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ABSTRACT

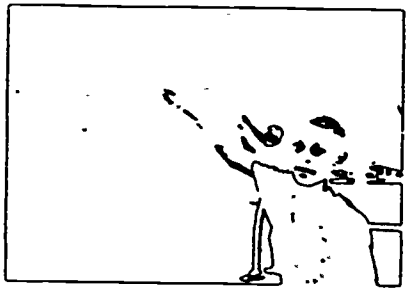
This resource guide, a consortium of environmental education specialists from state education departments and resource management agencies in the 13 western states, sets guidelines and recommendations for the production and use of environmental education materials developed by resource management agencies and organizations. The council outlines a procedure to assist in determining the who, what, where, when, why and how of resource material production. Among the topics covered are: the philosophy of the program, kinds of resources, student interaction with the materials, availability of resources, specific approaches for use of resource materials and the Strandsearch. Learning activities (tasks) for students are included. (BT)

Western Regional Environmental Education Council

RESOURCE GUIDE

Resource Materials

A Guide to Production and Use



Developed by the Western Regional Environmental Education Council, Incorporated. Members come from State Resource Agencies and Departments of Education of the Thirteen Western States.

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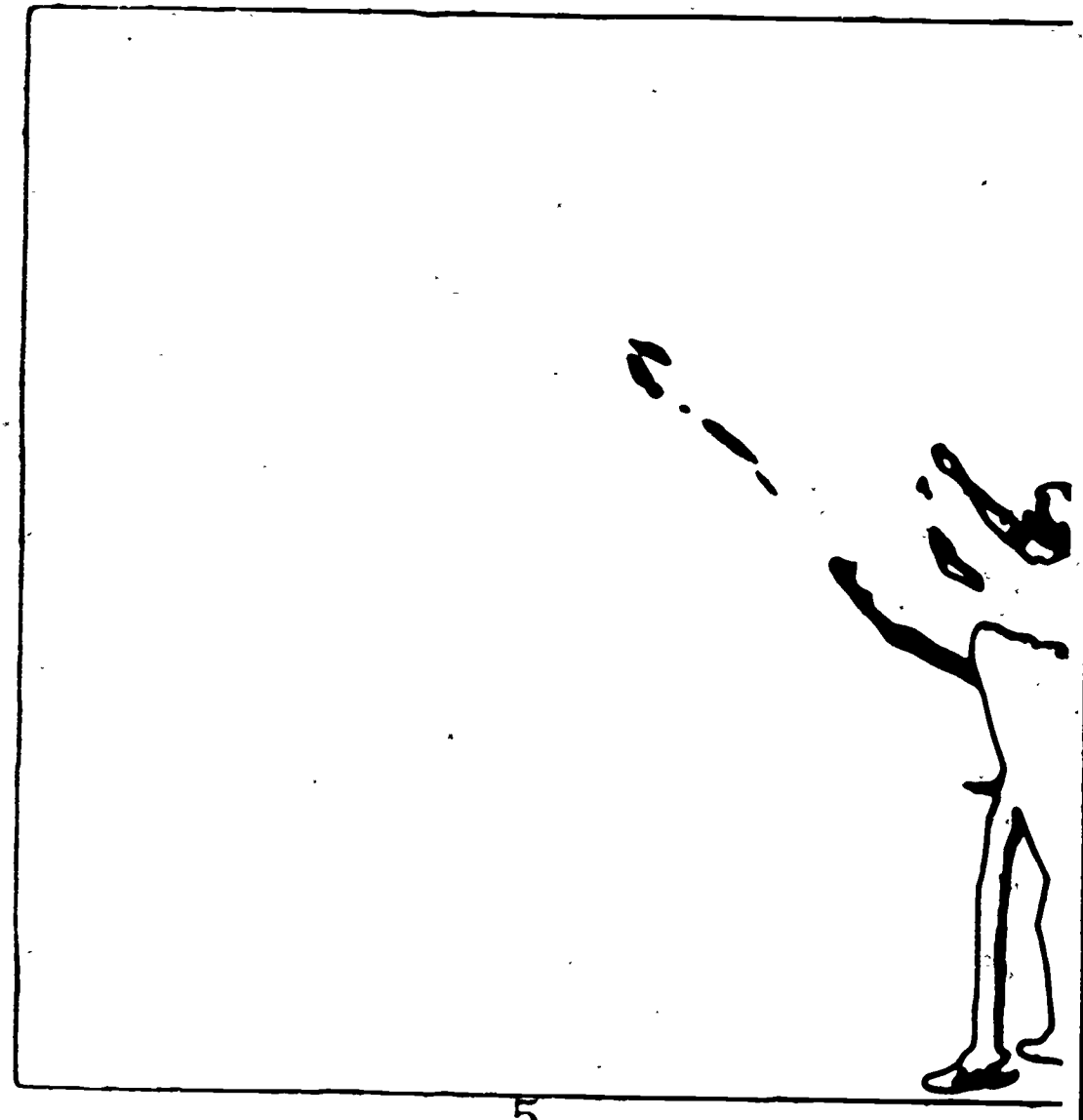
GUIDELINES AND RECOMMENDATIONS FOR THE PRODUCTION AND USE OF ENVIRONMENTAL EDUCATION MATERIALS DEVELOPED BY RESOURCE MANAGEMENT AGENCIES AND ORGANIZATIONS

Many resource materials related to the environment are available to schools, clubs, youth groups and the general public. Many more are being produced each year to meet an ever increasing demand for information. Among those who are called upon to provide these materials are governmental agencies involved with the management of natural resources, business, industries and private groups. The purposes behind the production of these materials vary widely, but basically they fall within the broad context of only a few categories: to enhance the producer's public image; to inform the public about the activities, policies and problems of the subject the producer deals with; or to promote adoption and use of the producer's products, services or philosophy.

To assist those with the responsibility for the production of these materials and to set forth some suggestions relative to their use the Western Regional Environmental Education Council, a consortium of Environmental Education specialists from state education departments and resource management agencies in the 13 western states, has developed the following set of guidelines and recommendations.



PRODUCTION OF RESOURCE MATERIALS

Initial Considerations

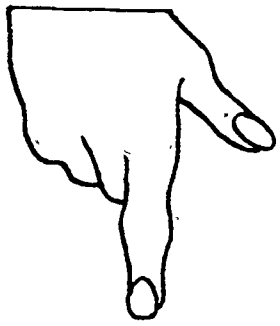
Before you make a decision to become involved in the production of resource materials related to environmental matters, and before you spend time and energy on the technical aspects of producing these materials, we suggest that the following three questions be given sericus consideration:

Does your agency or organization have a policy statement that clearly defines its involvement with, and commitment to, the environmental education concerns of its state or geographic area of influence? Such a policy statement can help determine the amount of money, manhours, and resources that your agency can invest in support of environmental education. It can also guide your choice of the type of support you will offer and the degree of interaction desirable with other agencies and individuals having similar concerns.

Does your agency or organization have a well defined and defensible statement of philosophy regarding environmental education and its relative role in the agency's broad, overall mission?

Is the resource material needed? In order to make the wisest use of all resources available within the field of environmental education, a concerted effort must be made to avoid duplication of effort among organizations having similar concerns and expertise. This involves researching existing materials and sharing these materials, ideas, and data. It also involves analyzing reques for assistance and channeling them to the most appropriate source of information.

If the answer is *yes* to these three questions and the decision is made to proceed, you can direct your attention to the technical aspects of production and the choice of media and technique to be used.



We of the Western Regional Environmental Education Council have attempted to outline a procedure which can assist you in determining the who, what, where, when, why and how of resource material production. We hope you find it useful.

Technical Consideration

DETERMINE PURPOSE OF THE MESSAGE

Factual. Virtually no one can question its validity. It is generally numerical in form with no analysis of the numbers. *Informational.* These materials offer data and interpretation. The data are as complete as relevance requires. Interpretations are offered not to sway opinion but to report analysis. *Manipulative.* Most materials fall here. Their purpose is to inform in a manner beneficial to the producer, to perhaps modify behavior or to create attitudes in the user or consumer. The producer often designs the material to be factual in the context of his point of view. From other viewpoints the information may be seen as limited, slanted or even misleading. Data presented are often selected to lend themselves to a particular interpretation.

