

# **Creating Effective Interpretation for Managing Interaction Between Tourists and Wildlife**

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## **Abstract**

Ecotourism associated with wildlife is becoming increasingly popular. The effects on wildlife of this increasing popularity are causing concern. Environmental interpretation programs may be a means of minimising negative effects if they are able to change tourists' behaviour. A review of cognitive psychology literature and theories of learning shows that simply increasing information and understanding does not necessarily result in more appropriate human behaviour. However, there are several techniques, such as the creation and resolution of cognitive dissonance and the use of the affective domain, which may create more effective interpretation. This paper reviews relevant theories of learning and offers guidelines for the creation of effective interpretation programs in the context of tourist - wildlife interaction. **Key Words:** Interpretation, Wildlife, Tourism, Learning, Cognitive Psychology.

## **Introduction**

Ecotourism is a rapidly growing industry (Ratnapala, 1992), in particular tourism which is based upon interaction with wildlife is a major component of this growth (Vickerman, 1988). Concern over the impacts of increasing numbers of tourists on the natural environment are widespread (Hegerl 1984, Ward 1990, Mellor 1990, Laycock 1991). Environmental interpretation has long been touted as an answer to some of these concerns (Herbst, 1979). However, despite a long history of research and theory development in the area of educational psychology there have been few, if any, applications of this knowledge to the environmental interpretation field. In addition, the argument that educating people about the negative impacts associated with certain types of behaviour will result in a reduction of that 'inappropriate' behaviour is simplistic. It ignores the complex relationship between learning and behaviour change. In order to make interpretation programs effective, lessons from educational psychology literature, particularly those which detail the process of learning, need to be considered carefully. Through examining components of this process techniques can be developed which promote the link between learning and environmentally appropriate behaviour.

## **Developing Effective Environmental Interpretation Programs**

Because interpretation is an education based management strategy much of the research and theory associated with education and environmental education is relevant in developing effective environmental interpretation programs. In order to design an effective program it is necessary to understand the process of learning so that the interpretation successfully targets those mental processes that are involved in human learning. An associated issue lies in understanding the precursors to human behaviour. Because one of the aims of interpretation is to alter human behaviour so that its impact on the natural environment is lessened, the intermediate steps of belief, attitude and intention development and adaptation must be examined. Through understanding these processes, strategies can be designed which reflect the complexities of the human mind and the diversity of human behaviour. Many interpretive strategies are based upon a simplistic premise that the provision of information will cause knowledge to be accumulated and subsequently behaviour to change. The discipline of educational psychology and empirical research in the field refutes this assumption. Lessons from these and the environmental education field are valuable in designing environmental interpretation programs.

## **Review of Relevant Theories of Learning**

There has been much debate over the definition of learning, however, most definitions include three main criteria. First, that learning involves some change in behaviour, second that the change is relatively stable over time and third that the change is a result of some experience. How learning actually occurs has been the subject of even greater debate over many centuries. Early philosophers, such as Socrates, Plato and Aristotle, all contributed to the foundations of educational psychology. Modern theories of learning fall into three main categories, conditioning theories, observational (imitation) theories and cognitive theories.

Conditioning theories of learning can be further divided into two main types. Classical conditioning is derived from the much reported experiments of Ivan Pavlov (1927). Pavlov conducted an experiment where a basic stimulus (provision of food) produced a response (an increase in saliva). The experiment was then manipulated so that a second 'conditioned' stimulus (a sound signal) produced at the same time as the original stimulus would eventually result in the same response even when the original stimulus was removed. The second type of conditioning is termed operant or instrumental. This is, learning in which the consequences of a behaviour alter the strength of that behaviour. For example, if a behaviour leads to a reward then that behaviour is reinforced. In summary, in classical conditioning the response is determined by antecedent conditions whereas in operant conditioning the behaviour is

