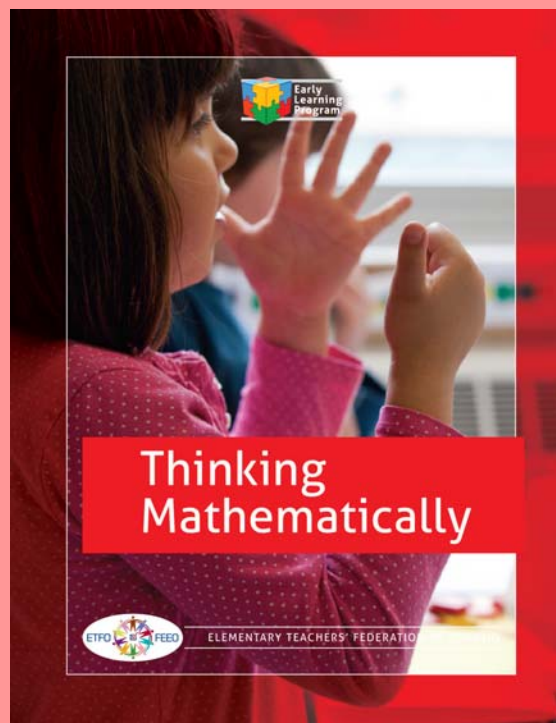


Facilitator Guide ETFFO Book Clubs



Thinking It Through Thinking Mathematically

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Introduction to ETFO Book Clubs

The Elementary Teachers' Federation of Ontario is committed to providing professional development for its members in a variety of forms. Teachers are best able to determine what professional development they need to pursue as life-long learners and ETFO Book Clubs are designed for voluntary participation of interested members. As ETFO professional development programs and services continue to evolve to meet the challenging needs of educators and their students, the new season of offerings has been expanded to include book clubs with a focus on classroom management, differentiated instruction, and Kindergarten.

Professional book clubs provide an excellent opportunity for members to reflect on their classroom practice, enhance their professional knowledge, and engage in the professional learning that best meets their needs and the needs of their students.

A book club is a staff learning experience that gives educators an opportunity for professional networking, sharing, and reflection through an in-depth examination of ideas, concepts, research, and strategies presented in a professional resource.

The main goals of ETFO Book Clubs are:

- To enhance the professional knowledge of our members.
- To enhance the professional practice of our members.
- To foster leadership at the local level.
- To implement high-yield, research-based instructional strategies.
- To monitor the impact or effects of instructional decisions on students.
- To reflect on current teaching practices.

When professional book club experiences are tied to the real work of teachers, and to authentic issues they are grappling with in their classrooms, teachers have a deeper understanding of their impact on classroom practice and student learning.

Book Club Structure

Professional book clubs provide an excellent opportunity for our members to enhance their professional knowledge and practice. Participants attend four two-hour sessions that focus on specific chapters of the various resources highlighted, consider strategies they can try in their classroom, and reflect on and share their experiences within a community of learners. As a facilitator, you will contribute to building leadership capacity within our locals in the area of professional development.

Roles and Responsibilities

ETFO Book Clubs are offered in partnership between locals and the provincial office. Facilitator guides, such as this one, have been developed by members to support you as you facilitate this book club.

The Role of the Facilitator

A book club facilitator guides a group of participants through an interactive discussion of a selected title. The facilitator organizes the session and conducts the meetings. Group members can expect the facilitator to use open-ended questions, wait time, and paraphrasing to encourage participation. The facilitator also emphasizes the importance of keeping the discussion on track, focusing on one topic or task at a time. The person in this role is not an expert and should remain neutral allowing group members to share different perspectives. All group members are valued and encouraged to participate in their own way.

“The most valuable insight a group can have is that the most effective resources for moving ahead are found within their situation and within themselves.”

R. Bruce Williams

Establishing Group Norms

Any group that meets regularly to work together needs to identify a set of norms or ground rules that will help a group do its work and discourage behaviours that interfere with a group's effectiveness. Norms govern how the group will interact, share, and learn together.

It is ideal to set norms at the beginning of a group's work together inviting group members to suggest ideal behaviours for groups, eventually refining them into an agreed-upon set of norms. Once established and posted, groups need to continually remind themselves about the norms they have created.

Some topics you may want to raise as starting points for discussion with your group are:

Expectations for behaviour – How will your group relate to one another within (and beyond) the group? Considering norms in TRIBES such as right to pass, attentive listening, and taking turns, may be helpful.

Shared leadership – How will members share responsibility for the group? How will decisions be made about what to read, when to meet, and where to meet be made?

Participation and interaction – How will members work together? Considering roles such as recorder, timekeeper, and encourager may ensure that all group members become involved in the discussions.

One strategy that may be helpful when reviewing group norms is 'Round-Robin Reflection'. In this process everyone takes 30 seconds to silently reflect on the extent to which he/she honoured the group's norms and to what extent it enhanced the group's work. The facilitator then chooses someone at random to share their reflections. When this person is finished then another group member paraphrases what they have heard. This process is repeated in round-robin fashion beginning with the person to the right of the first speaker.

Building Inclusion

Grounding is an excellent inclusion activity for introductory meetings. It serves several purposes including:

- establishing a norm for respectful listening;
- bringing people into the here and now;
- allowing people to connect with one another; and
- allowing for expression of hopes and apprehensions.

Directions - Each person in round-robin fashion, speaks to these points:

- name;
- current role;
- school;
- reasons for joining a professional book study; and
- expectations of the book club experience.

Powerful
Conversations:

- Focused
- Productive
- Interactive

Needs of Individuals in Groups

Regardless of the nature of the group and its purpose, some basic needs must be met within the group setting for it to be as focused, productive, and interactive as possible. A good facilitator looks for signs of the characteristics listed below to determine whether it provides the kind of satisfaction group members need. Periodically it may be helpful to give group members time to evaluate the extent to which the group is meeting their individual needs.

