

THE HONEYBEE ACROSS THE CURRICULUM

Sue Hart

This paper describes a teacher aid programme on the honeybee, which is considered an ideal subject for cross-curricula study. The rationale of development is outlined and the content of the tape, wall charts and handbook are discussed. Examples from the teacher's handbook are given.

INTRODUCTION

ECO LINK came into being as an activity centre as the need for environmental resource material became increasingly verbalised by black educationists at all levels. The aims and ethic resulted directly from the urgent need for *back to basics* material, as expressed by a senior school inspector:

"Give us courses as a resource for our teachers that will help us to love our land. After love will come care and after that the eagerness to learn more, to protect and conserve. Begin with what is related to our needs and with subjects familiar to our people, of any age."

ECO LINK produces Teacher Aid Courses ('*Reach Out*') which are related, easily identified and naturally encompassed in our overall theme: interdependence between man and his environment.

AIMS OF COURSES

- To:
- impart knowledge of our natural environment of which man is a part.
 - stimulate caring interaction with the environment, a survival factor for mankind.
 - impart ideas in support and extension of topics across the curriculum.
 - develop skills and attitudes necessary for the understanding of man's place in the environment, and to create job opportunities.
 - generate a sense of joy, adventure and inquiry in the study of Natural Science.
 - use this enrichment course as a model for assembling other environmental study programmes, with special attention to the Outdoor Classroom.

COURSE NO. 1: 'THE HONEYBEE'

The amazing, essential honeybee 'arrived' as soon as our team was ready for action - beamed into our consciousness in the same effortless manner as do all answers to questions when thoughts are permitted to flow. We could hardly have been gifted with a more exciting, mind-extending subject; one vital to all people and at the same time serving as a perfect model for environmental studies. The honeybee, then, was chosen for the following reasons:

1. It is a wild creature, familiar to everyone, in country or in city.
2. It serves as a model for interdependence within its own large community and with the whole environment in which it lives.
3. It is remarkable for:
 - its division of labour
 - population control in times of food shortage
 - skill in architectural design and home building
 - its unique, complicated communication system
 - economy in food intake
 - the vital role that it plays in man's agriculture and economics.

In summary, the honeybee is familiar, traditionally useful and a natural resource in itself. By focusing on the unique life-style and extraordinary achievements of one of Nature's smallest inhabitants, we acknowledge man's own insignificance in the light of the order, diversity, mystery and beauty of Creation. It is not possible to study the kaleidoscope of the honeybee's life without a sense of deep humility and acute Creator consciousness.

The Honeybee Enrichment Course has been produced in three interlinking, yet separate, units:

1. A teaching tape.
2. A series of five wallcharts.
3. A teacher's handbook.

The Tape

The honeybee song, composed and sung by Nicholas Mthaba, introduces "the world of the honeybee".

The Honeybee Song

*Come on BROTHERS
BUZZ BUZZ
Come on sisters and everyone
Let us dance
Let us sing
Let us dance
For the pollinator
Let's rejoice for all of Nature
BUZZ BUZZ
The Honeybee.*

*We are the children
BUZZ BUZZ
Nature is mine
And Nature is yours
Let us dance for the busy bees
Collecting nectar and
Making sweet honey
All day long
From flower to flower
So ... Let us praise
The beauty of Nature
BUZZ BUZZ ... The Honeybee*

*Save the world
And save the bees
Save the world
And save us all
Always care for the living world
Caring and sharing for evermore
Sharing and caring for the living world
BUZZ BUZZ BUZZ buzz buzz*

The tape, which looks at the life and ecology of the honeybee, is illustrated with natural sounds. It is a half hour tape (15 minutes each side - English and Siswati and can be translated), supplied with a back-up, illustrated 'wrap-around'.

The Wall Charts

1. Anatomy
2. Insects/Fascinating Facts
3. Honeybee at Home/Home Industry
4. Interdependence
5. Communications/Bee Watch.

This series of five serviceable wall charts are two dimensional creative teaching aids, which serve to present the topic in the classroom in a vital and informative manner. They are designed to stimulate continuing interest, further research and practical follow-up activities, and can be used in conjunction with the tape lesson.

The Teacher's Handbook

This is an illustrated, two-colour, comprehensive teacher guide in A4 size. It provides extensive back-up information for the charts and tape lesson. The introductory section describes the theme and aims of the course with a guide to its presentation and use *across the curriculum* (primary school levels). The handbook contains an 'across the curriculum' turntable, so that the teacher can direct each chapter content (marked on the inner circle) to any school subject marked on the outer circle. See Figure 1. Each chapter contains a specially selected 'activities' section to relate to the subjects in the curriculum. The seven chapters cover the life and role of the honeybee since its first association with man.