ASSESS NEEDS

The field is currently glutted with a variety of environmental materials. The quality and accuracy of these materials vary widely. Is there a need for your new material? Is there a story that you must tell which is not currently available in some other form? If you re-invent the wheel will it roll better? We suggest that you first review available materials and avoid duplication.

IDENTIFY THE TARGET AUDIENCE

There is no such thing as the general public. There are many different publics. Each can usually get some use from material aimed at another group. Production of a periodical magazine or bulletin, for example, may appear to be aimed at a "general public" but in actuality it is not. Those who cannot read or who are too young to absorb the information are left out. So, too, are those who simply have no interest in the subject or no access to the material regardless of their interest. In producing material, select a primary audience if possible. You cannot be all things to all people with one piece of material!

ANALYZE TARGET AUDIENCE

What are the characteristics of your target group? Are they students? Elementary, secondary, or college? What is the age level, learning ability, handicap in understanding, special interest, background etc, of the target group? There is no simple way to decide which materials fit what groups. Research will probably be necessary when designing materials for a special group. Libraries contain materials on child psychology, publications of special interest that will give some acquaintance with the group, and a variety of other aids. Most state education departments and some local school districts have a staff specialist whose area of educational responsibility covers the resource with which your company, agency, or organization deals. If you are developing something you hope will be used by schools or teachers, before going to the expense of production, get this specialist's advice. An individual such as a teacher who would actually using the product could also give able tips.

DETERMINE FORM OF THE MATERIALS

Your budget is often the first consideration related to which form the materials will take. But even unlimited budgets require choices. Which forms will get the message across and are usable in the target audience program? Rank them. Analyze the cost for each. Make the decision. The cheapest, of course, is not always the best, nor is the most expensive. Format, sophistication, graphic design, and photo composition must be considered. The more attractive material, whether by appearance or gimmick, is most likely to be at least considered for use.

IDENTIFY DISTRIBUTION RADIUS AND METHODS

Your best production will be of no value if it is unobtainable or its availability is unknown. Most groups have a periodical intra-organizational newsletter or similar publication for all members. This is perhaps the best way to advertise availability of materials to a specific target audience. Be prepared to limit distribution of your materials to the area where the information is

pertinent. Do not feel obligated to send material where the information is not appropriate or useful. For such distant requests, it is most helpful if you can suggest an organization in that area, which might provide information on that locality. If the material furnished by your agency or group is the best or only source of local information on a subject, you should make some provision for providing quantities of the materials either free or at cost for classroom and other purposes. If this is not practical, you should provide permission to reprint in the material or make it easy to obtain from your agency. Copyright can protect the integrity of your material and prevents commercial pirating. It can also inhibit the legitimate use of the material by your target audience. A permission statement such as the following can allow for proper use as well as protection of your materials: "This book, or parts thereof, may be used or reproduced for non-profit educational use only. This permission does not include the alteration or change of context of specific phrases, sentences, paragraphs or statistical data. For information, contact:"

Materials and/or Techniques

At its Summer 1973 Conference in Jackson Hole, Wyoming the membership of the Western Regional Environmental Education Council pondered the notion of resource materials and the media and techniques through which the materials could be represented. Scores of man hours went into the development of the descriptions in this section. Still they are only tentative. There are no absolutes in materials production. An outrageous premise today may be the creative stroke of tomorrow, The medium or technique selected is, however, often vital to the success of getting the message across. Each form has some unique characteristics.

The purposes of the media and techniques described in this section are to DISPLAY: (1)data, (2) the results of data processing, (3) a value posture related to the processed data

OR

to INVOLVE the target audience in: (1) collection of data, (2) processing data, (3) valuing the results of data processing.

Determining which of these activities you wish to engage in will aid you in your decision regarding which medium to use in your presentation. Some of the media are more appropriate to particular functions than others. In this section we will explore the characteristics of various media and techniques which are used for environmental materials. We hope that this can aid you in your choice.

PRINTED MATERIALS

Generally speaking printed materials **deal with only one sense** and most require at least some reading ability. But they offer a tremendous variety of presentation modes. With the exception of lesson plans, the items included in this classification are **display-oriented** rather than involvement-oriented. They are agency vehicles for presenting data, interpretations or biases. They are extremely effective for those purposes.

Field data is a straightforward presentation of an agency's research findings or on-going program results. The information can be narrative or numerical. There is no interpretation. Typically the format is rigid and formal. Even if you are truly interested in using the data it can be pretty dry reading. This is a rich educational resource if

you are interested in supporting students in the process of developing the ability to interpret data. If you're afraid of them coming to the "wrong" conclusions then better give them something else. Use it to say numbers. Don't be afraid to dress up the format.

Fact sheets provide a "short course" on a subject. They are direct but can be oversimplified. Most often they offer a display of processed information. Often offered as interim position papers, they can provide students with study topics related to "in progress" work of an agency. If you need to be comprehensive look elsewhere. If an inexpensive overview is all that's necessary or the situation is liable to change this is a good bet. Try to include a bibliography so that further information can be obtained by the curious reader.

Pamphlets and leaflets are items which typically deal with single topics. They are most often used to display the results of data processing or related value postures. They can be attractive, direct, easy to refer to, simple, fairly low cost and re-usable. They are not very useful for dealing with in-depth topics, and they often suffer from a "throw-away syndrome."

Magazines are multiple topic pamphlets and are often used to keep an audience regularly informed of a range of agency interests and activities. They tend to be expensive but may provide sufficient public relations benefits to more than offset the costs of the regular staff which is required for success with this medium. A magazine can provide a vehicle to carry any of the other printed media. If you opt to produce one, explore its diverse potential for agency display and target audience involvement.

Posters are "grabbers" and have their greatest effectiveness as display vehicles for producer value postures. Posters which attempt to provide much data and a logical lesson development are better classed as pamphlets in poster format. A poster is an ideal item to provide exposure for a new program. It should somehow leave the target audience with the feeling that they would like to know/do more about the poster subject. Thus, posters can operate most effectively when additional resources or programs are readily available soon after the poster "hits the walls". Posters set the climate. You should be there soon after with something to do in that climate. If you decide to produce a poster be inventive. There are "dynamic" posters in the form of mobiles and other "weird" approaches available to you. If your message is so-so, "grab 'em" with the image or the format.

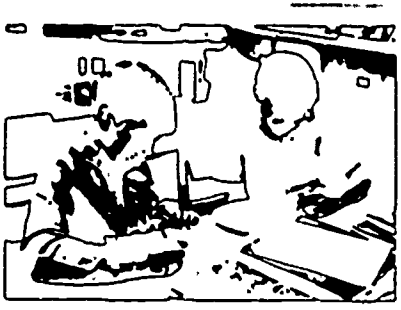
Many producers develop *lesson plans* for school use regarding their programs. These can be useful if the teacher wishes to adopt or adapt the producer's plan to classroom purposes. Such plans are likely to be ignored if they appear at cross purposes to the classroom direction. What is worse is that such plans can be adopted *even though* at cross purposes to the classroom direction. The handbook which accompanies this guide is designed to be a multi-purpose, non-lesson plan which will allow for most effective use of agency materials in the context of classroom educational programs.

ACTIVITY-ORIENTED CLASSROOM MATERIALS

The items in this section are usually designed to involve the target audience in data processing or developing/defending a value posture related to processed information. So if you get involved with these things better not have an axe to grind unless everybody's out to grind the same one. Your target audience will catch your bias right away, and if they don't like it or want to see both sides your effort can be counter-productive. If you want to support user involvement in decision-making or you feel pretty sure of your position when stacked up against alternatives then this group can be useful.