The following are important needs group members value. As the group evolves, it is about finding the balance between the needs of the group members and the group work that needs to be accomplished.

Feeling a sense of belonging – Group members need a collaborative environment where they feel safe and supported in their presence and their contribution to the group's work.



Commitment to group goals – Group members achieve commitment when they see value in the goals selected, having a part in selecting and refining those goals, and directing the group process.

Sense of progress – It is important to give group members opportunities to reflect on their progress toward goals so that members feel a sense of accomplishment.

Having confidence in the facilitator – A good facilitator establishes a supportive, risk free learning environment emphasizing the importance of professional dialogue. The facilitator organizes the sessions and conducts the meetings. The person in the role of facilitator is not intended to be an expert and should remain neutral, allowing participants to share different perspectives.

Knowing Your Participants

When developing a group's capacity for powerful conversations, Robert Garmston suggests that group members set aside unproductive patterns of listening, talking, and participating.

However, from time-to-time, facilitators may need to confront challenging situations. Late arrivals at meetings, overbearing participants, and conflict among group members can negatively impact on a group. Although there is no "right" way to respond to these problems, here are some possible solutions to common problems faced by facilitators.

"We should all try to listen with the same intensity we have when we are talking."
Richard
Saul
Wurman

Non talker – Honour an individual's right to pass. Each member has the right to choose when and to what extent they will participate in the group discussion; ask open ended questions and learn to be silent.

Underminer – Focus on the agenda and topics agreed upon by the group. Don't acknowledge or over react; at the end of the session revisit the group norms and their purpose.

Rambler – When the member pauses, refocus attention by restating the relevant points and move on; ask "How does that relate to _____?"

Side talker – Re-direct conversation by asking the person an easy question or to paraphrase what has been stated; create a parking lot (flip chart, sticky notes) to post questions or issues that can be discussed in a later session.

Over talkative – State "We only have a limited amount of time today. We want everyone to have a chance."

Further Reading

Robert Garmston. "Teacher Talk That Makes a Difference". Educational Leadership, ASCD, April 1998.

Garmston, R. & Wellman, B. The Adaptive School: A Sourcebook for Developing Collaborative Groups, Christopher-Gordon Publishers, 1999.

Richardson, J. "Norms Put the 'Golden Rule' into Practice for Groups". Tools for Schools, NSDC, August-September 1999.

Easton, L.B. Powerful Designs for Professional Learning. NSDC, 2004.

Richard G. Weaver & John D. Farrell. Managers as Facilitators: A Practical Guide to Getting Work Done in a Changing Workplace, McGraw Hill, 1999.

Bennett J., Dawson R., & Torney. "Book Study Facilitator's Guide for Teaching Student-Centred Mathematics". Pearson Education, Canada, 2007.

Wisconsin Staff Development Council – www.wi-sdc.org.

Introduction to *Thinking Mathematically*

Young children have already learned a great deal about mathematics before coming to school. They have had experience with shapes through manipulating objects, moving themselves through space, have a sense of number (I want more cookies), seen patterns in their environment and engaged in informal data management sorting objects. The mathematics in kindergarten needs to build on these previous experiences and the ways in which children have come to know mathematics. In the kindergarten, the experiences need to continue to be play-based.

Children's mathematics learning will be dependent upon the materials, the experiences and the support of the adult in the classroom. As educators plan the learning environment, they need to keep these ideas in mind as they make intentional decisions about the learning potential of the materials, organize the space, and think about the routines and what they can teach children about mathematics. In planning, educators must also consider what is known about child development. Kindergarten children continue to need hands-on concrete experiences. They learn and use the language of mathematics in social situations where they can engage in explorations with others.

Thinking Mathematically Book Club provides support for educators in creating the learning environment for mathematics based on what is known about child development and current understandings in the area. The resource looks at each strand of mathematics and the learning processes and provides examples of what this looks like in kindergarten. Through examples, the document shows the connections between mathematics and other learning areas thus promoting an integrated approach. The educator's role is clearly outlined through the conditions of learning. Mathematics learning cannot be left to chance. Educators need to find a balance between demonstrations about mathematics and opportunities for children to apply their knowledge and strategies in natural situations in the classroom. There is a definite place for guided instruction but this is not the sole means for children to learn. This is a practical resource for educators who wish to reaffirm their practices

and for those wishing to make changes to their kindergarten classroom program.

In this book club participants will have an opportunity to meet with other kindergarten educators to share and reflect on current practice. The sessions have been organized around four large areas: Mathematics in Kindergarten, Creating the Learning Environment, Planning, Connections and Assessment.

In the first session, participants will have the opportunity to meet others in the book club through an introductory activity. There will be an opportunity for self-reflection about their program. This will form the basis for the reflection in the last session as they make a plan for after the book club. The focus of this session is really to set the context for other sessions thinking about how children learn mathematics, and what it looks like in kindergarten.

Creating an environment that supports mathematics learning is the focus for the second session. Through activities and readings, participants will think about the various elements of the environment and the roles of the educator and the child. Learning centres are an important component of a kindergarten classroom with the Math Centre being one of them. It is key that educators intentionally plan the centre thinking about the purpose and appropriate materials.

In the third session the focus will be planning. Not only must educators plan for the strands but think about opportunities for children to apply what they know and learn through using some of the mathematical processes. Planning also needs to take into account the 'big ideas' in the strands to avoid the teaching of discrete facts. The big ideas are useful for long range planning.

Planning also involves intentionally selecting experiences that are appropriate for the large group small group and the individual child and educators will have an opportunity to create a plan for these different groups.

