



A Companion Guide for Natural Curiosity:

Making Environmental Inquiry
Work Through Teacher Collaboration



UNIVERSITY OF
TORONTO

The Laboratory School at the Dr. Eric Jackman Institute of Child Study
OISE | ONTARIO INSTITUTE FOR STUDIES IN EDUCATION

Thank you

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Introduction

The teacher resource *Natural Curiosity: Building Children's Understanding of the World through Environmental Inquiry* looks deeply at Inquiry-based teaching methods through a four-branch framework approach to teaching. These four branches include the following: Inquiry-based learning, integrated learning, experiential learning, and stewardship.

This resource focuses on a transformative shift in education, and answers frequently asked questions teachers have by showcasing actual teachers' stories. Unlike many other educational initiatives that are popular in today's teaching world, *Natural Curiosity* is not an extra "add-on". Instead, it is offering teachers an opportunity to examine their own practice, providing them with a forum to discuss the process of student learning rather than the teacher's focus to "cover the curriculum".

Although not intended as an "instructional manual" or "recipes", the stories in this resource show examples of how inquiry can start in a classroom, what it may look like, and how it works. The goal is to be inspired and encouraged to try inquiry in your own classroom.

As teachers, we know we work best as professionals when we collaborate with other teachers, sharing experiences so that we can all benefit. "A Companion Guide for Natural Curiosity: Making Environmental Inquiry Work Through Teacher Collaboration" will assist in the facilitation of bringing teachers together to discuss Inquiry-based learning and teaching methods found in *Natural Curiosity*.

HOW DO I USE THE COMPANION GUIDE?

The "Companion Guide" is made up of sessions, run by a facilitator(s), that are approximately 60 minutes in length (times will vary based on length of discussions). The sessions will create a forum for teachers to discuss options for putting inquiry into practice. It will provide the opportunity for teachers to gather together to discuss strategies to make both the content and process of learning about the world more engaging and relevant to students.

THE ROLE OF THE FACILITATOR(S)

Each session requires a facilitator. This may be the same person for each session, or you may share this responsibility. The first task of the facilitator is to invite interested staff members to be participants in this professional development, and schedule the dates for seven sessions. The necessary materials and reading are listed at the start of each session. The facilitator and/or group member can choose to extend a session or add an extra session if they feel it would be beneficial to the group.

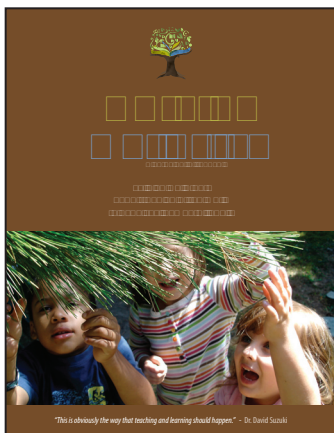
WHAT ARE TAKE AWAY ACTIONS?

At the end of each session, participants will be asked to think about, or write down thoughts, related to certain questions or prompts. These are called "take away actions" and encourage participants to remain involved in the inquiry process while offering added motivation to stay engaged in the experience. Take away actions are important as they provide individuals with a chance to reflect on their own practice, and to continue asking questions and making observations.

MY STAFF IS INTERESTED, BUT OUR TIME IS LIMITED. WHAT CAN WE DO?

These sessions are meant to complement the work that is currently taking place in classrooms within your school. The sessions can be tweaked, extended, or shortened to suit the needs of the individuals participating. What is important is the participants' commitment to the overall shift in mindset – one that pervades school and classroom life to foster a culture of collaborative learning and idea improvement.

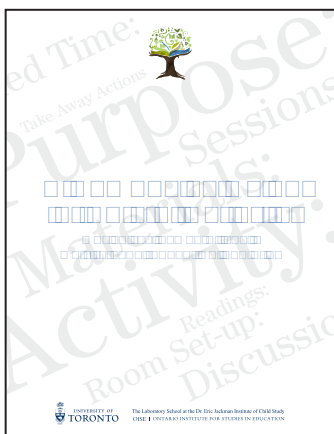
WHERE CAN I FIND A COPY OF NATURAL CURIOSITY?