Contests are a time-honored approach to public relations and target audience involvement. They usually involve two

target groups: (1) the contestants and (2) the friends, relatives, etc. of the contestants. Some things to be aware of: (A) If a large number of contests are going on you had better have a beneficial, high quality affair and time it well from the viewpoint of the target audience. It's embarrassing to have a "no-contest". (B) "Build-up" to the finish of a contest is of prime importance and requires skillful timing, publicity and incentive. (C) Personal contact is the most effective tool for participation of contestants, judges and "the public". But be sure to "go through channels" at the same time.



Games and simulations provide for target audience involvement in situations paralleling real decision-making opportunities. Herein lies both their strength and their weakness. The effectiveness of such games is directly related to their perceived reality to the players. Some of the most effective games are produced by people in the context of the problem. Thus any game or simulation produced should provide for maximum input by the target audience. If the rules take more than a minute to read you're probably in trouble. Kids often adapt games effectively by ignoring the rules and developing them as they are needed. Games and simulations should provide opportunities to relate to real situations so further resources and suggestions should be identified or provided.

An excellent book which inventories and describes available games and simulations is *Learning with Games*, edited by Cheryl L. Charles and Ronald Stadsklev, Social Science Education Consortium, Inc. (Publication 150). Read this for ideas for your own game or simulation or to save yourself the work.

Color, Cut, Assemble materials are designed to be "involvement posters". (See posters description.) Ideally the target audience is "grabbed" by either the involvement or the product to delve further into the subject of the material. Effectiveness of these materials depends on how attractive the materials and the topic are and how available and pertinent are the follow-up materials and activities. This approach can be considered interdisciplinary, but if activity ends with the product it's probably just a bad art lesson.

AUDIO VISUAL MATERIALS

This category offers many good ways of getting a high-impact message across. In many cases this is the only way of letting users actually "see" a situation or problem. Information is easily presented through these media and little effort is required on the viewer's part. It is a very passive educational method and unless good preparation or follow-up is used, much of the potential value may be lost.

An ability to read is not necessary for audio-visual materials to be effective. However, these materials, once presented, may not be available for later review.

Ease of use is a prime consideration for producers contemplating development of A-V materials. Fewer pieces and less equipment provide for simple access, e.g. cassettes are preferable to reel to reel operation when sound or video tapes, films or filmstrips are involved (so long as the user has the necessary ...k or projection equipment).

Suggested Literature:
Planning and Producing Audiovisual Materials, Jerrold E. Kemp, Chandler Publishing Company, 124 Spear St., San Francisco, California 94105.

Films are suitable to large audiences, reusable, easily distributed; flexible in production, adaptable to television and attractive to audiences. They are also expensive, inflexible after production, often required to be broad in appeal and therefore superficial, difficult to control in production unless in-house and often quickly dated.

If you have a powerful message with broad appeal, lots of bucks and access to a friendly and cooperative film production studio then do it. The silver screen is a powerful place.

Filmstrips and slides; tape reels and cassettes are, singly or in combination, one of the most popular of presently available educational materials They are all versatile, with slides providing the greatest ease of updating and modification for specific audiences. Slides also require the least technical skill, though filmstrip technique and tape editing are fairly simple operations given proper equipment. They are all easily distributed and stored. Easy storage means easy to forget, however. There are undoubtedly more unused slides, filmstrips and tapes in schools around this country than there are regularly used ones. Most schools have equipment for all of these materials with reel-to-reel tape equipment being least accessible.

Most filmstrips, slides and tapes display either processed data or the value postures related to processed data. The potential for active involvement through these media has never really been tapped. If you want your target audience to collect, process or get involved in valuing their processed data don't discount these approaches. Most slide shows, filmstrips and educational tapes answer questions or ask obvious ones. Try asking questions you don't know the answers to and providing resources to attack those problems and you'll probably get some takers.

Radio and television spots can provide a limited message to a potentially large audience at a per person cost substantially less than other media. This assumes ideal conditions, however, as lack of control over airing times can cut down on the audience or place you in contact with an inappropriate audience. The messages must compete with commercial advertising and its often high quality production.

In developing such spots keep in mind that high quality, meaningful messages carry more impact than simple information messages. Check your non-profit status and keep your message public service in nature. Radio messages cost less to produce and are easier and quicker to get on the air, but television messages may have more impact due to the added visual effect.

Video tape may be one of the most exciting informational tools to come along for some time. It can do just

about anything that any of the previously described items can do and often times easier and quicker. Additionally, it provides a mechanism for two-way communication between producer and user. If equipment is available (the major present drawback) the target audience can easily respond immediately to the videotape viewing and the producer can get real feedback, something only minimally achieved with films and other media.

Many institutions are purchasing recording and playback equipment and new developments in cameras, recorders, editing techniques, cable TV and color capability offer prospects for intimate involvement of learners in message receiving, analyzing and sending.

Right now it's expensive and not everyone has equipment or is willing/able to use it effectively. But get ready. If you get involved in video tapes be ready for them to talk back.

Telephones are one of the simplest and most often overlooked items in our media repertoire. Ever feel frustrated that your fact sheet or slide show didn't hit the target for a particular group? A speaker equipped phone to a classroom or 4-H meeting hall can provide you with a mouth-to-ear connection that could save time and money and might just provide your cost-benefit analyst with a neat little statistic to quickly improve your target ...e contact hour status.

PHYSICAL AREAS

These are simply places for your target audience to go to gain exposure to whatever message is there for them. You can assist them in getting that message by the kinds of support materials you provide. Again, you can *display* a message that you have seen there or you can *involve* them in gaining a personal message that may or may not be yours. If you develop a guide to an area that simply uses the area to illustrate the descriptions and answers in the guide then you could probably do the job better with a filmstrip, a film or a slide show. The items which relate to a physical area probably ought to ask more questions than they answer and leave more for the target audience to experience than they describe. The area can be one with inherent (i.e. recognized and catalogued) cultural, historical, scientific, etc. worth or it can be a vacant lot near school or the backyard of a church. "You don't need a bus to go on a trip." If you don't have any physical areas to recommend then find a few and see what you can develop for materials to assist people in exploring them. Try to make the materials useful for more than one place. Ask some kids to help you.

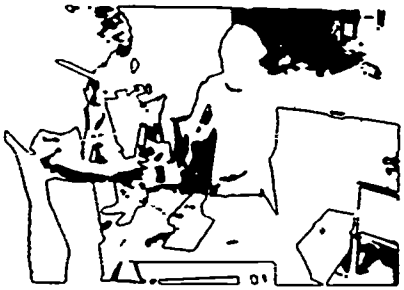
Field trip guides offer access to a fairly large geographical area and usually involve more than one site of interest. Such a guide offers cues to stimulate awareness of features, feelings, characteristics, etc. as a route is followed.

If you decide to develop such a guide for a trip you might wish to take care of specifics such as danger points, preparation procedures, what to do in an emergency, etc. Once you have done that you might also consider "what to do if the flowers aren't out." If the only message people get from a trip is what they read in the field trip guide they didn't need the trip. If you know the answer to a question of if the question is obvious don't ask it in the guide. If it's really obvious someone else will ask it. Provide cues not clues. This is not a guessing game, it's a trip and everybody responds to cues differently. Let them. If you decide to

write a field trip guide then get people involved in more than collecting or even processing data. Let them get their biases out. Help them to value the experience. Help them bring back something to deal with after the trip. Clue: The bare ground on the hillside tells us(?) something happened here. Cue: I often try to experience what people living nearby must have felt when they heard the rush of that fantastic landslide.

Interpretive site brochures are like field trip guides to single limited areas. The same principles apply, but the items for which cues will be provided will probably be much more specific. Instead of mapping the pattern of human transportation in an agricultural valley, the focus might be on how the road passing by a botanical garden affects the garden residents. Key words: involvement not display; data not conclusions; cues not clues; feeling *as well as* thinking; sensing as well as making sense; interpretive sites not interpreted sites.

