for students. However, most teachers find it is more fun to teach this way.

Another aspect of this problem is adding the multiage factor into the equation. The premise of multiage is that school is the only place children are separated according to age and that children learn from each other and from children of all ages. Having the consistency of the same teacher for two or more years, especially at the lower grades, is a stability factor that is beneficial for many children. Teachers know exactly where the children are the second year and begin teaching at the appropriate level. Less time is spent adjusting to class rules and routines because half the class already knows them and can model the procedures for the other students. These are all very positive factors about multiage. Having children for two years, means that the teachers
need to have curriculum developed and in place for two years and rotate it on a two year cycle. Curriculum mapping is helpful for teachers to project two years in advance and gather materials that will fit into the units that they have started.

Statement of Purpose

The purpose of this project is to develop and implement a learner-centered, thematic curriculum for a multiage class of six, seven and eight year olds at Ada Elementary School in the Forest Hills School District. The tool that will be used is a curriculum map. The new social studies and science curricula will be integrated into a functional map that will meet all the state standards and benchmarks. This project will develop the first grade curriculum which will be groundwork for the second grade curriculum to follow.

More specifically this project will:

1. Define the characteristics of a curriculum map.
2. Define the characteristics of the multiage approach.
3. Develop a curriculum map of the first grade curriculum for a multiage class.
Definition of Terms

**Benchmarks:** Indicators that standards are being met.

**Curriculum Map:** A tool developed by teachers to show what is actually being taught in the classroom month by month.

**Developmentally appropriate practices:** Teaching strategies that take the needs of the whole child into account when planning for learning to take place. A child's age appropriateness and individual development are not always the same.

**Multiage:** A classroom grouping that has more than one grade level and where the teacher keeps the children for more than one year.

**Multigrade/combined grade:** A classroom grouping with two or more grade levels each requiring their own curriculum.

**Nongraded:** Grouping children without grade level designations and with more than one year age span.

**Standard:** An established measure of quality.

**Thematic:** The organization of an activity or unit around one concept. In education, all disciplines would be integrated into this concept so the learner has a more unified way of seeing how all learning is related.
Limitations

This curriculum map is designed to meet the standards and benchmarks of a specific state and district. These may not apply to all school districts.

This project is designed to meet the needs of a multiage class of six, seven and eight year olds with an affluent, homogeneous population. The activities, projects and lessons may or may not be valid for other populations.
Chapter 2
Literature Review

Introduction

Curriculum development has gone through many cycles of reform in the past few decades. Some specialists in this area have developed traditional curricula with separate disciplines taught at different times during the day or year. Others have developed curricula with the disciplines integrated under one broad theme or concept.

With the resurgence of multiage, nongraded classrooms, and the most recent brain research; curriculum development has come under scrutiny for using/or not using developmentally appropriate practices and teaching the way that children learn best (Bredenkamp, 1987). First, we will examine some changes in curriculum development and identify some components that are necessary for students to learn. Second, we will present multiage classrooms as an alternative to straight graded classrooms and the rationale behind this choice. Finally, we will discuss the development of a curriculum map for a multiage classroom and the particular challenges this presents to the teacher. Since ways of organizing and delivering curriculum have been changing over the past few years; perhaps now there is a more useful way for teachers to organize their year.
Curriculum Development

Curriculum comes from the Latin derivation for “a course to run”. That is what educators do when they set out to work on revising curriculum; or what teachers do when planning the way they will deliver the curriculum for the year.

Work on curriculum development has often started in a scenario similar to this one described by Heidi Hayes Jacobs in chapter five of her book, *Interdisciplinary Curriculum Design and Implementation*, 1989.

The school board has allocated money for a team of teachers to develop an interdisciplinary unit for implementation in the fall. Four teachers are in shorts and sneakers sitting around a table in the faculty room ready to write. But where do they begin? The teachers have no clear guidelines for interdisciplinary curriculum from their state department, their school district or commercial publishers. Too often, the team sitting around the table feels insecure about writing the unit. (p.53)

Fortunately, there are other ways to organize curriculum. This paper will list some of the methods that have been used before and also present a model that has promise, because it is teacher driven and based on what goes on in the classroom. Some of the methods to organize curriculum that have been used in the past are the fragmented
model, the connected model, webbing strategies, the integrated model and the inquiry based discovery method of learning.

The fragmented model is a traditional method to organize curriculum along separate disciplines such as language arts, science, or social studies. Each discipline is taught separately with relationships between subjects only implied (Fogerty, 1991).

The connected model looks at the interconnections with one discipline. It connects each day, week, or term within that strand with the previous one. This model helps students make linear relationships within the discipline rather than assuming this learning will take place (Fogerty, 1991).

Webbing strategies have been used in many different formats in education. This model can be used to plan curriculum as well by using a theme as a core. Teachers make a web using the disciplines and the activities that children will use. This web will help them see the relationships between and among the different subject areas as a whole and how they relate to the theme (Fogerty, 1991).

An integrated approach requires that teachers begin by finding overlapping patterns in all four major curricular areas. From these patterns, the teacher considers a pervasive theme or concept around which to build this curriculum. Teachers formulate questions for which children will need to find answers in order to understand the broad theme. These questions will cross disciplinary lines. Activities that will
engage the children and help to answer their questions will be listed as well as literature, field trips and resources needed (Fogerty, 1991).

The inquiry based model is based on a child discovering information on his/her own rather than having the teacher deliver information. Science has traditionally been a teacher lecture subject with lab experiments here and there. Teachers of science are realizing that inquiry based education where students focus on questions as “How do we know?” yield deeper understanding. These science teachers also are beginning to integrate all areas of science with other subjects as well. This helps students make meaning out of their learning experiences. Science For All Americans Project 2061 envisions more broad concepts and less memorization of procedures and vocabulary for students to better understand the science concepts and be able to apply them to real life (Willis, 1995).

These are some of the models of curriculum that have been used and are still being used in districts around the United States. The most recent developments in curriculum have been influenced by the current brain research. This information helps us understand how the brain works. It also explains why some methods are more efficient than others to help children learn. Renate Caine and Geoffrey Caine (1990) have presented these principles that can help us to apply learning theory to the classroom.
1. Learning is a physiological experience that involves the entire organism; thus schools must take into account all facets of students' health and well-being and acknowledge differences in maturation.

2. Search for meaning is basic to the human brain. The brain finds meaning by creating patterns; it resists learning meaningless pieces of information.

3. The brain has memory systems for processing rote learning and for instant recall or spatial memory. Isolated facts and skills take longer to learn than those learned in meaningful context.

4. The brain performs many functions simultaneously. Teachers need to use diverse methods and approaches.

5. Each brain is unique. Teachers need to use diverse strategies to meet sensory, emotional and physical needs (Shoemaker, 1991, pp. 793-4).

With this information about the brain, curriculum development needs to look not only at standards and disciplines; but also take into consideration how children learn.

The Key School in Indianapolis is finding solutions to curricular problems by incorporating brain research into their curriculum planning. They have become nationally recognized for their collaborative interdisciplinary curriculum. There are central themes selected by the staff each year. All disciplines are integrated through one theme. Although materials are available from publishers, the staff uses them less and less as they become more self directed and
confident in their own professionals judgments (Bolanos, 1989). This restructuring process used at Key School helps teachers mix and match subjects in an attempt to solve the problem of too much to teach and not enough time. They have used a holistic, integrated curriculum that is more brain compatible than more fragmented models. One fifth grade student from Willagillespie Elementary School in Eugene, Oregon that uses a model similar to the Key School said: “It’s kind of nice to have one main thing to learn about. That way, it seems a lot easier to remember all that we’ve been taught” (Shoemaker, 1991, p. 793).

Multiage Grouping

History

U. S. institutions of learning are trying every strategy they can to improve the image of education and performance of students in this country and to gain the public’s confidence in the educational system. There is one method that is showing increased interest by academia. According to Richard Owen in his doctoral dissertation at Michigan State University as cited in Miller, 1995, p. 4: “The age-graded structure has endured for almost 140 years without being described as an important reason for some of the current ills of the U.S. education system.”
Schools did not begin as a lock-step graded system. As we look at multiage, non graded education as an alternative, we will first look at the history of the system of grouping students. Second, we will present the multiage philosophy, and third, examine the strengths and weaknesses of this method.