An important feature of the handbook is a supplement leading to a life skill: *How to be a Beekeeper* (taken from *The Beekeeping Handbook* by B. Clauss, L. Tiernan and K. Mosinyi). A further supplement provides the latest scientific research on the use of the honeybee as an indicator of pollution. The Handbook's appendixes provide information on further reading, honeybee authorities, a glossary, an index of words and illustrations, acknowledgements, credits and sources.

A SUMMARY OF CHAPTERS WITH EXAMPLES OF ACTIVITIES

Chapter One: The Honeybee Across the Ages, traces the story of man's close association with, and reverence for, the honeybee, from early cave dweller to Egyptian Pharaoh, ancient Greek and Roman. We look at early rock paintings, beehive motifs on churches, tombs, tapestries, coins, jewellery and artefacts. See Box 1.

Chapter Two: The Honeybee with the Insects - the nature of insects and their classification. The study of insects is the most rewarding, most fascinating, natural science occupation. You don't have to go far - not a step further than your own doorstep - to find living specimens for nature topics. The humble citizens of our earth hum, drum and buzz everywhere around us, performing their tasks with the inherited purpose and wisdom of their kind. See Box 2.

Chapter Three: Anatomy - Structure and function. This details the anatomy of the honeybee and the functions of parts of the body.

The chapter contains for example, a diagram to be completed by pupils, followed by questions relating to the anatomy of the honeybee.

Chapter Four: The Honeybee at Home. After the swarming, the building of the nest, the establishment of a new community and the mating of the queen and drones, we observe the development of the queen, drone and worker from egg to adulthood, and their division of labour within the nest.

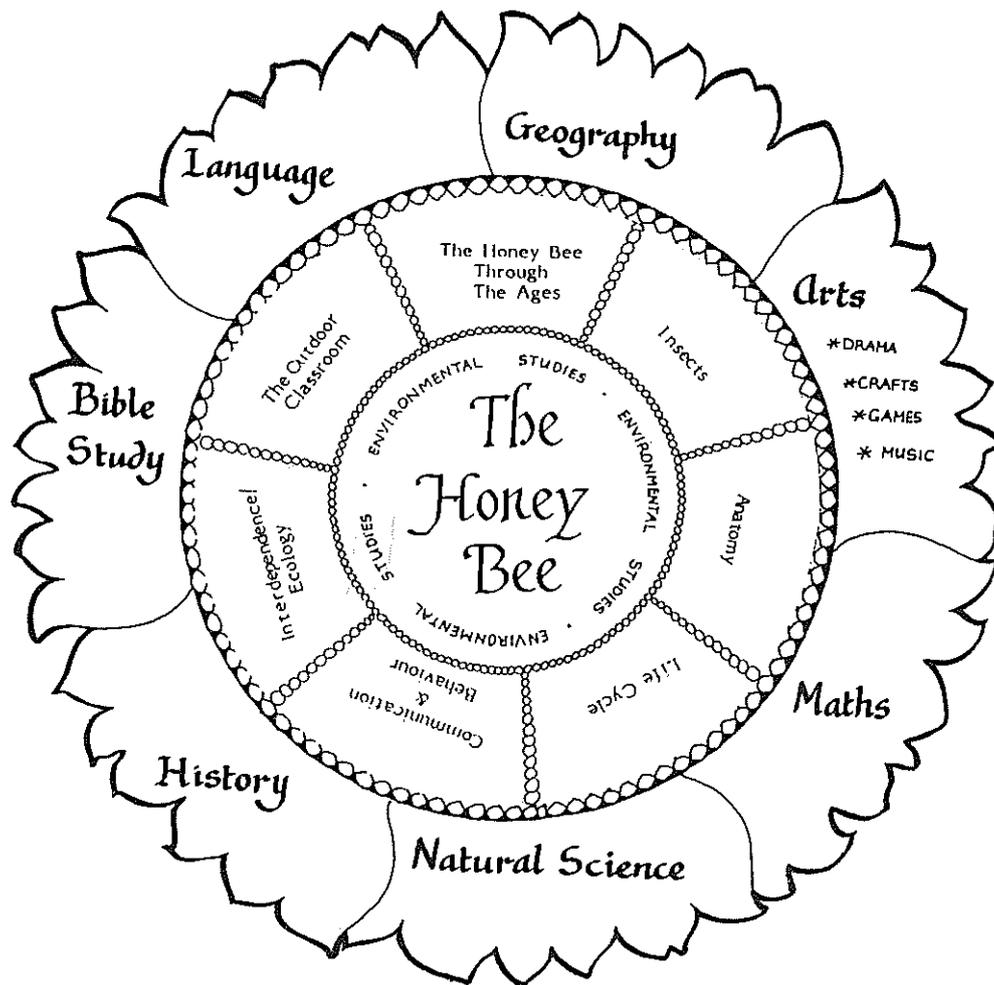


FIGURE 1 'Across the curriculum' turntable.

