

Facilitator Guide ETFFO Book Clubs



Thinking It Through Science and Technology

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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 *Science and Technology*

Science and Technology is part of the larger document ***Thinking It Through***. This particular section focuses on what science and technology ‘looks and sounds like’ in the kindergarten classroom. It builds on the notion that young children are curious about the world in which they live and learn about the world through observing using their senses and exploring.

There are no prescribed topics for science and technology but rather ‘big ideas’ that will be explored in a beginning way in kindergarten. These ideas will continue to be explored throughout children’s school career. Inquiry is an important component of the classroom program and plans for science and technology need to include the inquiry model. Science and Technology experiences happen within the walls of the classroom as well as outside. Planning needs to incorporate both of these environments and also needs to include the experiences that occur at the learning centres within the classrooms acknowledging that some centres lend themselves more to exploration and discovery learning than others.

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 areas. In the first session, educators will have the opportunity to meet other members of the book club and to do some self-reflection. There will be a discussion of the definition of science and technology and creating a learning environment to support it in the classroom. Inquiry is at the heart of science and technology and will be the focus of the second session. In particular, what is inquiry, what are some of the elements of an inquiry model and how does inquiry connect to what we know about young learners? The third session centres on planning. Planning involves thinking about what happens in the centres as well as the broader focus-what are the ‘big ideas’ and what does this look like in the kindergarten classroom. In the fourth session, the focus is on documenting children’s learning and planning ahead for what to look and listen for.

Session One: Science and Technology and the Learning Environment

Readings:

Science and Technology, pages 3-10, 19-26

General Overview:

Science and technology doesn't happen only at 'science and technology' time. It is embedded throughout the centres in the kindergarten classroom and is happening as children engage with the materials. It is important for educators to be able to identify the concepts that children are exploring not only to support their learning but also for assessment purposes.

As with other areas, creating an environment for learning is critical for children's as well as the program's success. The learning environment includes time, space, and materials as well as the support of the educator.

Key Learning/Objectives:

During this session participants will:

- Get to know other participants
- Reflect on own program
- Define science and technology in own terms
- Identify the elements of science and technology
- Identify where science and technology can be found in the classroom
- Read and reflect on the learning environment
- Share thinking and knowledge with others



Materials:

Science and Technology resource

LM 1.1, Self-reflection (one per person)

LM 1.2, Science and Technology in the Centres (one per person)

Chart paper and markers (as participants enter have them fill out a nametag)

Name tags

Time: 120 minutes

Instructional Tasks:

A. Getting to Know You - Where do you stand? (20 minutes)

Background: In this activity, participants are asked to place themselves along an imaginary line with 1 being at one end of the line, 5 in the middle and 10 at the other end. As the facilitator reads a statement, participants respond by taking a position on the line that matches their beliefs or understandings.

Purpose: Through doing the activity, the facilitator and other group members can meet and gather information about the group as a whole.

Instructions and Task

1. Explain to participants that you will read a statement and they are to stand along the imaginary line in response. Indicate where 1 (don't agree) will be, 5 in the middle and 10 (highly agree) at the opposite end. Note: It may be helpful to put up numbered signs to help participants visualize.
 - a) *I like science and technology.* Have participants turn and talk to someone next to them explaining why/why not.
 - b) *I am comfortable with planning experiences involving science and technology.* Have participants turn and talk about their level of comfort.
 - c) *I am more comfortable with planning for science than with technology.* Have participants turn and talk and share about their level of comfort.
 - d) *In my classroom, science and technology is embedded in play.* Have



participants turn and talk about how they embed it in play.

e) *I think carefully about the materials and choose materials that promote inquiry.*

Have participants turn and talk about how they do this or why they don't.

f) Science that is inquiry-based is strongly connected to language and literacy and mathematics. Have participants turn and talk about an example of this.

g) Science and technology should drive the content of the program in kindergarten. Have participants turn and talk about why/why not.

2. Whole Group Debrief: Ask:

What did we learn about ourselves as a group?

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.

Purpose: To reflect on strengths, areas of growth and also the particular needs of the children in the class.