Self-guiding nature trails are just what they imply: trails where one guides one's self. How can you help do this? Probably not by identifying the objects along it, but perhaps by asking the people who use the trail to invent their own identification system. (Provide them with a pamphlet for a resource *after* they have invented a system of their own.) Trust the people to relate in their own way to what's there. Often people relate to identification because that's the only way they can think of to approach **you** as the interpreter. Help them to make comparisons with that which they are familiar. (How is this game preserve like a kitchen? What do the Minnesota Vikings and Woodsy Owl have in common? How are Hugh Hefner and a game warden the same?)



Use of Resource Materials

Most resource agencies and organizations do not wish to be involved with the development of curricula or lesson plans for use in the classroom or with the production of program oriented materials that appeal only to a limited audience. Resource materials should, therefore, be considered by the user as raw data to be studied, analyzed or incorporated into the development of a particular project from which conclusions can be drawn based upon the information available.

Since materials will be collected from a variety of sources it is important to understand that these materials will often present differing points of view that reflect the producers' philosophies and management policies. This does not mean that the information is non-factual or that one philosophy is "right" and another is "wrong". Highly experienced and knowledgeable professionals in the resource management field may have different opinions on the same subject. Persons using the resource agency material should recognize that differing philosophies are present in all areas of resource management and should be prepared to identify and analyze these differences. This can only be done effectively if the resource material is treated as objective data rather than as a complete and comprehensive treatment of the subject to be studied.

The following points are set forth for the guidance of all groups requesting assistance for their environmental education programs. They are as applicable to the leaders of a youth group or adult organization as they are for the school district superintendent or classroom teacher:

A limited budget for resource materials is common to many government agencies, private groups, and industries. Production and development costs may restrict both the variety of material available and the format. Information contained in simple publications, however, is just as useful as that in more elaborate

productions, provided that the data is factual and can be adapted easily by the user.

Groups should not expect to be supplied with a complete set of all materials an agency or industry produces. They should request only what they actually have plans to use rather than asking for one of everything just because it is available. Most schools and groups have access to duplicating machines and are encouraged to use their own facilities when multiple copies are needed, provided that permission has been granted by the producer.

The propriety of using dedicated funds such as hunting and fishing license fees or agency operating funds for the unlimited distribution of what in essence amounts to test materials for schools is questionable. However, it is resaonable for agencies to provide schools, libraries, classrooms and other groups with basic sets of materials they produce. Such materials may be bound and used for several years, or as long as they are suitable, rather than requesting fresh supplies each year. Students who want personal copies of specific materials can usually obtain them from the supplier upon request.

State agencies have jurisdiction only in their respective states and are financed by residents of that state. Single copies of agency publications will usually be sent to out-of-state requests; however, bulk orders of classroom quantity orders will usually not be filled. Requests for literature should be confined to the resource area with which the agency or company deals. Information on forest maps and tree species, for example, should be requested from the state forestry department or a timber company rather than the wildlife management agency. Most resource publications are broad in scope in order to cover as wide a range of information as possible. If information of a very specific or technical nature is desired, other sources should be pursued.

Most agencies and companies divide the territory for which they are responsible into administrative units such as districts or regions. Information on the wildlife, forests, soils, water, or other resources which the industry or agency manages may, therefore, be categorized according to these sub-divisions. Groups should determine what unit system the agency uses before requesting information on specific geographical areas.

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USE
THIS

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Resource Materials Committee:
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USE GUIDES

We got together and found that we both had something to offer. The resource management people had materials and services to offer. The educators had process to offer. So, after we argued a bit and found out where we each were, we decided to get together and help each other do a better job in this thing called environmental education.

Some of the materials were beautiful -- fantastic photography, rich information sources. Others were really bad. Most had some bias. We toyed with the notion of writing guidelines to keep bias out of the materials. But that didn't make much sense since (1) it probably wouldn't work and (2) the bias was probably what made the good materials good.

So, instead, we decided to include bias (values and prejudices) as part of the thing that ought to be studied.

What follows is our attempt to help people use another resource. We frown on the notion that environmental education is limited to resource management concepts, But, in a very real sense, environmental education (or good education of any kind) is very much a process of good (learning) resource management. The things we will describe are things like:

WHAT KINDS you' find
what are DIFFERENT WAYS students can interact with resources
AVAILABILITY of resources

WHAT KINDS OF RESOURCES YOU'LL GET

1. PROPAGANDA Materials to indocrinate critics regarding an agency's practices or purposes.
2. PUBLIC RELATIONS STUFF Materials to inform the public of the agency's efforts and perhaps gain its support.
3. TECHNICAL Usually internal or service documents designed for training. Sometimes the training is aimed at increasing sales or service but not usually... directly.
4. ADVERTISING Similar to Public Relations Stuff but directed specifically at gaining greater sales or service use.
5. REPORTS These are documents outlining an agency's activities, usually for an advisory or funding agency. (Legislative reports, annual reports to stockholders, etc.)
6. "Education/Information" Documents These documents vary greatly in purpose and quality. It is sometimes difficult to separate these materials from those previously described. Most often the documents aim at providing "facts" about an agency, some aspect of its work, or some area of its expertise. Very often the conclusions are developed and offered within the document.

HOW STUDENTS CAN INTERACT WITH THESE MATERIALS

Since most teachers are familiar with "read & report" approaches for use of materials we will not describe those in detail here. We will offer alternative techniques later, however, which can provide for more meaningful reading and reporting of resource materials.

There are basically two approaches which provide for direct study of resource materials:

ANALYSIS-- this is an attempt to determine what is in an article, i.e., what did the author(s) put into the paper?

SYNTHESIS-- this is an attempt to build a meaning which may or may not be what the author(s) intended.

Analysis can be very dry and dull as in book report (for book report sake) types of assignments. It can also be very exciting if creative techniques are employed to elicit the meaning from printed material. Such techniques include:

role playing the author
debate
fantasy
structured problem-solving
observe, classify, display

Synthesis offers the opportunity to begin with the student's own perceptions and backgrounds. It does this by seeking the development of some structure separate from the printed material's (presumably the student's own biases) using the information provided in the material. This allows for combining different resource materials, for differences of opinion on the part of students, for creation of metaphorical representations (paintings, poems, songs, posters, dramas, etc.) Some techniques which lend to this approach are:

fantasy
role-playing
debate
structured problem-solving
observation, classification, display

Note that the techniques employed in each case are similar. This simply points out that the difference between analysis and synthesis is the interpretation we seek. If we seek the interpretation of the writer then we analyze. If we seek the interpretation of the learner then we allow the learner to synthesize.

AVAILABILITY OF RESOURCES

Once you begin getting resource material from various agencies you may be sorry you ever tried. Mailing lists have a way of regenerating. But if you really want to use community resource materials it's well worth your while to inquire personally by mail. Written requests on some kind of official stationary almost always produce a response. (But please, don't do the blanket request thing. If you're not sure what to ask for ask for a materials listing. Then if they send you everything it's because they wanted to, not because you are trying to use up trees. Lots of things are free. Lots of things are inexpensive. (Often the inexpensive things are sent free in single quantities if you feign naivite!)

A good place to start for finding resource materials is your telephone book. Usually there is a listing of governmental agencies, both State and Federal. A phone call will often get you in touch with an information or education officer of an agency. Many large businesses and industries also have a public relations staff person. Chambers of Commerce and other business organizations are also good places to start. One other rich source is the Government Printing Office, Washington, D.C.

SPECIFIC APPROACHES FOR USE OF RESOURCE MATERIALS

Often an agency, a business, an organization will undertake an "education" campaign to "educate" folks about what they're doing. What they usually do is to gather a great deal of information about their operation, their target groups, their purposes, their goals, their motivations and intentions. They put this information into some very beautiful, in many cases, pamphlet, booklet, portfolio, etc. and send it to "the public". The assumption underlying many of these campaigns is that distribution of information is education.

The education that school folks talk about is one which involves the student in the processing of information to make sense of it on the basis of his past experiences and those he has in the school situation. The information itself is the raw material. It is the stuff from which a student structures the concepts which form his framework of what makes sense. The stuff that he experiences which doesn't fit into that framework or cannot contribute to its building immediately is stored away in the "pre-conscious" for use in dreams, fantasies and other non-rational explorations.