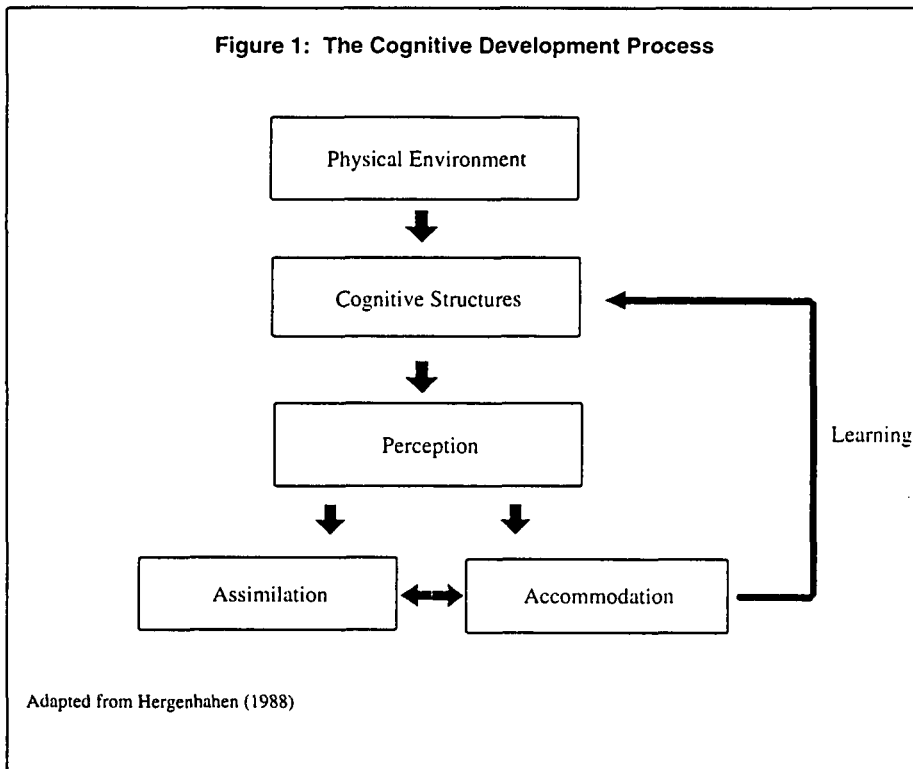
determined by the consequences of that behaviour.

Observational theories of learning centre on learning that occurs through observing the behaviour of others. Bandura (1969, 1977) suggests observational learning manifests itself in three main forms. First, we learn new responses by simply watching others. Second, we 'inhibit' or avoid behaviour which we observe has negative consequences for others, or we 'disinhibit' behaviour. That is, we reduce our reluctance to undertake a behaviour when we observe someone else do it successfully. Third, 'facilitation' occurs when we observe another utilising a behaviour that we know, but have not used and this eventually facilitates our trying that behaviour.

The third major category of learning theories are those termed 'cognitive learning'. Cognition is the process of thinking and knowing. It involves our reception of sensory information, the transformation of that information, its storage, recovery and use (Neisser, 1967). Cognition is, therefore, about how people use information from their environment and their memories to make decisions about their actions. One of the major contributors to cognitive theories is Swiss psychologist Jean Piaget (1963). Piaget argues that the human mind builds cognitive structures to take external sensory input, to interpret it, transform and organise it. An individual and the environment are engaged in a continuous interaction which leads to new perceptions and new knowledge. The ideas of change and adaptation are, therefore, central to Piaget's theory of cognitive learning. His term for the thinking structures that evolve for dealing with particular situations is 'schemes'. 'Knowledge' consists of a system of these schemes.

Adaptation is, according to Piaget, how we learn and it consists of two processes. The first of these processes is 'assimilation'. Assimilation occurs when new information is interpreted so that it is consistent with existing schemes. The second process is 'accommodation'. This occurs when new information causes a modification of the existing scheme so that it is consistent with new information, presumably because the new information is so different and has sufficient credibility that it cannot be assimilated. The two processes work against one another as new information is received and the individual searches for 'equilibrium'. Equilibrium is achieved when a person is able to operate on an assimilation basis and until the volume or weight of evidence is such that it creates 'dis-equilibrium' and accommodation occurs. Cognitive development (learning) occurs through alternating states of dis-equilibrium and equilibrium. Figure 1 provides a simplified representation of this process.

