Introduction

Growing with Mathematics is a comprehensive Pre-K to 5 curriculum which incorporates a balanced-approach to learning mathematical concepts and problem-solving skills. *Growing with Mathematics* is the result of 30 years of research which has identified several areas which are critical to mathematical learning and success. All learning expectations within the program are designed to provide significant, carefully sequenced mathematics experiences.

The program reflects the philosophy that all children can learn mathematics when they are provided:

- ◆ A wide range of learning experiences
- High expectations
- Ability to use prior experiences
- Conceptual understanding

Research results from schools representing diverse populations in both low and high socioeconomic statuses demonstrate that *Growing with Mathematics* improves student performance in mathematics.

Aligned to NCTM Standards

Growing with Mathematics incorporates suggestions and recommendations of the NCTM Principles and Standards for School Mathematics, 2000. NCTM standards emphasize the importance of communication and discussion in mathematics. *Growing with Mathematics* components encourage children to listen, discuss, explore, explain, and connect math ideas to solve problems.

U.S. Department of Education

The U.S. Department of Education has identified *Growing with Mathematics* as a **'Promising Program'**. The evaluators stated "the program's well-developed learning goals are challenging, clear, and appropriate for core students as well as gifted and talented, Title I, special education/special needs, and Spanish-speaking students."

NSF

The National Science Foundation (NSF) has recognized *Growing with Mathematics* as one of four elementary **research-based** mathematics education core curriculum programs. This distinction is given to programs which enable students to acquire a deep understanding, solve problems creatively, apply knowledge to new situations, work productively, and enjoy their learning experiences.

Program Features

Key Features of the Growing with Mathematics program include:

- Balanced-approach of concept and skill development
- ◆ Language-based materials to reinforce mathematical concepts
- ◆ Number Sense Starter with each topic
- Hands-on student activities
- Teacher-friendly topic booklets
- Differentiated instruction
- Application of mathematics to real world situations
- Ongoing and periodic assessment

Building Concepts

Growing with Mathematics uses a language-based approach to help build understanding of math concepts. The program builds on research that demonstrates a strong correlation between children's language development and their ability to learn mathematics. In *Growing with Mathematics*, the child's development is modeled as a spiral. The child's everyday language is a starting point from which mathematical and symbolic language grow.



Building on everyday experiences, the program provides a range of activities that ensure children are constantly discussing, representing and reasoning mathematically. Mathematical language and symbols include all the words, expressions, and symbols that are necessary to communicate in the world of mathematics. Understanding the mathematical relationships expressed in these terms is crucial to concept and skill development.

English Language Learners

Growing with Mathematics meets the needs of all learners. Each topic background includes accompanying support and lesson extensions providing ELL recommendations. Home Link letters explaining the *Growing with Mathematics* program and student assignments to families are provided in both Spanish and English.

Research Based

Growing with Mathematics is a core mathematics program developed through extensive field testing and in-depth research. The mathematical content and sequence of the program and the teaching methods it promotes make it a comprehensive program appropriate for all student populations.

Growing with Mathematics incorporates research from the fields of cognitive psychology, socio-cultural theories, and mathematics education.

- Research on how children learn provided much insight in the development of the activities within the program which encourage children to interact with their world in a meaningful and challenging way.
- The language focus of the *Growing with Mathematics* program is influenced by the research of socio-cultural theorists such as Vygotsky. The program strongly reflects the philosophy that children learn through active involvement and can be influenced through instruction.
- *Growing with Mathematics* incorporates research regarding best practices in the teaching of specific content areas of mathematics.

The results from schools using *Growing with Mathematics* demonstrate that the program improves student performance in mathematics. *Growing with Mathematics* introduces students to a variety of thinking strategies that allows them to develop their own thinking thus making them more effective problem solvers. The philosophy, content, and organization of *Growing with Mathematics* promotes a set of carefully sequenced learning experiences that allows students to simultaneously develop their understanding of mathematical content and skill development.

Success with Growing with Mathematics

Many Tulsa school sites post rise in test scores

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By Andrea Eger, World Staff Writer, 06/09/2004 Tulsa World © *Copyright 2004*, *World Publishing Co. All rights reserved*.

Many Tulsa Public Schools principals and teachers spent Tuesday celebrating significant gains in student test scores ...

"We complained about *No Child Left Behind*, but one good thing that has come from it is that it has caused us to look at areas where we are deficient and develop a plan to address the problem," said Doug Howard, principal at Sequoyah Elementary School.

This year, 53 percent of Sequoyah students demonstrated reading proficiency, compared with just 33 percent last year, and 78 percent were proficient in math, compared with just 30 percent in 2002-03.

Howard said the math gains are a direct result of a pilot program called *Growing with Math* that the school introduced this year in pre-kindergarten through fifth grade.

Mathematical Content

The National Council of Teachers of Mathematics has identified five content strands that form the basis of an exemplary mathematics curriculum. These strands are interrelated, with numbers being present throughout.

Number and Operations

A major focus of number work at Pre-K is to help children learn to count accurately and with understanding. They also begin to compare and order numbers, using concrete materials and then symbols.

To develop number sense and sight recognition of numbers, children need to work with many different representations of numbers, both concrete and pictorial. They also need abundant experience with joining numbers together and "breaking" them apart in different ways. This will help build a foundation for later work with operations such as addition and subtraction.

Number concepts are developed in the Pre-K program through activities that involve:

- estimating and counting objects, both concrete and pictorial
- working with different representations of numbers
- comparing and ordering groups of concrete objects
- recognizing and beginning to write number symbols
- using the language of ordinal numbers
- ◆ joining numbers together and breaking numbers apart

Note: Since "zero" is not a counting number, it is not formally introduced at the Pre-K level. However, many children are fascinated by the idea of zero and it should be dealt with in a natural way. For example, in activities where children are putting numbers of objects on a plate, the opportunity may arise to discuss what is shown on an empty plate. "Teachable moments" such as this occur at a variety of times throughout the year.

Algebra

Algebra is the branch of mathematics that uses symbols to express patterns and relationships between numbers or quantities.

At Pre-K, children begin to develop algebraic thinking through activities that involve:

- sorting and classifying concrete objects or pictures
- identifying, describing, creating, copying, and extending patterns of sounds, actions, or objects
- writing number symbols

Geometry

At Pre-K, geometry is an intuitive part of mathematics for young children, who are naturally interested in the shape, size, and position of objects in the world around them. Geometric concepts and related language are developed through children:

- describing the relative position of objects in the real world and in pictures, using words such as in *back of, next to, below*
- investigating the characteristics and properties of 3-D solids and 2-D shapes, and describing their attributes; for example, a triangle has three sides
- hearing and beginning to use formal names for 3-D and 2-D shapes

Measurement

One of the most practical applications of mathematics in everyday life is measurement.

At Pre-K, the focus is on helping children identify, describe, and compare measurable attributes such as length, size, weight, and capacity. At this level, tools that measure in formal units are not used.

Activities that help develop concepts related to measurement include:

- describing measurable attributes; for example, using the words long and short to describe length
- identifying which object has more or less of a given attribute; for example, holding two objects to "feel" which is heavier, and then using a pan balance to check
- ordering objects according to a given attribute

Children explore concepts related to measuring time through activities such as:

- ordering events in a story or everyday situation
- working with a calendar that shows the days of the school week.

Data Analysis and Probability

Data analysis is a general term that covers the processes of collecting, describing, interpreting, summarizing, and graphing information, and creating or answering related questions.

Activities at Pre-K that contribute to the development of data analysis skills include:

- classifying objects as the same or different, according to an attribute such as color, size, or shape
- sorting concrete or pictorial objects
- interpreting simple graphs and charts such as the pictorial graphs in Who Has More? and Grandma's Special Toy Box
- making simple graphs and charts; for example, by sorting concrete objects on a graphing mat, or by placing stickers on a weather chart.

At Pre-K, probability experiences are very informal; for example, predicting what the weather will be like tomorrow

Content Summary

GETTING STARTED

Week 1

- Day 1 Block Center
- Day 2 Home Center
- Day 3 Craft Center
- Dav 4 Art Center
- Day 5 Moving to Centers

Week 2

- Dav 1 Sand Center
- Day 2 Science Center
- Day 3 Play Center
- Day 4 Math Center
- Day 5 Moving to Centers

TOPIC 1: SAME OR DIFFERENT?

Week 1

- Day 1 Introducing the color names
- Identifying same colors Day 2
- Same and different colors Day 3
- Day 4 Identifying same and different colors
- Day 5 Matching colors

Week 2

- Day 1 Introducing textures
- Dav 2 Describing textures
- Day 3 Same and different sounds
- Day 4 Same and Different pictures
- Day 5 Color and texture matching

TOPIC 2: BIG OR SMALL?

Week 1

- Day 1 Introducing big and small
- Day 2 Labeling objects big and small
- Identifying big and small objects Day 3
- Dav 4 Exploring animal sizes
- Day 5 Describing same and different attributes

Week 2

- Day 1 Introducing long, short, and tall
- Day 2 Focusing on long and short
- Day 3 Focusing on tall and short
- Day 4 Focusing on tall, short, and long
- Day 5 Reviewing height and length

Week 3

- Day 1 Introducing wide, narrow, thick, and thin
- Day 2 Wide or narrow? Thick or Thin?
- Day 3 Size and position
- Day 4 Reviewing size vocabulary
- Day 5 Making simple size comparisons

TOPIC 3: SPACE AND SHAPE

Week 1

- Day 1 Introducing positional language
- Day 2 Using positional vocabulary
- Day 3 Reinforcing positional vocabulary
- Dav 4 Describing position
- Day 5 Reviewing positional language

Week 2

- Day 1 Introducing 3-D Shapes
- Describing features of 3-D shapes Day 2
- Day 3 Exploring features of 3-D shapes
- Day 4 Naming 3-D shapes
- Practicing language of shape and position Day 5

TOPIC 4: SORTING

Week 1

- Day 1 Introducing sorting
- Day 2 Discussing ways to sort
- Developing sorting rules Day 3
- Day 4 Sorting and classifying
- Day 5 Naming and labeling groups

Week 2

- Day 1 Grouping similar objects
- Dav 2 Sorting pictures
- Day 3 Identifying which object does not belong
- Day 4 Sorting and re-sorting
- Displaying groups in an informal graph Day 5

REVIEW WEEK: TOPICS 1-4

TOPIC 5: COMPARING AND ORDERING

Week 1

- Day 1 Introducing comparison of sizes
- Day 2 Using comparison language
- Day 3 Describing and demonstrating size comparisons
- Day 4 Ordering three objects by size
- Reinforcing the concept of ordering by size Day 5 Week 2
 - Dav 1
 - Introducing comparison of sizes Day 2 Using comparison language

 - Day 3 Describing and demonstrating size comparisons
 - Ordering three objects by size Day 4
 - Day 5 Reinforcing the concept of ordering by size

TOPIC 6: ONE, TWO, THREE, FOUR, FIVE

Week 1

- Day 1 Introducing one, two, three
- Day 2 Number rhymes to three
- Day 3 Introducing four and five
- Day 4 Listening and counting
- Representations of quantity Day 5

6

Week 2

- Day 1 Counting to five
- Day 2 Counting items in pictures
- Day 3 Same and different numbers (one, two, three)
- Day 4 Number matching with pictures
- Day 5 Number symbols 1, 2, and 3

TOPIC 7: DESIGNS AND PATTERNS

Week 1

- Day 1 Introducing patterns
- Day 2 Looking at real-life patterns
- Day 3 Patterns in the environment
- Day 4 Identifying patterns
- Day 5 Participating in making a pattern

Week 2

- Day 1 Describing patterned clothing
- Day 2 Identifying checks, spots, and stripes
- Day 3 Matching designs
- Day 4 Comparing designs
- Day 5 Arranging objects to make patterns

TOPIC 8: FOCUS ON FOUR

Week 1

- Day 1 Counting to four
- Day 2 Matching different representations of numbers
- Day 3 Finding groups of four
- Day 4 Matching different representations of numbers
- Day 5 Number recognition

Week 2

- Day 1 Counting from one to four
- Day 2 Arrangement of four
- Day 3 Four sides to a square
- Day 4 Number review
- Day 5 Introducing the part-part-total idea

REVIEW WEEK TOPICS 5-8

TOPIC 9: FOCUS ON FIVE

Week 1

- Day 1 Counting one more
- Day 2 Finding and making groups of five
- Day 3 Showing five in two groups
- Day 4 Exploring picture graphs
- Day 5 Matching quantities and number symbols

Week 2

- Day 1 Counting back from five
- Day 2 Showing five in different ways
- Day 3 Matching numbers and pictures
- Day 4 Introducing the five-frame
- Day 5 Matching different representations of numbers

TOPIC 10: HEAVY OR LIGHT? MORE OR LESS?

Week1

- Day 1 Introducing heavy and light
- Day 2 Comparing weights, focusing on heavy
- Day 3 Comparing weights, focusing on light
- Day 4 Comparing sizes and weights
- Day 5 Using a tool to compare weights

Week 2

- Day 1 Using language related to capacity and volume
- Day 2 Introducing more and less capacity
- Day 3 Comparing capacities
- Day 4 Filling and pouring to compare capacities Day 5 Investigating sounds
- Day 5

Week 3

- Day 1 Comparing numbers of puppets
- Day 2 Identifying more
- Day 3 Finding and making groups to show more
- Day 4 Comparing numbers of pennies
- Day 5 Comparing numbers

TOPIC 11: SHAPES AND PATTERNS

Week 1

- Day 1 Introducing two-dimensional shapes
- Day 2 Matching shapes to pictures of shapes
- Day 3 Reinforcing shape recognition
- Day 4 Recognizing shapes
- Day 5 Sorting two-dimensional shapes

Week 2

- Day 1 Introducing repeating patterns
- Day 2 Describing and creating patterns
- Day 3 Finding and "reading" patterns
- Day 4 Exploring continuous patterns
- Day 5 Extending a repeating pattern

TOPIC 12: NUMBERS IN ORDER

Week 1

- Day 1 Introducing ordinal numbers
- Day 2 Using first, second, third, and last
- Day 3 Changing the order of the race
- Day 4 Describing the order of events
- Day 5 Predicting the position

Week 2

- Day 1 Counting to ten
- Day 2 Recognizing the symbols 1 to 6
- Day 3 Showing six in two groups
- Day 4 Counting in any order
- Day 5 Numbers in order

REVIEW WEEK: TOPICS 9-12

The Pre-K Mathematics Curriculum

Growing with Mathematics Topic

\mathbf{C}	urriculum							
Growing with Mathematics Topic		Mumber Oberations Algebra Geometry Measurement Data and Analysis and Analysis						
1	Same or Different?		~				/	
2	Big or Small? Short or Tall?				~			
3	Space and Shape			~				
4	Sorting		~			~		
5	Comparing and Ordering				~			
6	One, Two, Three, Four, Five	~						
7	Designs and Patterns		~					
8	Focus on Four	~						
9	Focus on Five	~						
10	Heavy or Light? More or Less?	~			~	~		
11	Shapes and Patterns		~	~				
12	Numbers in Order	~						

Key:

- Content focus of the Topic.
- Provides a foundation for concepts that are essential to later work with this Content Strand.

Note: The mathematics strands listed relate to the National Council of Teachers of Mathematics Content Standards. The NCTM Process Standards are interwoven through every topic.

How a Topic Is Organized

The structure of this three-week topic (Topic 8) is representative of the format used for each of the twelve topics in the *Growing with Mathematics* Pre-K program.





12

How a Lesson is Organized

Each week begins with a Circle Time song. Daily whole-group activities are provided for the remaining days of the week.

TOPIC 8 Week 1 Day 1

Whole group Teaching focus: Counting to four

One, Two, Three, Four



Whole group Teaching focus: Showing four in different ways

TOPIC 8 Week 1 Day 2



Two teacher-directed small-group activities are provided for each week.

Two math center activities are provided for each week.

Four free-choice activities are provided for each week.

8-8



all children have had a turn as

8-14





Assessment

Assessment is a natural and essential element of learning. Thoughtful assessment provides teachers with valuable knowledge about what children know and how they think. It also greatly assists teachers in making curriculum decisions.

Growing with Mathematics provides both the guidance and the materials necessary for authentic assessment. Assessment should occur both informally on an ongoing basis and periodically in a more formal way. It is recommended that samples of children's work be kept in individual portfolios.

Ongoing Assessment

The **learning expectations** for each Topic are listed on page 4 of each Topic Booklet, together with suggestions for recording children's progress. This is a most valuable part of day-to-day planning. It involves observing children as they work—watching what they do and listening to what they say. It is recommended that regular observations be recorded on each child's Ongoing Assessment Record Sheet. The columns "Not yet," "Sometimes," and "Consistently" should be dated to help you keep track of each child's progress. Space is provided for you to add comments about significant indicators of understanding.



This teacher is making an anecdotal record as she listens to the child describe her thinking. Later, she will include it in the child's portfolio. Some of the most valuable assessment occurs as teachers observe and interact with children.

Periodic Assessment

The program provides **three Review Weeks**: one that reviews Topics 1–4, one that reviews Topics 5–8, and one that reviews Topics 9–12. No whole-group activities take place during these Review Weeks, freeing teachers to use the Assessment Tasks provided for each topic. These periodic, individual assessments are designed to be used *as needed*. It is not necessary for every child to complete every assessment task.

Comprehensive Assessment Interview

This Interview, which comprises 20 tasks, is included at the end of the Assessment Book. It is intended to be used as needed to gather information about individual children's mathematical understanding. It is appropriate for use at **the end of the school year** or, if required, could be used earlier in the year to assess a child's **initial level of understanding**.



This teacher is using a task from the Assessment Book to assess the child's ability to make groups of one, two, or three objects. Such periodic assessment can be used as needed to supplement ongoing assessment of the learning expectations provided at the beginning of each Topic.

Portfolios

Keeping a portfolio for each child is a key part of authentic assessment. A portfolio allows you to keep work samples, annotated photographs of children engaged in activities, anecdotal records, and records of a child's results on periodic assessment tasks.

By maintaining a cumulative record of children's work in this way, you can easily monitor a child's development over time. Portfolios are also extremely valuable for showing parents how their child is progressing.



Juanita

Diverse Learners and Home Links

Diverse Learners

The Growing with Mathematics Pre-K program has been purposefully designed to meet the needs of all children. The authors recognize that all children learn in different ways and at different times. Consequently, children need a variety of experiences to develop early mathematics concepts. In addition, the authors are aware that some children have special needs. Children with special needs include those with specific physical or learning disabilities, English-language learners, and those who require additional challenge. To meet the diverse needs of children, special education teachers were involved in the development of the program. Although all program activities are designed to allow for a diversity of learning styles and abilities, in each Topic Overview you will find additional support activities, ELL recommendations, and extension activities.

One, Two, Three can walk Song Poster One, two, three 14 can walk. Look at me! One, Two, Three I can hop One, two, three. Vocabulary I can hop. Look at me! Using the Song Poster I can jump. One, two, three can jump. Look at mel can clap. One, two, three I can clap. Look at me!

Additional support activities and ELL recommendations are provided throughout the program, including on the back of the song posters.

Home Links

A letter introduces families to the *Growing with Mathematics* Pre-K program. It highlights the math content children will be learning, the cross-curricular connections, and strategies for working with their Pre-K child. Newsletters, one for each topic, are also provided. The newsletters invite caregivers to participate in the mathematics learning of their child by giving information about the mathematics in the topic as well as related activities that can be done at home. Both English and Spanish versions of the introductory letter and newsletters are included in the Blackline Masters Book.



Classroom Kit Components



Teacher's File



Discussion Book



Learning Center Labels



Jumbo Pocket Cube



Song Pack



Calendar Kit



Concept Lap Books





Math Literature Big Books



Card Sets



Mix and Match Flip Book



Sets of Magnetic Pieces

Pre-K Classroom Kit

- ♦ Teacher's File
- Discussion Books Vols. I and II
- Student Book (24 copies)
- ♦ Song Pack
- Calendar and Data Kit
- ♦ Jumbo Cube Kit
- Mathematics from Many Cultures— Big Book
- ◆ Math Literature Books—8 Big Books
- ♦ Mix and Match Flip Book
- ♦ Resource Kit





Discussion Big Books

The Pre-K Growing with Mathematics program includes a giant-sized Discussion Book. *Growing with Mathematics* language-based approach to learning mathematics concepts and skills are driven by student interaction using big books. This wonderfully designed book provides a powerful reinforcement and guide for classroom discussions.

The Pre-K Discussion Book:

- Includes discussion material which meets all NCTM and NAEYC standards
- Incorporates images that reinforce mathematics content
- Allow students the opportunity to explore a variety of problem-solving strategies
- Integrates mathematical concepts with crosscurriculum activities and investigations
- Provides a rich source of data and images for problem solving

Our First Calendar Kit

The Pre-K calendar kit builds on the concepts and characters in *Wilbur the Weather Watcher* and *Dinosaur Days*. Students establish daily classroom routines related to weather and the days of the week.

The Pre-K calendar kit includes:

- ◆ Teacher's Notes and Blackline Masters
- ◆ Wilbur the Weather Watcher Lap Book
- Wilbur's Wardrobe Stickers
- Weather Symbol Stickers
- ♦ Laminated Wall Chart
- ♦ Dinosaur Days Lap Book
- Matching and Sequencing Cards
- ♦ School Week Calendar
- ♦ Month Calendar

Dinosaur Days

Seven dinosaurs are characters in this appealing story. Each day of the week associates a different dinosaur with a special activity to help children learn the datys of the week. Language development includes words such as today, tomorrow, and yesterday, plus the use of initial consonant sounds and rhyming words in descriptions.

Wilbur the Weather Watcher

Wilbur the weather cat checks the weather every day. He knows what to do and how to dress for different types of weather. This book encourages children to watch the weather where they live and decide what they will do. Foldout flaps reveal picture icons for different kinds of weather.

Our Calendar Kit components shown on page 30





Song Pack

Thirty song posters-one for each week are used to introduce concepts. Children sing songs from the accompanying CD and act out the rhymes through movement. Activities on the back of each poster tie mathematics to literacy with a special emphasis on English Language Learners.

Sets of Magnetic Pieces

These sets of magnetic pieces are used with matching sequencing, and comparing activities.

- Ordinal Number Magnets
- Shape Magnets
- ◆ Size Comparison Magnets
- Mix and Match Number Magnets

Flip Book

This flexible resource for whole-class or small-group activities can be used for matching two or three amounts, comparing pictures, numbers, ordering numbers, writing numerals, and assessment.

Card Sets

Four sets of cards are used for sorting, matching, and sequencing activities.

- ♦ Dinosaur Dominoes
- ♦ Sorting Cards
- ◆ Time Sequencing Cards
- ♦ Design Cards

Learning Center Labels

Learning centers are an important part of the Pre-K program. This set of labels identifies specific centers for concept specific materials. Student sized cards are designed to help manage the number of students working at a center.

Jumbo Dice

Ideal for circle-time and small-group activities, this six-inch soft cube can be used to reinforce concepts. The kit includes card sets for activities involving:

- Physical Movement
- Matching
- Positional Games
- ♦ Shape Identification
- Number Representations
- Reading Numbers

Teacher's File



The Pre-K Teacher's Resource File conveniently organizes teacher materials. Topics provide detailed lesson plans including individual, small-group, and whole class activities.

Each topic can be removed easily for use in planning.

Teacher's File Components: Overview booklet

The Overview Booklet serves as a guide through the Pre-K program providing information on the programs philosophy, content, and organization.

Topic Booklets

The program is organized by topic booklets. The program supports **National Council of Teacher's of Mathematics** (**NCTM**) content and process standards as well as guidelines set forth by **The National Association for the Education of Young Children (NAEYC)** Curriculum Content and Assessment Programs Serving Children ages 3 through 8. Each topic booklet includes:

- An Overview of each week
- Ongoing assessment
- Cross-curriular connections
- Related children's literature
- ◆ Home and school connection
- Whole class, teaher directed, small-group, math center, and free-choice activities

Getting Started Booklet

The Purpose of the Getting Started Booklet Both NCTM and NAEYC place great emphasis on establishing an appropriate learning environment. The activities in the Getting Started Booklet:

- Establish what prior knowledge children have on entering Pre-K
- Establish daily routines that integrate learning with social development

Topic Content

Topic 1: Same or Different? Topic 2: Big or Small? Short or Tall? Topic 3: Space and Shape Topic 4: Sorting Topic 5: Comparing and Ordering Topic 6: One, Two, Three, Four, Five Topic 7: Designs and Patterns Topic 8: Focus on Four Topic 9: Focus on Five Topic 10: Heavy or Light? More or Less? Topic 11: Shapes and Patterns Topic 12: Numbers in Order

Assessment Book

The GWM program supports principles of appropriate assessment set out by NCTM and NAEYC. Provided in the Assessment Book:

- Ongoing Assessment Records used to monitor each child's progress through the program
- Assessment Tasks (and accompanying Record Sheets) that are designed to be used as needed with individaul children

All assessment resources are directly related to the learning expectations of the topic.

Blackline Masters Book

The blackline Masters book includes:

- Home letters and activity sheets (in English and Spanish) for every topic
- Activity and game templates for whole-group and small-group use

Mathematics Literature Books

Six Big Books linking math and literature provide stories with rhyme, rhythm, and repetition to reinforce key mathematics concepts. Children are encouraged to discuss the pictures and act out the stories.

Literature titles in Pre-K cover the following:

- Counting
- ♦ Sorting
- ◆ Comparing
- ♦ Patterns
- ♦ 3-D Shapes
- Positional Language







I Think I'll Go Flying



The Puppet's Party







Pretty Patterns





Wayne's New Shape





Buster Balloon



The Dancing Dragons

Concept Lap Books

Let's Be Clowns

A gorilla, a lion, and a bear want to become clowns. They go looking for big red noses, tall hats, long shoes, and other clown apparel. Each page of the book provides opportunities for children to compare and order items according to their size. Children are encouraged to make predictions about the characters choices.



The Hiding Game

Children use the language of size and position as they join the search for Dolly Duck's friends. The foldout 'tall' and 'wide' pages engage children's interest and provide valuable experience with the language of measurement.



Pat and Penny

As children learn about Pat the Penguin's new home, they enjoy identifying the patterns Pat has used to decorate each room. This book features prediction windows that encourage children to describe the different kinds of designs and patterns that Pat has used.





Concept Lap Books

Milly and Molly

A rhyming text adds to the appeal of this tale about two monkeys and their favorite dress-up game-creating identical outfits. As children help the characters find hats, scarves, and shoes that are the same, they have many opportunities to identify same and different colors, textures, and sizes.



Who Has More?

Familiar nursery rhyme characters are shown in two similar illustrations. Children compare the pictures to determine which one contains more or less of a particular item or object. Center flaps open to reveal items from each picture aligned for easy counting

Grandma's Special Toy Box

This warm story (with a surprise ending) is about a young boy who enjoys the many treasures he finds in his grandmother's toy box. Children will count with him as he explores each new collection of toys. Contents of the toy box are shown in photography and represented din simple graphs.



Manipulative Kit Components



Manipulative Kit

The Manipulative Kit includes the manipulatives recommended for use in the Pre-K *Growing with Mathematics* program.

- ◆ 1-Inch Wooden Cubes (102)
- Links (500)
- Dinosaur Counters (100)
- ♦ 3-D Foam Shapes (Set of 5)
- Animal Counters (144)
- Table Blocks (84)
- Pattern Blocks (250)
- ◆ Teddy Bear Counters (100)
- Graphing Mat (1)
- ◆ Texture Dominoes (1 Set)
- Connecting Cubes (300)
- VEhicle Counters (144)

Crecindo con matemáticas

Pre-K

In order to teach for understanding, students must have the ability to communicate their ideas. *Growing with Mathematics' Pre-K Spanish* program includes instructional materials in Spanish, increasing the ability for **English Language Learners** to become actively engaged in the classroom. Students are not only provided a comfortable learning environment; they are also able to communicate and learn from one another.

Teacher's File

The teacher's file includes a Blackline Masters book with Spanish Home Link letters to send home.

Math Literature Books and Concept Lap Books

All math literature and concept lap books found in the English version are translated and provided in our Spanish edition.

Libro de discussión

The big book discussion books are also written in Spanish with all the features of the English version.

Cuaderno de actividades

The Student Book contains student pages with instructions written in Spanish.

Mis primeros calendarios

Our Calendar Kit contains materials in English with a Spanish Supplement including: days of the week, months of the year, Grafica del Tiempo wall chart, and Nuestro calendariario.

Jumbo Cube Kit

The kit contains all components of the English version along with a Spanish supplement which includes Spanish text.

Combina y une

Our Mix and Match Flip Book, Spanish edition, adds the same number skills found in the English version.

Resource Kit

The Spanish program also includes the unique components found in the *Growing with Mathematics* resource kit with additional Spanish supplements.

٦	,
9	All non-text Pre-K components used in the English
q	The non-text ric recomponents used in the English
¢	edition are also used in the Spanish edition. The Pre-K
9	Song Pack includes suggestions for FLL students on the
¢	Song Fack includes suggestions for ELL students on the
¢	hack of each poster
d	back of each poster.

.









Planning and Preparing

About Getting Started

This Getting Started Booklet is designed to help you to:

- organize your classroom effectively for the school year
- gradually introduce children to key routines and resources
- help children become accustomed to a variety of learning experiences
- establish practical methods for managing centers throughout the year.

The booklet has two main sections:

- pages GS-1 to GS-8 cover aspects of planning and preparation that are essential for effective implementation of the total program, and the first two weeks in particular
- pages GS-9 to GS-30 provide suggested activities for the first two weeks of the school year (before you begin Topic 1).

Planning for Varied Learning Experiences

Growing with Mathematics provides a balance of teacher-directed and independent learning experiences. It is structured around the following kinds of activities.

Whole-group activities

These are the main teaching activities that start each day's math time. They are built around songs, stories, games, calendar activities, and so on.

Teacher-directed small-group activities

Two teacher-directed small-group activities are suggested for each week of the program. It is intended that all children be involved in at least one of these during the week.

Math centers

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Two Math Centers are suggested for each week of the program. Working in pairs or small groups, children will have an opportunity to work at each of these centers during the week.

Free-choice activities

These are math-related activities that take place at centers typically found in Pre-K classrooms. Four free-choice activities are suggested each week. Working individually, in pairs, or in small groups, children complete at least one of these free-choice activities.

The suggestions for classroom organization that are provided in this *Getting Started* Booklet will help you to plan successfully for these varied learning experiences.

Tailoring Growing with Mathematics to Support Your Program

In the weekly overview charts, certain whole-group activities, teacher-directed small-group activities and Math Centers are identified (*) as essential activities. If children are attending preschool for less than five full days, you may focus on only these essential activities. For a full-day, five-day program, *Growing with Mathematics* provides a year-long mathematics program.

Ensuring a Successful Start

Background

The program for the first two weeks has been carefully designed to ensure that children have a gradual and effective introduction to the rich learning environment that they will experience throughout the school year.

By guiding children through the suggested activities before beginning Topic 1, you will be helping them to become familiar and confident with:

- participating in and moving between a variety of activities, including whole-class activities, teacher-directed small-group activities, Math Centers, and other ongoing learning centers
- the routine of starting each week with a song
- the use of literature (Big Books) as a frequent focal point for Circle Time activities
- appropriate ways of using and sharing the wide variety of hands-on resources that will be featured in their explorations of mathematics throughout the year.

In keeping with the experience of beginning a new school year, the activities have a very strong connection to personal themes of making friends, getting to know one another, and exploring the immediate environment. However, the activities also have a mathematical focus. Children:

- discuss and chart the weather
- learn about the days of the week
- begin to explore calendar routines that will continue throughout the year
- engage in center activities that encourage them to focus on attributes of size and color, and concepts such as same and different.

These activities help make children aware of the world around them. Early mathematical thinking related to comparing and ordering, early concepts of time, and early methods of representing and making sense of data are all involved. As is the case throughout the program, activities are fun and focus on the value of play and active exploration as vehicles for learning.