1. Ask each participant to fill out Self-reflection LM 1.1. Explain that this is an opportunity that they may not have in their busy day to reflect on their program. It may be as they identify the strengths that they can then build on these throughout the book club sessions and the areas of growth can be addressed while they have the opportunity to obtain input from colleagues.
2. Remind them to put their names on the sheet and to keep it to bring to the last session.

A. Define Science and Technology (20 minutes)

Background: This first activity is meant to engage participants in dialogue to come to some understanding of science and technology and in so doing reflect on what it might look like in the kindergarten classroom. Technology especially design technology might be less familiar for people. In understanding what it is educators may see the



potential of the collage centre, for example, as being an important part of design technology.

Purpose: To create a working definition for science and technology in order to connect it with what is happening in the classroom.

Instructions and Task

1. **Small Group Work:** Ask groups to create a definition for science and for technology in their own words. Allow five to seven minutes for this task.
2. **Whole Group Debrief:** Collect the information from each group to compile a group working definition for science and for technology.
3. **Individual task:** Invite participants to individually read the quote on page 3 and all of page 4 and compare with group's definition.
4. **Whole Group Task:** Ask each group to select one word that comes to mind when they think of science and technology and to write it on a piece of paper so that it may be seen by others. Have each group in turn hold up their word and say it for others.
5. **Whole Group Debrief:** Ask for comments about the chosen words.

B. What is the Science and Technology? (15 minutes)

Purpose: To identify aspects of Science and Technology using the examples as a starting point.

Instructions and Task

1. **Partner Work:** Ask participants to work with a partner at their table (across from them, on their right or left...). Explain that as they read the each example, they are to identify the science and technology learning potential for the child/children.

Readings:

Example, page 3 (physical science; speed; incline planes; design technology showing a need or motivation; choosing connecting materials and joining; creating a design and testing to see if it works...),



Example at the bottom of page 5 (design technology with a challenge or motivation to create a design, choosing materials that will fit the plan, joining materials and selecting ones that will work, testing to see if design works and evaluating results through sharing, problem solving....)

2. Whole Group Debrief: Invite some of partner groups to share science and technology for each example.

C. The Learning Environment (40 minutes)

Background: As educators create a learning environment, they think about time, space and materials. This happens in an overall way and specifically when they are creating centres in the classroom and choosing materials that will support children's learning and exploration about the ideas and concepts in science and technology.

In order to speed up the reading, this will be done in a jigsaw format with four in a group.

Note: In a jigsaw format, the home group is divided (usually by numbering off) and participants meet in a new group to read and discuss the ideas. The input from others and the opportunity to dialogue is preparation for bringing the information back to the home group.

Instructions and Task

1. Ensure that participants are in groups of four to begin with. Have participants number themselves 1, 2, 3, and 4. Select a place for all the 1s to meet, the 2s...etc.
2. Once groups are settled explain that each group will read a section and select the key ideas to share-in other words, what is it important for others to know or remember about time? Assign the task and the reading. Explain that they will have about 10 minutes in their numbered group.
 - Read the section on Time, pages 19-20
 - Read the section on Materials, pages 20-22



- Read the section on Space, pages 22-23
 - Read the example, page 6 and discuss: *What did the educator do to create an environment for learning?*
3. After about 10 minutes, have groups report back to their home group to share. Explain to groups that each person should have an equal opportunity to share the information and that they might want to appoint a time -keeper to ensure it happens.
 4. After groups are finished sharing, have groups reflect on:
What was a new idea or concept?
What was something worth remembering?

Reflection (10 minutes)

Pair Response Writing

Background: This activity is a way for participants to reflect in writing on their own thoughts 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. They are using both the skills of reading and writing. 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 others ideas. It may be necessary to model the activity with one of the participants beforehand.

1. Each participant needs a piece of blank paper and a pen.
2. Have them stand and look across the room to choose a partner to exchange writing. Their partner is someone they make eye contact with.
3. Invite them to write one or two sentences in response to: *As I think about science and technology 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 sentences 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. Note: The writing and swapping of papers may need to be demonstrated by the facilitator.

