

The KindergarteN

Science and Technology

WORKSHOP GUIDE FOR THE VIDEO 6

UQÀM SAV Service de l'audiovisuel Université du Québec à Montréal



Contents

Kindergarten: Science and Technology......p. 4 How the Video Fits Into the Preschool Education Program

Context of the Video	p. 4
Introduction	р. 5
Science and Technology	
About the Video	р. 5
Animating the Workshop	р. б
Appendixes	p. 9

Purpose of this Animation Guide

This animation guide is to be used with the accompanying video, Science and Technology in Kindergarten, within the context of the Québec Education Preschool program. This guide is designed to be user friendly. To facilitate the viewing of the video, this guide provides ideas and suggestions to animate sessions for teachers and parents. It also provides the worksheets needed to conduct the session.

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1

KINDERGARTEN: SCIENCE AND TECHNOLOGY HOW THE VIDEO FITS INTO THE PRESCHOOL EDUCATION PROGRAM

"The program enables 4- and 5-year-olds to develop psychomotor, emotional, social, language, cognitive and methodological competencies related to self-knowledge, life in society and communication."

The content of the *Kindergarten: Science and Technology* video is closely connected to the child's development. More precisely, it relates to the program's fifth competency, "To construct his/her understanding of the world." This competency is related to the four intellectual competencies from the Québec Education program: "To use information," "To exercice critical judgment," "To use creativity" and "To solve problems." ²

Five-year-old children come to school with certain conceptions and representations of

their environment based on personal experience. For example, a child might say: "The earth doesn't turn; it's the sun that moves," or "Summer's warmer than winter because the sun's closer to us."

These notions are meaningful to children if we give them the tools to explore through observation, manipulation, experimentation and appropriate questioning.

To support children during this process, the teacher must be on the lookout for anything that will provide them with opportunities for exploration and self questioning so they can engage in reflexive thinking and, in so doing, build a "foundation for future learning." ²

I Québec, Ministère de L'Éducation du Québec, <u>Québec Education Program: Preschool Education</u>, <u>Elementary Education, Approved Version</u> (Québec, Gouvernement du Québec, 2001) p. 52

2. ibid., 62.



CONTEXT OF THE VIDEO

The Kindergarten: Science and Technology video, explaining the role of science and technology in the kindergarten classroom, shows how teachers, children and even parents can explore these two important areas of learning.

In part one, different contributors present their ideas about science and technology in the preschool setting.

In part two, we attempt to answer a variety of questions, in particular: how and why should teachers use science with preschool children on a daily basis? Also discussed is the teacher's role, which is to develop the best possible ways of helping children uncover the causes of the phenomena they have observed (e.g. asking questions, stimulating their curiosity, comparing ideas, helping students to communicate their discoveries).

Throughout the video, the contributors' ideas are illustrated by practical scientific and technological experiments conducted in the classroom.

INTRODUCTION TO SCIENCE AND TECHNOLOGY

To us

As adults, we must constantly adapt to our everchanging society. We all know too well how scientific and technological advances are shaping our daily lives and the future. Our outlook on how to deal with these changes influences our students, our children and the future.

Can you think of a scientific or technological advance that is currently affecting your life?

For preschoolers

Preschoolers are in awe of the world that is opening around them. They are only too eager and ready to explore everything that surrounds them. Science and technology is part of their everyday activities and discoveries.

Can you name something a typical preschooler wonders about?

In our classroom

Science and technology is an essential part of learning in our classroom. Our guidance coupled with students' curiosity, can help plant the seeds for a life long interest in science and technology.

Can you think of an activity involving science or technology that you have explored with your students recently?

In the home and everyday life

Children yearn to learn about their surroundings and to know how things work. Their curiosity is stimulated through their senses, questions are asked, answers are demanded.

Can you think of a daily chore that requires scientific and technological knowledge?

Content

This video is a tool to help teachers and parents have a better understanding of science and technology and on how to get children involved. The science and technology video in Kindergarten is 26 minutes 30 seconds long and contains footage of children, teachers, university professors and consultants giving their views and sharing their experiences in relation to science and technology. It also contains excerpts from classroom situations and interviews with experts and novices (adults and children). ANIMATING THE WORKSHOP

The workshop for teachers aims to spark discussion and can serve to promote the sharing of practical experiences related to the competencies of the Preschool Education program. A modified version of this workshop can also be conducted for parents to help them appreciate the role of science and technology in the kindergarten classroom so that they will be encouraged to explore alongside their child at home.

notes and considerations

I. Get Ready

A. Materials

Here are some ideas and suggestions for your workshop.