Mathematics is a learning area in the kindergarten program with its own expectations and content. However, mathematics is closely connected to other learning areas and is, for example, used to gather data in science and technology. Oral language is linked to mathematics as mathematics is very much language dependent at times (words for directions and positions in space, vocabulary to designate attributes....). The fourth session then will look at some of these connections so that mathematics is integrated into other learning areas.

Assessment of mathematics and skills occurs when children are engaged in play at learning centres. Educators will have observation notes, but may also be collecting work samples not work sheets (the child's representations of solving a problem, samples of their language and their drawings, photos of their structures....). These samples are evidence of the child's knowledge and understandings and the strategies they are using to represent their ideas.

There are many practical examples in this resource that can and will be used for discussion and reflection in the sessions.

Session One: Mathematics in Kindergarten

Readings:

Thinking Mathematically, *How do Young Children Learn Math? Pages 4 and 5*

What does Math Look Like in Kindergarten? Page 7, Example, pages 15 and 17

General Overview:

In the first session participants have the opportunity to meet and learn a little bit about each other through an introductory activity-Find Someone Who. This particular example is Mathematics based so can be used to think about some practical classroom opportunities. An opportunity for self-reflection is included, as this will set the stage for members to identify the strengths and gaps in their program. The self-reflection will be used as a basis for planning in the last session.

This session is really intended to provide some background information or set the context for further sessions as educators read and discuss how young children learn mathematics. It is children's initial natural exploration that lays the foundation for their knowledge and should be the basis for thinking about planning the kindergarten environment. Through reading about what it looks like in kindergarten and examples of mathematics, educators should have a clearer picture of what needs to be included in, for example, organizing the classroom. These activities also highlight some of the foundational beliefs of the resource; that mathematics is explored through play, children are active, experiences are hands-on, and that mathematics is embedded in the life of the classroom.

Each session ends with a reflection activity and instructions for homework. As participants enter, have them fill out a name card and choose a place to sit at one of the group tables.

Key Learning/Objectives:

During this session participants will:

- Meet the members of the group
- Engage in self-reflection
- Read about how young children learn mathematics
- Think about how the connection to development
- Explore what mathematics looks like in kindergarten with practical examples
- Identify the mathematics and educator supports through reading examples
- Reflect on their learning

Materials:

Thinking Mathematically resource (participants should have their own copy)

Line Master 1.1, Find Someone Who... (one per person)

Line Master 1.2, Self-Reflection (one per person)

Line Master 1.3, Reflection (one per person)

Line Master 1.4, Where is the Mathematics? (one per person)

Large envelope for self-reflection sheets

Name tags for each person

Time: 120 minutes

Instructional Tasks:

Getting to Know You-Find Someone Who... (20 minutes)

Background: In this activity, *Find Someone Who* participants will be finding members of the group to sign their sheet based on the statements. The statements use the strands of mathematics and hopefully this activity is a fun way for group members to meet.

Purpose: To meet other members of the group as they connect mathematically.



Instructions and Task

1. Give each person a copy of Line Master 1.1, Find Someone Who...
2. Explain that they are to get a signature for each square, someone who fits the statement. They can only get one signature per person. The goal is to meet as many people as they can. When they are finished they can return to their table.
3. Whole Group Debrief: What areas of mathematics were represented in the classroom? How could you use the idea of this in the classroom? Obviously the children are not going to be signing a Find Someone Who sheet but it could be part of an oral activity where children find others in the room (someone who has hair shorter than me, who is the same age as I am...). This would be an excellent opportunity for children to listen to and use the mathematics language.

A. Self-Reflection (10 minutes)

Background: Self-reflection is an important component of professional development. This self-reflection sheet will be used in the first session for participants to think about their professional practice and where they are now. It will be used in the final session as a basis for planning.

Purpose: To personally reflect on aspects of the classroom mathematics program.

1. Ask each participant to fill out Self-reflection LM 1.2. Explain that in the last session it will be handed back to them for planning next steps. Remind them to put their names on the sheet.
2. Collect the sheets and keep them in a large envelope to be given back at the last session.
3. Whole Group Debrief: Ask for comments from each of the groups.

Ask: What are the implications for planning?

A. How do young children learn mathematics? (25 minutes)

Background: This reading is to highlight that children are learning about mathematics in very natural ways before they come to school and that much of their learning is

through exploring materials in a very concrete way. The example in particular highlights the role of the adult in supporting children's language and also in providing learning experiences.

Purpose: To read and reflect on how children learn mathematics and what this means for classroom practice.

Instructions and Task

1. Individual work: Ask participants to read: *How do young children learn mathematics?* Pages 4-5.
2. Small Group discussion: Once they have finished reading, in their small group ask them to discuss: *What were some of the key ideas? How does this fit with what we know about children developmentally?*
3. Whole Group Debrief: Ask for comments from each of the groups.
Ask: What are the implications for planning?

B. What does mathematics 'look like' in Kindergarten? (25 minutes)

Background: The reading for this activity sets the context for what a mathematics program should look like in kindergarten. It takes into account child development, routines, and organization, the children's role, materials and resources. It also highlights the beliefs that play are important part of learning in kindergarten as well as talk and developing thinking skills.

Purpose: To read and identify examples from the kindergarten classroom.

Instructions and Task

1. Partner Work: Ask participants to stand and find a partner at another table. This is to enable people to get to know each other.
2. Ask them individually to read: *What Does Mathematics 'Look Like' in Kindergarten?* Page 6 to the top of page 7.
3. Explain that as they come to each point e.g., is embedded in the routines they are

to give a practical example from the classroom; e.g., there are four bead necklaces at the centre to indicate how many children can use the centre at one time.