BOX 1

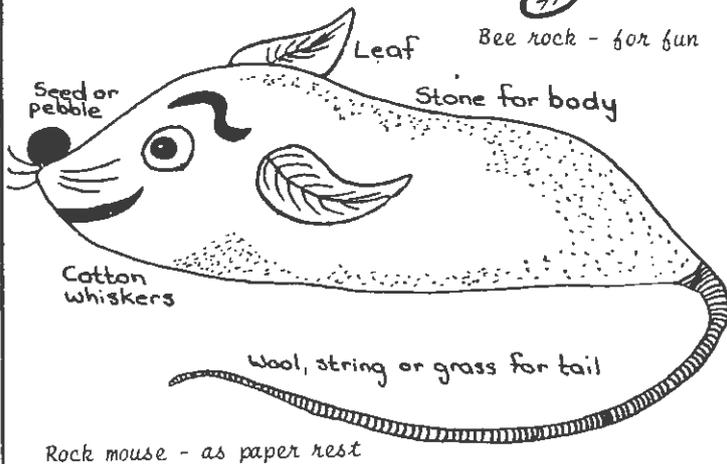
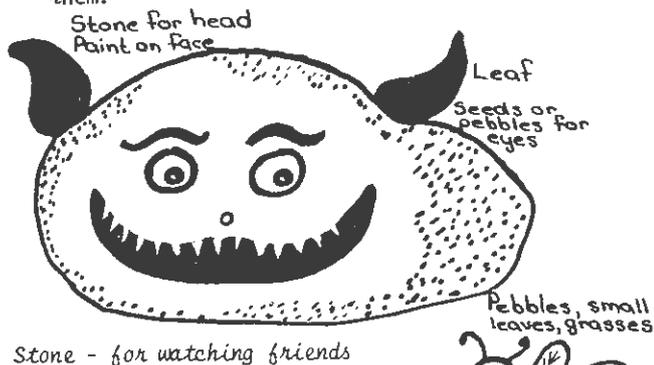
Lower Primary

Activity suggested for: History, Art & Crafts.
Topic: Rock Artists
Purpose: Hand dexterity and creativity.

Material:
Stones, leaves, grasses, seeds, wood, paint, paint-brushes, glue.

Method:

1. Go outside and find a stone or piece of wood similar to a person or an animal.
2. Choose leaves, grasses, seeds and pebbles to stick onto your stone/piece of wood for eyes, nose, ears, or any other body part.
3. Stick on grasses, wool or string for hair and/or tails.
4. Paint on faces.
5. Explain what each animal/person that you make does. You could make up stories about each of them.



We see a perfect example of interdependence and the sharing of community tasks: builder, cleaner, nursemaid, undertaker, store lady, 'air conditioner' (maintaining the nest at an even temperature) and the nest guard protecting the home against intruders.

Amongst the material contained within this section are mathematical and artistic skills based on the development of a hexagon from multiple triangles. The shape of the hexagon is further explored in the making of a mobile.

Chapter Five: Communication - An insight into the extraordinary system of honeybee communication through scent, sight, sound and movement. We travel with the forager to the nectar source, returning to the nest to take a 'bee's view' of the most amazing of all methods of communication - the honeybee's dance, describing perfectly the distance, direction and value of the nectar source. See Box 3.

Chapter Six: Interdependence - interdependence within the nest and within nature as a whole; the order and cycles in nature, amply illustrated; the delicate interlinking of the whole web of life, as described by Chief Seattle in 1855:

All things are bound together
All things connect
What happens to the earth
Happens to the children on the earth.
Man has not woven the web of life.
He is but one thread.
Whatever he does to the web,
He does to himself.

This chapter discusses the bee's role in agriculture and economics and man's loss of kinship with all life, focussing on environmental stress caused by

BOX 2

Lower Primary

Activity suggested for: Drama and music.
Topic: Insect sounds.
Purpose: To find out how sounds are made.

Material:

Tape Tesson of honeybee.

Method:

Students imitate insects, using voices and bodies.

1. **CRICKET:** Scrapes wings together behind its body. Children should rub their arms together behind their backs, while making a cricket noise. 
2. **GRASSHOPPER:** Scrapes wings with legs. Children should stand with their arms hanging at their sides like wings, and then try to rub their legs against their arms. Encourage them to make a grasshopper noise. 
3. **HONEYBEE:** Wings vibrate together. Children should stand, holding their arms out in front of them, and then rub their arms together as quickly as they can, making a "buzzing" noise. 
4. **CHRISTMAS BEETLE:** Rubs legs together. Ask children to lie down on their backs, lifting their legs a little off the ground. Rub legs together quickly, making the noise of a Christmas Beetle. 