Each participant should have a copy of *Natural Curiosity* available to download for free, or to purchase for \$18.75 (+S&H) at www.naturalcuriosity.ca. Each session has required readings that need to be completed for the session. It is the role of the facilitator to remind participants to have their own copy of *Natural Curiosity* prior to the first session.

Natural Curiosity: A Resource for Teachers

WHERE CAN I FIND A COPY OF THE “COMPANION GUIDE”?



The “Companion Guide” can be completely downloaded for free, off of our website at www.naturalcuriosity.ca. Very few hard copies of the “Companion Guide” have been printed to cut down on the use of paper and to keep it as widely available and accessible as possible. If the facilitator of the session would prefer a hard copy, please visit www.naturalcuriosity.ca for ordering information.

A Companion Guide for Natural Curiosity: Making Environmental Inquiry Work through Teacher Collaboration

RECOMMENDED READINGS

Executive Summary - Connecting the Dots: Key Learning Strategies for Environmental Education, Citizenship and Sustainability

By: Stan Kozak and Susan Elliot, Learning for Sustainable Futures

This resource (available for free at <http://www.lsf-lst.ca>) is an optional companion piece for *Natural Curiosity* and reinforces and supports the four-branch framework approach to teaching.

Introduction –What is Inquiry?

The three activities, which make up Session One, are designed to introduce participants to the *Natural Curiosity* handbook and Inquiry-based environmental education.

Recommended Time: 75 minutes

Time will vary based on length of discussions

Room Set-Up:

Arrange the room so that participants are sitting in a circle to promote collaborative learning.

Readings:

Natural Curiosity: Pages 6-13 (read prior to session)

Optional Reading:

Connecting the Dots - Pages 2-3 and 14-15

Materials:

Sticky notes

Chart paper

Marker(s)

Activity 1: Starter Activity

Who Knew? (Inspired by: Finding Common Ground in Groups at Work)

Groupings: Full Group and Pairs

Time: Approximately 10 minutes

The goal of this activity is to find connections and commonalities that you share with other participants outside of teaching.

Instructions:

1. Have participants split into pairs.
2. Give participants 2-4 minutes to come up with a list of non-obvious things that they all have in common (e.g. We both had a pet gold fish growing up).
3. Once the time has been reached, have participants return back to the group. Each pair should pick one commonality to share with the larger group.
4. Anyone in the group who also shares that commonality should raise his or her hand.
5. Write each commonality on the board, or sheet of graph paper, and post it on the front of the room.

Activity 2: Generating Ideas

“I wonder...”

Groupings: Individual and Full Group

Time: Approximately 20 minutes

Prior to the first session, everyone was asked to read a chapter on Inquiry-based learning. Ask participants to, on their own, write down three “*I wonder...*” thoughts that they have surrounding Inquiry-based learning. Write each thought on a separate sticky note or sheet of scrap paper. For example: I wonder what tools I need to implement Inquiry into my own classroom?

After 3-5 minutes, each person will be asked to read one of his or her “I wonder” thoughts out-loud and place them onto chart paper. Some thoughts may be repeated as you go around the circle, that is a normal part of the process and is encouraged. If someone has the same thought, they should still read their thought out loud and place it on the chart paper next to the similar comment.

Proceed to go around the circle two more times, repeating the process until all “I wonders” are read aloud. Once all the “I wonders...” have been read aloud, ask participants to group similar thoughts together based on the general idea they are covering (i.e. assessment, classroom management, modifications etc).

Activity 3: Connect To Text Discussion

Groupings: Entire Group

Time: Approximately 20 minutes

This activity will build upon Activity 2. It is an informal discussion surrounding the biggest “I wonder” thought from Activity 2. As the facilitator, read one of the “I wonders” aloud, and ask participants to add to the discussion. At the end of the 20 minutes, the facilitator can close the discussion by summarizing what participants have been saying. An answer to the question may not have been found, but the thoughts and ideas that were brought forward contribute to the groups knowledge.