Homework/Follow-up Task: 5 minutes

1. Use LM 1.2 to fill in examples of science and technology in the centres in their classroom at present and bring to the next session for sharing. Note: Explain to participants that there may not be examples in all centres so leave these areas blank. The purpose is to have them identify the science and technology for sharing and for them to identify any gaps.
2. Bring a photo of a science and technology centre if they have one.



Session Two: Inquiry and Developing Inquiry Skills

Readings:

Science and Technology, pages 3-9

General Overview:

Inquiry may be new for some educators in the sense that it is a model that may be used for planning identifying the different phases within the model. Inquiry may be short or more of a long-term project. Inherent in the inquiry process are the dispositions that are important for young children to develop e.g., risk taking, confidence not just in relation to science and technology but in other areas. Inquiry takes time and a willingness by educators to support children through listening to their questions, theories and ideas observing their interests, guiding their explorations, planning the environment and thinking ahead about the materials that will be needed. As with other areas, science and technology begins with the child- what are they noticing, wondering about, what are their theories.

Key Learnings/Objectives:

During this session participants will:

- Share personal examples from their classrooms of a science and technology centre and where they found science and technology
- Begin to think about inquiry-what it looks like and sounds like and how it connects to what is known about young children
- Synthesize learning by creating a model of inquiry
- Think about the skills that young children are developing and how these are connected to a model of inquiry



Materials:

Science and Technology resource

LM 2.1, Inquiry Model

Name tags for each person

Large sheets of paper for brainstorming and for creating inquiry model

Glue for each group

Scissors for each group

Markers

Tape

Time: 120 minutes

Homework Review:

A. LM 1.2 Science and Technology in the Learning Centres (20 minutes)

Purpose: To reflect on own practice, share and dialogue with others.

Instructions and Task

1. Small Group Sharing (no more than four): Invite each participant to share examples of the science and technology they found in their centres. Remind participants to share the time equally. *Note:* Facilitators may want to colour code name tags or put a letter on nametags to establish the groups ahead of time.

2. Whole Group Debrief: Use some of the following questions:

Was there anything that surprised you?

Were there some centres that you found more science and technology than others?

Did your observations lead to any changes?

B. Sharing Science and Technology Centre (15 minutes)

Purpose: To share practices and thinking behind the choices and to reflect rationale for the centre. *Note:* Groups may have to be rearranged particularly if only a few people bring examples. If there aren't many examples perhaps the question might be



asked as to why there is a lack of them.

1. Small Group Sharing: Ask participants to share the photos of their centre using the following questions to guide them.

- *What is your goal for the centre?*
- *Why were the materials selected?*
- *How do children access the centre?*
- *What have you noticed the children doing at the centre or with the materials?*

Instructional Tasks:

A. What skills or attitudes does a good science and technology program in kindergarten promote? (10 minutes)

Background: The skills and dispositions are connected to the skills and dispositions important for children to develop as learners. This involves looking long term and thinking about the big picture of development.

Purpose: To identify the skills and dispositions of the young child as a learner.

Instructions and Task

1. What are the skills and dispositions we want kindergarten children to develop as learners?
2. Small Group work: Give each group a large sheet of chart paper to record their ideas in response to the question.
3. Ask groups to share one item from their list in turn until all ideas have been verbalized. Record the ideas to make a compiled list and post the list in a place where everyone can see it. Tell participants that the group will return to the list later in the meeting.

B. Developing the Disposition for Science Inquiry (10 minutes)

Instructions and Task:

1. Individual Reading: Have individuals read *Developing the Disposition for Science Inquiry*, page 8

2. Small Group work: Ask participants to compare what they read with their list of skills for the kindergarten learner.
3. Whole Group Debrief: Invite participants to comment on their observations of the reading and the lists (the skills are similar, problem solving and risk taking are important to both, confidence is part of all program areas....)

C. Developing Inquiry Skills (50 minutes)

Background: Inquiry engages young children as they ask questions, observe, draw conclusions etc. Planning needs to include not only the development of content knowledge but also the development of particular skills. It is important to know what the skills are not only to plan for them but also to know what to look for when assessing. Creating a visual to represent the inquiry process helps participants solidify their understanding, represent their thinking visually and provides an opportunity for dialogue in a cooperative activity.

Purpose: To identify the skills of inquiry and learn why inquiry is important to a science and technology program as well as creating their own visual to deepen understanding.