Cognitive psychology has, in the past two decades, become the dominant view of how people learn, accumulate knowledge and perform (Goetz et al, 1992).



### **The Theory of Cognitive Dissonance**

Festinger (1957) proposed a theory which built on Piaget's work and which has been widely discussed in the field of cognitive psychology. The theory describes the learning process in terms of the relationships between different cognitive elements. Central concepts of the theory are termed 'dissonance, consonance and irrelevance'. An individual's perception of two elements are in consonance if they are consistent or supportive with one another. For example the statement, 'I don't litter' is consonant with the statement, 'I know litter has a negative impact on the environment'. Two elements are dissonant if they disagree or are inconsistent, for example, 'I do litter' and 'I know litter has a negative impact on the environment'. An element that has no relationship with and has no affect on another is termed irrelevant. The central hypothesis of Festinger's theory is that:

The existence of dissonance, being psychologically uncomfortable, will motivate a person to try to reduce the dissonance and achieve consonance (Festinger 1957, p.3).

There are, according to the theory, four basic situations which cause cognitive dissonance, disagreement with others, forced compliance, decision making and exposure to dissonant information. It is this exposure to dissonant information which may be useful in environmental interpretation. If an education program is designed to deliver information which is counter to an individual's current belief system cognitive dissonance will arise. The psychological tension that results will motivate the individual to change his/her beliefs so that they are consonant with the new information.

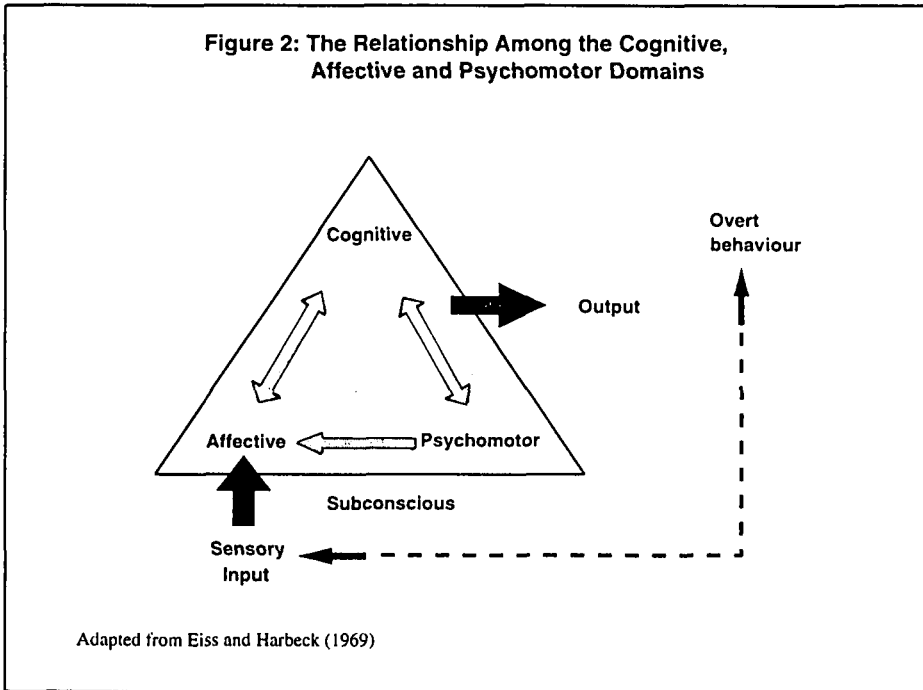
The theory argues that the 'greater the magnitude of dissonance, the greater the expected change in belief' (Fishbein and Ajzen 1974, p.128). However, others point out the limitations of this assertion. Sherif (1965) argues that there is a latitude of rejection beyond which dissonance will have no affect on belief and attitude change. This is because the new dissonant information will be of such magnitude that 'selective perception' will be employed and the new information will be discounted or rationalised so that it remains consonant. In applying Sherif's concept and the theory of cognitive dissonance to marketing, Engel et al (1973, p.329) state that;

advertisements should deviate as far as possible from a subjects own position, thereby generating dissonance while, at the same time, staying within the latitude of acceptance. This assertion is equally applicable to the environmental education/interpretation scenario.