The history of grouping children began formally in the one room school house with all ages and grades together with one teacher. Before this, parents taught their own children at home with all ages together and taught all subjects to each one. The teacher now taught all subjects to all students with a variety of abilities and at each student's own grade level. But now, the teacher had many more students. This was a teacher's logistical nightmare, but no one had developed any other method of grouping large numbers of children. The children learned from each other, helped each other and worked cooperatively. They expected differences and realized that not everyone was at the same academic place at the same time. Even today we realize that: "The practice of grouping by age and grade may be creating a significant barrier to meeting the goals of equity and instructional excellence in schools" (Miller, 1995, p.27).

During the mid 19th Century, the school grouping shifted from a multiage class of students to straight age level classes. This was a necessity because of the number of students and it seemed like a logical way to organize students into manageable sized groups (Walser, 1998). Horace Mann introduced this method which was born of
administrative practicality and puritanical tradition as well as necessity for grouping. He first brought the system to Massachusetts from Prussia in the mid 1900's (Anderson, 1993).

Along with this lock-step system came the isolation of female teachers from each other so they had no one to share ideas with nor help solve problems. Harsh punitive practices were also prevalent during this time. John Dewey's philosophy of "educating the whole child" and observation of the many different talents of children went unheeded until late in the 1940's (Anderson, 1993).

After World War II, there was a new interest in education practices and nongradedness began to emerge in the 1950's through the 1970's. There were some good programs developed by the Kettering Foundation in Wisconsin. However, many of these experimental and nongraded programs in the United States, along with the open education programs failed because educators lacked several key components for success. First, they lacked understanding of the philosophy. Second, they did not have administrative and community support. Third, the planning and implementation of the programs was inadequate (Gaustad, 1992).

Because of the failure of most of the nongraded school programs, many schools continued with the lock-step, single grade classes. There were educators who realized the value of nongraded classes and pursued research and implementation strategies as well as studying the components necessary for success of these programs.
Some of these far-sighted educators are John I. Goodland and Robert H. Anderson who are co-authors of *The Nongraded Elementary School*. Sue Bredenkamp, editor of the National Association of Education of the Young Child's position statement on developmentally appropriate practices and Lillian Katz, director of ERIC Clearinghouse on Elementary and Early Childhood Education. Along with others such as Joan Gaustad, educators have realized that children entering the first grade can vary in mental age with a span of up to four years and that as children get older there is an even wider spread. Children achieve in different subject areas at different rates (Gaustad, 1992). How can all these children fit one grade! Do all 8-year-old Boy Scouts fit into size eight uniforms? Do all 8-year-olds learn at the same rate and develop at the same time?

As research became clear, advocates of nongraded education found interest in the state of Kentucky who mandated nongraded elementary education in 1989 and in British Columbia. They realized that 5 to 8-year-old children learn concretely and are not ready for abstract concepts. Young children learn from their personal experiences and can relate their experiences to new concepts much more easily through meaningful activities rather than unconnected facts. Physical activity is important to these primary-aged students and they actually get more tired from prolonged periods of sitting than by prolonged physical activity (Gaustad, 1992).
These schools mentioned have researched the nongraded, multiage philosophy and classroom practices. They have a plan and they have worked at the implementation of the plan. Other states are mandating this developmental approach to educational grouping. This time educators are better prepared to be successful with multiage classrooms. "With knowledge provided by more refined research techniques and bureaucratic support for implementation of curriculum change, the decade of 1990s may be the time for the nongraded concept to flourish" (Mackey, Johnson & Wood, 1995, p.49).

Philosophy of Multiage Grouping

The philosophy behind the nongraded or multiage approach to grouping children for learning is based on the developmentally appropriate primary grade curricula in a classroom of more than one grade level (Davis, 1992). Children grow and develop at different rates. Multiage classes provide students with ability peers, as well as with age peers. They work together and play together with children of various ages in other settings. School is the only place children are divided simply by the date they were born.

There are no set guidelines for a nongraded, multiage approach. The teacher or teachers set up a system that works for their teaching style. Some common elements that are found in these types of classrooms are:
1. Heterogeneous grouping of children as to ability, gender, academic as well as special needs.

2. Developmentally appropriate materials and curriculum for that age level. There are manipulatives as well as experiences for exploring, discovery and problem solving for the children through spontaneous and planned activities.

3. Emphasis on the process of learning as well as the curriculum.

4. Flexible grouping for ability, interest and developmental needs. (Elliott, 1997)

5. Cooperative learning experiences as olders learn from youngers and youngers learn from olders by their modeling.

6. Building students’ self-esteem and their own sense of competence. This effects all their learning.

7. Ability to stay with the same teacher for two or more years. Adjustments are less stressful and if a child was to spend an additional year in this class he/she has peers he/she knows.

8. Integrated thematic instruction and planned units to coordinate all of the child’s learning into a meaningful whole (American Association of School Administrators, 1992).

9. Children take more risks because they feel comfortable in their classrooms and with their peers. All of the children’s efforts are accepted because they expect diversity (Maeda, 1994).

A nongraded primary is not a rigid, sit-in-your-chair and do dittos approach to learning; nor is it the teacher lecturing to students as they
sit and listen. It is not “Bluebirds”, “Robins”, and “Mud hens” ability groupings for separate academic subject areas. In authentic nongraded schools one would see:

1. Individual differences of students are expected, accepted and respected.
2. Learning, which is the child’s work, is challenging and fun.
3. Students are viewed as a whole. Development in cognitive, physical, aesthetic, social and emotional areas are all important.
4. Grouping is flexible and instruction is planned to meet individual needs.
5. Curricula is integrated with outcomes more important than just covering the material.
6. Standards and benchmarks are clearly defined.
7. Major concepts are the focus of instruction as well as skill development.
8. Evaluation of learning is continuous.
9. Student assessment is holistic, flexible, individualized and teacher managed.
10. Teachers are empowered to manage curriculum to create learning opportunities (Anderson & Pavan, 1993).

This philosophy of multiage groupings of the 1990s differs from that of the 1950s-1970s open space classrooms because today’s classes have walls and teachers are better prepared to teach to this philosophy. Some classes have doors between rooms or perhaps two
rooms opening with a moveable wall. Teachers are also better prepared for this approach to educating children by reading research, observing classrooms and having training in thematic teaching, developmentally appropriate practices and brain research.

Many educators ask what ages go together most efficiently. Most educators would agree that first and second or first, second and third make good combinations. Another possibility is first-second and then third-fourth. Some educators have incorporated kindergarten, but many feel that 5-year-olds are not ready to be grouped with 6, 7 and 8-year-old learners (Cushman, 1990).

Research varies in the reported effectiveness of multiage classes. Most research has found either positive effects of multiage classrooms or that there was no difference between the academic achievement between multiage and graded classrooms. Two are cited here.

Results indicate consistently positive achievement effects of simple forms of nongrading generally developed early: cross-grade grouping for one subject (median ES=+.46) and cross-grade grouping for many subjects (median ES=+.34). Forms of nongrading making extensive use of individualization were less consistently successful (median ES=+.02) (Gutierrez & Slavin, 1992, p. 333). ES means effect size. The individualized programs they were referring to are the IGE or Individually Guided Education Programs which are a form of nongraded
education. There is much more emphasis on learning stations where children worked independently of the teacher (Gutierrez & Slavin, 1992).

In another study of cognitive and non-cognitive effects, "It is concluded that there is no empirical evidence for the assumption that student learning may suffer in multigrade and multiage classrooms" (Veenman, 1995, p. 319).

**Benefits and Detractors to Multiage Groupings**

The benefits of multiage classes seem to favor the students while the detractors relate mostly to the educators. Supporters claim that "Society is multiage, families are multiage, and we want classrooms to reflect real life" (Walser, 1998, p. 1). It also emphasizes continuous progress and project based curricula (rather than pass-fail systems) (Walser, 1998). These groupings focus on individual expectations rather than grade level expectations because there are no grade distinctions. There is more time to address individual needs because students stay with one teacher two or more years. Children have the ability to work where they are functioning in academic as well as social arenas. A child’s success is based on mastery of new skills and not by comparison to his/her own age mates. This philosophy of learning is based on theories of Jean Piaget, Jerome Bruner and others (Cushman, 1990).
Nobody falls behind, these measures show; although those students on developmental and academic extremes benefit most, boys, blacks, the slow and gifted, and children with low self esteem. Particularly effective for bright but immature children who need both academic stimulation and a social environment more suited to a younger child (Cushman, 1990, p. 39).