Instructions and Task

1. Individual Task: Have participants read the section: Developing Inquiry Skills p.6-7
2. Small Group Debrief: After reading ask groups to discuss the examples using the following questions:
 - *How did the educator support the children's learning?*
 - *What skills were being developed in Example A/Example B?*
 - *What needs to be in place for these skills to develop?*
3. Whole Group Debrief: Take three or four comments from the group as a whole in response to the following questions:
 - *What was an 'aha' for you in the reading?*
 - *What was a question that you had?*
4. Small Group work: Hand out one copy of LM 2.1 to each group along with a large



sheet of paper, scissors, markers and glue. Set the stage for the activity by telling participants that they will have an opportunity to use the words on the sheet to create their own visual model of inquiry. All of the words should have some place in the visual but they may be combined. New words may be added by creating their own squares.

5. Small group debrief: Pair groups and give each an opportunity to explain their model. Post the models or leave on the table and give participants an opportunity to walk about and see the creations.
6. Whole Group Debrief: Ask participants to respond to the following question:
 - *What did you learn from doing this activity?*

Reflection: 10 minutes

Learning Circle

Background: Learning circle is a way of reflecting on the learning as a participant in a community of learners. The power of the circle is the quiet listening to others as they speak and the equality in everyone having a voice if they wish. It allows people the space 'have a say' without interruptions from others.

- Have participants form a circle with you.
- Tell them that you are going to ask them to think about:

Example of introduction to circle: *Today, you have been involved in reading excerpts from the resource, sharing ideas and thinking about inquiry in the kindergarten program. As we reflect on what we have heard and done today, what was important for you?*

1. Remind participants that everyone will get a turn to speak but they may pass if they wish.
2. Choose someone to begin that you know will wish to speak. Once they have finished, ask them which way they would like to go around the circle. The circle then systematically follows the direction indicated with each person speaking in turn.

3. When finished, close the circle by thanking participants for being part of the circle today.

Homework/Follow-up Task: 5 minutes

1. Ask participants to bring an object from the natural world (it can be living or dead) or a photo of something of interest from the natural world.
2. Read *What are the Big Curriculum Ideas that Must Be Addressed*, page 15.
3. Read **Planning for Learning** resource, *Why Plan Based on an Inquiry Model*, pages 24-26. Ask participants to bring this resource to next session as well.



Session Three: Planning

Readings:

Science and Technology, pages 15, 24-26, 32-34, 37

General Overview:

Planning is important for science and technology as it is in other areas.

Planning includes thinking about the learning environment, knowing children's interests, listening to their theories, free exploration, guided exploration and topics for inquiry. Children are natural explorers and may engage in inquiry on their own when the environment is conducive to exploration but it is the support of an interested adult that will help them to extend their learning. So in this way, educators need to think about their role and how they can actively promote further learning. Planning also includes guided explorations with an adult. These guided explorations arise from educator observations of children engaged in exploration, from events indoors and outdoors, from experiences, and from print and visual material. Science and technology does not have themes or specific topics per se. Children may be involved in a topic through the inquiry process (investigation of snails in the garden). There is input from the children and from the educator. It is helpful for educators to consider 'the big ideas' in an inquiry focus, not just literal level pieces of information.

Key Learning/Objectives:

During this session participants will:

- Generate questions for inquiry
- Consider topics that might be explored directly
- Consider how children's questions can support the planning process
- Explore the 'big ideas' in science and technology
- Read about guided exploration and reflect on practice
- Plan an outdoor experience



Materials:

Science and Technology resource

Planning for Learning resource

LM 3.1, Examples Reading-Questions for Discussion (one copy for group)

LM 3.2, Big Ideas

Chart paper and markers

Name tags

Blank index cards or pieces of paper cut to that size

Markers

Time: 120 minutes

Homework Review: 45 minutes

A. Sharing an object from the natural world (25 minutes)

Background: Children's curiosity and questions are associated with the natural world in which they live. It is important to foster the connection to the natural world by exploring and investigating.

Purpose: To have participants develop some 'I wonder' questions and then to use the questions to determine the questions that could best lead a focus on inquiry.