### **The Affective Domain**

Environmental educators have emphasised the importance of the 'affective domain' in shaping an individual's thinking process. Eiss and Harbeck (1969), who developed the concept, describe the affective domain as that part of human thinking that includes attitudes, feelings, emotions and value systems (see figure 2). They argue that:

The affective domain is central to every part of the learning and evaluation process ... It includes values and value systems that provide the basis for continued learning and for most of an individual's overt behaviour. It provides the bridge between the stimulus and the cognitive and psychomotor aspects of an individual's personality (Eiss and Harbeck 1969, p.4).



The idea that emotions and value systems, as well as knowledge, shape behaviour is well supported in the literature (Dewey, 1933; Eiss and Harbeck, 1969; Iozzi, 1989). As a result, it is argued that the attention given to cognitive development in education programs should be balanced with effort on the affective domain.

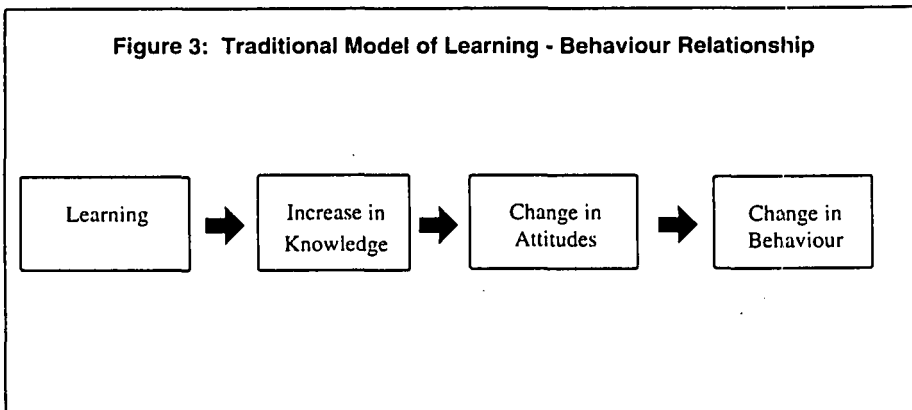
thus it would seem that cognitive and affective factors should be considered holistically in the teaching and learning process in practice, however, such an approach is the exception rather than the rule (Iozzi 1989, p.3).

Iozzi goes on to summarise the research in the environmental education field that is relevant to the affective domain and finds that effective environmental education programs concentrate on both the affective and cognitive domains. He emphasises that increasing knowledge alone will not significantly change attitudes and values and, as a result, argues that specific activities designed to do just that must be included in environmental education. A further significant point is that his summary of the research shows that 'outdoor education is an effective way of improving environmental attitudes and values' (Iozzi 1989, p.7).