The approaches presented here are attempts to let students use resource materials as raw data. We will try and provide ways for them to develop concepts. We will also try provide ways to explore the "pre-conscious" use it as a resource.

Both approaches outlined here are adaptations of existent projects for environmental exploration. The first is a National Park Service project: The Strands Walk. We hope we have been true to their intentions.

Acknowledgements to the National Park Service and especially to Bill Taylor, Environmental Education Specialist, Western Region.

The second approach is that of the Environmental Studies Project (ES). Our adaptation is restrictive compared to the intention and purpose of that project. We restrict exploration to resource materials while the ES folks open up the content to the total environment. I'm sure they'll understand however. They have been quoted as saying that "Structure does not provide for openness but openness provides for structure."

Our thanks to the Environmental Studies Project at ESSENTIA, The Evergreen State College, Olympia, Washington.

THE STRANDSEARCH

(The Strands Walk adapted to printed resource materials)

- a simple activity by which you and your students can interact with printed resource materials -- and get to know each other better, too.

In the StrandSearch, your principal role as a teacher will be to help your students express what they observe and experience in the printed resource materials, to form or put words to the questions that come to their minds. And, of course, to help them with the processes of answering them.

It could, it should, lead to deeper understanding of many specific ideas, observations and concepts related to the environment. But these will be based on the questions you discover together -- not on a prepared agenda. Thus, if any of the following questions or ideas are at first unclear, consider it part of the exercise to decide on their meaning to you.

A. The Plan -

1. Gather a large supply of printed resource materials from as many sources as possible.

2. Jot down a few observations about some selected materials(s) -- what things you think or imply that the author(s) are saying. They may be simple facts or general ideas. Keep them simple; make your observations fairly quickly. Criteria - if you wish - can be "first facts which interest you", "most important," etc.

3. Compare notes. This can be as individuals or in small groups. (Small teams might work to build a group list of representative observations-- based on their own criteria, of course.) A blackboard or butcher paper for people to post their "findings" is very helpful -- but a small group can have a fine rap session just sitting on their grass.

As you compare your observations, try the following:

I. Discuss the varieties and similarities of observations.

The point here is twofold: 1. That most publications are made up of a great many elements -- many of which go unnoticed; and 2. so are each and every one of us. You might ask here why you observed the things you did. (No wrong reasons allowed, please!)

II. Try to "group and classify" these observations; see if you can find a pattern. Have each person or team invent a set of categories (Good-Bad, Little-Big, Etc.) for what everyone has observed. Or, they might try ranking the same items in some sequence or order (in order of "importance, in order of "beauty".)

The point here is that everything falls into some sort of Pattern of existence -- if only as we see/invent it. Some of these have been formalized into laws or principles of physics, biology, economics, psychology, etc. We can discover/invent patterns which, though less fromal, may be very useful for problem-seeking/solving, model building, analysis. Science and taxonomy are devoted to discovery/invention and understanding of these patterns. So is history, art, religion, or, for that matter, almost any subject you can think of.

III. Interrelate as many of the elements observed as you can. This can be tricky. All of you have been "interrelating" with everything you have observed thus far, right? You might start with that observation. Try these -- "pick out one thing that depends on, helps, hurts, or cooperates with something else", or "link as many things together as you can, for whatever reason you can".

Clue - look for causation, historical sequences, action and interaction.

This can be aided by writing the observations on small cards, with key verbs and spreading them on a table; or by constructing a wall chart or checkerboard, writing the same things down and then across like on a mileage table between cities. Then pose the question "what do items 1-3; 4-2, and so forth have in common? or, have to do with each other?" Make up stories. Weirdness is helpful here as the strange may be the key to creative insight.

The point here is that everything in our environment can be seen as interrelated in at least one way, however insignificant or strange that way may seem. As individuals we are interrelated in at least three ways: 1. as elements of our environment; 2. as environmental affectors; and 3. as environmental effectors.

The second way can bring rewards -- or, almost overwhelming problems. The third way can offer many solutions and a fantastic challenge.

IV. Enough of the present, now the past. Would these same observations have been appropriate or likely yesterday? last year? a century or perhaps one million years ago? (Any length of time will do. If they are 6th graders you might say "12 years ago" and see if they discover themselves!) Or, what clues do we have in our observations as to where these publications and their authors have come from and what has been their history?

Thus, the fourth concept is one of time, of change and continuity. The temporary nature of some things versus the eternal (seeming) nature of others.

V. But what about the future? Are there clues to that here, too? What will be written tomorrow? next/year? one thousand years or more from now? Fantasize, write stories, project, argue, vote, role play - Be the future author. Write the future publica- Predict the future environment.

Of the elements that exist right now some are new, some are old and some are eternal -- but all have one quality in common: they are adapted to Today, if only for an instant and if only in the perceptions of the people who gathered/structured these elements.

Many of these elements will be adapted -- and become something new. This is called evolution. Publications are adapted and evolve. The environments they describe also adapt and evolve.

What were the things you observed before they were what they are today? And what will they be tomorrow???

Will monkeys be people will people be fish will cars become buses will trees become forests will towns become cities will oceans be sewers will man become extinct? Will information become propaganda? Will facts become questions? Will questions become dogma?

Perhaps you didn't see all these implication in the data gathered from the resource material; but perhaps you're thinking about them now -- a little.

Where do we go from here?

TASK I - VARIETY AND SIMILARITY

a. select 5 things from or impressions you have from exploring the resource materials around you and list below:

1.
2.
3.
4.
5.

b. make a group list with your team. use any criteria you wish . . . common ideas, most important, first, etc.

1.
2.
3.
4.
5.

TASK II - PATTERNS

a. invent 3 ways of grouping and classifying what you have listed - either alone or as a group.

1.
2.
3.

b. test these by classifying each item. Do all things fit? Note your conclusions here.

TASK III - INTERACTION AND INTERDEPENDENCE

a. Write your 5 observations below.
b. Now see how many you can connect that act on, need or are related to each other - tell how.
c. Are any the result of other "interrelationships"?

TASK IV - CONTINUITY AND CHANGE

a. How many of your observations today are examples of "change" or are clues to the past?
1.
2.
3.
4.
5.

Why are they here today?
b. Think of 5 things that aren't current elements in today's resource materials but were, or would have been sometime in the past,
1.
2.
3.
4.
5.

Why aren't they here today?

TASK V - EVOLUTION AND ADAPTATION

a. How many of your observations today show "adaptation"? ("Why are they here today?")

1.
2.
3.
4.
5.

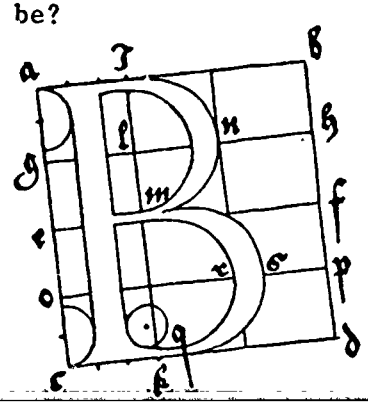
Which of these will be here tomorrow? Why?

b. Think of 5 things that aren't current elements in today's resource materials but might be tomorrow or sometime in the future.

1.
2.
3.
4.
5.

When will they be? Why will they Be?

c. Do you want them to be?



TASK VI - PROBLEM FOCUS

a. Write out 1 or 2 questions you now have (or ones you think someone else might ask) about these materials, the authors, or the environments they represent

1.
2.

b. Compare these with others of your group for variety and similarity. Can you combine any? Do so and record below.

1.
2.
3.
4.
5.