4. Whole Group Debrief: Choose particular points and take some examples from the group.

C. Where is the mathematics? (25 minutes)

Background: The example on page 15 shows how the educator takes a common experience such as planting and embeds mathematics in a natural way through preparing for the experience. She also engages children in a problem solving approach so they can apply their mathematical knowledge.

The example on page 17 shows how the educator prepares a practical experience for children to explore and supports them through his observations and questions.

Purpose: To identify the mathematics in the example and the role of the educator.

Instructions and Task

1. Partner Work (they can stay with the same partner): Ask participants to read the examples on page 15 and page 17 with the following questions in mind and discuss with their partner:

- *What is the mathematics in the example?* (page 15 problem solving, counting, representing, communicating, representing, selecting a strategy, reflecting on whether there is enough....and page 17 estimating, measuring, concepts of space, shapes and counting....)
- *What did the educator do to support the children?*

2. Whole Group Debrief: Take comments for each of the questions.

Ask: What do the examples demonstrate about planning for mathematics?

What might you learn about the children? Or, what might you be looking for as you listen and observe?

Reflection: 10 minutes

Purpose: To reflect on discussions and experiences.

1. Individual Task: On a piece of paper ask participants to finish the statements.
 - *As we read and discussed today I thought about...*
 - *I feel it is very important to...*
 - *I want to try...*
2. Small Group Reflection: Ask groups to take turns reading their statements for each sentence starter. In other words everyone reads his or her response to number 1. Then number 2... Remind groups to not interrupt while others are sharing.

Homework/Follow-up Task: 5 minutes

1. Ask participants to fill in LM 1.3 finding examples of mathematics in the classroom and bring back to Session Two for sharing. There is a blank square in case an area is missing. Explain also that participants need to just find one example (how materials are put away in sorting containers, a sign for how many can go into the centre, an exploration that a child or children engage in, a comment by a child while playing....)
2. Read *Starting with Children*, pages 34-35.
3. Bring copy of ***Learning in Centres***.

Session Two: Creating the Learning Environment

Readings:

Thinking Mathematically; *Creating the Learning Environment* pages 7-11

Learning in Centres, *Math Centre*, pages 43-45 and *Mathematics throughout the Centres*, pages 57-58.

General Overview:

The session will begin with participants sharing examples of mathematics from their classroom. This activity should help individuals identify gaps in areas in their program. The ideas of connecting the mathematics to children starting with the children themselves (making comparisons to objects and others for size) may be new for some people. Brian Cambourne's conditions for learning are used to organize the information for creating a learning environment. Through synthesizing the readings and discussions participants will think about the information as it relates to the various roles and learning environment categories.

One of the learning centres in a kindergarten classroom is the Math centre. Participants will be asked to plan a math centre for this time of year using the model found in ***Learning in Centres*** resource. As always, there will be an opportunity for reflection at the end.

Key Learnings/Objectives:

During this session participants will:

- Share mathematics examples
- Reflect on the reading and personal connections
- Make connections to previous readings
- Read about creating an environment for mathematics and the implications for practice

- Read about the rationale and organization for a mathematics centre
- Plan a math centre for this time of year
- Reflect on their learning

Materials:

Thinking Mathematically resource

Learning in Centres resource

Line Master 2.1, Partner work (one copy per person)

Chart paper and markers

Name tags

Time: 120 minutes

Homework Review: 40 minutes

A. Sharing Examples of Mathematics in the Classroom (25 minutes)

Background: The intent of this activity is to have educators take a close look at what is happening in their classrooms to identify the mathematics. In doing this they can then identify where there might be gaps in their program. Sharing is a reflective practice as educators articulate what they are doing and as they listen to the ideas of others thus reflecting on their own.

Purpose: To identify the mathematics in the classroom and possible gaps through sharing.

Before the session begins, hand out Line Master 2.1. Explain that throughout the sessions they will be doing a lot of partner work and that they should have the opportunity to work with different people.

Explain that they are to find one person for each season and each person will signature in the appropriate box. Stress that then they must sign the other person's sheet in the same box. For example, if Susan signs Lynn's sheet for summer then

Lynn must sign Susan's sheet in the summer box. This is the most important thing to remember. Remind them that they need to bring this sheet to each session so they remember their partners.

Instructions and Task

1. Partner work: Ask participants to find their 'Summer' partner. Explain that they are to take turns sharing their examples of mathematics in their classroom.
2. After they are finished sharing, ask them to consider the kinds of mathematics experiences they found (were they mostly related to number? Did they involve language, problem solving?....). Ask: *Were there any gaps, places that you didn't find any mathematics?*
3. Whole Group Debrief: Ask: *What did you learn about your classroom from doing this task?* Take three or four comments.

B. Starting with the Children (15 minutes)

Background: This reading was chosen to highlight how much of the mathematics that children have learned and the math that they talk about is in relation to themselves - *I'm taller than the blocks. I can fit through the tunnel....*

Purpose: To review and reflect on the readings in collaboration with others.

Instructions and Task

1. Small Group Discussion: Ask participants to respond to the following questions from their readings on page 34 and 35:
 - A connection that they made
 - A new idea
2. Whole Group Debrief: Ask: *How does what you read in this section connect to what you read about how children learn mathematics and what mathematics looks like in kindergarten?*

Instructional Tasks:

A. Creating an Environment that Supports Mathematics Learning (40 minutes)

Background: This next reading will expand on Cambourne's conditions of learning using examples from mathematics. In doing so, it clearly outlines a role for educators, children and areas for planning that encompass organization-time, space, materials etc.

Purpose: Think about what needs to be in place to create an environment for mathematics learning.

Instructions and Task

1. Small Group Work (four in a group): Explain that the next task involves group members reading particular sections and synthesizing the information for the rest of the group.
2. Ask each group to decide who will read the following sections from the readings *Creating the Environment*, pages 7-11:
 - Immersion and Modeling
 - Expectations and Applications
 - Responsibility and Approximation
 - Feedback and Engagement

Note: If group size varies from four, ask groups to divide the sections and take responsibility for who will do what.