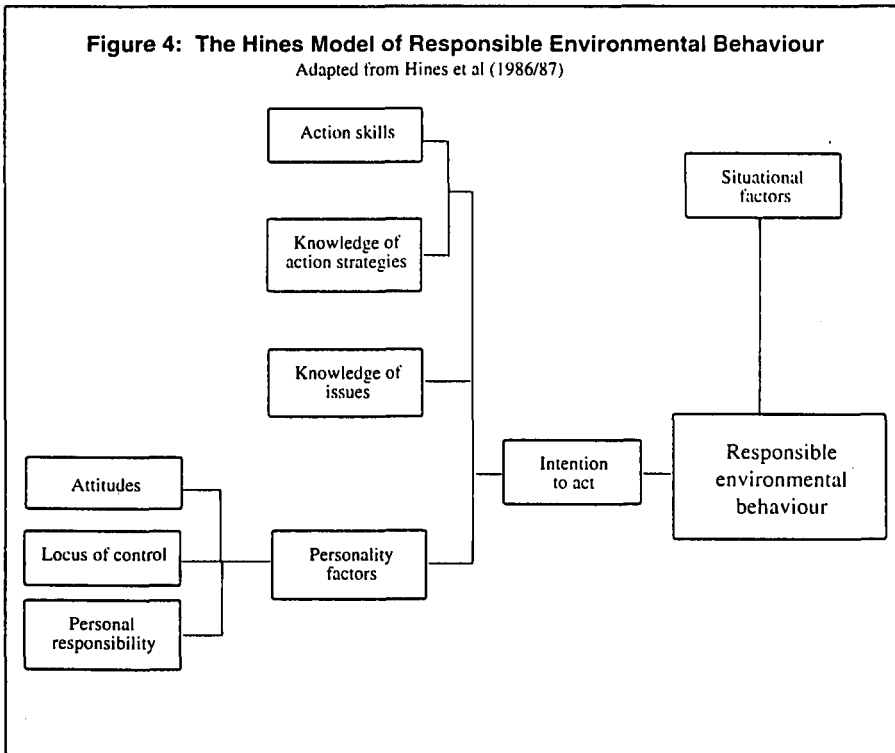
The affective domain is particularly relevant in human - wildlife interaction because of the emotional responses that such interaction engenders. These interactions may, therefore, be ideal opportunities to influence the affective as well as the cognitive domain.

### **The Link Between Learning and Behaviour**

'Learning is a relatively permanent change in behaviour or capability that results from experience'. Definitions of learning, such as this one provided by VanDerZanden (1980, p.98), imply that the link between learning and behaviour is a strong one. This thinking has been based on the assumption that increased knowledge leads to a change in attitudes and that attitudes then drive behaviour. This simple linear model (see figure 3) was widely accepted during the early growth of the environmental education field in the 1960s and 70s (Hungerford and Volk, 1990). However, empirical research does not support this assumption. Firstly, it appears that the relationship between knowledge and attitude formulation is a complex one (Fishbein and Ajzen, 1974) and secondly, the link between attitudes and behaviour is weak (Gudgion and Thomas, 1991).



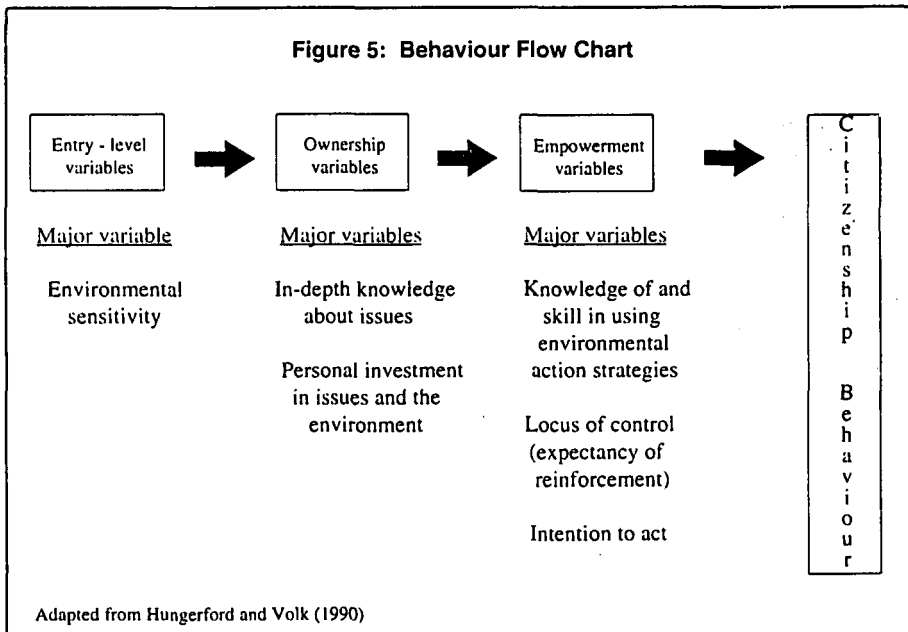
Hines et al (1986-87) conducted a meta-analysis of 128 studies which had examined variables associated with responsible environmental behaviour. Their research showed that there were a number of important variables which interacted to drive environmentally responsible behaviour. They also showed that the relationship between these variables was more complex than the traditional knowledge - attitude - behaviour model. These variables were summarised in The Hines Model of Responsible Environmental Behaviour (see figure 4).