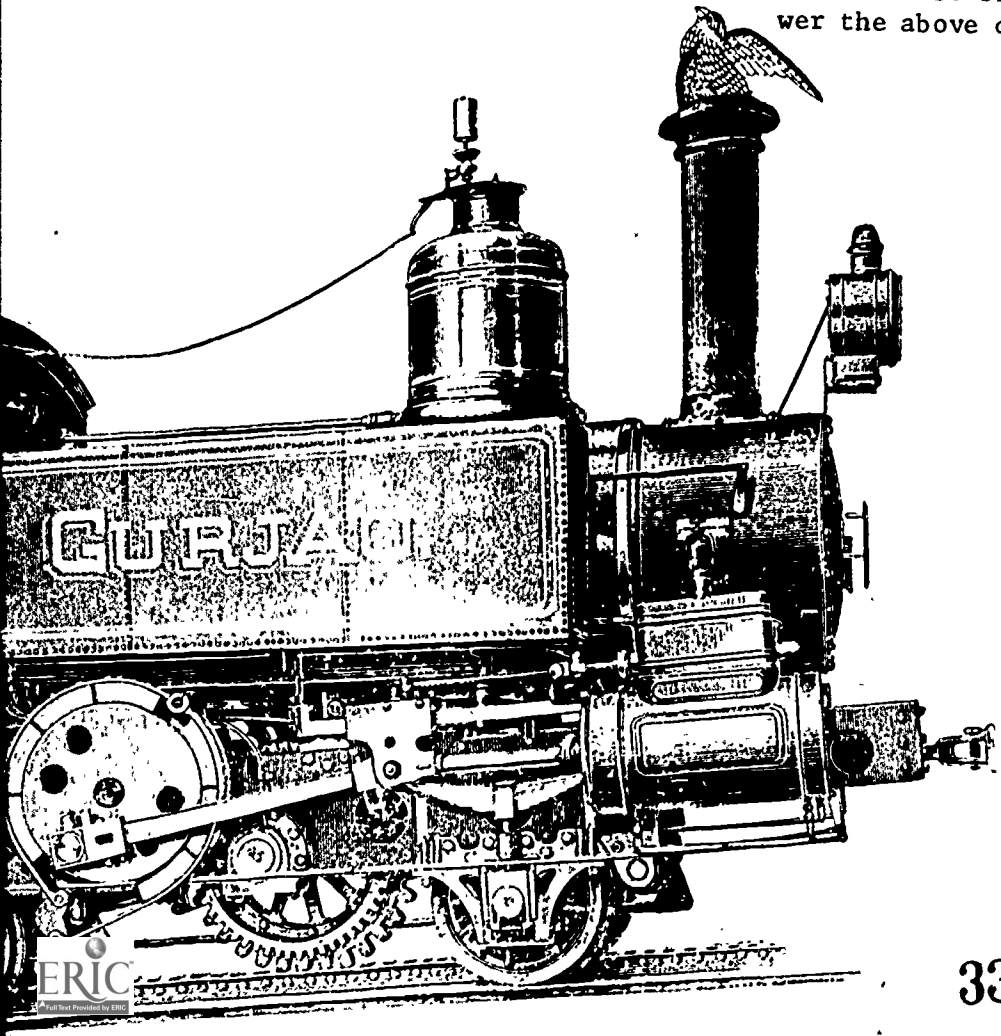
B

TASK VII - PROBLEM FOCUS

a. What kinds of questions do you have? Do they fall into any patterns? Natural History, Cultural, Animal, Plant, Philosophical, or whatever - - -
What are the questions about?

b. Try the same question another way -- How are they asking? What For? Are they simple data questions? Information, permission?; or are they asking for clarification or deeper understanding? anything else they might be asking? (Hidden Questions)

c. Describe briefly the ways you might answer the above questions.



TASK VIII - PROBLEM FOCUS

a. Select one question.
b. Write out as many possible explanations or answers you might have for it NOW.
1.
2.
3.
4.

c. Take each one at a time and design a means of answering or testing it.
1.
2.
3.
4.
Possible data sources:

d. Follow it out and report back in _____ hours.

B. The Point of It All

Some of you might think of the following as "behavioral objectives" or goals. They are however, just our reasons for following the steps as outlined in the "Strand-Search".

One--confidence or trust-building . . . children are entitled to their own impressions, their own values and conclusions. First impressions-upon which the search is largely based -- are rarely random: they express a great deal of the person making them.

Too much involvement in the author's conclusions can be limiting and deny the individual his or her own feelings.

Two-understanding the group. . . or, to find out wher. they are, how much they know or are able to feel, and what each has to offer. And of course, to give them a chance to offer it.

Three--to express the "Strands" concepts of the National Park Services's environmental education program through experience, participation and recognition. These are:

VARIETY AND SIMILARITY. Many likenesses and differences occur in anything we study. A variety of functions, sizes, and structures exist in plants and stars, rocks and animals, processes and people. Yet sufficient similarities permit their classification into orderly patterns. Action: listing, observing.

PATTERNS. Organizational patterns may be found in rock formations, social groups, and magazine articles. Functional patterns include traffic movements, classroom schedules and taxonomies. Spatial arrangements are patterns that often please us. Such patterns can be recognized in nature and invented by man. Action: grouping and classifying.

INTERACTION AND INTERDEPENDENCE. Nothing exists in isolation. Each of us constantly interacts with living and nonliving things: our family, our belongings, our friends, our world. These in turn depend on us to function. The process is continuous even after death, for dead forms nourish the living. Action: comparing, interrelating and interrelating with.

CONTINUITY AND CHANGE. Both living and nonliving things constantly change--whether among galaxies and planets or within body cells and systems. Yet some things remain the same in spite of change. For example, matter and energy may change in form, but they can never be created or destroyed. Action: deducing the past: sequencing events, ideas.

EVOLUTION AND ADAPTATION. Systems, cultures, living and nonliving things over centuries and centuries of time alter and develop in the process called evolution. Those features which adapt them best to a changing environment are passed on from generation to generation thus ensuring their survival--not all do. Action: predicting, sequencing events, ideas.

Four-identifying "problem focuses" . . . to not leave this introductory use of resource materials hanging we try to bring forth questions that can be examined in depth. We observe, form hypotheses, test hypotheses through further observation, experimentation or research; and becoming confident enough to formulate some theories or "answers" about our own experience. We learn to state a question and seek an answer.

Five--to seek a concept of our oneness with our environment -- not of ourselves as separate and distinct. Which is to say we are ultimately looking at our own nature, our own behavior as a product of nature -- with all our cultural artifacts that we in turn have contrived from nature and therefore become an extension of it.

This final goal really goes back to item one: to let children develop their own interpretations - and if these must be challenged let them be the ones to challenge them. We guide.

One thing stands out that is curiously different in the way children perceive: while adults will invariably "group and classify" man-made elements of the environment against those which are "natural", children never do. This in itself may say more about environmental problems than any other issue regarding man's views of the universe. For, after all, children have not perpetuated our environmental degradation.

. . . . . another way to become involved with resource materials.

USE THESE CARDS

GIVING THE ASSIGNMENT

the assignments are ambiguous because it is the kids who are to invent an understanding of the problem and invent a solution

start by giving the assignment and then keep as quiet as you can . . . until they really get going

VARIATIONS
- let the kids choose the assignments they want to do
- give all the kids the same assignment
- give different assignments to several small groups of kids
- have students create their own assignments
- have the kids do some at home
- let the kids choose assignments from a shoe box on their own

WHEN THE ACTION SUBSIDES
- let the kids share their results if they seem to want to (don't force it or it becomes your agenda)
- if they want to, let the kids share with you their feelings about what they did. (If the classroom atmosphere has an attitude of freedom the kids should feel free to discuss feelings.)
- help them if they want to extend their experiences.

Find something you really dislike in the resource materials. Change it to convey something you like.

* Using the resource materials, convey your feelings about something you really dislike in the classroom or school. . . Use the materials to do something about it

* Read the articles and see what authors and/or photographers really dislike. What do they do about it?

Find power represented in the resource materials. Find opposing power.

* See if others find the same power as you do

* Find the article/picture which is most powerful. What makes it powerful?

* Where is the power in your home/school/community? Where is your power?

Begin a graffiti board with some resource material; words, sentences, pictures . . .

If the graffiti board becomes a 'trouble spot' let the kids decide what to do about it . . . while you're out of the room.

Try small-group, non-verbal graffiti board sessions as a beginning for your next brainstorming session.

Pick a problem from the resource materials. Help solve the problem.
*Organize others into action groups to do something about your problem.
*Find a place at school where you can do something about the problem
*Find a place at home where you can do something about the problem

Do the kids want to do something about it? Help them! Are kids optimistic or pessimistic? How about you?

Look in the resource materials and find pictures of some places.
*Predict how the places will look in the future
*How did they look in the past?

Try overhead transparencies and felt tip pens or grease pencils.

Take old used resource materials and recycle them
*Hold a brainstorming session and see how many ways you can invent to recycle the same thing
*Recycle something which has been recycled.

Make some art from resource materials
*Try dressing up your room
*Try to say what the author wants said. . . with art
*Send some of the art to the author or publisher

Find an article with which you agree. Find someone who disagrees with it. Have a debate. Now switch positions.
*Try it in teams
* Combine two opposing articles and make them say the same thing

Make up songs using the words from a resource article
* Get a tape recorder and listen to yourself sing the song
*Have a sing-a-long or a poetry reading session. Invite others.

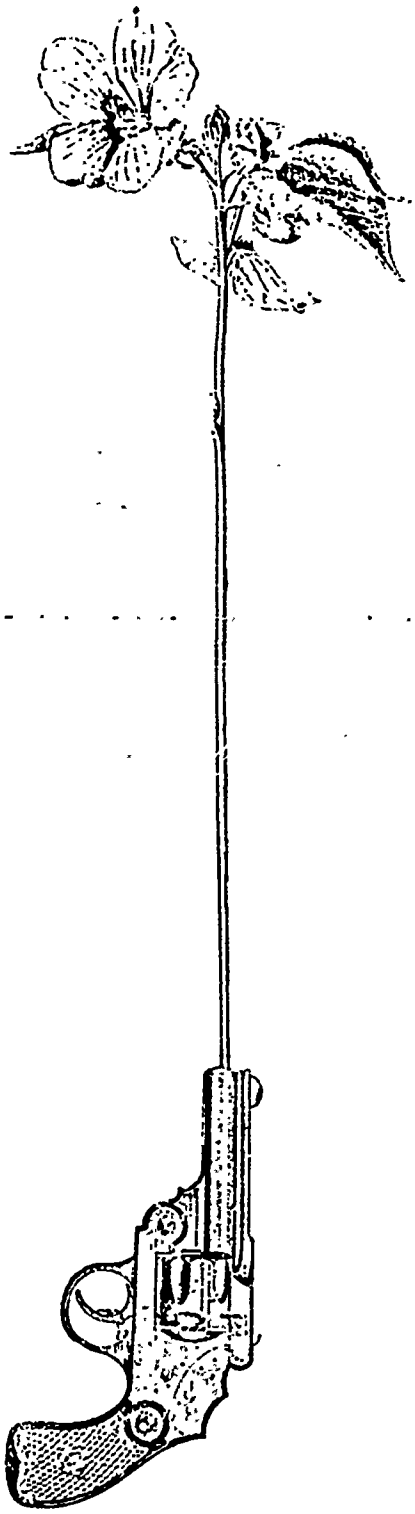
Tell a mystery story using the pictures (or words) from the resource materials... Make sure the pictures contain clues about how the story comes out.

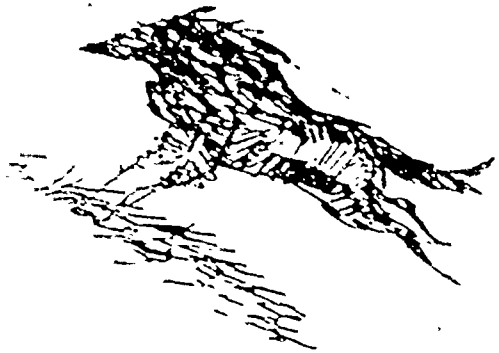
* Have someone solve your mystery
* Take an article and edit out some of the information so it becomes a mystery. Leave some clues.

Begin reading some resource material and predict what its conclusions/recommendations will be from reading the title; first paragraph; introduction; middle sentence.

Choose a resource book(let) and read it for words (pictures) which you can use as metaphors for: objects in your room; people you know; places in your school and community.

* Find metaphors in your surroundings which represent the ideas of the authors of the resource articles you chose
* Write a metaphorical story which represents an idea you found in the resource materials
* Represent one of your metaphors with a visual, audio or some other kind of metaphor





Using the resource materials available to you create a commercial for some aspect of your environment. Present it to the class.

* Create an anti-commercial
* Anti-create a commercial
* Anti-commercialize a creation
* Commercialize an anti-creation

Find joy in the resource materials pile

Take a tape recorder outside and record sounds to represent words, sentences, pictures, ideas, biases which you find in the resource materials.

* Tell a story with sounds. Try a commercial for one of the resource articles.
* Make a map of someplace with the tape recorder. See if anyone can follow your map.

Take ideas, sentences, words, photographs from the materials and invent a new way of using them or make them say something else.

* Find a new use for the resource materials
* Invent a new use for your classroom
* Invent a new use for something of your choice
* Invent a new choice for something of your use

Pick out something controversial from the resource articles and conduct a survey about it

* Use the information to change something about your environment
* Try the survey with different folks. See if you get the same results

Find the predators and prey in the resource materials of your choice

* How can those relationships be changed?
* Can they change places? How?
* What happens if either or both are removed?
* Check your environment

Role play the "hero" or "villain" of a resource article

* See if others can figure out which you are playing
* Role play some of the "heroes" and "villains" in your school, community, ...
* Try living one of these roles for a day. Do you feel any differently about the "hero"/ "villain"

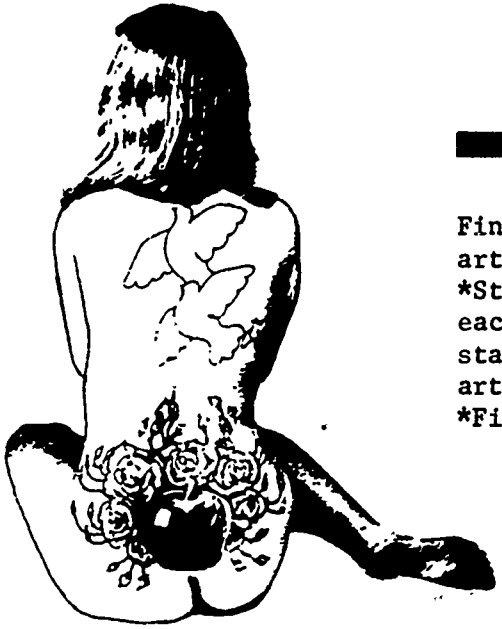
Find two articles which portray cause and effect... One article for the cause and the other the effect

* Find a good cause which produces a bad effect
* Find a bad cause which produces a good effect

Who determines what's good or bad?

Look in the resource materials and find evidence of a good change and a bad change

* try the titles, the photographs, charts,
* see if others agree
* predict future changes, good and bad
* start a campaign to support a good or discourage a bad change...



Find yourself in one of the resource articles

*Start a journal. Write down feelings each day. Illustrate the journal with statements and pictures from resource articles.

*Find others in the articles. Share.

