

Teacher Resource Manual

Zoology Zone

Investigations into the Animal Kingdom



SPIDERS

BEARS

RAPTORS

Three Multimedia Teaching and Learning Resources
For
Elementary School Students

December 2000 Edition

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Preface

This teacher resource manual was written to assist teachers with the use of the December 2000 version of Zoology Zone: Investigations into the Animal Kingdom.

This multimedia teaching and learning resource is a set of three CD ROMS that were initially designed for use in the teaching of the Alberta grade three science program. However, the Zoology Zone resources could be effectively used at many grade levels and as a general resource.

Each CD ROM focuses on the study of one group of animals. Three different groups of animals are presented: Spiders, Bears and Raptors.

This manual provides some explanation about the multimedia resource and may be of assistance to purchasers of the program in understanding the instructional design. Various suggestions are also made about planning for instruction in the classroom but there are many, many possibilities beyond suggestions in this manual.

For more information about the resource or implementation ideas please contact any of the following teachers who assisted in developing the resource.

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**Zoology Zone: Investigations into the Animal Kingdom
BEARS, SPIDERS and RAPTORS**

A Multimedia Teaching and Learning Resource

1. Overview of the Resource

Zoology Zone consists of three separate CD ROM's. Each CD features one animal as a focus of study. The first in the series is Spiders. The second is Bears. The third is Raptors. Each CD ROM can be used independently as a separate and complete resource.

The three disk resource kit was designed as a result of needs expressed by Alberta elementary teachers to have multimedia resources that were compatible with the Alberta science program of study and also met information and technology outcomes for elementary school students. A team of elementary teachers volunteered to develop the instructional content for the project. These teachers, all active in full time teaching in elementary classrooms, worked closely with a film company and a multimedia company to develop the Zoology Zone materials.

Although interest for the project was initiated by teachers for resources that could be used in Alberta classrooms, the Zoology Zone series was designed to also meet a much larger audience than Alberta classrooms including public use, and educational use nationally and internationally. The quality of the resource, and its proven popularity with young learners makes the resource a desirable addition to school resources, libraries and home collections.

Zoology Zone -- Bear Safety Note – Please Read!

Teachers are strongly recommended to address the issues of bear safety with students early in the study of bears. This software presents extensive information on bears and presents the content in a variety of ways that appeal to a young learner. Included are cartoons, stories, games, live video and expert testimonials. Students should be informed and cautioned that bears are wild animals and dangerous to humans despite the representations of bears that children may have been exposed to through the media and other

learning experiences (eg. Story of the Goldilocks and the Three Bears, Yogi Bear, teddy bears). Teachers may find it useful to focus student attention on the expert testimonials in this CD ROM which provide serious advice on the inherent danger of bears. The purpose of the learning activities in the CD ROM are to provide students with accurate information about bears and to apply this information in a meaningful way to their life experiences. Issues of personal safety must be paramount in all discussions about bears.

Teachers wishing to pursue the study of bear safety, as an extension of study from the Bear CD ROM in their local communities may find it useful to contact Parks Canada or bear experts in the local community.

2. Target Audiences

The resource has appeal and relevance to various audiences including:

- a. Alberta students in grade three science programs. The resource specifically links with Topic E: Animal Life Cycles.
- b. Science students in other grades in Alberta. Depending on how the teacher utilizes the resource, Zoology Zone could be used to address specific learner expectations in the following grades and science units and study:
 - Grade 1: Topic E: Needs of Animals and Plants
 - Grade 2: Topic E: Small Crawling and Flying Animals
 - Grade 6: Topic E: Trees and Forests
- c. Students carrying out research on the topic of animals
- d. Home school and virtual school programs
- e. Home entertainment and education
- f. General library resource
- g. Resource to assist in the teaching of using multimedia resources and serving as a model for students who construct multimedia programs or presentations.

- h. Professional audiences: A useful resource for teachers, para-professionals, parents as educators and teachers in training.

3. Educational Features of Zoology Zone

The instructional design of Zoology Zone was developed utilizing research on effective teaching and learning strategies and applying this knowledge to a multimedia format. Classroom teachers who developed the instructional design took care to include many dimensions of teaching that have been proven to ensure student learning.