Take Away Actions

For the next session, ask participants to continue thinking about inquiry in their own classroom. Ask them to write down or think further about questions they may have surrounding inquiry. Alternatively, ask participants to identify opportunities from students’ conversations in class that can launch into, or further direct, an inquiry.

These take away actions, and observations, will be discussed at the beginning of Session 2.



Reminders to Facilitator:

Prior to Session Two, remind participants to read the following pages:
Natural Curiosity: Pages. 14-21

Session Two

Knowledge Building

Purpose:

Participants will continue their exploration of inquiry by participating in a knowledge building circle.

Recommended Time: 60 minutes

Time will vary based on length of discussions

Room Set-Up:

Arrange the room so that participants are sitting in a circle to promote collaborative learning.

Readings:

Natural Curiosity: Pages. 14-21 (read prior to session)

Optional Reading:

Connecting the Dots – Pages 12-13

Materials:

Chart paper for each group

Activity 1: Group Sharing

Grouping: Full Group

Time: Approximately 30 minutes

The time at the beginning of this session, and each subsequent session, will be used to share ideas, thoughts, and observations that have occurred since the session prior. The group will gather in a circle and one member of the group can choose to share their thoughts first. Try to move around the circle so that everyone has an opportunity to share their thoughts and offer up support, suggestions, and advice to their fellow participants.

Activity 2: Connect To Text And Generating Discussion

Knowledge Building Circle

Groupings: Full Group

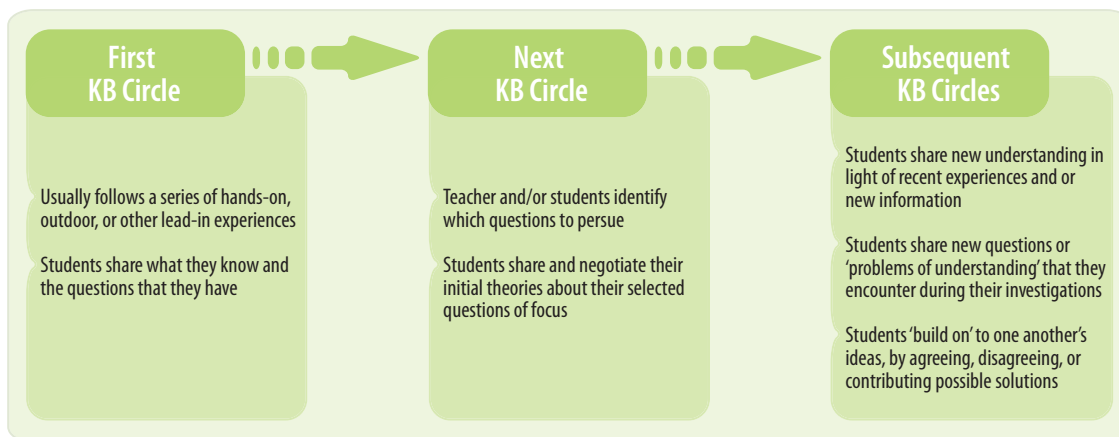
Time: Approximately 30 minutes

The participants should have read the section of the text related to knowledge building (pgs. 9-13) and knowledge building circles (pgs. 14-21).

Begin the activity by outlining the structure of knowledge building circles. The goal of a knowledge building circle is to share our knowledge to address the questions raised by members of the group.

The structure of a knowledge building circle is outlined below:

1. Everyone sitting in a circle is at the same level
2. Participants should participate in active listening - provide the person talking with your full attention.
3. Participants should only raise their hand once another person is done talking.
4. The person who just finished speaking should pass onto someone who has their hand raised.



Knowledge Building Sequence

Remind participants that not everyone in the knowledge building circle needs to agree with each other. Knowledge building circles are about listening to and honoring different perspectives in a respectful and thoughtful way.

A belief of knowledge building is that **ALL IDEAS ARE IMPROVABLE**. Once an idea is expressed to the group, it becomes the groups' shared idea, no longer that of the individual. This creates a safe environment for everyone to express what she/he is thinking.