In explaining their model, Hines et al argue that the immediate precursor to behaviour lies in an individual's intention to act. However, the intention to act is the result of a number of other variables. Before persons can intentionally act on an environmental problem or issue they must first be aware of its existence. They must also have knowledge of the strategies available to resolve the issue and they must have the skills (ability) to take action on it. These factors are all related to the knowledge that an individual possesses. In addition to knowledge, one must also have the desire or motivation to act. Hines et al finds that this desire is affected by a number of personality factors which can be categorised as attitudes, locus of control and personal responsibility. Attitudes (toward the environment and toward taking action) form only a part of the matrix of influences upon a person's desire to act. An individual's locus of control refers to a person's belief in being reinforced for taking a certain action, while personal responsibility refers to one's feelings toward the environment. In addition to this complex number of cognitive variables, are situational factors, such as social and/or economic pressures and opportunity. Hungerford and Volk (1990) accept Hines et al's model as being more accurate in explaining the variables which influence an individual's



decision making processes. However, as a result of more recent research, they elaborate on Hine's model and propose a Behaviour Flow Chart to explain the elements involved in what they call 'environmental citizenship behaviour' (Hungerford and Volk 1990, p.11). Figure 5 shows the flow chart and the major variables outlined by the authors (minor variables are excluded).



In explaining their model Hungerford and Volk (1990, p.11) state that:

entry level variables are good predictors of behaviour, or ones that appear to be related to responsible citizenship behaviour ...environmental sensitivity is defined as an empathetic perspective toward the environment. It is the one entry level variable that has shown a dramatic relationship to behaviour in the research.

The next main category in the flow chart is entitled Ownership Variables. This refers to the importance of the issue/s to the individual. Important variables within this category are 'In-depth knowledge' and 'Personal investment'. In-depth knowledge is explained as an individual's understanding of the problem:

it appears that before individuals can engage in responsible citizenship behaviour, they must understand the nature of the issue and its ecological and human implications (p.12).

The authors define personal investment as when an individual has a vested interest in the issue/s. The final category in the model is Empowerment Variables. These are actions that give a person a sense that they can 'make a difference'. Knowledge of, and skill in using, environmental action strategies, the expectancy of reinforcement and an intention to act are the major variables of empowerment.

### **The Lessons for Environmental Interpretation**

There is a general acceptance that human learning and behaviour are a result of combinations of conditioning, observational and cognitive processes. However, it is also important to consider separately the role of emotions, attitudes and value systems, the 'affective domain'. In encouraging environmentally responsible behaviour, strategies based on all these models may be useful. A number of examples show that a range of management strategies which emphasise each of these processes can be utilised:

- 1) **Conditioning** \* Rules and regulations with enforcement through punishment are an example of operant conditioning with a negative stimulus.
  - \* Rewards given for positive behaviour, such as a deposit refund for returning soft-drink bottles, is an example of operant conditioning with a positive stimulus.
  - \* In an indirect sense, the reward of easier access through the following of paths and roads is operant conditioning.
- 2) **Observation** \* An organisation can become a role model through adopting environmentally sound practices. For example, by using recycled paper, utilising environmentally sensitive waste disposal strategies and employing and training staff who are informed and conduct themselves in an environmentally responsible manner.
- 3) **Cognitive** \* A deliberate and structured interpretation program that utilises techniques such as, the creation and resolution of cognitive dissonance, can result in learning and a change in behaviour.
- 4) **Affective** \* The use of the affective domain can be facilitated by utilising and emphasising the emotional component of visitor experiences. Friendships,

bonds, a sense of beauty and appreciation can 'personalise' an experience and ensure the affective domain is brought into play.