The Zoology Zone resource:

- a. Addresses specific learner expectations from the 1996 Elementary Science Program of Studies (Grade 3: Topic E). The learner expectations were used as the starting point for the first CD ROM and all learning activities relate directly to these identified expectations.
- b. Encourages students to develop or enhance a science way of knowing through the use of explorations and learning activities that encourage students to build on the knowledge they have about three specific classes of animals: Spiders, Bears and Raptors. Through inquiry and problem solving students are encouraged to extend their learning and apply, where possible, relevant science principles. The learning material is purposely presented with games and challenges to nurture the sense of wonderment in young students.
- c. Is multi sensory to appeal to students varying learning styles. Script, audio, video, visuals and interactive activities provide variety in learning activities. The explorations component which directs students to do lab or field test activities adds the hands on experiences important in science learning.
- d. Is appropriate for a variety of grade levels and reading levels. Choices exist for beginner or advanced students in many of the activities. Choices exist to let a student read independently or to have the text read to the student.

- e. Has genuine applications to real life situations. The high quality video and slides are professional quality productions of animals in natural habitat and each picture was specially chosen to demonstrate specified learning objectives.
- f. Has a sense of humor. The inclusion of jokes, cartoons, trivia questions and special effects keeps students interested and inspired to continue the unit of study.
- g. Addresses integration of subject matter across different disciplines. Students are exposed to literature and connections are made to the fine arts, social studies and mathematics.
- h. Includes song. Many students learn well by inclusion of content in music, rhythm and rhyme.
- i. Is teacher friendly. The resource is easy to use and teachers can track the path that each student has taken during a lesson. Each students' progress is mapped on a site map which can be printed and saved so that teachers are aware of each students' progression through the CD ROM.
- j. Is highly interactive. Students get immediate feedback and encouragement in all learning activities. Student progress in each activity is recorded for easy teacher or student viewing.
- k. Allows students rich opportunity to extend learning through additional activities and research projects. A glossary, library and direct links to appropriate internet sites assist students in learning more about the animal of study or finding information on additional species, or other animals of study.
- l. Allows for instructivist teaching approaches or constructivist teaching approaches. Teachers can direct learning by encouraging students to investigate specific portions of the resource in a specified progression or teachers can utilize a more flexible approach in which students select their learning path. Both methods of instruction can be utilized with the resource.

- m. Addresses MANY of the Information and Communication Technology outcomes mandated for Alberta students beginning September 2000. Students using Zoology Zone employ many of the skills identified in the ICT Program of Studies (2000) and the extended activities allow for students to demonstrate their skills in information, communication and technology.
- n. Is rich with learning activities. There are a total of 105 learning activities in the Spider CD ROM. The Bear and Raptor each have nearly one hundred activities.

4. Technical Considerations

System Requirements:

Zoology Zone will run on a Power Macintosh with 16MB of free RAM or an IBM compatible computer running Windows 95, 98 or NT. You can use this CD-ROM on either platform.

Zoology Zone will run with the display depth set to 8bit (256 colours) but looks best with the display depth set to 16bit (thousands of colours). Zoology Zone is designed for a display resolution of 640 x 480. If the display resolution is set higher than 640 x 480, Zoology Zone will appear in the centre of the screen.

Installation:

NOTE: Zoology Zone is a multimedia-based product that **requires QuickTime version 4** or greater. If you do not already have QuickTime installed on your computer or you have a version less than version 4 then **run the QuickTime installer located on the Zoology Zone CD.**

To Run Zoology Zone:

- 1). Insert the Zoology Zone CD-ROM into the CD-ROM drive.
- 2). Ensure QuickTime 4 or greater is installed.

3). Double click the program called "Zoology Zone Spiders".

Each zone has one pull down menu with many menu items called "Sections" (Learning Activity) which the child can access at any time. Sections that have been visited, but not totally completed, appear with a dash (-) before its title. Totally completed sections, appear with a check mark (√) before its title. Sections have one or many pages.