3. Once groups are finished reading, ask each person to synthesize the information for the rest of their group.
4. Give each group chart paper and markers and ask them to create a grid on their chart paper as follows:

Ask them to consider: *How does what you read impact on the following:*

Schedule/Time	
Materials	

Adult/Child Interactions	
Large group activities	
Children's role	
Adult's Role	

5. Whole Group Debrief: Take one or two examples from each category.

Ask: *How might these conditions apply to learning in general?*

B. Creating a Math Centre (25 minutes)

Background: Each classroom should have a permanent math centre where materials for mathematics are housed and where children can explore ideas. The size of the centre may change throughout the year and of course it will look different at different times of the year. As well, mathematics resources should be added to other centres in the classroom. In choosing resources it is important for educators to be intentional when making their choices.

Purpose: To identify the materials and resources appropriate for a math centre in the classroom.

Instructions and Task:

1. Individual Task: Ask participants to skim read Mathematics Centre pages 43-44 in ***Learning in Centres***.
2. Explain that the centre highlights the purpose - what children might experience and learn, observations and materials that could be at the centre. Of course all of the things listed would not be there at the same time.
3. Partner Work: Ask participants to find their 'Winter' partner.
4. Explain that their task will be to think about what a Math centre could look like at this time of year based on what they are exploring in their classrooms. They should organize their paper into two columns. They will share some of their ideas with a partner group but there is no need to put it on chart paper unless they feel so inclined.



Materials	Rationale/Purpose

Reflection: 10 minutes

Pair Response Writing

Background: This activity is a way for participants to reflect in writing while at the same time learning about and responding to their partner's thinking. The writing is done without talking and it is imperative that participants be reminded of this. The 'no talking' enables participants to focus in a very different way specifically on just the writing aspect. They are using both the skills of reading and writing in this response. Participants will need to be reminded that they are only to write one or two sentences otherwise it will take too long to respond to the ideas of others.

It may be necessary to model the activity with one of the participants before-hand.

1. Each participant needs a piece of blank paper and a pen.
2. Have them identify an elbow partner.
3. Invite them to write one or two sentences in response to: *As I think about the environment for mathematics in my classroom....* on their own piece of paper.
4. Tell participants that once both partners are finished the one or two sentences they exchange their papers. They are to read their partner's sentences and respond with one or two statements/questions of their own. Once finished, papers are again exchanged. This continues for the duration of the reflection time and ends with partners getting their own papers back.

Homework/Follow-up Task: 5 minutes

1. Read ***Thinking Mathematically, Planning for Mathematics***, page 31

2. Read ***Thinking Mathematically***, *The Role of the Educator*, pages 29-31 and select three key ideas for sharing at the next session.
3. Read ***Thinking Mathematically***, Example pages 3-4 and to reflect on how this educator plans for mathematics in the large group. *What are children learning? What are the mathematics routines? How does Jim connect the learning?*
4. Bring ***Child Development*** resource.

Session Three: Planning

Readings:

Thinking Mathematically, *Planning with the Processes in Mind*, pages 25-28

Thinking Mathematically, *What are the Big Ideas*, pages 15-22 (statements in red)

Child Development, Example, page 23

General Overview:

The homework from the previous session sets the context for the activities in this session reading about planning and the educator's role. Planning is such a large topic but in this case, the planning will focus on including the mathematics processes, as these are how children apply strategies and learn the mathematics. As well, there will be an opportunity for educator's to plan a lesson that involves the large group, small group experience and individual opportunities. This will support the notion that planning must be intentional and that children need these opportunities to make the learning more explicit. In other words as the quote in the document says, play does not guarantee mathematical development but it offers rich possibilities. The educator plays a key role in planning these experiences.

Key Learning/Objectives:

During this session participants will:

- Reflect on reading about planning
- Revisit the role of the educator
- Read and reflect on the mathematics processes
- Consider the 'big ideas' in mathematics
- Read and reflect on appropriate/inappropriate practice
- Apply learnings to planning for large and small groups and individuals
- Reflect on the learnings in collaboration with others

Materials:

Thinking Mathematically resource

Child Development resource

Line Master 3.1, Stop and Say Something (one per partner group)

Chart paper

Markers

Name tags

Time: 120 minutes

Homework Review: 25 minutes

A. Planning for Mathematics (10 minutes)

Purpose: To review the reading as it will set the context for one of the activities in the session.

Instructions and Task

1. Small group sharing: Ask participants to share:
 - one idea that was relevant to them
 - what diagnostic information do they collect and how do they do it
2. Whole Group Debrief: Take some examples from the group

B. The Role of the Educator (15 minutes)

Background: This particular reading expands on the role of the educator as discussed in Session Two through creating the learning environment. Some of the key ideas are: opportunities for talk and reflection about mathematics, listening to children, balance in voice, letting children use language, thinking about the potential of mathematics in all centres, and thinking about the big picture.

Purpose: To reflect on readings and the critical role of the educator.

Instructions and Task

1. Small Group Reflection: Ask group members to each share their key ideas from the readings and their observations about their three key ideas.
2. Ask groups to consider the examples of the questions: to clarify for understanding, to infer (page 30) and ask them provide examples or questions of what an educator might say.

Instructional Tasks: 60 Minutes

A. Planning with the Processes in Mind (20 minutes)

Background: The processes are the means by which children apply their knowledge and skills and come to learn mathematics. The processes are the signposts of what needs to be at the forefront of planning. As an evaluative tool educators may ask: *What are children's opportunities to problem solve, communicate? Represent...?*

Purpose: To reflect on the processes in mathematics and how they are integrated into planning.