Instructions and Task

1. Partner Task: Ask each partner to share the object they brought and on cards/ sheets of paper create I wonder questions. (Rock - *what kind of rock is it? How hard is it? What does it remind you of? Will it sink if I put it in water? Will it break if I drop it?*)
2. Once participants have generated their 'I wonder questions', have them sort the questions in some way (those that children can explore directly and questions that need to be answered through books, through direct actions....)
3. Whole Group Debrief: Ask participants to share some of their categories.



Ask: *Which topics could children explore directly?* Note: Since young children are concrete learners, it is important to think about topics that can be explored directly as opposed to topics where the information comes mainly from books.

- *How can having children generate 'I wonder....' questions help with planning?*
 - *Where do the 'I wonder....' questions fit in the inquiry process?*
4. Partner Task: Have participants look at the Planning Guide to Inquiry on page 37 and use one of their topics to talk through the planning guide questions.
 5. Whole Group Debrief: *How might this guide help with the planning process?*

B. "Big" Curriculum Ideas (25 minutes)

Background: This concept may be new for some people so this is an attempt to explore it in collaboration with others. Sometimes topics are chosen e.g., apples and a great deal of attention is placed on learning the names, that apples come from trees etc. and the more enduring understandings are missed e.g., they are fruit that is part of a cycle of growth (a concept which develops over time-children may not have access to a tree through the seasons unless it is in a neighbourhood backyard).

Purpose: To collaboratively plan using 'the big ideas' as a framework.

Instructions and Task

1. Turn and Talk with a Partner: Ask participants to turn and talk with their elbow partner using the following question as a guide: *What connections did you make while reading this section?*
2. Partner task: Ask partners to take one of the 'big ideas' from the section in *The Kindergarten Program* or a particular topic in **Science and Technology** (rocks, bugs, winter...) and complete LM 3.2.

<i>Big Ideas</i>	<i>Examples</i>	<i>Learning Experiences</i>
Enduring Understandings		
Important to Know and be able to do		
Be familiar with		

3. If time, have partners share.
4. Whole Group Debrief: Ask for comments about using the framework for planning
Note: Participants may want to refer to some of the ideas in the ***Planning for Learning*** resource, pages 24-27.

Instructional Tasks: 55 Minutes

A. Guiding an Exploration (25 minutes)

Background: Teachers play a critical role in guiding an exploration for young children to develop and use the skills of inquiry. In guiding an exploration, educators must balance guiding with enabling children to have input-to lead without always being the leader.

Purpose: To use the examples of educator’s guiding an exploration to reflect on practice.

Instructions and Task

1. Individual Task: Have participants read the three examples, pages 32, 33, 34.
2. Present the questions to the group and have them decide who will focus on which question.
 - *What was the motivation or introduction to the exploration?*
 - *What elements of planning were evident in the examples?*



- *How was the educator guiding the exploration?*
- *What role did the children play?*
- *What kinds of questions did the educator ask?*
- *What inquiry skills were being developed?*

Note: There may be more questions than are necessary for the group size but there is enough to accommodate a larger group. It may be helpful to copy the chosen questions onto chart paper so all can see.

3. Instruct participants that they are to read the three examples with their question in mind and will have the opportunity to share and ask for input from the rest of the group.
4. Small group Task: Ask participants to lead the discussion in their group according to the question number chosen e.g. number one goes first makes their comments and then others can add. *Note:* It may be helpful to appoint a timekeeper so the time is shared equally among participants.

B. Planning for the Outdoors (30 minutes)

Background: The outdoors is waiting to be explored and is a rich resource for science and technology in the classroom. Ecological literacy is important consideration for any plan as educators plan the ‘big ideas’.

Purpose: To plan activities that would support the concepts of ecological literacy.

Instructions and Task

1. Small Group Task: Ask participants to prepare an outdoor exploration that would fit with the current time of year using the following headings to guide the recording of information.