The child turns the pages of a section by clicking the arrow buttons located at the right of the screen, below the zone buttons. If the last page of the current section is reached, the right arrow changes colour indicating that if it is clicked, you will proceed to the first page of the next section. Pages can also be turned (or skipped) by dragging the yellow "Page Indicator" box located at the bottom right of the screen. The child can also navigate to any page of any section of any zone by clicking on a piece of a caterpillar that appears in the site map. The site map is accessed through the "File" menu. The site map also indicates which pages have been visited (or completed if its an activity) by turning a caterpillar piece yellow. The "Page Indicator" box also turns yellow when at visited (or completed) pages.

The buttons along the bottom of the screen let the child see their current location (like a "Pea" trail) and allows them to quickly go back to any place on the trail.

Here are some keyboard shortcuts and special key combinations you should know about:

Command-Q (or Esc) = Quit
Right Arrow = Go to next page.
Left Arrow = Go to previous page
Down Arrow = Repeat current page

It may also be handy to know that holding the 'control' key down when choosing "Print" from the "File" menu will cause the printed material to display on the screen instead of printing on the printer. Holding the 'shift' key down when choosing "Print" from the "File" menu displays a "Page Setup" and a "Print Job" dialog box before printing.

Also note that holding the mouse button down can interrupt the action of many activities in progress. An example of an activity in progress is the web building exercise solving itself after the child clicks the "Solve" button.

Aside from giving expert help, Ribbert, the talking 'help' frog, can be a lot of fun. The cursor turns into a flying bug when placed near him. If you get the flying bug too close to his mouth, he'll eat it! Be sure not to click him in the eye! If you don't move the cursor for a while, Ribbert will start making faces and eventually he'll go to sleep. Moving the cursor while Ribbert is sleeping makes him snap to alertness. The characters in the Liar's Club also behave in a similar manner.

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5. Attention: Alberta Teachers

The Zoology Zone resource has specific attraction for elementary teachers in Alberta. The resource was designed with the 1996 Alberta Elementary Science Program of Studies as the guiding document. The Information and Communication Technology outcomes were also utilized in the preparation of the resource. Where possible, as many of the technology outcomes were incorporated into the development of the resource. When reviewing Zoology Zone, it may be helpful to have the current Elementary Science Program of Studies and the Information and Communications Technology Program of Studies nearby to assist teachers in planning for instruction. Although Zoology Zone has relevance and appeal to various grades, all the specific learner expectations in the grade 3 science unit on Animal Life Cycles (Topic E) are addressed in each of the three separate CD ROMS. The unit can be enhanced by comparing and contrasting the three animals of focus in the Zoology Zone series and by encouraging student projects on the study of other classes of animals (e.g. fish, reptiles, amphibians) using the Zoology Zone resource as a template to guide further student research. The specific learner expectations taken from the 1996 Alberta Elementary Science Program of Studies addressed in Zoology Zone are outlined below:

*Students will:

- a. Classify a variety of animals, based on observable characteristics; e.g., limbs, teeth, body covering, overall shape, backbone.
- b. Observe and describe the growth and development of at least one living animal from one or more of the following groups: mammals, birds, fish, reptiles, amphibians, and insects; and identify similarities and differences in their developmental sequences. Additional examples from other animal groups might also be included: brine shrimp, isopods, spiders.

***Zoology Zone features animals from three different groups: Bears (from mammal group), Raptors (from Bird group) and Spiders as a separate group.

- c. Predict the next stages in the growth and development of at least one animal from each of the following groups: mammals, birds, fish, reptiles, amphibians, insects; and identify similarities and differences in their developmental sequences.
- d. Identify the food needs of at least one animal from each of the following groups: mammals, birds, fish, reptiles, amphibians, insects; and describe changes in how each animal obtains food through different stages of its life.
- e. Demonstrate awareness that parental care is characteristic of some animals and not of others, and identify examples of different forms of parental care.
- f. Demonstrate awareness that animals require different habitats in order to meet their basic needs of food, water, shelter and space.
- g. Recognize adaptations of a young animal to its environment, and identify changes in its relationship to its environment as it goes through life; e.g., tadpoles are adapted for life in an aquatic environment, adult frogs show adaptations to both terrestrial and aquatic environments.
- h. Identify examples of environmental conditions that may threaten animal survival, and identify example of extinct animals.