Description of Activity: Stop and Say Something is a strategy that allows people to read together and then have the opportunity to process the reading by stopping and saying something after reading a particular section. In this way, it helps people remember what they have read and they hear feedback right away from their partner. It is not meant to be a long conversation but a brief comment.

Instructions and Task

1. Partner work: Have participants find their 'Fall' partner.
2. Explain that they will read the section individually on Mathematical Processes and then stop and say something to each other—a very brief comment of whatever comes to mind (*That made me think of...I agree with what they are saying here....That's a new idea....*). Stress that there is no right or wrong answer. It is whatever they are thinking.
3. Hand out Line Master 3.1, Say Something to partner groups.

- Read Problem-solving-Stop and Say Something
- Read Reasoning and Proving-Stop and Say Something
- Read Communicating-Stop and Say Something
- Read Connecting-Stop and Say Something
- Read Representing-Stop and Say Something
- Read Selecting Tools and Strategies-Stop and Say Something
- Read Reflecting-Stop and Say Something

4. Whole Group Debrief: Ask: *How do you include these processes in your planning?*

B. What are the ‘Big Ideas’? (10 minutes)

Background: The ‘big ideas’ in mathematics are meant to guide the overall planning in an area. This will avoid educators getting bogged down with discrete facts or isolated activities.

Purpose: To review the ‘big ideas’ in mathematics and consider how they might be built into planning.

Instructions and Task

1. Individual Task: Explain that each strand of mathematics has a big idea in red and that this is what is to read not the rest of the information. Ask participants to read the statements in red only under each section on pages 15-22. For example, number: *Numbers can be used to tell us how many, describe order, and measure.*
2. Small group discussions: *How can you use these big ideas in planning?*

C. Planning Examples (15 minutes)

Background: The intent of this experience is to examine planning examples and think about the learning potential for the children and what is developmentally appropriate /inappropriate.

Purpose: To compare examples and think about appropriateness for planning.

Instructions and Task:

1. Small Group Work: Ask participants to read examples in ***Child Development*** resource on page 23 on their own and then discuss using the following questions:
 - *What is the potential for learning in each example?*
 - *What is appropriate practice? What is inappropriate?*
2. Whole Group Debrief: Take comments in answer to the questions for each example.

D. Planning for the Group (30 minutes)

Background: This activity has participants apply their learning from the readings to plan a lesson for the large group, small group and individual. The lesson will incorporate the process and thinking about the big ideas.

Purpose: To apply learnings to plan a lesson for large and small group of children and individuals

Instructions and Task

1. Whole Group Debrief: Refer participants to Example page 3-4 from their homework readings.

Explain that this is an example of a large group session that incorporates mathematics. This teacher does not use the calendar but does a variety of mathematics. Ask the following questions from the homework:

 - *What are children learning?*
 - *What are the mathematics routines?*
 - *How does Jim connect the learning?*
2. Small group work (no more than three in a group). Explain that participants will plan a lesson incorporating what they have learned from the readings about 'big ideas' and the processes for the large group, small group and/or the individual. Explain that the lesson may be a flow through in other words what happens in the large group may be something that is extended to the small group or at a learning centre for individual children. There should be an opportunity for children to apply

or use what has been demonstrated in the large group either individually at a centre with particular materials or in a small group.

3. Give each group a piece of chart paper and markers.
4. Small group sharing: When groups are finished have them meet with another group to share what they did. Explain that when they are finished sharing groups should acknowledge what was evident. *I noticed that the activity was very concrete. You had a way for children to represent their leaning. You invited more than one response.* *Note:* This is not to highlight the negative aspects but again to connect the plan to what is appropriate practice.

Reflection: 10 minutes

Inside/Outside Circle

Background: This is a strategy that can be used in a variety of different ways. In this case, the group makes two circles—an inside circle and an outside circle. The inside circle faces the outside circle and people line up face to face as partners. Therefore, there needs to be an equal number on the inside and outside of the circle. After a brief conversation with a partner, the inside circle rotates one position to meet a new partner. Alternately, the outside could rotate. The number of times for the rotation will depend on the time and the energy level of the group.

Purpose: To hear a variety of opinions; to get to know the people in the group; reflect on practice by talking to a partner.

Instructions and Task

1. Have participants form a circle. Designate the inside circle as A and the outside as B. Make sure that people are lined up face to face with some space in between. Have people identify their first partner.
2. Explain that you will make a statement and A talks to B first while B listens and then B talks while A listens. The inside circle will rotate on a predetermined signal and people will have a new partner. *Note:* You can switch who talks first just to add variety. Each will have about 30 seconds to talk. It is important to have a



clear signal for when groups are to rotate whether that be the use of voice to say 'stop' or turning over the talking stick, etc.

3. The following are a variety of statements that can be used in this activity. Note: Facilitators may want to choose the statements that would be best for their group. There are more statements than might be needed and they are not in any particular order.

- *What material in your classroom do you feel promotes the most mathematical learning? Why?*
- *How do you have children make connections?*
- *What is a problem solving experience that you have planned for children?*
- *What is an example of how children in your class represented their understanding?*
- *How do you plan for mathematics?*
- *How do you incorporate mathematics into your large group sessions?*
- *How do you have children communicate their ideas?*

Homework/Follow up Task: 10 minutes

1. Bring a book that demonstrates a mathematical concept. Participants will be asked to share: *What does the book demonstrate about mathematics and specifically how will it be used in the classroom?*
2. *Oral Language and the Links to Mathematical Literacy*, page 11.

Session Four: Connections and Assessment

Readings:

Thinking Mathematically, *The Grouchy Ladybug*, page 20

Thinking Mathematically, Examples, pages 25, 27-28 and 37-38

General Overview:

Making connections and assessment are the two big ideas for this session. Through the homework review, participants will explore the connections to literacy through sharing the math book. The connections will further be explored by looking at examples from the resource. There is also a link to intentional planning.