Description of Exploration	Rationale	Materials Needed	I wonder questions



2. Whole Group Sharing: Have participants go on a print walk to see the examples.
Ask: *What were some of your considerations in planning this exploration?*

Reflection: 10 minutes

As children ask questions, educators can also ask questions when thinking about planning the learning environment and creating opportunities for learning. An educator might ask: *I wonder what would happen if we took large sheets of coloured acetate outside-what would children notice, what would they do? I wonder what would happen if we had a wet and dry sandbox and added planks between the two? I wonder what children would do?*

1. Small Group Reflection: Invite each participant to share a response to: *I wonder what would happen if...* as per the example above. Remind participants that everyone needs to have the opportunity to speak. Once everyone has had a turn, participants may continue having other turns as the ideas that are shared may spark new ideas.

Homework/Follow up Task: 5 minutes

1. Ask participants to bring a non-fiction text that is a good example of a text appropriate for kindergarten children and will provide the background information in a variety of ways. As they present their book at the next session they will be asked to comment on the following:
 - *What makes this text a good non-fiction text for young children?*
 - *How will you introduce? What are your teaching points? How will this text connect to children's learning experiences?*
 - *How would you assess the effectiveness of this text?*

Note: Participants may wish to use the whole text or bring a text that has a particularly good section that could be used.
2. Ask participants to bring an example of a documentation used for a science and technology learning experience (a photo, a documentation panel, a representation, anecdotal note....).



Session Four: Planning

Readings:

Science and Technology, pages 27-31

General Overview:

This session involves participants in sharing a non-fiction text that will support children's explorations. As non-fiction texts are secondary sources of information it is important that they demonstrate how non-fiction texts are organized and present the information that is appropriate to young children's level of understanding. Assessment is the focus in this session, sharing examples of documentation and the effectiveness of the choice of method, thinking about organizing for assessment and planning what to look for when observing. As this is the final session, participants will have some time to think about plans for beyond the book club experience. They will review what they have written at the first session and reflect on changes in their thinking.

Key Learnings/Objectives:

In this session, participants will:

- Share a non-fiction text and evaluate its effectiveness for use with young children
- Share examples of documentation reflecting on effectiveness and use
- Reflect on what needs to be in place for assessment
- Examine examples of documentation and reflect on how this fit with own practice
- Think about a plan for observation and identify particular observation points
- Reflect on learning in the book club and make a future plan.

Materials:

Science and Technology resource

LM 4.1, Say Something

LM 4.2, Observation

LM 4.3, How would you rate?

Extra non-fiction texts in case participants have forgotten their copy

Tape

ETFO Book Club Evaluation Form

Time: 120 minutes

Homework Review: 50 minutes

A. Sharing of Non-Fiction Text (20 Minutes)

Background: Non-fiction texts are secondary sources of information for inquiry. Some texts are better than others. These non-fiction texts should have good picture to text support, present information in a variety of visual formats, follow guidelines for non-fiction texts with headings, content page etc., introduce concepts that are appropriate to the age of the children....)

Purpose: To share non-fiction texts and reflect on the suitability and teaching points for the text in relation to science and technology.

Instructions and Task

1. Small Group Task: Invite groups to decide who will go first and in the allotted time of fifteen minutes how much time each person will be given. Suggest that groups select a timekeeper so everyone has the opportunity to have the same amount of time. Remind participants of the framework for sharing:
 - *What makes this text a good non-fiction text for young children?*
 - *How will you introduce? What are your teaching points? How will this text connect to children's learning experiences?*
 - *How would you assess the effectiveness of this text?*
2. Whole Group Debrief: Ask groups to select one text from their group to share with

the other groups. Ask groups to share their observations about the non-fiction texts. Take three or four comments.

B. Sharing Documentation Examples (20 minutes)

Background: Documentation can take many forms-photos, anecdotal notes, checklists, and documentation panels. It is important for participants to choose a method that will meet their needs as well as the needs of the children.

Purpose: To share, discuss and reflect on the effectiveness of the documentation.