"The longer students stay in nongraded programs, the greater the improvement in their achievement scores. Better attendance and fewer discipline problems are also pluses" (Bozzone, 1995, p.65).

Another benefit for multiage grouping is more choices for the parents when they are considering the best learning environment for their child (Calkins, 1992). Parent rapport and trust increases as children stay with the same teacher for more than year. An opt-in program from kindergarten insures parents have input into their preference for placement of their child (Wall, 1994). The final placement is up to the kindergarten teacher based on what is best for the individual child.

Multiage groupings can provide older children opportunities to be leaders, especially if they tended to be shy as youngers. They seem to "blossom" as olders and are helpful, patient and tolerant of the youngers coming into the classroom (Katz, 1992). Teachers "create a caring, learning community,... where learners have choices and children's uneven development is not viewed as a deficit, but is accepted as a normal part of human growth" (Surbeck, 1992, p.3).
The detractors to these programs are primarily related to the educators, but there are a few detractors for children that educators need to keep in mind. For a student who needs to be in a very structured environment with few distractions; this may not be the best placement for that learner. That is why there should be options in each building for parents and teachers to place children in the best learning environment for the child's learning style.

Another concern parents often raise is about the academically gifted students and the challenges they need in order to function at their ability and not just get along. If teachers of multiage classes are truly seeing each child where he/she is, this is not a problem because each child will be challenged individually. Often, especially with a team of teachers, one is good with the gifted and the other works better with the emergent learners. "Teaching to the top" also gives these children, as well as all children, the challenges they need to stretch their thinking.

Most of the detractors relate to the teachers and the work load that this type of classroom involves. First, there is groundwork and learning that has to be done before attempting to implement a nongraded program if it is to function the way it is intended (Miller, 1996). When there is no administrative support or lack of understanding on the part of other teachers, problems can exist among staff and between grade levels.
Multiage classrooms are not the answer to budget crunches, fewer teachers or increased class size. It is not a “dumping” ground for immature, advanced or any one type of learner. The heterogeneous aspect of the nongraded classes is an important component for the class’s success.

This option is more successful when it is teacher driven and not mandated by the state, district or individual school. Some teachers are not ready to take this risk and will not work to make it a success. Teachers need adequate planning time, training in early childhood education and experience with a variety of ages of children. Teachers’ attitudes are very important to success (Surbeck, 1992).

With the extension of age ranges and children staying with one teacher for two or more years, comes two or more years of curriculum to plan. “There is a heavy burden on the classroom teacher. They need to know what to do, why they are doing it and when to do it” (Elliott, 1997a, p. 46). There is the need for separate curricula for each year which involves planning, finances and time expenditures.

An added barrier to nongraded classes is the grade level activities and standardized testing that is required by the district (Walser, 1998, p. 2,3). Some districts handle this by exempting some types of testing, some by testing only those “olders” or “youngers” that meet the typical grade level designations. However, swimming and classroom guidance programs such as Project Charlie have been successfully programmed with multiage classes. They rotate on a two
year cycle and all children in the class participate during the year the curriculum for that grade level is presented. Each school and district needs to be flexible and work on an individual basis keeping in mind that a multiage class is "a class": It is not two separate groups of children in one room.

Multiage programs require major conceptual changes (Miller, 1996). These can be overwhelming to educators trained in traditional, direct instruction. While planning curricula, it is important that teachers make sure that students are developing the skills that are required to meet the standards and benchmarks. In Chapter 3 this concern will be addressed as curriculum is presented in a thorough curriculum map (Gaustad, 1995).

"Success in the early grades does not guarantee success throughout the school years and beyond, but failure in the early grades does virtually guarantee failure in later schooling" (Slavin, Karweit & Wasik, 1993, p. 11). "Research indicates that nongraded groups performed better (58 %) or as well as (33 %) of the graded groups on measures of academic achievement" (Pavan, 1992, p.22). With the research showing that multiage is as good or better than graded education, why not get more educators involved?
Curriculum Mapping

Teachers teach behind "closed" doors. Educators at each grade level and within a grade level have materials and curriculum provided by the district.

There is simply no way to ensure that all teachers will teach any curriculum—even one they have developed. However, they are more likely to use a system they have developed that represents their beliefs about what should be taught. (Glatthorn, 1987, p.77)

Curriculum maps need to be useful and represent what is happening in the classroom. They improve communication between teachers at the grade level, building level and also between buildings by sharing maps and ideas. Creating maps forces teachers to understand the state and district standards and benchmarks and helps to organize materials, time and resources. In addition, parents and students have an overview of learning for the year at a glance.

To begin mapping, teachers must first describe three major elements of curriculum. Second, they must cut and paste the standards and benchmarks on large sheets of paper. Third, teachers look at the social studies and science curricula to see how they can be meshed together to meet the standards and benchmarks. Fourth, language arts and math are integrated into the map; and last of all, the projects, speakers and field trips are added.
First educators look at the major elements of the curriculum and make sure that they understand these elements: 
“(a) the processes and skills emphasized (b) the content in terms of essential concepts and topics, or the content as examined in essential questions, and (c) the products and performances that are the assessments of learning” (Jacobs, 1997a, p.8). Second, teachers cut and paste standards and benchmarks on chart paper that is arranged by quarters of the school year. Quarters work well to get started and then the map can be refined, broken down by month, later. Third, educators look at the social studies and science curricula to see how these can meet the standards and benchmarks to achieve the curriculum goals. (Roub, 1992).

A framework results after the social studies and science are blended; then the language arts component can be added. Some strands of language arts such as spelling, listening, handwriting and reading skills will need to be worked on all year long. Some skills, such as ABC order, will fit in best at the middle or end of the year. Some prior knowledge may be necessary for the new skill to be meaningful and for the students to be successful. For instance, teaching A, B, C order would not be appropriate in the first quarter of the year for first grade when most children are learning to read. It would fit better during the third or fourth quarter when children have a reading vocabulary and decoding skills.
Fourth, math concepts or lessons are placed on the chart paper with critical lessons marked for mastery. Assessment timelines can also be added if desired. Finally, special projects, speakers, field trips and other resources are added as they fit into the map for each quarter. Technology will be added to guarantee it is integrated into the curriculum and not just a tag along time.

A curriculum map is a continuous, developing work. Revision is to be expected and encouraged. It gives the teacher a guideline or timeline for incorporating all the necessary standards and benchmarks by using the curriculum of the district to do that job. When there is enough curriculum to cover the standards and benchmarks, most teachers will find that some of the "favorite units" will have to be discarded. There just is not enough time to teach all we want to teach. We need to teach so children can answer the essential questions that come with the curriculum and will help children think about and be responsible for their own learning. Essential questions are the guiding principles that the children should be able to discuss and answer at the end of the unit as well as synthesize the material that they have learned in all disciplines.

Curriculum maps not only help the individual teacher, but the entire building staff, to detect any holes in the curriculum or if there are too many grades teaching the same thing. Districts can use these maps to tell what is happening between buildings. Specials teachers find curriculum maps helpful in integrating their work with the teachers'
themes. “Mapping promotes a living curriculum because it deals with real time. Teachers ‘tell it like it is’” (Jacobs, 1997a, p. 62).

By putting maps on the computer, changes can be made easily and teachers can use computers as part of their planning rather than an add on to the curriculum. “Right now, technology is still viewed as an event. Teachers are using it erratically, not because they don’t wish to, but because it’s still an appendage to the program” (Jacobs, 1997b, p.84). Using technology for curriculum mapping will help us use it as a tool, not as an appendage.

Charts in the room will enable parents and students to see where they year is going. However, one word of caution: If maps that are too detailed are given to parents there could be the danger that some would use them as a check list to see if everything is actually being taught. Since this is a living document and open to revision, only general charts or maps should be published for parents and placed on the wall of the classroom.