Mathematics is dependent on vocabulary and is closely linked to oral language. As well mathematics is linked to other learning areas. Participants will be asked to explore these connections. Through reading examples, participants will identify what needs to be in place for the assessment opportunities. They will also be asked to identify the dos and don'ts of assessment. This is connected to the reading that they did for homework.

In this final session, participants will review their self-reflection from Session One and make a plan for how they will continue after the book club.

Key Learnings/Objectives:

In this session, participants will:

- Share a book about mathematics and identify what it demonstrates about mathematics
- Represent the links between oral language and mathematics
- Examine examples to explore the links to literacy
- Identify the connections between mathematics and other learning areas
- Explore through examples what needs to be in place for gathering assessment

information

- Identify appropriate and inappropriate practices in relation to assessment
- Reflect on program and make a plan for change

Materials:

Thinking Mathematically resource

Line Master 4.1, Making a Plan

Chart paper and markers

Tape

Examples of story books that illustrate a math concept for possible display (if appropriate)

Envelope with self-reflection sheets from Session #1

ETFO Book Club Evaluation Form

Time: 120 minutes

Homework Review: 30 minutes

A. Sharing a Math Book (20 Minutes)

Background: Texts are an important resource for demonstrating a mathematical concept. Sometimes the information in a text is communicated through photos, sometimes through visuals (showing how to make a graph, represent counts of objects...). Not all texts are the same however and educators need to choose texts that represent the information correctly and are appropriate for the kindergarten child. Reading and discussing mathematical texts need to be part of the program as much as stories are. Quite often the literature is a catalyst for further exploration and activities.

Purpose: To explore the links between literacy and mathematics through sharing of a resource.

Instructions and Task

1. Small Group Sharing: (no more than five): Invite each person in the group to share their text by talking about what the text demonstrates about mathematics and how the text might be used.
2. Ask groups to decide how much time they think each person will need and appoint a timekeeper to keep the group on track.
3. Whole Group Debrief: Ask the group to consider some criteria for choosing texts for mathematics learning. Take a number of comments from the group.

B. Oral Language and the Links to Mathematics (10 minutes)

Background: Oral language and mathematics are closely linked. Children learn the mathematical language through concrete experiences in interactions with adults. Educators need to consider how children are learning and using language in relation to mathematics.

Purpose: To synthesize the information from reading into a graphic form.

Instructions and Task

1. Small Group Work: Give each group chart paper and markers.
2. Explain that they are to take the information from the readings and present one or two of the key ideas in graphic form.
3. Whole Group Sharing: Have groups leave their graphics on the tables and invite everyone to go for a walkabout to view.

Instructional Tasks: 65 minutes

A. Links to Literature (20 minutes)

Background: This activity will reinforce the links to literature by providing two very different examples. A third example will demonstrate the educator's use of language and how that influenced children's responses.

Purpose: To compare examples reflecting on the educator's role and intentions for planning.

Instructions and Task:

Example A and Example B, page 37 and 38

Partner Work: Have participants find their 'Spring' partner.

1. Ask them to read the scenarios Example A and Example B on page 37 and 38 to compare the similarities and differences between the two scenarios.
2. Whole Group Debrief: *What words might you use to describe Example A? What words might you use to describe Example B? (intentional, planned, explicit, purposeful, connected to math...)*

Example, page 20

1. Individual Work: Have participants read: *The Grouchy Ladybug by themselves.*
2. Partner work (spring partner): With their partner, ask participants to discuss:
 - *Why did the adult choose this book to read?*
 - *What did you notice about the adult talk?*
 - *What did you learn about the children?*
 - *Based on what you learned about the children, what are possible next steps?*
3. Whole Group reflection: Take four or five comments from the partners.

B. Making Connections (20 minutes)

Background: Mathematics is more than a subject with content. It is, for example, a tool for gathering data, comparing, making decisions, for learning about the physical world. As such mathematics is closely connected to other areas of learning.

Purpose: To identify the connections between mathematics and other learning areas and provide examples.

Instructions and Task

1. Whole Group: Ask participants to turn to the example on page 25. Ask: *What other learning area is this connected to?* (elements of visual arts: line and space; health and physical activity: space, movement).
2. Small Group Work: Give each group a piece of chart paper and markers. Ask them to show the connections between mathematics and other learning areas using one or two specific examples for each. They can put the information in chart form, in a web or whatever way will work for them.
3. Small Group Sharing: Once groups are finished, ask them to meet with another group and share their examples.
4. Whole Group Debrief: Ask: What is the advice then for planning? (think about integrating, using skills in one area to reinforce in another...)

C. Assessment in Mathematics (25 minutes)

Background: Assessment opportunities abound when children are actively engaged. Observation is still the main tool for assessment in kindergarten but in a rich program there are opportunities to collect representations, language samples, photos etc.

Purpose: To identify assessment opportunities and appropriate assessment practices.

Instructions and Task

1. Small Group: Ask participants to read the examples on pages 27-28.
2. Explain that these are opportunities to gather assessment information.
3. Ask: *What needs to be in place for an educator to gather this kind of assessment information?* (time to explore and build, access to a variety of materials, educator support to extend thinking, planned observations, knowledge of what children can do....)
4. Give each group a piece of chart paper and divide it in half as below:

Dos	Don'ts
Provide open ended activities	Use worksheets
Collect samples to show growth over time	Place children in test situations

5. Explain that using their knowledge from the readings and personal experience they are going to create a list of some **dos** and **don'ts** in relation to assessment in mathematics.
6. Whole Group Debrief: Take two or three ideas from each group.