Question:

Why do insects make sounds?
To attract females, to declare their home ground, and to speak to their neighbours.

BOX 3

Lower Primary

Activity suggested for: English Language, Music.
Topic: Honeybee Talk.
Purpose: Words and sounds.

Materials:
Blackboard, pencils and paper.

Method:

- Write the word 'Onomatopoeia' on the blackboard. Ask your students who can say this big word. It is pronounced: "On-o-mat-oh-pee-yah". Does anyone know what this word means? It means words that sound like the meaning of other words. Here are some examples:

Bees "buzz" (the word "buzz" sounds like the sound that bees make). Other examples are: ducks "quack", snakes "hiss", frogs "croak", whips "crack", the wind "whispers", leaves "rustle" and dogs "bark".

Think up some more exciting sounds and then make up a song with the words. Act out the words. For example: jump like frogs and make a croaking sound.

- Who knows what 'Rhyming' means? Write this word on the blackboard. Explain that it means words that match each other in sound. Give some examples:

"The *beehive* is *alive*." "Honey is *runny* on hot toast." "The *pot* is *hot*." "The *Queen* is *serene*." "A *dove* means *love*." "There is *power* in a *flower*."

Underline all of the rhyming words. Ask the students to help you make up rhyming songs about the honeybee. Here is an example:

CAN I CHOOSE?

Can I be a bee?

*to buzz and brizz
drum and drizz
drone and moan
gasp and rasp?*

Can I love honey and be very funny?

Can I dance and sing
or cry ding-ding-a-ding?

Be CLEAN

Be SEEN

Be STRONG

Be WRONG?

Can I be CARING and SHARING

All day long?

Yes, I CAN be a bee.

And I LOVE to be ME!

Questions:

What is the meaning of the following words from the rhyming poem?

- CHOOSE? (This means to make a choice - good or bad. To decide.)
- MOAN? (To make a low, sad noise. Often this means to complain.)
- FUNNY? (This usually means to make other people laugh.)
- DANCE? (To move joyously, happily, to music.)
- SHARING? (To be able to give to others, and receive from them.)
- STRONG? (To be healthy, and not easily upset.)
- CARING? (To love and respect others. To be interested in them and to protect them.)

Explain to the students that honeybees are caring about each other and look after each other. They share the work that they do and they also share their food with each other.

pollution, deforestation and overgrazing. It stresses the need for environmental education at adult and student level to inspire new attitudes and the development of skills which relate to the environment. Activities centre around the food web.

Chapter Seven: The Outdoor Classroom (Bee Watch). A natural sequence to the first six chapters. The teacher can more confidently proceed to the next most important step of natural science teaching: the practical application of the indoor classroom lessons in the *outdoor classroom*.

This section stresses the non academic, informal outdoor education process; contact with nature, urban or rural, wilderness or city parks, and back gardens. This can be said to be the real *starting point* of holistic environmental consciousness. To study the honeybee in the classroom creates no more than passing interest. To *observe* the worker bee moving from flower to flower, collecting nectar and brushing the pollen from its body into its pollen baskets, is a lesson of life.

This chapter is an exercise in *AWARENESS*. As our senses become more acute, we become aware; not only of the honeybee, but of the scents, sounds and movements around us. As our awareness expands, we ourselves become *ONE* with the honeybee and with the whole of nature, re-establishing our kinship with life.

In this section we consider the devastating effects of man, the disrupter and destroyer of nature and natural resources.

Supplement: How to be a Beekeeper.

All that has been learnt about the honeybee may lead a student quite naturally to a desire to develop the skill of *beekeeping*. This beekeeping supplement gives in great, step-by-step detail, how he may go about acquiring such a skill. He is shown how to build a hive, catch a swarm, and care for it. But, as a beginner, he is urged first to seek professional help.

We have been advised that the honeybee sight and sound course - in whole, or part, or adapted - is suitable for all school levels, including pre-school, and for all regions in education centres, museums and other environmental education and training colleges.

ACKNOWLEDGEMENTS

We gratefully acknowledge the encouragement and expertise received from:

Mr. M. Johannsmeir, Director, Bee Station, Department of Agriculture, University of Pretoria.
Dr. Irma Allen, Environmental Advisor, Primary Schools, University of Swaziland.
Mr. Michael Cooke, Editor, SA Bee Journals.
Mr. Dave Falconer, Beekeeper.
Mr. and Mrs. D. Marcbant, Honeybee Foundation.

And, for the Beekeepers Handbook, Messrs. B. Clauss, L. Tiernan and K. Mosinyi, Agricultural Information Service, Gaborone.

ECO LINK wishes to co-ordinate and share its work with any other centre or individual.

*Leopard stalks in morning light
Life flees into dawn
Antelope in flight*