Instructions and Task

1. **Small Group Task:** Ask participants to find their elbow partner (either way) and with that partner find another partner group at a different table. Note: It is important for participants to hear ideas from others. As there is comfort in working with the same group all the time, there may be a lack of diversity in opinion. Also, group dynamics are established and it is refreshing to change those for participants.
2. Inform the groups that each person will get an opportunity to share their sample. As participants share they should consider:
 - *What was the context for the documentation?*
 - *Why did you choose this method?*
 - *How effective was it?*
 - *How did you use the information?*
 - *What might you consider doing another time?*
3. **Whole Group Debrief:** Ask groups to consider: *What did you learn from the sharing? What questions did you have?*

Instructional Tasks: 65 minutes

A. Assessing the Learning (20 Minutes)

Background: Assessment involves listening to children, watching what they are doing,



and interacting with children. In other words it is an active process.

Purpose: To read the examples and to reflect on educator practice.

Instructions and Task:

1. Individual Task: Ask participants to read the two examples pages 27 and 28 and as they read reflect on the two questions.
 - *What needs to be in place for these two educators to enable them to assess in the way they did?*
 - *How did they actively support the children's learning? What kinds of questions did they ask or comments did they make?*
2. Small Group discussion: Ask the group to identify someone to lead the discussion of the above questions.
3. Whole Group Debrief: Take three or four comments from the whole group about their observations.

B. What are you Looking for? (20 minutes)

Background: Educators can create a wonderful learning environment but when it comes to assessment, they may have some difficulty knowing what to look for or listen to. As experiences are planned it is important for educators to think ahead as to what might children be learning; what they might hear them say or see them do that would indicate that they were developing the skill or understanding.

Purpose: To collaboratively reflect on possible assessment opportunities.

Instructions and Task



1. Small Group Task: Hand out LM 4.1 to each person. Have them work in small groups to complete some of the situations thinking about what they might be watching for, listening to and how they might interact for further information.
Note: There won't be time to fill in the whole sheet. It is important for groups to choose ones that they are most interested in and have the opportunity to hear the various viewpoints.
2. Whole Group Debrief: Have participants share some examples for each situation.

C. Documentation of Learning (15 minutes)

Background: This strategy is a way for participants to share responses while reading an assigned section. Participants read the assigned section, stop, then turn to each other and 'say something'. What is said is whatever comes to mind. It might be: *I tried this and it didn't work for me, I like this idea, I wonder how that would work in my classroom? I don't understand how they did this.* There is no expectation of what should be said, it is their choice

Purpose: To read about documentation and reflect on the various practices with a partner.

Instructions and Task

1. Partner work-Have participants find a partner-perhaps someone they have not worked with before.
2. Explain the task: They are each to read the assigned section in their own books. At the end of the section, complete Stop and Say Something (line master 4.2). This is not meant to be an extended dialogue but a brief conversation.
3. Assign the readings: **Science and Technology** chapter *Planned Documentation*, pages 28-31. Note: It may be useful to tell participants that each example shouldn't take more than a minute.
 - Read Example One: Stop and Say Something
 - Read Example Two: Stop and Say Something
 - Read Example Three: Stop and Say Something



- Read Example Four: Stop and Say Something
- Read Example Five: Stop and Say Something
- Read Example Six: Stop and Say Something

Note: It may be useful to prepare a chart of this example ahead of time or give a copy to each pair.

4. Whole Group Debrief: Guide a whole group discussion using some or all of the following questions.
 - *What was a new idea for you?*
 - *How would you adapt one of the ideas?*
 - *What questions do you have?*
 - *How do these examples help the teacher with planning? With assessment?*

Reflection and Making a Plan: 15 minutes

Background: The rating scale is a tool for participants to assess areas of their program. The tool is personal and does not need to be shared with others.

1. Have participants review their self-reflection sheet they filled out in the first session as this may help them reflect on their growth or help in formulating a plan of action for the future.
2. Give each participant a rating scale (line master 4.3) and have them complete it.
3. Turn and Talk: Once participants have completed the task have them turn to their elbow partner and share:
 - *The area I would most like to work on...*
 - *Some of the strategies I will try...*
 - *My timeline for getting started...*

Remind partners that they may wish to make suggestions.



Final Reflection Circle: 10 minutes

Background: This closing circle is a way of ‘summing up’ the learning giving participants an opportunity to reflect on the sessions, The power of the circle lies in the quiet listening to others as they speak and the equality in enabling everyone to have a voice if they wish. It allows people the space ‘have a say’ without interruptions from others.