•A large screen television and a video cassette recorder	Make sure the equipment functions properly and can be viewed by all.
•A computer and a projector or	This is a quick and effective way to record, save and share notes that can be viewed by all.
•A large board to write on	Find a secretary who can take notes for you (either on the computer or on paper) while you are animating the workshop.
• Photocopied sheets	Prepare a sufficient number of copies of the appendixes to ensure that each participant receive one.
• Materials and books	Set up a table of reference books, story books, science materials, projects, etc.
•Other:	
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NOTE: One or more of the following suggestions can be used with the whole group or by participants working in smaller groups. Use your discretion to decide how the information should be shared.

2. Get Set

Ask participants to take a few moments to reflect on what they think science and technology is. (Appendix I)

3. Go

- A. Show the introductory part of the video, stopping before the first part (Observe and Explore) begins.
- **B.** Invite participants to share their ideas about science and technology and compare them to what they saw or heard in the video.
- C. Watch the rest of the video. Participants may take notes using Appendix 2.

4. After viewing the video

Once they have finished viewing the video, have the group share their ideas, comments or questions related to what they have seen or heard. To reinforce how science and technology is part of our daily lives, continue with the following activity.

- A. In small groups, have participants make a list of questions a 4-5 year old child would ask.
 - E.g. Why do I see myself upside down in a spoon? How does grandma gets inside the telephone? Why is sea water salty? How does a computer mouse know what to do? Why is a snowflake white?
- **B.** In small groups, participants are invited to choose one question and explore how it could be exploited in class or at home (use Appendix 3 for teachers and Appendix 4 for parents).
- C. Ask participants to formulate questions that children can be asked in order to spark their interest or challenge their beliefs. Questions should lead them to make predictions, to compare, to confront their opinions with their peers, to anticipate reactions or comments, etc.
- **D.** What activities or experiments could be carried out with the children so they can explore and find answers to their initial question?
- E. Invite participants to discuss the pedagogical strategies that will sustain and guide the children in their quest for answers to their questions.
- F. What connections can you make between the children's learning and the competencies of the program?

5. Sharing time

- A. Invite one participant from each group to share the results of their collaboration.
- B. What connections can be made with the competencies of the Preschool Education program?
- C. Have the participants note the cross-curricular nature of the Preschool Education program.



6. Evaluation

In preschool education, observation is the favoured means of evaluation. Observation makes it possible to follow the children's progress in the development of their competencies.

"...It fosters and respects the learning process and focuses on the children's attitudes, behaviours, processes, strategies and productions "

Using Appendix 5, invite participants to look at their methods of evaluation. How are they going to observe children in action? What are they going to be looking for?

How will they enable children to share their new knowledge?

✓ What do they know now that they did not know before doing the experiment or the activities?

7. Discussion

To pursue the discussion and share ideas, ask the following questions:

- ✓ What is the role of play in making discoveries about our world that relate to science and technology?
- ✓ What other subjects can be integrated with science and technology?
- When do children first think about and become fascinated by the wonders of our world?
- \checkmark How can we stimulate children to question what is going on around them?
- ✓ How can we help children find answers to their questions?
- ✓ "Children are young scientists." Discuss this sentence.

APPENDIXES



Appendix I

IN YOUR VIEW, WHAT IS SCIENCE AND TECHNOLOGY?

• Science is

• Technology is

• How is science and technology used in your everyday life?



Appendix 2

The video starts with an introduction, followed by these ten parts:

	personal notes
Observe and explore	
Play with science and technology	
Are the worms happy?	
Why is it slippery?	
Why it floats?	
Trying to pull the string?	
Why it moves?	
Science in the curriculum	
Environment and material	
Teacher's role	

Appendix 3 (teacher)

Child's question.

Questions asked by the teacher to sustain the child's interest.

Pedagogical strategies to accompany, guide and support the child in his/her search for answers to the initial question.

Activities to be elaborated with the children to help them find answers to their questions.

Connections with the competencies of the Preschool Education program.



Appendix 4 (parents)

Child's question.

Questions asked by the parent to sustain the child's interest.

Strategies of parent to accompagny, guide and support the child in his/her search for answers to the initial question.

Activities to be elaborated with the children to help them find answers to their questions.

Did the children learn (what do they know now that they did not know before doing the experiment or the activity)?



Appendix 5

Observation makes it possible to follow the children's progress in the development of their compentencies.

Observation. . . " fosters and respects the learning process and focuses on the children's attitudes, behaviours, processes, strategies and productions." $^{\prime}$

OBSERVATIONS	
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PROCESSES	
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STRATEGIES	
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PRODUCTIONS	
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