- i. Recognize that habitat preservation can help maintain animal populations, and identify ways that student actions can assist habitat preservation.
- j. Demonstrate knowledge of the needs of animal studies, and demonstrate skills for their care.

Teacher Note: Given the limitations of a multimedia resource, the critical role of the teacher is essential in planning for instruction in a way that the above expectations are met by students. The Zoology Zone resource includes the content and various assessment and learning activities but the teacher role in extending learning opportunities through discussion, report making, field experiences and other learning activities deemed appropriate by the teacher is important to ensure that all learner expectations for the unit are met by students.

6. Planning for Instruction

Many options exist for the teacher. Depending on classroom or individual circumstances any of the following options may be appropriate:

- a. Give students the resource and have them utilize it independently (with or without specific direction on how to progress through the resource)
- b. Partner students. Each pair of students has one CD ROM and students progress through the learning activities with a partner.
- c. Small groups of students (3-5).
- d. Teacher projects for class or small group viewing, the CD ROM on one teaching computer or on a projection screen.

***Note: If many students are using the resource at the same time, headphones may be recommended.

7. Instructional Design

Each CD ROM follows a similar instructional design although the content for each CD ROM is different. You can expect to find all the following elements in each of the Spider, Bear and Raptor resources;

- a. Introductory Screen
- b. Greetings from RIBBERT -- the friendly frog who serves as the help agent and as comical relief as students progress through learning activities.
- c. Five separate ZONES (kind of like chapters in a textbook) titled:

All About Me How I Grow Where I Live How I Eat Did You Know?
--

- d. In the zones you will find several learning activities including:
 - Text material that can be printed for future use
 - Audio presentation of material
 - Real life pictures and videos of the animal of study
 - Highlights on the screen of portions of visuals that need to be emphasized for the learner
 - Ask the Expert interviews; Students ask questions of experts in the topics of study
 - Cartoons and hot spots
 - Interactive games
 - Integration of the topic with literature

8. Information and Communication Technology Outcomes

Teachers are encouraged to refer to the ICT Program of Studies document from Alberta Learning (2000) for a listing of expected outcomes at various divisions. With a minimum of planning, teachers can implement Zoology Zone and with appropriate follow up in

assessment and student assignments can successfully address many of the ICT outcomes identified for division one (and two) students. The three main categories of General Learner Outcomes (C: Communication, Inquiry, Decision Making and Problem Solving F: Foundational Operations, Knowledge and Concepts; P: Processes for Productivity; and) can be incorporated with the use of Zoology Zone. Teachers may find it useful to refer to the Alberta Learning document Illustrative Examples to Accompany ICT Program of Studies (1998). Many of the examples for division one ICT outcomes refer specifically to the grade 3 Science Topic E: Animal Life Cycles. Rubrics for assessing student progress in the ICT outcomes in Animal Life Cycles are included. Teachers may also find the Alberta Learning document Classroom Assessment Tool Kit useful for assessing student performance on both ICT and curriculum expectations. This document contains rubrics and templates integrating ICT outcomes with specific subject learner outcomes.

9. What is useful to know when using Zoology Zone?

Refer to the sample screen of one learning activity (See Diagram 1). The purpose of the key areas on the screen are described below:

Top Menu Bar

- File:** Pull down the **File** menu and find options to go to:
- Site Map: This shows which screens the user has visited. The site map can be printed at any time.
 - Reset to New User: This allows a new user to begin a new site map.
 - Print the Screen
 - Quit
- Internet:** Pull down the **Internet** menu and find options to go to:
- Identified sites for further study on the Internet
- Library:** Pull down the **Library** menu and find options to go to:

- Glossary: Lists alphabetically all terms in the resource
- Games: Presents the site map of the CD ROM and highlights each of the games with a Red Dot.

Workshop:

Pull down the **Workshop** menu and find options to go to:

- Explorations: These are suggested activities to be carried out away from the computer and include data gathering, organizational charts and suggestions for field activities.

Ribbert's Home:

Ribbert is the friendly frog who serves as a guide in the Zoology Zone series. He lives in the top right hand corner of every screen and can be accessed by clicking on Ribbert. He will provide assistance and entertainment at every click and can be put back to his house by clicking him off when he moves to the full screen. Ribbert is a curious fellow and has many antics to keep users amused. Once he has been accessed wait and watch him for some special surprises.

Zoology Zones:

The ZONES are colour coded boxes along the right hand side of the screen. Each zone represents one major focus of study of the animal featured on the CD ROM.

- The **pink** zone is the **All About Me** zone. Pull down the menu in this zone and get a listing of all the learning activities in this zone. You can go directly to any of the activities by clicking on the activity.
- The **yellow** zone is the **How I Grow** zone. Pull down the menu in this zone and get a listing of all the learning activities in this zone.
- The **green** zone is the **Where I Live** zone. Pull down the menu in this zone and get a listing of all the learning activities in this zone.

- The **orange** zone is the **How I Eat** zone. Pull down the menu in this zone and get a listing of all the learning activities in this zone.
- The **blue zone** is the **Did You Know?** Zone. Pull down the menu in this zone and get a listing of all the learning activities in this zone. This zone provides trivia questions posed by young children and tests student learning in all the other zones. Following each trivia game there is an explanation of correct responses.

Teacher Note: It may be helpful to review the design of the program with students early in the unit of study.

Learning Activity Progression Bar:

Below each learning activity in which the student must make choices to demonstrate learning, the correct response is rewarded with a portion of the assessment bar turning yellow. If the response is incorrect no progress is marked on the assessment bar. After all the correct responses are entered the assessment bar turns completely yellow and the narrator congratulates the student for accurately completing the exercise. In all learning activities, if a student is finding the activity too difficult, an option exists to have the activity solved on the screen for the student. This is done by clicking on the **SOLVE** button on activity screens.

Page Progression Bar:

On the bottom right hand corner of each screen is a black bar. It is divided equally into the number of pages in the section. When a student visits a page or completes the activity connected to the page, the progression bar turns

yellow. Pages can be turned (or skipped) by dragging the “page indicator” forward or backwards.

Bottom Menu

At the bottom of learning activity screens there are three buttons:

- **Restart:** Allows you to begin the program again from the introductory song and title screen.
- **Intro Screen:** Allows you to return to the introduction screen opening the program
- **Title of the CD ROM (Spiders, Bears, Raptors):** Click this button and return to the main menu screen of the program.
- **Title of the learning activity on the screen:** This title corresponds to the title of the activity (section) listed on the pull down menu of each zone.

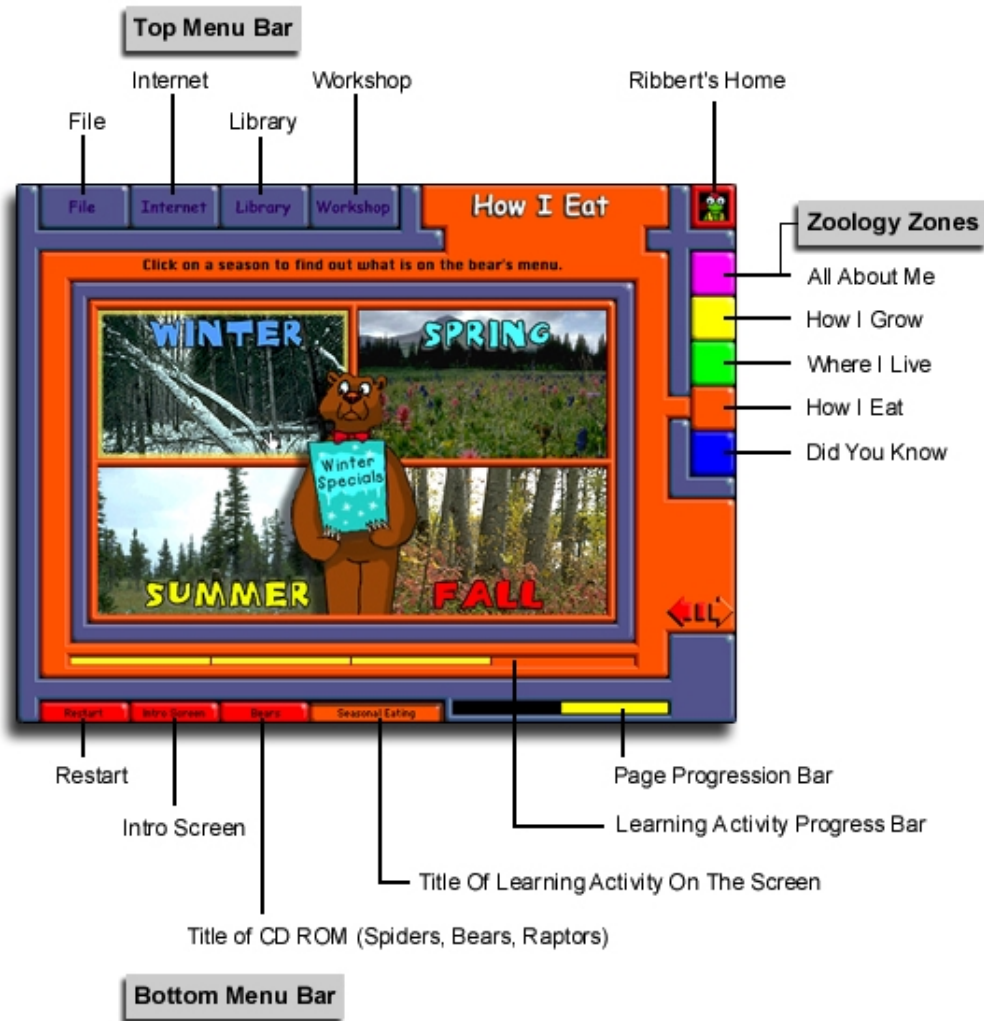


Diagram 1

10. Extending Learning

Used independently, Zoology Zone provides learners with quality instruction and guidance. However, learning can be extended well

beyond use of the resource to enhance the overall learning experience for the student. Teachers are encouraged to have students:

- carry out the suggested explorations
- compare and contrast one animal of study with one or two other animals.
- develop their own multimedia presentation on an animal of choice by using PowerPoint, Hyperstudio or some other presentation software.
- use the Zoology Zone resource as a template for a presentation made by the student and aim to incorporate one or more of: Ask the Expert, pictures and films, accurate text, suggested explorations, viewing of life specimens.
- utilize the internet to learn more about bears, spiders and raptors or to explore different species of these animals that were not addressed in the Zoology Zone CD ROMS.
- use word processing, spreadsheets, or databases to demonstrate knowledge about the animals of study.

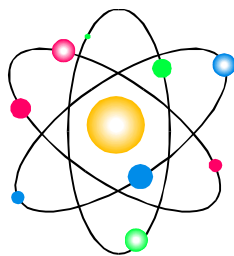
11. Teaching Tips

The following suggestions emerged from field testing the resource and may be helpful for teachers:

- Partnering students worked very well, also groups of three.
- When all students had their own CD ROM use of headphones was helpful in noise control.
- Brainstorming at the beginning of the unit to find out student prior knowledge about the unit of study helped frame possible research questions and direction for what students needed or wanted to learn. This process allows students to seek some of their

own answers to questions that are posed. Later in the unit, coming back to the questions assisted in clarifying incorrect information students may have had regarding the various animals of study. (e.g. spiders are scary, bears sleep soundly all winter) and also served to motivate students to explore further research to find out things that they did not know or to investigate into new dimensions of study that emerged from student experiences with the CD ROM..

- Teaching the unit in spring or fall had advantages in that the animal activity of spiders, bears and raptors was greater in the warmer months and provided more possibilities for field tests and explorations.
- As a summation activity for the unit, and an assessment of student learning, have each student produce a research project on an animal of study of their choice (either within the groups of Bears, Raptors or Spiders) or from other groups (e.g. Fish, Reptiles). Have students use the instructional design from Zoology Zone as a template for the research study. They may want to include a text section (use the Internet for facts and pictures), an Ask the Expert section, some Trivia questions and a game. If the report can be put into a multimedia format (use Hyperstudio, Powerpoint or other multimedia application programs) many of the ICT outcomes will be met for both division one and division two.



Enjoy Zoology Zone!