Environmental Education and Environmental Protective Behaviour

[1]Ms. Neha Gupta, [2]Prof. SavitaSrivastava

[1]Research scholar, [2]Professor
Dayalbagh Educational Institute,(Deemed university), Agra

Abstract: **Environmental value strongly depends on human behaviour patterns. We review the role and the potential of environmental education for understanding and promoting environmental protective behaviour. A general framework is planned, comprising: (1) identification of the behaviour to be changed, (2) examination of the main factors underlying this behaviour, (3) design and application of interventions to change behaviour to reduce environmental impact, and (4) evaluation of the effects of interventions. We discuss how environmental psychologists empirically studied these four topics, identify apparent shortcomings so far, and indicate major issues for future research.**

Keywords: **Environmental Education, Environmental Protective Behaviour**

INTRODUCTION

The past one decade much effort was expended in the global level to achieve sustainable development. Inspite of conducting more number of conferences, seminars and world summits towards the protection of environment, the present world is environmentally less sustainable than in the previous days. The motive is very expected that the poor developing countries had been seriously thwarted by the lack of financial and skilled manpower resources while the prosperous urbanized country appear to be practically satisfied with the advancement they had completed. The progress whatever the developed countries have made so far has largely been achieved through the relocation of their dirty manufacturing facilities to poor developing countries. However the relocation of the manufacturing facilities in this way cannot address the growing problem of anthropogenic pollution – it merely changes the jurisdiction of the pollution created from the 'rich' to the 'poor' world. Therefore in order to achieve the acceptable level of global environmental sustainability, the citizens must be empowered with essential knowledge and information. Then only they can exert pressure on their elected representatives to develop and implement policies for securing environmental sustainability. The awareness between the community and manufacturing generator have to be shaped and provoked by the efficient technique and incorporate the pioneering and implementable solutions to reform our economy. These can be achieved through environmental education .

1. A systematic approach to encourage environmental protective behavior

Various environmental problems pose a hazard to environmental protection among which worldwide warming, urban air pollution, water shortages, environmental noise, and loss of biodiversity. A lot of of these problems are rooted in human behaviour (DuNann Winter &Koger, 2004; Gardner & Stern, 2002; Vlek&Steg, 2007), and can consequently be managed by changing the applicable behaviour so as to decrease its environmental impacts. Changes in human behaviour are believed to be desirable because scientific efficiency gains resulting from, for example, energy-efficient appliances, home insulation, and water-saving devices tend to be overtaken by consumption growth (Midden, Kaiser, &McCalley, 2007). Moreover, physical and technical innovations imply behaviour changes as well because individuals need to accept and understand them, buy them, and use them in proper ways. This paper discusses environmental psychology's merits and its potential to help promote environmental behaviour via behavioural changes. We provide a systematic perspective on assessing, understanding, and changing environmental protective behaviour. We describe environmental behaviour broadly as all types of behaviour that change the availability of materials or energy from the environment or alter the structure and dynamics of ecosystems or the biosphere (cf. Stern, 2000). environmental protective behaviour refers to behaviour that evils the environment as modest as probable, or even profit the environment. Following Geller (2002), we argue that promoting behaviour change is more effective when one (1) carefully selects the behaviours to be changed to improve environmental quality, (2) examines which factors basis persons behaviours, (3) applies welltuned interventions to change relevant behaviours and their antecedents, and (4) systematically evaluates the effects of these interventions on the behaviours themselves, their antecedents, on environmental quality and human quality of life. provides an overview of the four key issues. We review how environmental psychologists so far have studied these issues, identify shortcomings, and indicate important topics for future research.

2. Enrichment of Environment Protective BehaviourThrough Educational Environment Program
Teaching methodology in schools :

The course of the last century, the principal types of infantile diseases have evolved a great deal. For children in industrialised countries, environmentally related diseases like asthma, lead poisoning, cancer and certain neurological or behavioural problems have progressively replaced infectious diseases . Even if, in the environmental health field, it is still difficult to attribute the cause of these new diseases to pollutants or specific environmental conditions, we recognise that toxic materials are more harmful to

children than adults. Children ingest greater quantities of toxins because they breathe twice as much air, consume three to four times as much food, and drink two to seven times as much water relative to their body weight, than adults. Children are thus particularly vulnerable to pollutants present in the air that they breathe, water that they drink, food that they eat and environments in which they grow, learn and play.To guard children livelihood in impure regions, environmental education represents a significant resources of preclusion because this type of instruction encourages environmental protective behaviour of their environment's comprehensive environment, with their active involvement in resolve restricted problems. yet, ways to develop Environmental Education in the environmental health pasture have yet to be developed. The students have to be invited to take part, in an instructive procedure, which includes various activities permit them to construct *broader* ideas on pollution and the pollution-health relationship. The young minds may be molded very simply and they will be having their own thoughts with concepts concerning effluence. The nine year old children have the thought concerning contamination as follows:"Pollution is what people don't want and throw on the ground … it harms animals and humans. We can see, touch, taste and smell pollution people don't want to live with pollution."Nine and ten year old students consequently imagine pollution since the attendance of damaging *garbage* . They are incapable of identifying the specific consequences of pollution on the state of their health. In a similar way the 16-year-old children have got diverse opinions about pollution. "Pollution arrive, from rubbish we draw that isn't ecological It assassination, muscle and deficit the environment, vegetation and other occupation remains. It is regularly substance in environment … yet condition we don't forever observe it, pollution affect our earth." therefore concepts about pollution varies below the unusual period groups and the 14 year elderly contain got a little bit obvious idea concerning contamination that it evils all livelihood remains.Children's outsets are personal interpretations of natural phenomena they believe in and use to solve problems, draw conclusions and make generalisation about the facts of daily life. Children's conceptions can be considered as different from those of the scientific community, but they stem from modes of reasoning that are organised and relevant to them. More and more researchers consider a child's reasoning plausible and firmly based on his or her prior knowledge . One of the goals of science education or environmental education (EE) at the elementary level is the evolution of children's initial conceptions into conceptions that are more thought-out and/or closer to those of the scientific community. This evolution is called *conceptual change* . During this "successive procedure, the introductory conception fabrication based on childish elucidation of daily intelligence are successive amplify and restructured" . The recurring development is typescript by manifold phases of inductile and deductive work. This is how conceptual change recognize an significant adaptation of students' early thoughts concerning a occurrence, in the direction of notions earlier to persons of conventional knowledge. further exclusively, students' original retention may well suffer numerous transformation in response to a abstract modify: concept may be subtracted , relations between concepts can also be additional or excised, or the original thoughts organization may be fundamentally adapted . In science or in environmental education, noting a conceptual change in students constitutes tangible proof that learning has occurred. The goal of conceptual change is not easy to attain however. Students begin a lesson or scientific theme with firm beliefs about a scientific phenomenon and its association to additional phenomenon. a number of situation may nearby ourselves and perimeter abstract modify: thoughtful the occurrence may *turn out* to be additionally intricate. Students capacity appreciate a new concept regarding a occurrence, but not consider it. they may firmly contemplate their original thought to be suitable and take no notice of some data to protect that initial view They may show little curiosity in the considered occurrence. At last, members of the society anywhere the students survive can distribute different opinions and conceptions than those to be developed by students, holding back the learning process.

• **Teaching strategies favouring conceptual change:**

A number of educational strategies with the intention of obligation abstract change have been recognized. Conceptual change model was one of the most experimented with and criticised. Several conditions necessity be met for a student to make a decision to adjust one of their conceptions. An individual must first knowledge disappointment with the original formation. That human being must subsequently appreciate the new formation that is projected and discover it believable. Finally, he or she have to find that the new conception increase his or her mentality. the original idea well thought-out applicable at the beginning increasingly loses its position to be replaced by a conception earlier to that of traditional science. The thought is to first encourage students to communicate their ideas concerning a specified trend and then nearby them with a revelation that counters persons thoughts. The resultant perceptional disagreement then instigate disappointment and the remains of the conceptual change process occurs naturally. Goals, values and feelings of efficiency and control are also influential factors in the conceptual change process. Students' goals and perceptions are components that influence their commitment on the path toward the modification of conceptual structureFinally, the classroom context influences the interaction between motivational and cognitive factors in learners. A teacher must, during the educational process, encourage the expression of a variety of ideas from different people in the class and must invite them to fully explain their ideas. The teacher must also make use of metacognition and ask students to think about the value of their ideas. It is thus important to supply students with a learning environment that encourages the expression of their ideas and beliefs, and then to make them have significant experiences that allow them to understand the limits of those ideas and beliefs, and consequently to motivate students to revise them.