Have participants form a circle with you. Tell them that you are going to ask them to think about the most significant learning for themselves. Example of introduction to circle: *We’ve been together for four sessions and have talked about what is science and technology, about creating a learning environment that will support exploration in the classroom, developing inquiry skills and planning for inquiry as well as documenting children’s learning. There have been times when we have read, listened to others and shared our practices. As we reflect on our time together in this book club, what is the most significant learning for you?* Remind participants that everyone will get a turn to speak but they may pass if they wish. After the initial person has finished, ask him or her which way the circle turns should 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 complete the ETFO Book Club Evaluation Form.

Support Material Section

Session One: Science and Technology and the Learning Environment

Line Master 1.1

Self-Reflection

Science and technology is/isn't an important part of my program because.....

The strengths of my program are.....

The areas I would like to improve.....

I know a lot about.....

I don't know enough about.....



Session One: Science and Technology and the Learning Environment

Line Master 1.2

Science and Technology in Centres

Sand Centre	Water Centre
Blocks	Construction Materials
Dramatic Play	Visual Arts
Reading Corner	Music Centre
Computer Centre	Science and Technology Centre
Writing	Interest Centre



Session Two: Inquiry and Developing Inquiry Skills

Line Master 2.1

Inquiry Model

Wondering	Asking questions
Observing, asking questions	Drawing conclusions
Collecting and recording information and data	Exploring
Noticing	Sharing Ideas
Reflecting	Focusing observations
Looking for patterns and relationships	Focusing Explorations
Planning	Investigating



Session Three: Planning for Science and Technology

Line Master 3.1

Examples Reading – Questions for Discussion

- *What was the motivation or introduction to the exploration?*
- *What elements of planning were evident in the examples?*
- *How was the educator guiding the exploration?*
- *What role did the children play?*
- *What kinds of questions did the educator ask?*
- *What inquiry skills were being developed?*



Session Three: Planning for Science and Technology

Line Master 3.2

Big Ideas

Big Ideas	Examples	Learning Experiences
Enduring Understandings		
Important to know and be able to do		
Be familiar with		

Session Four: Documenting the Learning

Line Master 4.1

Say Something

- Read Example One-Stop and Say Something
- Read Example Two-Stop and Say Something
- Read Example Three-Stop and Say Something
- Read Example Four-Stop and Say Something
- Read Example Five-Stop and Say Something
- Read Example Six-Stop and Say Something



Session Four: Documenting the Learning

Line Master 4.2

Observation

Situation	Watch, Listen to, Interact
There are various containers, sealed and filled with different substances (beans, sand, shredded paper,). The children are shaking them and listening to the sounds.	
Outdoors, the children are digging pathways through the puddles in the sand trying to get the water to move.	
There is a container filled with various sizes and shapes of seeds and seedpods at the Science table. The children are taking out the seeds, handling, smelling and them.	
With the children, the educator has drawn the procedure for planting seeds. The pictures are numbered and displayed in a line. All the tools and materials the children will need are on the table.	
With the educator, the children have put bags of coloured water in the freezer. These have been taken out and added to the water table.	
Various sizes and colours of acetate have been added for use with the overhead projector.	
Different sizes of boxes, screws, gears, spools, tubes, flexible wire and other objects and adhesives have been added to the collage centre with the challenge to make a toy that moves.	
After observing the new bridge in the playground and discussing how it is made as well as looking at pictures of different kinds of bridges, the educator poses a challenge for children to build their own bridge using the construction materials.	
The children and the teacher go out in the playground to look for things that are moving in the wind.	
The children have noticed a spider spinning its web in the corner.	



Session Four: Documenting the Learning

Line Master 4.3

How would you rate?

Time provided for science and technology exploration

1	5	10
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Science and Technology in the centres

1	5	10
---	---	----

The materials provided for exploration

1	5	10
---	---	----

The adult support for learning

1	5	10
---	---	----

The documentation of children's learning

1	5	10
---	---	----

Planning with the 'big ideas' in mind

1	5	10
---	---	----

The use of the outdoors

1	5	10
---	---	----

Attention to children's theories and questions

1	5	10
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ETFO Book Club Evaluation Form

Thinking It Through – Science and Technology

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

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