Reflection and Making a Plan: 15 minutes

Background: This is a follow-up from Session One and will allow participants to review what they wrote initially. After reviewing what they have written, participants will make a plan for what they will do after the book club. Writing the plan is a way of formalizing the intent to continue.

1. Give participants their sheets from Session One and ask them to review them. Ask them to think about: *Does this still hold true? Is there anything that would change?*
Note: There is no need to take comments from the group at this time.
2. Hand out Line Master 4.1, Making a Plan and ask them to fill in their plan.
3. Partner Sharing: With an elbow partner, ask participants to share some of their strategies.

Final Reflection Circle: 10 minutes

Background: Reflection Circle is an opportunity to give everyone a voice-for participants to share their learning and for others to hear the different ideas expressed. In Reflection Circle everyone has an equal position including the facilitator. It is an excellent strategy to use for reflecting on the learning.

Have participants form a circle with you. Tell them that you are going to ask them to think about: Example of introduction to circle: *We've been together for four sessions. We've read, shared, discussed and reflected on what we've learned. We've thought about the environment, planning for mathematics, the connections to other learning areas, our role as educators and assessment. In circle today, we will think about our response to the question: What was the most significant learning for you about mathematics in the kindergarten?* Remind participants that everyone will get a turn to speak but they may pass if they wish. Choose someone to begin that you know will wish to speak. Once they have finished, ask them which way they would like the circle turns to go. The circle then systematically follows the direction indicated with each person speaking in turn. When finished, close the circle by thanking participants for being part of the circle today.

Have participants fill out the ETFO Book Club Evaluation Form.

Support Material Section

Session One: Mathematics in Kindergarten

Line Master 1.1

Find Someone Who....

Has hair longer than yours	Is wearing something with a pattern	Has a shoe size the same as yours
Is wearing something with a circular shape	Has a first name shorter than your name	Has a favourite number that is the same as yours
Travelled further than you did to the book club	Has more years of teaching than you	Likes caramel better than chocolate

Session One: Mathematics in Kindergarten

Line Master 1.2

Self-Reflection

Circle the number that applies to you:

1 = Lowest Rating

5 = Highest Rating

I like Math.	1	2	3	4	5
I am very comfortable teaching Math in Kindergarten.	1	2	3	4	5
Mathematics is embedded in the centres in my classroom	1	2	3	4	5
I ask questions that initiate thinking in some way about mathematics.	1	2	3	4	5
I integrate mathematics into other learning areas.	1	2	3	4	5
I embed mathematics into classroom routines	1	2	3	4	5
In group time, I have a mathematics focus each day	1	2	3	4	5
I read books that demonstrate a mathematical concept	1	2	3	4	5
I plan open-ended experiences for problem solving and thinking about mathematics	1	2	3	4	5
I think about the processes of mathematics when I'm planning	1	2	3	4	5
I assess children's knowledge and skills in authentic play situations	1	2	3	4	5
Is my plan for mathematics meeting the needs of the children in my class	1	2	3	4	5

Which strand(s) receive(s) the most attention in my classroom?

- Patterning Number Geometry and Spatial Sense
 Data Management Measurement

Which area(s) do I include in my planning and interactions with children?

- Problem Solving Reasoning and Proving
 Connecting and representing Selecting tools/strategies
 Communicating Reflecting

Session One: Mathematics in Kindergarten

Line Master 1.3

Reflection

I was thinking about...

I feel it is important to...

I want to try...



Session One: Mathematics in Kindergarten

Line Master 1.4

Mathematics in My Classroom

Where	Example
Large group session	
Sand	
Water	
Big Blocks	
Dramatic Play	
Science and Technology	
Reading/writing centre	
Routines	
Outdoors	

Session Two: Creating the Learning Environment

Line Master 2.1

Find a Partner for Each Season

Winter	Summer
Spring	Fall

Session Three: Planning

Line Master 3.1

Stop and Say Something

- Read **Problem-solving** -Stop and Say Something
- Read **Reasoning and Proving**-Stop and Say Something
- Read **Communicating**-Stop and Say Something
- Read **Connecting**-Stop and Say Something
- Read **Representing**-Stop and Say Something
- Read **Selecting Tools and Strategies**-Stop and Say Something
- Read **Reflecting**-Stop and Say Something

Session Four: Connections and Assessment

Line Master 4.1

Making a Plan

What do I want to improve?	
What strategies will I use?	
What resources will I need?	
How will I know that my improvements have been effective?	
What is my time frame for completing my plan?	

ETFO Book Club Evaluation Form

Thinking It Through – Thinking Mathematically

1. My overall impression of the ETFO Book Club is:	Excellent <input type="checkbox"/>	Good <input type="checkbox"/>	Fair <input type="checkbox"/>	Poor <input type="checkbox"/>
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Please explain your answer:

2. Outline the most useful feature(s) of the program and why?

3. What three things from the ETFO Book Club had the most impact on you?

- a. _____
- b. _____
- c. _____

4. How do you think your learning from the ETFO Book Club will impact your work?	To a Great Extent <input type="checkbox"/>	Somewhat <input type="checkbox"/>	Very Little <input type="checkbox"/>	Not All <input type="checkbox"/>
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Please explain your answer:

5. What one thing would you change or add to the program to enhance its effectiveness and applicability in your work?

6. The ETFO Book Club model was appropriate for the type of learning I expected:	Agree <input type="checkbox"/>	Disagree <input type="checkbox"/>
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Please explain your answer:

7. Attending the ETFO Book Club changed my understanding of ETFO as a professional organization:	Strongly Agree <input type="checkbox"/>	Agree <input type="checkbox"/>	Disagree <input type="checkbox"/>	Strongly Disagree <input type="checkbox"/>
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Please explain your answer:

8. Can you suggest ways this ETFO Book Club could be more environmentally friendly?

Overall comments:
