

Microware Review

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The Digital Field Trip to the Wetlands by Digital Frog International, Trillium Place, RR#2, Puslinch, Ontario, NOB 2J0

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Reviewed by Dell Franklin

The Digital Field Trip to the Wetlands is the first in a series of "field trips" produced by Digital Frog International. The virtual tour of a bog environment is the flagship portion of the program with four other major topics that would be of interest to a young ecology students.

The package contains the program on compact disk, an instructor's guide and a student's guide. The instructor's guide is a brief introduction to the values and uses of the package followed by a copy of the student's guide with answers. The learning objectives are clearly delineated in the instructor's guide and the student's guide. The student's guide also contains a brief introduction to the workbook and a series of questions providing guidance on how to use the CD. This section is followed by a series of lists, rules and questions (with answers) which are generic enough to be used on any field trip to a wetland area but which can also be used to explore the CD. Lastly, a set of study questions are provided to reinforce the material found on the CD.

This package has been designed for a grade 10 age group. The ecological approach is appropriate for study units in chemistry, biology, geography and environmental science. As suggested by the teacher's manual, this program could even be used as a supplement to a language arts program because the text in the glossary is reinforced by a digital sound pronunciation of the word.

Unfortunately the attempts at humor in the student's guide border on the sarcastic. For example, the equipment list for real field trips contains the phrase: "Knapsack (unless you have more than two hands)"(p.2). This style detracts from the more meaningful examples regarding mosquito repellent, floatation devices and pens.

The Study of a Bog

This section of the program contains three major foci: Formation and Succession, The Bog Food Web, and Adaptations in a Bog. Each of these are separate and the learner is free to choose the order and pace to proceed.

The Formation and Succession of Bogs is a tutorial that has two animated segments describing glacial formation and formation by beaver ponds. These contain higher order concepts involving geological time lines and are very clear and concise.

The immense span of time is functionally handled by the animation format and is reinforced by a moving time line along the bottom of the screen. These animations will play continuously or increased learner control takes place with the option of sliding the time line. A negative feature of the animations is the duplicity which takes place as the text is read to the learner. An increased form of learner control could be where the learner hears a different content line and/or has the option to turn the sound off.

The Bog Food Web is definitely the largest content area of the section The Study of a Bog and is also the most interactive of the three. While the five tutorials: Food Chains, Food Web Energy, Producers, Consumers and Decomposers are all linear with text reinforced by graphics of each concept, the species examples used are hyperlinked to the organism screens. The organism screens are similarly available from various other sections of the program and provide the learner with a wide variety of examples of species found within wetland areas. The Bog Food Web section also contains the Bog Food Web Game where the ecological concept of food webs and food chains are reinforced by linking consumers with food sources. In this screen, the learner may also hyperlink to the organism screens of each species in the game. Only correct links are allowed and the user can check the accuracy of their web at any time, receiving a number of correct links out of a total number of links. Furthermore, the score screen allows the user to view the total correct links highlighted, the links they had correct as well as the links by species.

In Adaptations in a Bog, there are two main sections. The section Adaptations in Animals has interesting examples of bird species and their adaptations to the winter environment. The learner interacts here by having to choose which birds do not migrate and select, on a different screen, where their food source may be located. This is an effective, however there are a large portion of adaptations among different species which are ignored, for example amphibian breathing in water environments. While it would be unreasonable to expect examples of all species in a wetland, the instructional design should have allowed for animals and insects to be shown rather than birds alone. The second section, Adaptations in Plants, also has interesting examples of interaction however there are few previous cues which would help a learner select how bog plants assimilate nitrogen from their environment. Again, textual feedback is used for incorrect answers with a game format used on a different screen showing the actual method the plants have adapted. Once again, the two specific types of plants used are an inadequate sample of the wide range of plant adaptations within a bog environment.

Wetland Types

This section has a variation on the graphical interface used. It begins with a split screen with four examples of wetland types shown and a description box in the middle. In the box is the options of playing the Wetland Types Game or viewing Other Classification Names for wetlands. By clicking on a photograph of a type of wetlands, the user is shown a diagram and photographic example for each type. This is the extent of the examples except for the peat lands example, which the designers break up into fens and bogs. This choice was content based as these two types are shown to have distinct similarities with an interactive comparison utilized. This interaction takes place via a split screen of the two types and if the learner clicks on an element in either photograph the program provides either a text or graph explaining the differences.

In the game the learner is shown photographs of various wetlands and then clicks on the multiple choice area. This area uses the metaphor of a remote control unit (RCU) and on this unit feedback is shown by several methods. A continuous score is shown on the RCU and if the learner is correct on the first try a higher score is given than on subsequent tries. Four tries are allowed with decreasing scores for each attempt and hints for each attempt are supplied.

Mechanisms of a Wetland

This portion of the program has the least amount of interaction for the learner. The more abstract concepts of Nutrient Cycles, Groundwater, Productivity, Wetlands, and Erosion and flooding are explained through text and, for the last three, some animation which the learner controls through buttons. The interface is consistent with the rest of the package.

Our Endangered Wetlands

This segment of the program web contains the sections Migration, Wetlands as Habitat, Conservation, and Pollution. The navigation scheme of the majority of the program is similar here with the initial screen showing the jigsaw sections. The migration focuses on birds and the initial screen is a text introduction with the example species graphically listed below. By clicking on the bird the learner, sees a set of folders with pictures, maps, and possible movies of that species. On that screen is also hyperlinked text describing habitat, behavior, range, food source, and migration. Also listed are the size and Latin name, the latter having a popup showing the taxonomy of that species.

The Wetlands as Habitat has a couple of unique features. While it shares the same appearance as Conservation and Pollution, its text is first person with the species addressing the learner. The learner also has the option to hear the species read the text to them in a variety of voices, both male and female. The content of this section is presented as a series of species giving their reasons for the conservation of wetlands.

The Conservation area provides the learner yet another variation on control as each graphic example allows the learner to choose between text answers to three questions: "What is it?", "What effect does it have?", and "What can we do?". These questions are referring to the various elements of human activity that affect wetland conservation. Pollution provides the learner with the least interaction as there are no responses required. The examples of sources of pollution are reinforced by pop-up text.

The Field Trip

The virtual Field Trip to the Bog has some of the most interesting characteristics of the program. Upon clicking that piece of the jig-saw you are given the option of seeing where the bog is located. This geographic exercise requires the learner to find North America, Canada, Ontario and Algonquin Park, in order, before seeing an aerial view of Cloud Lake. Once there you begin your trip by seeing a three dimensional map of the area, a set of field notes (text in a graphical binder), and a small screen. On the screen the learner views a QuickTime video which allows the control and navigation. The learner can navigate to several markers within the movie, which are also shown on the map. At each marker, a set of notes and names of species which are hyperlinked to organism screens. The learner may also zoom in and out to view specific areas of the screen as well as have the view pan in any direction. This allows the learner the unique perspective of seeing where she/he has been. This is truly an example of a virtual experience.

The instructor's guide states "the Field Trip to the Bog is an excellent opportunity to synthesize knowledge by making observations and by analyzing those observations" (p.3). Making observations could be greatly enhanced if the screen display were larger and perhaps having the map as an option. Also the compression ratios on the graphics are not enough to allow for much enlargement. With the option to zoom in on objects, one would assume that the objects would not pixellate readily yet very little viewable enlargement is available.

Conclusion

The Digital Field Trip to The Wetlands is an interesting ecological package which is highlighted by a virtual field trip to a bog environment. This package utilizes a wide variety of interactive strategies to maintain attention and promote engagement with the learner. A few flaws in navigational strategy exist primarily due to the misguided assumption that student's always read the textual material supplied.

The content of this program is extensive, however some topics have been omitted or edited out. For example, the programmers chose to ignore a wide variety of wetland species when discussing adaptations and this would not go unnoticed by the experienced student and may lead to misconceptions by the novice. Many content areas have detailed textual accounts and highly interactive learning strategies while other areas leave the impression that production deadlines may have caused these areas to be compiled in a hurry.

Notwithstanding these drawbacks this software package provides a unique learning experience for young people concerned with the environment. Many people do not have the economic or geographic ability to visit wetland areas and The Digital Field Trip to The Wetlands uses the latest technologies of computer based instruction to give a very realistic account of the wetlands experience.

Recommended System Requirements

The hardware/software requirements are clearly labeled on the materials accompanying the CD. Basic requirements are:

PC version- a 386X/25 or better, 8 MB RAM, CD-ROM drive, Windows 3.1, VGA/SVGA displayin- 640x480 256 colors, with a sound card recommended.

Macintosh - LCII or better (16MHz 68030 machine), 5 MB RAM, CD-ROM drive, System 7, screen capable of displaying 640x480 256 colors.

Microware Reviewer

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