Conclusion

There have been many ways to organize curriculum in the past. Most methods start with the ideal curriculum or what educators think should be taught. Teachers develop ways to fit these concepts into the standards and benchmarks of the state and district hoping that the content will cover what needs to be taught. Heidi Hays Jacobs has
developed another way of organizing a curriculum map that starts with the standards and benchmarks. Her plan fits the content to meet these needs. The content, then, is what is actually presented in the classroom instead of an ethereal idealized curriculum.

By starting with social studies and science concepts, the teacher can see how a theme emerges as the map becomes a reality. Math, literature and writing skills are integrated into this thematic unit and a comprehensive curriculum map includes all the content necessary to teach the state standards. Educators have learned that children learn as active, holistic learners according to the recent brain research. By integrating the content into a thematic unit and using hands on, developmentally appropriate activities; this research will help teachers become guides to learning rather than givers of information.

Research has also shown that children learn from each other and from their peers, whether age peers or ability peers. The multiage concept of grouping two or more grades together and rotating two or three years of curriculum; necessitates organization. The Jacob's mapping concept lends itself to this type of age-grouping curriculum development. It allows teachers to plan a two or three year cycle of instruction based on the standards and benchmarks, as well as the curriculum for two years.
Chapter 3
Project Description

Introduction

Organizing curricula for any class is a challenge. The educator needs to make sure that all of the state standards and benchmarks are met; and all of the information is available for children to be able to answer and discuss the essential questions for the unit. In the past, many methods of organizing this material have been tried. Usually the teacher has had too much material and too little time to do an adequate job of disseminating information.

This task is complicated when a multiage classroom is involved. This type of classroom will have two or three grade levels working together as one unit. The teacher must make sure that all grade level benchmarks in math and language arts are covered even though he/she teaches only one grade level material per year. This material is best organized by the social studies and science curricula of the district.

Heidi Hayes Jacobs takes another view of organizing this material based on the state standards and benchmarks. First, teachers make sure they understand the major elements of the curriculum, Second, they organize the state standards and benchmarks. Third, the social studies and science concepts are added. Fourth, the language arts
and math components are included. Last of all the assessments, projects, speakers, field trips and other resources can be added. The finished product is a living document that can be changed or amended as needed.

This method insures that the material that is actually taught in the classroom is meeting the state standards and benchmarks and if there are any units left and time remaining in the year, the teacher can add them at his/her discretion.

This project organizes the first grade curriculum for a multiage class of six, seven and eight-year-old learners who would be in the first and second grade. The curriculum is rotated on a two year cycle, but each age group needs to have the appropriate language arts and math benchmarks for their grade level, while the social studies and science is adapted for their learning level. This project will lead into the organization of the second grade curriculum in the same type of map.

This type of curriculum map not only works well for single grade classrooms, but makes the job of the multiage teacher much more organized and less frustrating.
Actually putting this map together was very frustrating at the beginning. When a process is new, frustration is often evident until the pieces fall into place.

The first step was for the team of six first-grade teachers to make sure that all of the parts of the curriculum were available. Science, social studies, math, and language arts individual curricula were enlarged on a copy machine so they were easy to work with.

Second, we looked at the social studies and science state standards and benchmarks to see how they would fit together and perhaps overlap (see Appendix A). Using four different colored highlighters, each quarter was color coded and standards and benchmarks were marked where they would fit best in each quarter of the year. For example, plants, soil and rocks would have to be in the spring or fall so the children could get outside to do exploratory work. Vertebrate classification works best in the spring for a field trip to the zoo and our flag and patriotism fits well in February.

When all of these were color coded, four large sheets of chart paper were marked with first, second, third or fourth quarters. Each sheet was divided into sections: social studies, science, language arts, math and special projects. The social studies and science standards and benchmarks were placed in the quarter where they seemed to work best; but they were not glued down permanently. After each piece was
placed, we looked over the whole year for continuity, equal amount of
content, and meshing of benchmarks. There was some discussion and
rearranging of these pieces before the team actually agreed on the
content of the social studies and science curricula. We found that some
of the science did fit very well with the social studies such as plants
and the food aspect of the basic needs of families. The thematic units
were developing on their own. We also found that steps two and three
organized themselves together as we placed the standards and
benchmarks on the chart paper. The team was very excited to see the
map developing.

Fourth, we looked at the math component. Our district math
committee had already marked the math lessons for Chicago Everyday
Mathematics using red, yellow and green designations. Because
Chicago Math is a spiral program and concepts are covered several
times during the year, teachers needed to know when a concept was
introduced (green), when most children will be able to master a
concept (yellow) and when a concept must be mastered (red). This
report was very helpful to us as we listed the lessons and underlined
the critical red lessons for both first and second grade math books.
This gives teachers the ability to look at this map and see the critical
lessons for the quarter and work on them not only at math time; but
also at centers to reinforce these concepts for those who need extra
time and help.
Also, at this time the team looked at the language arts curriculum and since this is in the process of revision by the district, we found it easier to list the skills on a continuum since multiage classes have wider variety of ages and abilities. Those listed at the end of the continuum will be those expectations for the olders or second grade children. However, many of the youngers or first grade children will be able to attain these same goals during their first year in the program so we did not want to put restrictions on the expectations. The benchmarks for the youngers for the first year are marked by a line to separate them from the expectations for the olders. Some of these expectations are listed on the map because they are more applicable to certain times of the year. For example, ABC order would not be taught to first graders at the beginning of the year because they need to be able to read words first and then be able to do this skill. Second graders will be expected to have this skill and develop it further at the beginning of the year.

Last of all, we listed the special projects which include speakers or outside resources we have used in the past and some others that came to mind. The team found it helpful to have more than one person giving input for these resources. We also listed special projects and products that will show what the children have learned so they can answer and discuss the essential questions posed on the curriculum map. There are also field trips that would be applicable to the unit of study. Also listed are the writing pieces for the children's portfolios.
that follow them through the elementary years. It is helpful to spread them out over the year. Finally, the district mandated assessments for reading and writing are listed separately for youngers and olders by quarters.

Pertinent vocabulary that needs to be used during the unit is also included so that the basis is laid for the next year's curriculum. The words are those that normally would be used, but we found that teachers may use other words in delivering the content. Thus, children will not all have the same vocabulary going into the next grade. We all seemed to think it was worthwhile to include these words in the map.

The last step in making the curriculum map was publishing the finished map. We each took a quarter and put it onto the computer trying to make them as similar as possible. We had difficulty with this as we found that each of us had a different view of what was important to be on the actual map. It was decided to let each team member do his/her own quarter and then we would make accommodations to match individual teaching styles. This seemed like a good decision especially as I look back on the map and see things that I needed to change for my own classroom. The following document is the completed map for the first grade curriculum for my multiage classroom.

There are other crucial parts of the curriculum that need to be considered but that do not need to be on the map itself. These are listed in the appendices for easy reference and would be listed on monthly or weekly lesson plans. The list of literature for teaching
reading in the thematic unit are listed in Appendix B. Videos and Reading Rainbow videos are used to enhance the curriculum and to give visual and auditory learners another way of inputting the information (see Appendices C & D). Each unit needs to have developmentally appropriate, hands-on activities not only for tactile learners, but because these activities are how children learn best. Some of these are listed for each unit. Some of them are used for culmination projects and assessment and some are experiments and learning projects (see Appendix E). Technology is the future and children in schools today can use computers better than the teachers in most classes. There is a list of suggested activities for computer use. This is by no means exhaustive but gives some ideas to go with the units (see Appendix F). Appendix G shows a model of a chart that will be posted in the classroom to give students as well as parents an overview of the year's curriculum.

**Recommendations and Plans for Dissemination**

After completing the research and work on Heidi Hayes Jacob's curriculum map for a multiage class, I discovered there was more to organizing the curriculum and working on curriculum committees than I had anticipated. I also concluded that this map will make teaching much easier in planning and gathering resources than in previous years. Many of the units that I have taught in the past will not be used
this year, because they are not needed to meet the standards and benchmarks from the state. There will be more time to teach fewer units which will enable me to go more into depth and not “dipstick” into many other units.

I was amazed at how the theme grew out of the organization. In the past, much time has been spent contemplating a theme and then finding the right resources to fit the theme. The plan is now to begin on the second grade curriculum.