The use of inclusive language in a knowledge building circle is crucial in order to aid in creating a safe learning environment for all participants. Non-threatening, and democratic language helps to foster constructive discussions and positive knowledge building discourse.

Examples of knowledge building language can be seen below:

"I would like to build onto what you said..."

"I agree with..."

"To add to what you said..."

"Something that I have tried is..."

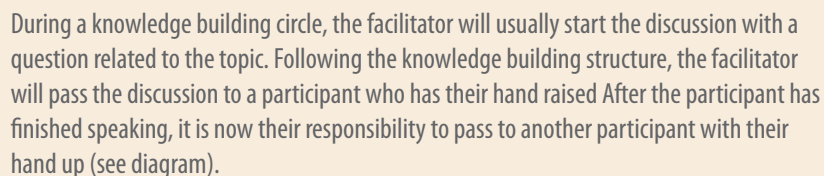
"I have a matching idea..." or "I have a tag idea..."

"I need to understand..."

"I have a different idea..." or "Another idea I had..."

"My theory is..."

Look on the "I wonder" chart paper (from Session One), where participants posted their questions. Pick one of the "I wonders" related to knowledge building and honoring children's questions and use it as a starting point for a discussion.



1. Encourage participants to wait a few seconds before giving an answer to allow time for thinking.
2. Repeat or paraphrase what the children say without praising or criticizing.
3. Be a co-learner. Don't be afraid to say, "I don't know. Let's find out!"
4. Post students questions and theories on display.

- 1) Promote attentive listening and communication by:
 - practicing and participating in respectful ways of listening and talking to each other
 - learning problem solving strategies and problem solving language
- 2) Eliminate hierarchy by:
 - creating a democracy within a classroom where all opinions are valued
 - promoting knowledge building discourse
 - validating students questions
- 3) Foster a respect for each individuals contributions by:
 - helping students learn that ALL learning is important and valued
 - providing an avenue for students to direct their own learning

Leading up to the next session, have participants think/write down thoughts that they have about “next steps”. What questions do they still have? What questions come up in between sessions? What knowledge building strategies are already taking place within his or her own classroom? What strategies can be implemented? What can you do with the students this week?



For Session Three, print out activity sheet “3-2-1” (Lipton & Wellman, 2011) to be used for the take away actions assignment (see Appendix 2)

- Natural Curiosity: Pages 22-34
- Natural Curiosity: Grade Level Story

The purpose in reading these stories is for participants to look for opportunities to engage in assessment. In reading the stories, and reflecting on their own classroom, participants may notice opportunities for authentic assessment that are already occurring in the classroom.

Session Three

Opportunities for Assessment

Purpose:

Participants will explore different opportunities for assessment that appear in *Natural Curiosity* and will look at assessment of, for, and as learning.

Recommended Time: 70 minutes

Time will vary based on length of discussions

Room Set-Up:

Arrange the room so that participants are sitting in a circle. Provide a subsequent area where participants can later split up into grade/division groups.

Readings: (to be read prior to session)

Natural Curiosity: Pages 22-34

Natural Curiosity: Grade Level Story

- Read and highlight assessment strategies that are being used in teacher stories – specifically look at: assessment of learning, assessment for learning, and assessment as learning
- The purpose in reading these stories is for participants to look for opportunities to engage in assessment. In reading the stories, and reflecting on their own classroom, participants may notice opportunities for authentic assessment that are already occurring in the classroom.

Growing Success: Assessment, Evaluation and Reporting in Ontario Schools: Pages 2-9 and 28-36 (Ontario Ministry of Education, 2010)

Optional Reading

Connecting the Dots – Pages 16-17

Materials:

Chart for Activity 3 (Appendix 1)

Please see Session Two, “Reminder to Facilitator” for chart description .

Activity 1: Group Sharing

Grouping: Fully Group

Time: Approximately 30 minutes

Use this time to discuss any next steps that people might have thought of from their take away actions in Session Two. Examples of discussion prompts are below (if needed).

Discussion Prompts

Did any other questions or “I wonder” thoughts come up since the last session? Did anyone try to implement one new strategy into his or her classroom?

Opportunities for Assessment

Time: Approximately 20 minutes

Discuss specifically what assessment as learning, assessment of learning and assessment for learning looks like.

Grouping: Full Group

Time: Approximately 20 minutes

After 20 minutes, bring the group back together into a circle. Ask participants to think about what they read about in *Growing Success and Natural Curiosity*. As a group, fill in the chart that was made. What does each type of assessment look like? What forms of assessment are teachers currently using in their classroom? Why is it important to assess for, of, and as learning?

Take Away Actions - 3-2-1 (Inspired by: 3-2-1 in Groups at Work)



Reminders to Facilitator:

For Session Four, print off the Thought Prompt sheet (Appendix 3) for take away actions.

Session Four

Bringing Learning Outside

Purpose:

Participants will explain how stewardship, experiential learning, and integrated learning are a part of the inquiry process.

Recommended Time: 70 minutes

Time will vary based on length of discussions

Readings:

Natural Curiosity: Pg's. 35-57 (to be read prior to session)

Different groups will cover these pages in the facilitation session – all participants should read all the pages on their own time.

Optional Reading:

Connecting the Dots - Pages 6-11

Note to Facilitator

All participants should read all pages on their own time

Materials:

Clip board

Paper

Pen/pencil

Chart paper/markers (one of each for each group)

Activity 1: Group Sharing

Grouping: Full Group

Time: Approximately 20 minutes

Use this time to review the 3-2-1 (Appendix 2) worksheet. Discuss what participants put down as their facts, questions and main ideas from Session 3

Activity 2: Connect To Text Bringing Learning Outside

Groupings: 2-3 people per group and Division or Grade Groups

Time: Approximately 50 minutes

For this activity bring participants outside to get them thinking about ways to incorporate experiential learning experiences, integrated learning, and stewardship as they themselves engage in an experiential learning experience.

Either as a whole group, or in division/grade groups, participants will head outside with a clip board, a pen/pencil and paper. Participants will be given 10-15 minutes to write or draw any living thing, or evidence of living things, that they can find.

Once inside, ask participants to work in pairs, or in grade/division groups, to look at their findings. What questions may arise from what you discovered outside? How can those questions be answered? How can you incorporate different subject areas into your study of living things by using the information you collected? What experiments could be created? What are some follow up experiences that can be facilitated to encourage deeper discussion and further knowledge building? What stewardship opportunities may stem from this inquiry? Write down all ideas onto chart paper.

After 15 minutes, gather together into a larger group, and share what ideas you have come up with. Specifically, talk with participants about how one experience can ignite numerous questions from students and what ways it can be incorporated across curriculum strands. Discuss how experiential activities could potentially lead to activism and stewardship on the part of the student.

Take Away Actions

Thought Prompts

Ask participants to think about/write responses to the following thought prompts:

1. One thing I am looking forward to implementing in my classroom this week is...
2. One question that I still have about inquiry is...
3. Some things that I am already doing in my classroom that contributes to Inquiry-based learning is...



Reminders to Facilitator:

For Session Five remind participants to choose two stories to read from their grade division.

Readings: (read 2 stories from your grade division prior to Session Five)

1. **The Early Years**
 - a) Carol's Story – page 63
 - b) Perri's Story – page 103
 - c) Amanda's Story – page 119
2. **The Primary Years**
 - a) Cindy's Story – 74
 - b) Susanna's Story – page 134
 - c) Rhiannon's Story – page 128
3. **The Late Primary Years**
 - a) Robin's Story – page 83
 - b) Vessna's Story – page 111
 - c) Kathleen's Story – page 140
4. **The Junior Years**
 - a) Ben's Story – page 93
 - b) Cathy's Story – page 147

Session Five

The Inquiry Process

Purpose:

This session is structured to get participants working together to identify the commonalities within the inquiry process. Participants will be looking for the similarities between classroom practices and structure and the balance between the sequential nature and the organic nature of the process. Prior to the session, participants are asked to read two of their grade division stories found in *Natural Curiosity*.

Recommended Time: 60 minutes

Time will vary based on length of discussions

Room Set-Up:

Arrange the room so that participants are sitting in a circle. Provide a subsequent area where participants can later split up into grade/division groups.

Readings: (read your grade division stories prior to the session)

1. **The Early Years**
 - a) Carol's Story – page 63
 - b) Perri's Story – page 103
 - c) Amanda's Story – page 119
2. **The Primary Years**
 - a) Cindy's Story – 74
 - b) Susanna's Story – page 134
 - c) Rhiannon's Story – page 128
3. **The Late Primary Years**
 - a) Robin's Story – page 83
 - b) Vessna's Story – page 111
 - c) Kathleen's Story – page 140
4. **The Junior Years**
 - a) Ben's Story – page 93
 - b) Cathy's Story – page 147

Materials:

Markers

1 piece of chart paper per group

Participants are asked to bring in a pad of paper, lap top (optional), and writing tools to help them plan their unit

Activity 1: Group Sharing

Thought Prompts Discussion

Grouping: Full Group

Time: 20 minutes

Use this time for participants take turns sharing one (or more) of their completed thought prompts from Session Four (Appendix 3).

Activity 2: Working Session

Grouping: Grade Groups and Full Group

Time: 30 minutes

Grade Group Activity - 10 minutes

Have participants split up into grade groups, or small groups, to discuss two of the stories that they have read from *Natural Curiosity*. In their groups, have participants identify the common processes or steps from each story. What are common classroom practices that are occurring in each story? What are some things that are not common between classrooms? Why do they differ? What does the structure of the classroom look and feel like? Look specifically for processes that are occurring organically, and those that may be more structural in nature. Have participants write down their thoughts on a piece of chart paper to bring back to the full group for sharing.

Full Group Activity – 20 minutes

Call participants in grade groups to gather together in one big group. Ask each group what commonalities and differences they found in each of their grade level stories. Ask what parts of the process they labeled organic and structural in nature. Write down all responses on chart paper and discuss the responses. Why are there certain things that are common throughout all stories? Why are there differences?

Take Away Actions

For this week ask participants to think about the following questions:

1. What are some successes I have experienced with Inquiry-based teaching that I can build on?
2. What are my priorities when it comes to implementing Inquiry-based learning into my classroom?
3. What are some specific tools and strategies that I have tried which have been successful?

Session Six

Working Session

Purpose:

This session is structured to get participants working on designing an Inquiry-based learning experience within their own classroom. This “working session” can be repeated as many times as necessary for participants to feel comfortable approaching an inquiry unit within their own classroom.

They should also bring a “big idea” into this session. This can be something that is currently taking place within the classroom, or something new that they know they will be pursuing later in the year.

This may also be an appropriate time to invite a guest speaker in to talk about inquiry within the classroom (see Appendix 4 for possible options). If this option is chosen, make the following session the working session, followed by Session Seven.

Recommended Time: 60 minutes

Time will vary based on length of discussions

Room Set-Up:

Arrange the room so that participants are sitting in a circle. Provide a subsequent area where participants can later find space to work individually or in grade groups.

Materials:

Markers

1 piece of chart paper per group

Participants are asked to bring in a pad of paper, lap top (optional), and writing tools to help them plan their unit

Activity 1: Group Sharing

Grouping: Full Group

Time: 20 minutes

Use this time to go over participant’s answers to Session Five’s take away actions.

Questions:

1. What are some successes I have experienced with Inquiry-based teaching that I can build on?
2. What are my priorities when it comes to implementing Inquiry-based learning into my classroom
3. What are some specific tools and strategies that I have tried which have been successful?

Activity 2: Working Session

As participants should now be more familiar with Inquiry-based learning and the four-branch framework approach to environmental Inquiry. It is fundamental that participants now have an opportunity to look at their own practice and see where they can incorporate the four-branch framework approach into what is currently taking place within their classroom. This can be done individually, or in division/grade groups.

To assist in organizing their own thoughts, provide people with a piece of chart paper and markers. One option is for participants to create a mind map on how to incorporate the four-branch framework approach into their study.

This is a time for participants to focus on Inquiry-based learning within their own classrooms. Some points that groups may want to consider are the following:

- Identify the “big ideas” or “overall expectations” from the Ministry Guidelines
- What are ways for students to unpack these ideas that will have them “learning by doing” rather than “learning by watching” or “learning by being told”?
- What hands-on experiences will the children need?
- What are the misconceptions in this area of curriculum to watch out for?
- What materials and resources are required?
- How will the children show their understanding (assessment)?
- What experts are available to us from within our community (class visits or field trips)?
- How will you support each other as teachers?
- Will schedules need to be changed? Is this a possibility?

Take Away Actions

Participants used this session to plan an Inquiry-based learning experience around a “big idea” from the curriculum. Ask participants to take their ideas into the classroom and try them out! Participants may want to focus strictly on one branch (experiential learning), instead of trying to incorporate everything at once. Encourage participants to challenge themselves to try something new and reflect on what worked and what didn’t work and why. This might be a good time to introduce the idea of a journal or personal blog to participants as a way to keep track of their progress, challenges and achievements along the way.

Session Seven

Follow Up

Purpose:

As a follow up to the previous six sessions, this session will focus on a group discussion on the experiences of the participants with implementing Inquiry-based teaching practices in their classroom.

This session is extremely relevant, as it will offer a forum for participants to discuss their triumphs and challenges and to ask more questions. The suggested time for this session is one hour, however, time may vary based on the length of discussion. It is important that participants be allotted time at the end to reflect on their experience as a whole. How have their ideas surrounding inquiry changed? Do they approach teaching differently now than prior to these sessions? Use this time for participants to reflect on their growth over the last five sessions, and the steps and strategies that they will implement when going forward.

Recommended Time: 60 minutes

Time will vary based on length of discussions

Room Set-up:

Arrange the room so that participants are sitting in a circle.

Discussion Prompts

Gather participants into a circle formation, and ask for people to reflect on the last month. What questions do they still have? What would they like to discuss? Some questions that may encourage discussion are outlined below.

- What are things that you are most proud of accomplishing?
- What are challenges and opportunities that you have found surrounding assessment and evaluation?
- What challenges did face?
- What challenges do you still face?
- What came naturally?
- What did you find useful in helping you achieve your goals?
- What are some of the commitments that continued to bring you to these sessions?
- How valuable did you find these sessions?
- What goals are you going to set for yourself the future?
- What advice would you give another teacher who is beginning to teach in this manner?
- Why is this teaching pedagogy worth the time and effort?

Suggestion to Facilitator:

This is the last prescribed session. The hope is that the group will continue to meet to support each other and to share “knowledge advances” and “problems of understanding”. A suggestion is to set dates to meet in advance to make it easier for people’s schedules to match up.

References

- Chiarotto, L. (2011). *Natural Curiosity: Building Children's Understanding of the World through Environmental Inquiry/A Resource for Teachers*. Oshawa, ON: Maracle Press Ltd.
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- Lipton, L. & Wellman, B. (2011). *Groups at Work: Strategies and Structures for Professional Learning*. Sherman, CT: MiraVia.
- Ontario Ministry of Education. (2010). *Growing Success: Assessment, Evaluation and Reporting in Ontario Schools*. Ontario: Queen's Printer for Ontario.

Appendix 1

Session 3, Activity 3

What does assessment <u>of</u> learning look like?	What does assessment <u>for</u> learning look like?	What does assessment <u>as</u> learning look like?	Why are all these forms of assessment important to use in the classroom?

Session 3, Take Away Actions

1.

2.

3.

1.

2.

1.

Session 4, Take Away Actions

Think about, and/or write responses to the following thought prompts:

Session 6, Alternative Session

1) The Literacy and Numeracy Secretariat

- ## 2) Resource Teachers

3) Librarians

4) Curriculum Consultants

Facilitator's Notes

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This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



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The “Companion Guide” is made up of sessions that will create a forum for teachers to discuss options for putting inquiry into practice. These sessions are meant to complement the work that is currently taking place in classrooms within your school. It will provide the opportunity for teachers to gather together to discuss strategies to make both the content and process of learning about the world more engaging and relevant to students.