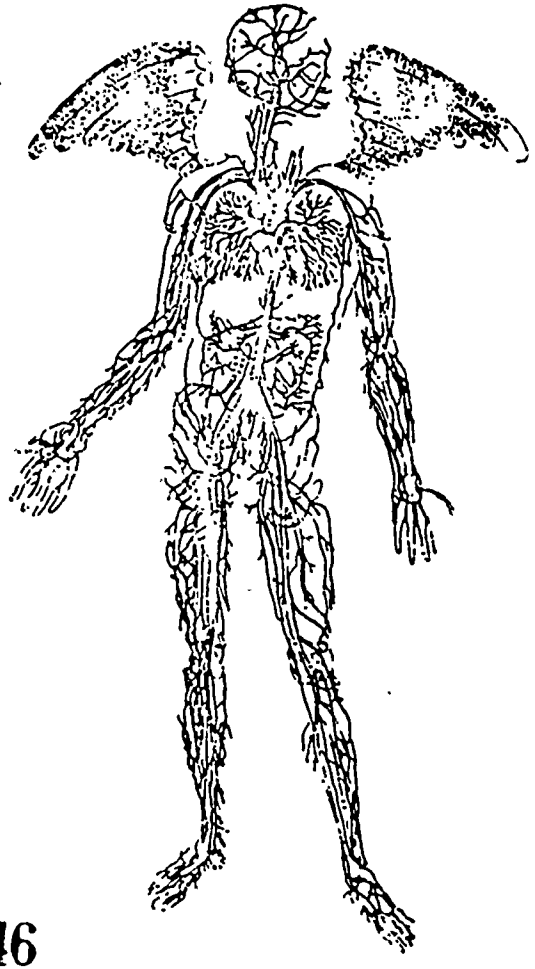
Build a stack of short articles from the resource materials. Now sort them into 2(or 3 or 5 or...) piles. Invent the criteria for why you did it that way

* Let someone else use the same articles and (1) their own criteria; (2) your criteria.. ...
* Invent the criteria first then find the articles

Which comes first-- the data or the taxonomy?

Choose 10 pictures from the resource materials. Tell or write a story which includes all of the pictures. Shuffle the pictures and let someone else do it.

* Write a different story with the same pictures
* Write the same story with different pictures
* Write the story and then find the pictures



Find manipulation in the resource materials. Is the manipulation good or bad?

* Search for other examples of manipulation in the articles. Place them in two categories: those you agree with and those with which you disagree.
* Make a record of the number of times that you are manipulated; that you manipulate.
* Watch other people and record manipulations you see. Do some people want to be manipulated? Do you?

Begin an invention box using resource articles/materials

* Create a poem, play, artform, song, experiment,.....using what you find in the invention box
* Find new ways to use the things in the box
* Add new things to the box

Make a list of opposite word pairs and then find, in the resource materials, objects, words, pictures, ideas that represent the word pairs.

* Try objects, ideas, attitudes, beliefs...
* For each pair: which are there more of? Why?
* In how many ways are the opposite things different?

Read 10 articles be different authors. Try to rank the authors according to age. Then try to find out if you are right.

* Fantasize first
* Try it with a group
* Write a description of each author

Is age only a function of time?

Make a list of unwritten messages that resource materials carry.

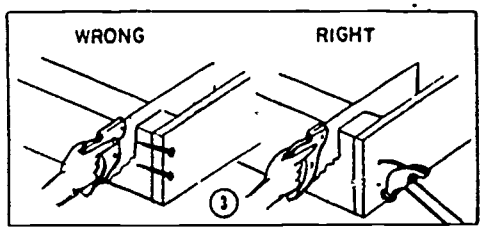
* Write an article describing something you're interested in. Have someone else find its unwritten messages.
* Listen to others speak their unspoken messages.
* Listen to your own unspoken messages.

Pick 10 articles from the resource material pile. How are they the same? How are they different?

* Do the same with pictures
* Try it with people
* Search for sameness in opposites

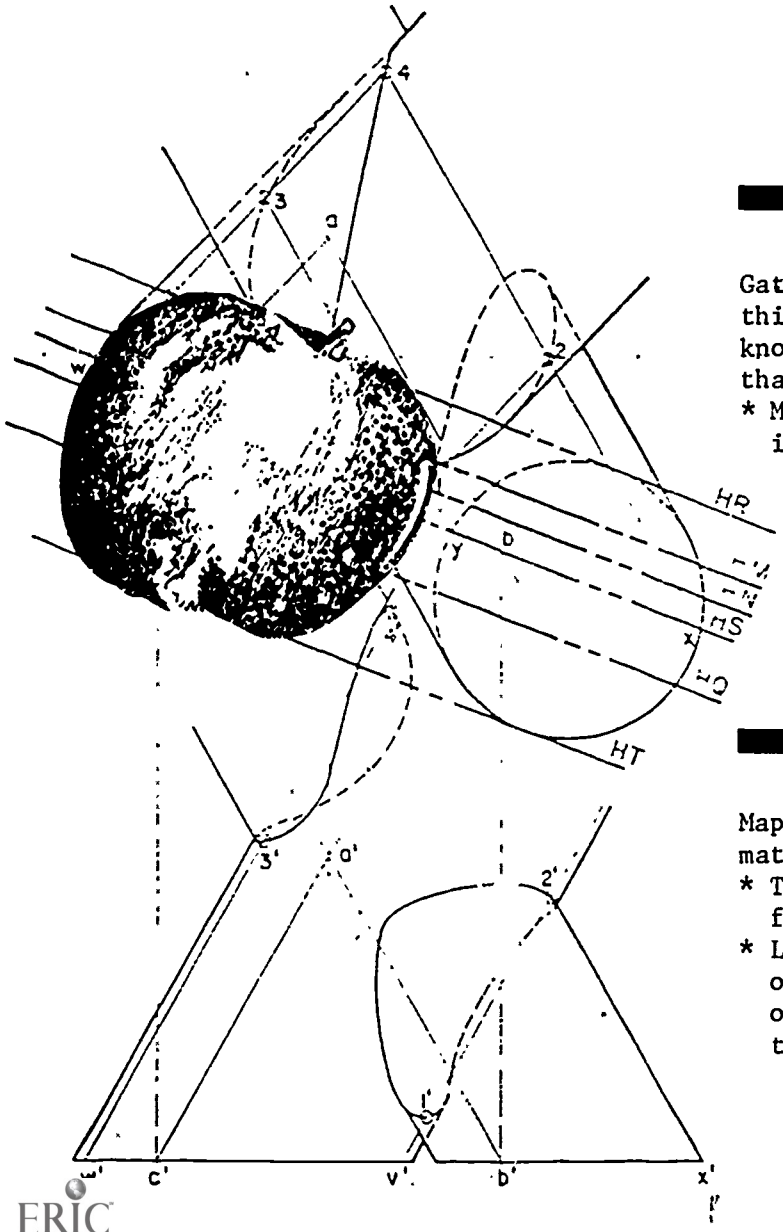
Make a list of hidden assumptions from the articles you read

* Make a list of hidden assumptions that you make when defending your position. Others.
* Rewrite one of the articles including all of the assumptions. Does the article sound as convincing?



Find statements, words, photographs... in the resource materials which make you feel: angry, sad, beautiful, afraid, happy...

* Find them that make you feel red, yellow, green, etc...
* Compare with others. Try other words.



Gather some resource materials. Count something in or about the materials so that you know more about them after you have counted than you did before

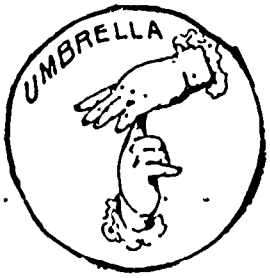
* Make a chart, graph or other representation illustrating the things you counted

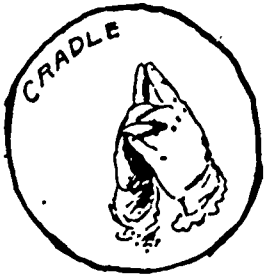
Map something you find in one or more resource materials

* Try different things -- places, people, things, feelings, words...
* Let two or more people map different things on the same base map. (If the base map is on overhead transparencies you can correlate them easily.)

Find out what authors think other people should do. Make a list.

* Find out how many of those things you want to do. How many do others want to do?
* Make a list of things you would like others to do. How many do they want to do?





Give a lecture on some article you read. Convince others that you really are an expert now...

* Convince yourself
* Develop charts and graphs for your lecture. Are people more impressed? Do they help you to know more?

A metaphor for environmental education

The name that can be named is not the enduring and unchanging name.

Lao-Tse 6th Century B.C.