My immediate plans are to use these maps in my classroom and to share them with others at my grade level. We are the only multiage class in the building, but it will be helpful to share maps with other similar classes in other districts who have used this type of procedure. Since this map is on disk, I expect to be able to add and delete data as I teach during the year. This will result in a true reflection of what was taught.
First Grade Curriculum for Primary Unit

First Nine Weeks

Social Studies
Topics: Families, school, rules

Focus Questions:
1. How do people and places change over time?
2. Why are rules important?
3. What are the responsibilities of members of a group?

Vocabulary:
past, present, future, history, current events, rules, consequences, rewards, truth, respect, service, work, timeline, days, weeks, months, years,

Science
Topics: Plants, soil, rocks

Compost

Focus questions:
1. What makes up weather and how does it change from day to day and from season to season?
2. What are the ways plants and humans respond to weather patterns?
3. What is the earth's surface like?
4. How could we group rocks?
5. How do we classify a variety of plants?

Vocabulary:
soil, rocks, texture, hardness, size, recycle, compost, plants, weather, temperature, wind, precipitation, clouds, sunlight, seasons, autumn

Math
Youngers: first grade
Unit 1:
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15

Unit 2:
16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27

Olders: second grade
Unit 1:
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13

Unit 2:
14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25

Unit 3:
26, 27, 28, 29, 30, 31, 32, 33

Language Arts

Reading/Literature Genre:
Realistic fiction, fantasy, nonfiction, mystery, poetry

Skills
Positive attitude toward reading
Seeing oneself as a reader
One-to-one correspondence
Left to right orientation
Top to bottom orientation
Confirming, self-correcting cue systems
Solving unknown words
Phonics
Vocabulary development
Re-telling stories
Predictions and inferences
Sequencing
Comprehension Questions
Self monitoring for comprehension

Spelling
Phonetic
Working toward more conventional
Basic list
Supplemental list
Dictation sentences
Structural analysis

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First Grade Curriculum for Primary Unit

Mechanics
Olders:
Punctuation at end of sentences
Capitals at beginning of sentences and names of things.

Grammar
Olders:
Complete sentences
Types of sentences: statement, question, exclamation

Reference Skills
Olders:
ABC order

Writing
Pre-writing
Drawing pictures
Sharing ideas with others
Brainstorming
Listing
Word webs

Drafting
Writing dictation
Writing to a prompt
Completing a draft

Revising/proofreading
Olders:
Conventional/phonetic spelling
Punctuation
Capitals

Penmanship
Upper case D'Nealian
Learn lower case D'Nealian
Use both upper and lower case D'Nealian appropriately

Listening
Following directions
Focusing on the message
Interpreting the meaning

Speaking
Discussing
Sharing
Speaking in turn
Sequencing/organizing
Stay on topic

Special Projects
Speakers: Bill Steffan, Grandparents, Fishbeck scientist, career speakers from parents if possible 4-H farmer

Field Trips: Blandford Nature Center, apple orchard

Products: composting, graphing plant growth, personal timeline, map of school, science investigation with apples

Portfolio writing: Olders: Friendly letter

Assessments for reading/writing:
Youngers: Reading Recovery assessments
Olders: MacMillan pre-test
District spelling pre-test
First Grade Curriculum for Primary Unit

Second Nine Weeks

Social Studies
Topics: Families, food, community, holidays

Focus Questions:
1. How do people and places change over time?
2. What are the basic needs of a family?
3. What are goods and services?
4. How do we get goods and services?
5. What are maps and what are their uses?
6. How does your environment affect the way you live?

Vocabulary:
traditions, celebrations, holidays, days, weeks, months, years, rules, truth, rewards, respect, loyalty, goods, services, work

Science
Topics: Food/Nutrition, Keeping Fit, Weather, Compost

Focus Questions:
1. What causes different kinds of weather?
2. What makes up weather and how does it change from day to day and from season to season?
3. Why is it important to recycle natural materials?

Vocabulary:
food groups, temperature, wind, precipitation, sunlight, wind, water vapor, clouds, fog, rain, dew, solid, snow, sleet, hail, frost, recycle

Math

Youngers: First Grade
Unit 3:
28, 29, 30, 31, 32, 33, 34, 35, 36, 37

Unit 4:
38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49

Olders: Second Grade
Unit: 4
34, 35, 36, 37, 38, 39, 40

Unit 5;
41, 42, 43, 44, 45, 46, 47, 48

Unit 6:
49, 50, 51, 52, 53, 54, 55, 56, 57

Language Arts

Reading/Literature Genre:
Realistic fiction, nonfiction, fantasy, poetry

Skills
Word families
Beginning, middle, end of stories
Sequencing
Story maps and webs
Expository reading strategies

Spelling (Cont.)

Mechanics
Punctuation at end of sentences
Capitalization at beginning of sentences
Capitalize proper names
Quotation marks
Commas
Apostrophes

Grammar
Olders:
Subject and verb agreement
First Grade Curriculum for Primary Unit

**Reference Skills**
Olders:
Multiple meanings of words
Definitions of words
Using a glossary
Looking up definitions

**Writing**

Pre-writing (cont.)

**Drafting**
Focusing on a topic

Revising/proofreading
Adding ideas to work

**Penmanship**
Monitor progress, correct formations

**Listening (cont.)**

**Speaking**
Use eye contact
Project voice

**Special Projects**

**Speakers:** Chef, nutritionist from food services, parents to explain celebrations

**Field trips:** Meijers or Forest Hill Foods, Food Services or kitchen in the school

**Products:** Create a lunch for food services at school, plan a nutritious meal and present it orally to the class, sort pictures of goods and services, write about Thanksgiving then and now

**Assessments for reading/writing:**
Youngers: Running record, letter recognition for those in question

**Portfolio:** Olders: "How to" paragraph
First Grade Curriculum for Primary Unit

Third Nine Weeks

Social Studies
Topics: Families, clothing, shelter, patriotism

Focus Questions:
1. How do people and places change over time?
2. What are the basic needs of families?
3. How do we get goods and services?
4. How does your environment affect the way you live?
5. What are maps and what are their uses?

Vocabulary:
food, clothing, shelter, needs, wants, goods, progress, globe

Science
Topics: Weather, soil

Focus Questions:
1. What causes different kinds of weather?
2. What are the ways humans respond to weather patterns?
3. How do the materials that make up the earth’s surface interact?
4. Why is it important to recycle materials?

Math

Youngers: First Grade

Unit 5:
50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61

Unit 6:
62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73

Unit 7:
74, 75, 76, 77, 78, 79, 80, 81, 82

Olders: Second Grade

Unit 7:
58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68

Unit 8:
69, 70, 71, 72, 73, 74, 75, 76, 77

Unit 9:
78, 79, 80, 81, 82, 83, 84, 85, 86, 87

Language Arts

Reading/Literature Genre:
Informational/expository, realistic fiction, fantasy, fable, poetry

Skills
Story elements (character, setting, problem, solution, ending)
Main idea
Rewrite the story ending
Expository reading strategies
Character analysis
Drawing conclusions

Reference Skills
Using a non-picture dictionary for definitions

Writing

Revising/proofreading
Writing a paragraph
Indenting paragraphs
First Grade Curriculum for Primary Unit

Special Projects

Speakers: Fishbeck engineers and architects (shelters, bridges),

Field Trip: Fishbeck, Thompson, Huber and Carr Engineering Firm, Blandford (maple sugaring)

Products: Make a model of a shelter in a cooperative group, write a report and present it orally.

Portfolio:
Olders: Personal story, Descriptive paragraph

Assessments for reading/writing:
Youngers: Recheck letters/sounds for concerned children, writing sample, dictation sentence
Olders: MacMillan Mid Year Assessment, CTBS/TCS
First Grade Curriculum for Primary Unit

Fourth Nine Weeks

Social Studies
Topics: Rules, geography

Focus Questions:
1. Why are rules important?
2. What are the responsibilities of members of a group?
3. How does the environment affect the way you live?

Vocabulary:
plants, animals, feather, hair, fur, scales, skin

Science
Topics: Animal classification, weather, seasons

Focus Questions:
1. What characteristics would we observe to differentiate animals?
2. What makes up weather and how does it change from day to day and from season to season?
3. What are the ways plants, animals and humans respond to weather patterns?
4. Why is it important to recycle natural materials?
5. How do magnets interact with objects?
6. How can we use magnets?

Vocabulary
weather, temperature, wind, precipitation, clouds, sunlight, water vapor, liquid, fog, rain, dew, solid, snow, hail, sleet, frost, soil, water, puddle, lake materials, magnets, attract, magnetic force, poles, repel, force, magnetic field, patterns

Math

Youngers: First Grade
Unit 8: 83, 84, 85, 86, 87, 88, 89, 90, 91
Unit 9: 92, 93, 94, 95, 96, 97, 98, 99, 100, 101
Unit 10: 102, 103, 104, 105, 106, 107, 108, 109, 110

Olders: Second Grade
Unit 10: 88, 89, 90, 991, 92, 93, 94, 95, 96, 97, 98
Unit 11: 99, 101, 102, 103, 104, 105, 106, 107, 108

Language Arts

Reading/Literature Genre:
Informational/expository, realistic fiction, fantasy, fable, poetry, biography

Skills
Cause and effect
Table of contents
Picture dictionary
Reports
Alphabetical order to second/third letter
Paraphrasing
Making judgments: facts/opinion

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First Grade Curriculum for Primary Unit

Special Projects

Speakers: Farmer to shear a sheep, Scott Korpak to demonstrate science lesson, Bob Barker (Canterbury Creek) Mr. Cooper, Geologist, Excavator

Field Trip: John Ball Park Zoo (Call in May, the year before, if want a classroom lesson first), Critter Barn, gypsum mine, peat moss farm, gravel pit,

Product: Writing and presenting an animal report and project of child’s choosing.

Portfolio:
Youngers; Friendly letter, personal story
Olders: Informative piece, poem

Assessment reading/writing:
Youngers: Post test of Reading Recovery battery.
Olders: MacMillan end of the year assessment
District spelling post test
References


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Appendix A

State Standards and Benchmarks

These are listed by quarters of the year according to the curriculum map listed in the body of this work. The strands of the social studies standards are designated by Roman Numerals. The state standards are listed first and the benchmarks are numbered as they are in the state curriculum. In this paper the benchmarks are indented under each standard. If a standard is mentioned more than once, only the benchmarks are listed and indented under the social studies perspectives.

First Nine Weeks:

SOCIAL STUDIES

I. Historical Perspective

1. All students will sequence chronologically events in their lives in order to examine relationships and to explain cause and effect.

2. Use weeks, months and years as intervals of time.

3/4. Place events of their lives and their families' lives in chronological order; past, present and future.
2. All students will understand narratives about major eras of American and world history by identifying the people involved, describing the setting, and sequencing the events.

2. Describe the past through the eyes and experiences of family members.

3. All students will reconstruct the past by comparing interpretations written by others from a variety of perspectives and creating narratives from evidence.

1. Use a variety of records to tell about their personal or family histories.

4. All students will evaluate key decisions made at critical turning points in history by assessing their implications and long-term consequences.

1. Recall situations in their lives that required decisions and evaluate the decisions.

III. Civics Perspective

1. All students will identify the purposes of national, state, and local governments in the United States, describe how citizens organize government to accomplish their purposes, and assess their effectiveness.

2. Describe consequences of not having rules.

3. All students will describe the political and legal processes created to make decisions, seek consensus and resolve conflicts in a free society.
1. Explain how conflicts at school might be resolved in ways that are consistent with core democratic values.

4. All students will explain how American governmental institutions at the local, state, and federal levels, provide for the limitation and sharing of power and how the nation's political system provides for the exercise of power.

   1. Identify rules at school and consider consequences for breaking rules.
   
   2. Describe fair ways for families to make decisions.
   
   3. Describe ways that those in the school community help each other.

V. Inquiry

1. All students will acquire information from books, maps, newspapers, data sets and other sources, organize and present the information in maps, graphs, charts and timelines, interpret the meaning and significance of information, and use a variety of electronic technologies to assist in accessing and managing information.

   1. locate information using people, photos, and other resources.

   2. All students will conduct investigations by formulating a clear statement of a questions, gathering, and organizing information from a variety of sources, analyzing and interpreting information, formulating and testing hypotheses, reporting results both orally and in writing, and making use of appropriate technology.
4. Report the results of an investigations. (Traditions)

VI. Public Discourse and Decision Making
1. All students will state an issue clearly as a question of public policy, trace the origins of the issue, analyze various perspectives people bring to the issue and evaluate possible ways to resolve the issue.
   1. Pose questions or discuss issues pertaining to school.

VII. Citizen Involvement
1. All students will consider the effects of an individual's actions on other people, how one acts in accordance with the rule of law, and how one acts in a virtuous and ethically responsible way as a member of society.
   1. Help to determine, interpret and enforce school rules.

Second Nine Weeks

1. Historical Perspective
2. All students will understand narratives about major eras of American and world history by identifying the people involved, describing the setting, and sequencing the events.
   1. Identify who was involved, what and where it happened by learning about different family holidays, celebrations and customs.
II. Geographic Perspective
4. All students will describe and compare characteristics of ecosystems, states, regions, countries, major world regions, and patterns and explain the processes that created them.
   1. Identify regions in their immediate environment and describe their characteristics and boundaries. (Map)

IV. Economic Perspective
1. All students will describe and demonstrate how the economic forces of scarcity and choice affect the management of personal financial resources, shape consumer decisions regarding the purchase, use, and disposal of goods and services, and affect the economic well-being of individuals and society.
   1. Identify ways families produce and consume goods and services.
2. All students will explain and demonstrate how businesses confront scarcity and choice when organizing, producing, using resources, and when supplying the marketplace.
   2. Select a particular good or service and describe the types of resources necessary to produce and distribute it.
3. All students will describe how government decisions on taxation, spending, public goods, and regulation impact what is produced, how it is produced, and who receives the benefits of production.
2. Identify the goods and services their school provides and the people who provide them.

4. All students will explain how a free market economic system works, as well as other economic systems, to coordinate and facilitate the exchange, production, distribution, and consumption of goods and services.

1. Identify examples of markets they experience in their daily life.

V. Inquiry

1. All students will acquire information from books, maps, newspapers, data sets, and other sources, organize and present the information in maps, graphs, charts, and timelines, interpret the meaning and significance of information, and use a variety of electronic technologies to assist in accessing and managing information.

3. Organize information to make and interpret simple maps.

Third Nine Weeks

II. Geographic Perspective

3. All students will describe, compare, and explain the locations and characteristics of economic activities, trade, political activities, migration, information flow, and the interrelationships among them.

1. Identify locations of significance in their immediate environment and explain reasons for their location.
4. All students will describe and compare characteristics of ecosystems, states, regions, countries, major world regions, and patterns and explain the processes that created them.

   1. Identify places in their immediate environment and describe its characteristics and boundaries.

IV. Economic Perspective

1. All students will describe and demonstrate how the economic forces of scarcity and choice affect the management of personal financial resources, shape consumer decisions regarding the purchase, use, and disposal of goods and services and affect the economic well-being of individuals and society.

   1. Identify ways families produce and consume goods and services.

2. All students will explain and demonstrate how businesses, confront scarcity and choice when organizing, producing, and using resources, and when supplying the marketplace.

   2. Select a particular good or service and describe the types of resources necessary to produce and distribute it.

3. All students will describe how government decisions on taxation, spending, public goods, and regulation impact what is produced, how it is produced, and who receives the benefits of production.

   2. Identify goods and services their schools and community provide and the people who provide them.
4. All students will explain how a free market economic system works as well as other economic systems, to coordinate and facilitate the exchange, production, distribution, and consumption of goods and services.

   1. Identify examples of markets they experience in their daily life.

V. Inquiry
2. All students will conduct investigations by formulating a clear statement of a question, gathering and organizing information from a variety of sources, analyzing and interpreting information, formulating and testing hypotheses, reporting results both orally and in writing, and making use of appropriate technology.

   3. Construct an answer to the question posed and support their answer with evidence.

Fourth Nine Weeks

IV. Economic Perspective
5. All students will describe how trade generates economic development and interdependence and analyze the resulting challenges and benefits for individuals, producers, and government.
2. Identify United States coin and currency denominations and describe the role of cash in the exchange of goods and services.