The predominant management approach to controlling visitor interaction with the natural environment and in particular with wildlife, has been through techniques based on operant conditioning. In more recent years a number of organisations, primarily public bodies, have recognised the need to 'lead by example' and adopt observational type techniques such as recycling and waste saving practices. Although many organisations pass on information to customers and visitors through various media, few agencies, outside of traditional education and resource management authorities, have explicitly adopted planned and structured cognitive strategies. Although there is a widespread perception that education is worthwhile and has positive benefits, there have been few applications of deliberate cognitive development programs designed to change attitudes and improve behaviour (Beckman 1988, Olson et al 1984). This is particularly true of the private sector tourism service industry. The literature suggests that this may be an effective mechanism for controlling visitor behaviour. In addition, it is possible that experiences with a strong emotional component may be a technique to 'short cut' the complex processes that determine behaviour.

As a result of this review of relevant learning theory, a number of features that should form an important component in developing an environmental interpretation program can be identified. These features are:

1. That the specific issues that are important to the program are identified and that the program is designed with the purpose of communicating these issues/problems to participants.
2. That the use of cognitive dissonance and assonance based strategies can be an effective way of communicating the issues/themes that are important to the program.
3. That a number of action strategies (answers to the problems) are provided as an integral part of the program.
4. That those action strategies are appropriate to the skill levels of the program participants, or that skill levels are improved by the program.
5. That a sense of personal responsibility about the issues is created.
6. That rewards for appropriate behaviour are identified and/or provided.
7. That attitudes that are appropriate regarding the issues important to the program are created and reinforced.
8. That the learning situation be chosen and/or manipulated in such a way that it is conducive to achieving the above objectives.
9. That the program should seek to include or emphasise an emotional component (thereby activating the affective domain) as a means of communicating its message/s.

## **Conclusion**

The difficulties associated with educating tourists on the basis of very limited contact and the complex relationship between belief, attitude and behaviour change means that some authors argue that the role of interpretation should be no more than simply passing on information (Hammitt, 1984). However, the analysis of learning theory and educational psychology presented above suggests that more ambitious goals for interpretation may be attainable. The use of emotional responses (the affective domain) and cognitive dissonance may 'short cuts' which are able to be used to counter the problems inherent in educating tourists. Fortunately, wildlife has distinct advantages in both the cognitive and affective areas. Animals often arouse curiosity and create cognitive dissonance in tourists simply due to their behaviour. For example, when observing a breaching humpback whale, one of the most common questions asked by tourists is, 'Why?' (Forestell, 1993). Additionally, wildlife often evoke an emotional response from people, particularly certain types of wildlife such as marine mammals. Wildlife interaction, therefore, has natural advantages in activating two processes which have been identified as important in facilitating learning. Such interaction may provide a 'window of opportunity' through which the limitations of tourist interpretation programs can be overcome.

It is surprising that, despite a significant amount of scientific effort directed at understanding how people learn, little of this information has been directed at developing models which can make environmental interpretation more effective. This paper attempts to identify some of the lessons from educational psychology and suggests how they might be incorporated into interpretation programs for tourism which is based upon interaction with wildlife. The next step which follows on from these suggestions is to develop a strategy for assessing whether or not these suggestions work in practice and to quantify the benefits. The empirical testing of such a strategy would provide particularly useful information for environmental interpreters.

## **Acknowledgments**

I wish to thank Associate Professor Greg Hill of the Department of Geographical Sciences and Planning, The University of Queensland for his assistance and advice in preparing this paper. Financial support was provided by a University of Queensland post graduate research scholarship.

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