Ongoing Observation

Observe children throughout these two weeks. You will have many opportunities to note how they participate in whole-class activities, how confidently they approach center activities and other activities that have a minimum of teacher direction, and how they interact with other children and with adults (sharing, taking turns, attending to directions, and so on).

Sample questions are provided with each suggested center activity to help promote discussion and encourage children to explain their thinking. This oral interaction is extremely valuable for providing insights into children's thinking and initial levels of mathematical understanding.

Begin a portfolio for each child during these first two weeks. By the end of the two weeks, a portfolio is likely to include the following items.

- Brief anecdotal notes, made on sticky labels or index cards as you observe and talk with children
- Photographs of children at work on particular activities. On the back of each photo, record the language the child used to tell you about what he or she was doing.
- Children's drawings or paintings. If the child tells a story or suggests a caption for a picture, an adult could write these words on the picture.



Learning Centers

Centers are used throughout the program to enhance children's physical, social, and cognitive development. To ensure that children have many opportunities for exploration, make sure that each center is equipped with a rich variety of materials, including the basics suggested below.

Also, decide on the system you will use to manage the number of children working at a center at any one time. Several popular methods are described on page GS-6.





Unit blocks, pattern blocks, people and animal figures, vehicles, traffic signs, floor rug, storage containers



Play dough, rolling pin, cookie cutters, modeling tools; collage materials such as scraps of fabric, yarn, buttons, pipe cleaners, cotton balls, old magazines, paper, scissors, tape, glue, glue brushes



Clean water (changed daily), sterilized sand, containers of varied sizes, cups, scoops, spoons, funnels, strainer, waterproof cover for floor and table



Dolls and doll clothes, dress-up clothes, hats, and shoes, including uniforms for occupations, costume jewelry, glasses frames with no lenses, wigs



Cooking, eating, and dishwashing utensils, empty food packages, napkins, plastic food, aprons, broom, telephone, telephone book, pencils and paper



Different colors and sizes of paper, tempera and watercolor paints, water containers, brushes, sponges, crayons, colored pencils



Variety of commercially made puzzles or puzzles you have made, such as outline pictures drawn on tagboard with holes punched around them for children to thread with yarn; wooden puzzles, durable cardboard puzzles, texture puzzles



Magnifying glass, magnets; objects from nature such as twigs, stones, seeds, leaves, feathers, shells; classroom pets



Manipulatives from the Manipulative Kit; the Mix and Match Flip Book; other objects such as buttons, ribbons, lids, bottle tops, keys, and so on for counting and sorting activities

Asking Quality Questions

As children work at centers, use the opportunity to ask questions that challenge their thinking. For example: What would happen if you ...?

Can you show me another way to ...? Why do you think ...? How is this (building) like ...? How is it different? How did you decide what to make?

How do you know?

Sample questions to ask at specific centers are given on pages GS-21 and GS-22, and GS-29 and GS-30.

All Aboard!

During the first two weeks, children are *gradually* introduced to centers, with a new center being introduced each day. The *All Aboard!* activity that appears on the following pages is ideal for helping children learn about taking turns at centers. It is a fun activity in which you, as the "conductor," take the children on a train ride around the classroom. Each child has a colored ticket, such as red, blue, green, yellow, or orange. As a train journey proceeds, children with different colored tickets have different stations or centers as the destinations.

Preparation for "All Aboard!"

- Make construction-paper tickets, with equal numbers of five different colors (e.g., for a class of 20 children, make four tickets of each color).
- Before math time on Day 1 of Week 1, pin or tape a ticket on each child. (Children will use the same color ticket each day so it is helpful to write the child's name on his or her ticket.)
- When you are ready to begin the All Aboard! activity each day, have children form a line





 Teacher-directed activities involving all children who are not at centers
**If it is not practical for two groups to work at a center at the same time, have one of the groups join the teacher-directed activity My Favorite Things. behind you. As the train's conductor, you might wish to wear a hat!

 Lead children on a train ride (making train noises if desired), following the route that is indicated in the teacher's notes to take children to particular centers or other activity areas.

The *All Aboard!* ticket system means that the class is effectively organized into five color groups. The charts below show how, in the course of two weeks, each group has turns at several centers.

After the First Two Weeks

The *All Aboard!* activity is designed to be used only when centers are first being introduced. By the end of the second week, children will be accustomed to having several centers in operation at the same time. You could then introduce them to an ongoing system for managing the way children choose and take turns at centers. Some popular systems are described on page GS-6.

OUR FIRST CALENDAR KIT





Laminated Wall Chart



Wilbur's Wardrobe Stickers



Matching and Sequencing Cards



School Week Calendar





Teacher's Notes and Blackline Masters



Weather Symbol Stickers



Month Calendar





Lap Book

Lap Book