SCIENCE

Earth: Weather and Seasons

This will be a year-long study and will incorporate much of our calendar work in the mornings. The strands of the science curriculum are designated by Roman Numerals. The standards are listed next and the benchmarks are indented and listed under each standard. If a standard is mentioned more than once, only the benchmarks may be listed.

II. Reflecting on Scientific Knowledge

1. Develop an awareness of the need for evidence in making decisions scientifically. (Weather maps)
2. Describe the relationship of science to other forms of creative expression such as language arts and fine arts. (Media resources)

iii. Using Scientific Knowledge in Earth Science

3. All students will investigate and describe what makes up weather and how it changes from day to day, from season to season and over long periods of time; explain what causes different kinds of weather;
and analyze the relationships between human activities and the atmosphere.

2. Describe weather conditions and climates.

3. Describe seasonal changes in weather.

First Nine Weeks
Life Science: Kinds of Living Things

I. Constructing New Knowledge
1. All students will ask questions that help them learn about the world; design and conduct investigations using appropriate methodology and technology; learn from books and other sources of information; communicate their findings using appropriate technology; and reconstruct previously learned knowledge.
   1. Generate reasonable questions about the world based on observation. (Plants)
   4. Use simple measurement devices to make metric measurement. (Plants)

II. Reflecting on Scientific Knowledge
1. All students will analyze claims for their scientific merit and explain how scientists decide what constitutes scientific knowledge; how science is related to other ways of knowing; how science and
technology affect our society; and how people of diverse cultures have contributed to and influenced developments in science.

5. Develop an awareness of contributions made to science by people of diverse backgrounds.

III. Using Scientific Knowledge in Life Science

1. All students will apply an understanding of cells to the functioning of multicellular organisms; and explain how cells grow, develop and reproduce.

   1. Compare and contrast familiar organisms on the basis of observable physical characteristics. (plants.

**Earth Science: Earth’s Land and Water**

1. Constructing new Scientific and Personal Knowledge

   1. Generate reasonable questions about the world, based on observation: (Soil)

   2. Develop solutions to unfamiliar problems through reasoning, observation and/or experiment. (Composition of soil)

   5. Develop strategies and skills for information gathering and problem solving. (Human choices regarding land and water)

   6. Construct charts and graphs and prepare summaries of observations. (Soil and plant growth)
II. Reflecting on Scientific Knowledge

1. Develop an awareness of the need for evidence in making decisions scientifically. (Determine hardness of rocks)

2. Describe the relationship of science to other forms of creative expression such as language arts and fine arts. (Experiences with mud)

V. Using Scientific Knowledge in Earth Science

1. All students will describe the earth's surface; describe and explain how the earth's features change over time; and analyze effects of technology on the earth's surface and resources.

2. Recognize and describe different types of earth materials.

6. Demonstrate means to recycle manufactured materials and a disposition toward recycling. (Start composting)

2. All students will demonstrate where water is found on earth; describe the characteristics of water and how water moves; and analyze the interaction of human activities with the hydrosphere.

2. Trace the path that rain water flows after it falls.

Second Nine Weeks

Continue with composting and weather.
Third Nine Weeks
Earth: Weather and Seasons

II. Reflecting on Scientific Knowledge
1. All students will analyze claims for their scientific merit and explain how scientists decide what constitutes scientific knowledge; how science is related to other ways of knowing; how science and technology affect our society; and how people of diverse cultures have contributed to and influenced developments in science.

4. Describe ways in which technology is used in everyday life.
   (Shelters, clothing)

Fourth Nine Weeks
Life Science: Kinds of Living Things

I. Constructing Scientific Knowledge
1. All students will ask questions that help them learn about the world, design and conduct investigations using appropriate methodology.......

5. Develop strategies and skills for information gathering and problem solving. (20 questions animal game)

6. Construct charts and graphs and prepare summaries of observations. (Animal mouth parts)
II. Reflecting Scientific Knowledge

1. Develop an awareness of the need for evidence in making decisions scientifically. (Animal skin adaptations)

3. Develop an awareness and sensitivity to the natural world. (Destruction of forests and effects upon animals)

III. Using Scientific Knowledge in Life Science

2. All students will use classification systems to describe groups of living things.

   1. Compare and contrast familiar organisms on the basis of observable physical characteristics.

4. All students will explain how scientists construct and scientifically test theories concerning the origin of life and evolution of species; compare ways that living organisms are adapted to survive and reproduce in their environments; and analyze how species change through time.

   2. Explain how physical and/or behavioral characteristics of organisms help them to survive in their environment.

Earth: Weather and Seasons

I. Constructing Knowledge

1. Generate reasonable questions about the world, based on observation. (Temperature predictions)
2. Develop solutions to unfamiliar problems through reasoning, observation and/or experiment. (Thermometers)

3. Manipulate simple mechanical devices and explain how they work. (Temperatures over time)

V. Using Scientific Knowledge in Earth Science

2. All students will demonstrate where water is found on earth; describe the characteristics of water and how water moves; and analyze the interaction of human activities with the hydrosphere.

   1. Describe how water exists on earth in three states.

   Physical: Magnets

I. Constructing Scientific Knowledge

   1. Generate reasonable questions about the world, based on observation. (Use of magnets)

   2. Develop solutions to unfamiliar problems through reasoning, observation and/or experiment.

   6. Construct charts and graphs and prepare summaries of observations.

II. Reflecting Scientific Knowledge

   1. Develop an awareness of the need for evidence in making decisions scientifically. (Experiment with magnets)
2. Describe the relationship of science to other forms of creative expression such as language arts and fine arts. (Act out being a magnet)

5. Develop an awareness of contributions made to science by people of diverse backgrounds. (Petrus Perigrinus)

V. Using Scientific Knowledge in Physical Science

1. All students will measure and describe the things around us; explain what the world around us is made of; identify and describe forms of energy; and explain how electricity and magnetism interact with matter.

   1. Classify common objects and substances according to observable attributes: color, texture, flexibility, length, weight, buoyancy, states of matter, magnetic property.

   2. Identify properties of materials that make them useful.

   3. Describe the interaction of magnetic materials with other magnetic and non-magnetic materials.


# Appendix B

## Literature List for Reading

### Families/Communities
- Our Granny
- Our Grandad Little Brother
- Going to Granna’s
- When Dad Went to Daycare
- The Corner Store
- Our Town
- Our Street
- To the Store
- Araboolies of Liberty Street
- Crossing the New Bridge
- The Relatives Came
- Trip to Mini Town
- Doctor DeSoto

### Weather/Seasons/Soil
- The Storm
- Rain
- On a Cold, Cold Night
- Weather/Seasons
- The Four Seasons
- Who Likes the Cold
- The Wind Blows Strong
- Seasons
- The Wind
- Clouds, Rain, Fog
- Hot and Cold Weather
- Wind and Storms
- I Am Water
- Water (Asch)
- Seasons of Arnold’s Apple Tree
- I am a Rock

### Foods/Nutrition
- Let’s Go Rock Collecting
- Why Do Leaves Change Color

### Weather/Seasons
- We Can Eat Plats
- Pizza Party
- Our Pumpkin
- Vegetable Soup
- Chocolate Chip Hippo
- To the Store
- Peanut Butter Rhino
- Ice Cream Cows/ Mitten Sheep
- Smallest Cow in the World
- “Not Now” said the Cow
- Milk makers
- Strega Nona
- Gregory the Terrible Eater
- If You give a Mouse a Cookie
- Make Me a Peanut Butter Sandwich and a Glass of Milk
- Six Dinner Sid
- Bread is for Eating
- Tony’s Bread
- Giant Jam Sandwich

### Holidays
- The Star Spangled Banner
- The Statue of Liberty
- Cinco de Mayo (HBJ)
Appendix B

Literature List for Reading

Plants

We Can Eat Plants
I Am an Apple
Seed Story
See How it Grows
The Tiny Seed
The Carrot Seed
The Enormous Turnip
Lennea in Monet’s Garden
The First Forest
People and Plants
Plant Works
Plants Galore

Clothing

Ice Cream Cows/Mitten Sheep
Charlie Needs a Cloak
The Dress I Wear to the Party
Shoes for Grandpa
Stinky Socks
Hats, Hats, Hats
Hello, Cat, You Need a Hat
Caps for Sale
Best Dressed Bear
The Sneaker Factory
Thomas’ Snowsuit
The Hundred Dresses
New Coat for Anna

Shelters

Goodye House
Harry’s House
A Good Place For Me (Drums)
My Apron
Building A House (Barton)
A House is a House for Me
The Three Little Pigs (Reader’s Theater)
Home Place
Homes and Shelters
Roxaboxen
How a House is Build
Mike Mulligan
Hammers, Nails, Planks, and Paint
The Little House
Town Mouse, Country Mouse
Percy and the Five Houses

Reptiles

Snakes
Alligator Under My Bed
Alligators and Crocodiles
Zack’s Alligator
Animals in the Wild: turtles and Tortoises
Life Story of Snakes
Snakes are Hunters
Cricktor, the Boa Constrictor

Amphibians

Jump, Frog, Jump
Frog and Toad Books
Frogs and Toads
Appendix B

Literature List for Reading

Frogs, Toads, Lizards and Salamanders
Bats
Beavers
Lion and the Mouse

Birds
It Could Still Be a Bird
Have You Seen Birds
What Makes a Bird a Bird
The Ugly Duckling
Chanticleer
How to Build a Nest
Little Red Hen
Make Way for Ducklings

Fish
Swimmy
It Could Still be A Fish
Fishy Color Story
Usborne First Nature Book of Fishes

Mammals
It Could Still be A Mammal
I Love Cats
What Do You Do With a Kangaroo
Pandas
Why Polar Bears Like the Arctic?
Monkeys and Apes
Curious George
Case of the Masked Robbers
Appendix C

Videos

Available from Kent Intermediate School District Media Center

Plants:
- Plants are alike and different
- Visit to Apple Cider Country
- Living and non-living
- Plant or animal

Seasons:
- Autumn comes to the forest
- Seasons: Winter
- Seasons: Spring
- Summer

Food/Nutrition:
- Feeding the world
- Food: Farm to city
- Where does food come from
- Food
- Health: Food and nutrition

Shelters:
- My house
- Basic needs: Shelter

VHS02255
VHS06700
VHS01525
VHS01673
VHS030607
VHS04004
VHS01896
VHS01837
VHS001185
VHS01579
VHS02559
VHS04164
VHS0162
VHS00195
VHS00029
How to build an igloo VHS05638

Clothing:
Visit to a sheep farm VHS00166
Purple coat VHS03681
Animal families: Silkworm VHS00019

Patriotism:
Our American Flag VHS03869
Patriotism VHS03872
Pledge of Allegiance VHS03871
Our country’s flag VHS04464

Vertebrates

General:
Plants and animals depend on each other VHS05189
Animals with backbones VHS04463

Reptiles:
Alligators/crocodiles VHS05175
Cool creatures: Reptiles VHS06887
Reptiles; a first film VHS05068

Amphibians:
Tadpoles and frogs VHS00248
Looking at amphibians VHS02644

Birds:
All about animals; Birds VHS02664
Backyard birds VHS01494
Alphabet of birds

Mammals:

- All about mammals
- Shamu and you: mammals
- Mammals
- VHS02667
- VHS06791
- VHS02695

Fish:

- All about animals; fish
- Fish: first film
- VHS02665
- VHS01504
Appendix D

Reading Rainbows

Available through Forest Hill Public School Media Center

Families:

Always My Dad
On the Day you Were Born
Tight Times
Owen

Plants:

Once There was a Tree

Foods and Nutrition:

Milk Makers
Gregory the Terrible Eater
Robbery at Diamond Dog Diner
How to Make an Apple Pie and See the World
If You Give a Mouse a Cookie
June 29, 1999

Holidays:

Mrs. Katz and Tush
Shelters:
  Borreguita and the Coyote
  Is This a House for a Hermit Crab?
  Fly Away Home
  Someplace Else

Patriotism:
  The Wall

Clothing:
  The Purple Coat
  Three Hat Day
  Meanwhile Back at the Ranch

Vertebrates:
  Rechenka's Eggs
  The Day Jimmy's Boa Ate the Wash
  Mama Don't Allow
  Salamander Room
  Tortoise and the Hare
  Runaway Duck
  Imogene's Antlers
  Perfect the Pig
  Duncan and Delores
Appendix E
Projects and Activities

Family:

Family portrait
Family walk: home project
Family Thanksgiving meal
Globe: where family came from
Personal timeline
Family quilt

Plants:

Grapes to raisins: AIMS
Cow to milk sequence
Plant/observe seeds
Dissect bulbs
T-shirt leaf print
Sort seeds
Create a plant: all parts labeled

Soil, rocks:

Start Composting
Investigate soil outside: layers
Test hardness of rocks
Experiment with soil: What makes good mud?
Weather:

Cloud book
Record weather daily on graph
Condensation on a can
Read thermometer daily
Spilt milk picture/writing

Food:

Make ice cream/butter
Sort cereal boxes
Pasta patterns
Cereal patterns
Bread tasting: graph
Enormous turnip big book
Peanut butter day
Collages in shape of cow: dairy,
turnip: vegetables etc.
Make pizza: what food groups?

Shelters:

Home project: build shelter/report
Cooperative shelters in school
Building center
Clothing:
  Silkworm book
  Plant to pants sequence
  Sheep to sweater
  Cow to shoe
  Create new shoe on a “last”

Vertebrates:
  Home project: written report, oral presentation, project
  Animal covering book
  20 question animal game
  Animal Jeopardy

Patriotism:
  Make a flag
  Learn the pledge

Magnets:
  Test strength of magnets
  What will magnets attract
  Make a magnet puppet show
Appendix F
Technology

Families and Communities:
1. Using Kid Pix with either stamps or drawing, make pictures of your family.
2. Write a note a family member.
3. Make a number story about your family.

Weather/Soils/Rocks:
1. Using Kid Pix, draw the layers of the soil. Use different colors for the layers.
2. Draw you favorite weather and write a sentence about it.

Foods/Nutrition:
1. Using stamps or drawing divide your screen into four parts and put vegetables and fruits in one, dairy products in one, meat in one and cereal in one. You can draw them, write words or use stamps.
2. Make an adding problem with an apple tree.
3. Make a subtraction problem with an apple tree.
4. Make a grocery list for a lunch you like. You can write words or draw pictures.
Holidays:
1. Make a holiday card for your family.
2. Draw some decorations you use at your home during the holidays.
3. Make a math problem using stamps and have a buddy solve it.
4. Make a flag with the pencil on Kid Pix.

Plants:
1. Draw a plant and label its parts: roots, stem, leaves and blossom or fruit.
2. Watch the Laser Disc about plants growing in slow motion.
3. Make your own picture of how a plant grows.

Clothing:
1. Draw clothing for summer, spring, fall or winter.
2. Design a new T-shirt.
3. Make a math problem with shoes.

Shelters:
1. Draw a shelter for a cold climate and one for a hot climate. Label them.
2. Draw or make list of tools you would need to build a house. Which ones are hand tools and which need electricity?
Animals:

1. For each of the five classifications of vertebrates, make a picture. Show one animal and its habitat.
2. Make a slide show of the pictures.
Interdependence of Living Things

First Nine Weeks
- Families
- Rules
- Plants
- Soil
- Seasons
- Weather

Second Nine Weeks
- Families
- Holidays
- Traditions
- Health
- Food
- Seasons
- Weather

Third Nine Weeks
- Animals
- Food Chain
- Seasons
- Weather

Fourth Nine Weeks
- Our Country
- Clothing
- Shelter
- Families
- Seasons
- Weather
Development of the Curriculum for use in a Primary Multiage Classroom Using a Curriculum Map

The curriculum map designed by Heidi Hayes Jacobs begins with state standards and benchmarks and enables the teachers to use the curricula they are actually using in the classroom to fit into this framework. Because a multiage classroom poses more challenges for curriculum planning due to the wider range of abilities and ages in the classroom, plus two or three years of curriculum to plan, this framework enables the teacher to see at a glance what he/she is actually teaching. It also gives parents and students as well as administrators the same information.