Researchers moreover suggest further strategy intended to favour abstract modify. empirical knowledge, or factual write to with people and objects in the environment is one of these. Pruneau and Lapointe define experiential learning as a process through which the participants fashion their ideas and beliefs through affective and cognitive transactions with their biophysical and social environments. signal compete that empirical knowledge consists of a relationship between people and their environment through which a significance is revealed. In the pasture of Environmental Education, Explains the stages of experiential learning in the following manner.

• *substantial*experiences is a mode of learning centred on *feeling* . During this stage, the learner is in a learning or problem-solving situation; one gains new experiences by interacting with one's surroundings.

• *reflective observation* is centred on the act of *observing* . The learner must observe, reflect and try to understand reality from his or her experiences.

• *conceptualization*, the student ponder *about* , ton and constructs his or her conceptions

• *active experimentation* is centered on the do something of *responsibility* . At this stage, the fresher believe on his or her innovative originate information to formulate decision and explain problems. The student as well make a remove by experiment to facilitate information in new situations.

All through thoughtful study, the learner can reveal unaccompanied or among a educator lying on what was skilled. Moreover, Throughout mixture (active experimentation), the student can contribute to the value of his or her experience with peers, or pertain it to a further situation. Experimental knowledge therefore allows learner to undergo special emotions such as confront, satisfaction, aspiration to contribute their imitation, amazement, compassion, etc.

Any more procedure that encourages hypothetical increase is verbal communication between peers allows learner to vocally converse their thoughts and opinions, and therefore their notion. Group connections generate cognitive conflict and deliberate between the family, creation them conscious of the survival of thoughts special beginning theirs. This inconsistency can pilot them to change their original thoughts.

Lastly, technical characters is a new strategy that helps theoretical modify. have to write down their thoughts allow students to complicated on them, estimate and change them.

There follows a thereabouts of questions and answers among educator and learner, a procedure that creates a deeper indication. Deeper indication is one more approach that influences intangible change.

Teaching method in Colleges

Curriculum development:

The younger descent, learner are the successful medium to bring giant changes in the society and therefore cultivating about the environment to the young intelligence is the accurate step and as well this is the exact instance for the equivalent. The reserve foundation is not infinite and there must survive several perimeter beyond which the velocity of utilization of natural resources will contain the capability of prospect generations to assemble their own needs. Therefore the meeting point must be on plummeting utilization with a observation to attain sustainability. Anywhere potential, approach for reducing expenditure of energy and materials, and greater use of renewable resources, should be incorporated in design and construction. Science and Technology, Yet while advanced, cannot assist in convey concerning the transform of manner. Therefore education in ethical and decent values is desirable and Environmental learn should be completed a compulsory element. Reasons for including moral education in Curriculum Development:

• As opportunity planners, designers, builders and decision makers, engineers shoulder special responsibility in defensive the reliability of nature and the natural environment.

• Human beings are normal creature who have an innate need to rationalise all their actions and thoughts .Moral philosophy provides this rationale, and by doing so gives us our humanity.

• Albert Einstein's statement "Science without philosophy is just mechanics".

This moral education reinforces environment – respecting moral values, especially in the young through formal education.

Criteria for curriculum development:

• The focus must be on reducing consumption with a view to achieving sustainability. Wherever possible, strategies for reducing consumption of energy and materials, and greater use of renewable resources should be incorporated in design and construction.

• The content should be holistic, covering all essential aspects.

• The content should comprise two strategic elements: The 'end- of- the pipe' element based on science and technology to deal with pollution already produced. The ' before-the-pipe' element concerned with pollution prevention and reduction.

• Low cost technologies which are more practicable for implementation is essential. Local, national or regional environmental issues and problems should be emphasised as appropriate and likely contributions to the environmental problems explained in accordance with the Rio slogan of " Act locally and think globally ".

Enhancing Research activities:

In investigate, precedence might be certain pro sustainable expansion, worldwide change and environment. The systematic and industrial competence wanted for our country can be strengthened. This will be able to implement a sustainable model in the short and long term, integrating its social, economic and ecological extent, causal to worldwide efforts explanatory unfavorable trends in comprehensive change.

Comfortable would be prepared to approve fewer consumptive lifestyles similar with the Earth's ordinary competence. The research may be centred on contamination, physical condition and ecological act. Further resources can be selected for ecological related assignment and learner may be provoked by charitable decoration and prizes for paramount community collision ecological development. The interest between the students may also be improved by behavior dissertation writing contest.

3. Factors influencing environmental protective behaviour

The valuation of behavioural participation habitually increases when they are intended at significant past history of the proper behaviourand remove obstacle for change. Consequently, it is significant to appreciate which aspect promote or reduce environmental protective behaviour. Aspect creative environmental protective behaviourhave been measured from special educational perspective. In Section 3.1, we first elaborate on three lines of research that focus on separate incentives to involve in environmental behaviour, separately: obvious charge and assistances, moral and normative concerns, and affect. We designate how these different perspectives may be integrated into a rational framework. Next, we identify two deficiency of these research appearance. primary, they do not pay due attention to contextual factors. We propose ways to consider such factors more systematically in Section 3.2. Second, they imply the statement that individuals make reasoned choices. In Section 3.3, we converse current studies that indicate that in many cases people act regularly.

3.1. Motivational factors

3.1.1. Expenditure and benefits

Different study on environmental protective behaviour ongoing from the assumption that persons make consistent choice and desire another with main benefits beside lowest costs. One influential framework is the Theory of Planned Behaviour (Ajzen, 1991). The TPB has proven to be successful in explaining various types of environmental behaviour, including travel mode choice (Bamberg & Schmidt, 2003; Harland, Staats, &Wilke, 1999; Heath & Gifford, 2002; Verplanken, Aarts, Van Knippenberg, &Moonen, 1998), household recycling (Kaiser &Gutscher, 2003), waste composting (Mannetti, Pierro, &Livi, 2004; Taylor & Todd, 1995), the purchasing of energy-saving light bulbs, use of unbleached paper, water use, meat consumption (Harland et al., 1999), and general pro-environmental behaviour (Kaiser et al., 1999).

3.1.2 Eethical and normative concerns

A general variety of study attentive on the role of Ethical and normative anxieties fundamental environmental protective behaviour from different hypothetical point of view.Initial, researcher have examined the value-basis of environmental beliefs and behaviour (De Groot &Steg, 2007, 2008; Nordlund&Garvill, 2002; Schultz &Zelezny, 1999; Stern & Dietz, 1994; Stern, Dietz, &Kalof, 1993; Stern, Dietz, Kalof, &Guagnano, 1995). These studies revealed that the more strongly persons promise to values beyond their instantaneous own welfare, that is, self-transcendent, pro-social, altruistic or bio-spheric values, the Further expected they are to engage in environmental protective behaviour. Next, studies focused on the role of environmental concern. Different conceptualizations of environmental concern have been used, but environmental concern has been mostly measured by the New Environmental pattern scale .These studies exposed that elevated environmental concern is related with performing extra pro-environmentally, Even though interaction are usually not strong. A third line of research focuses on Ethical obligation to act environmental protective behaviour. These studies are based on the norm-activation model. The NAM and VBN theory come out to be successful in explanation low-cost environmental protective behaviour and ''good intentions'' such as compliance to modify behaviour, following behaviour environmental nationality, or strategy acceptability, but they emerge to have far less expressive authority in situation characterized by elevated behavioural expenses or physically powerful limitation on behaviour, such as that reducing vehicle utilize. In such settings, the TPB appears to be further prevailing in amplification environmental protective behaviour, in all probability because the TPB consider a broader variety of factors, particularly non-environmental motivations and supposed behavioral arrange. A fourth line of investigate focused on the manipulate of social norms on behaviour. The theory of normative conduct distinguishes two types of social norms. Injunctive norms refer to the extent to which behaviour is supposed to be frequently permitted or disapproved of. Descriptive norms reflect the extent to which behaviour is apparent as common. The extent to which injunctive and expressive standards influence behaviour depends on the saliency of a particular norm. This theory has been validated in a series of experimental studies about littering in public places .

3.1.3. Affect

Some studies have clearly examined the role of affect in explaining environmental protective behaviour, mostly in relation to vehicle use (see Gatersleben, 2007, for a review). It come into sight that vehicle use is significantly related to affective and symbolic factors. Most studies on the role of affective and symbolic motives were exploratory and not theory-based. Steg (2005) established that Dittmar's (1992) theory on the meaning of material possessions provides a promising perspective. This theory proposes that the use of material goods fulfils three purpose: involved, symbolic, and affective. Steg (2005) showed that car use is most powerfully related to symbolic and affective motives, while instrumental motives are less important. Dittmar's theory proposals a talented viewpoint on zhuman being motives to buy and use substantial goods.An obvious question for more investigate suffering the role of representative and sentimental purpose in other area than automobile usage.

3.1.4. An integrative perspective on environmental motivation

The three general lines of research just described involve rather different antecedents of environmental behaviour. All three perspectives proved to be predictive of at least some types of environmental behaviour. However, so far it is not clear which perspective is mainly practical in which circumstances. Though ethical and standard frameworks come into view to be further winning to explain low rate behaviour and actions with environmental intent, orderly research on the variety of submission of each notional perspective is deficient. The three theoretical perspectives are not equally restricted. A range of researcher have included concept and variables from different notional frameworks, showing that behaviour results from various motivations.

3.2. Contextual factors

The theories and viewpoints conversed above emphasis on separate inspirations influencing environmental protecting behaviour. Observably, human behaviour organizes not be contingent on incentive on your own. Many appropriate factors may smooth the improvement or confine environmental behaviour and influence individual motivations. For example, the availability of recycling facilities, the quality of public transport, the market supply of goods, or pricing regimes can strongly affect people's engagement in environmental protective behaviour . In some cases, constraints may even be so severe that behaviour change is very costly and motivations make little difference in the environmental outcome . So, it is not only important to consider intra-personal factors such as attitudes, norms and habits, but also contextual factors such as physical infrastructure, technical facilities, the availability of products, and product characteristics. In environmental psychology so far, except for a few studies. Contextual factors have not been examined systematically, nor are contextual factors included in the theoretical approaches discussed above. The TPB only considers individuals' perceptions of contextual factors, as expressed in perceived behavioural control. This is remarkable, given that environmental psychology aims to study transactions between humans and their environment, and thus should be particularly interested in examining the effects of contextual factors on behaviour. Contextual factors may operate in four different ways. First, they may directly affect behaviour. For example, one cannot travel by bus when no bus service is available, while a free bus ticket may result in an increase in bus ridership. Second, the relationship between contextual factors and behaviour may be mediated by motivational factors such as attitudes, affect, or personal norms. For example, the introduction of recycling facilities may result in more positive attitudes towards recycling, and positive attitudes may in turn result in higher recycling levels. Third, contextual factors may moderate the relationship between motivational factors and behaviour, and the effects of contextual factors on behaviour may depend on personal factors . For example, environmental concern may only result in reductions in car use when feasible alternatives are available, and recycling facilities may promote recycling only among those high in environmental concern. Fourth, and related to the third point, following goal-framing theory, it may well be that contextual factors determine which type of motivations most strongly affects behaviour. For example, normative goals may be strongly related to frequency of recycling when facilities are available, while gain or hedonic goals may be prominent if recycling facilities are poor. Given the significance of contextual factors for environmental behaviour, studies are needed about the role of contextual factors vis-a` -vis motivational factors, following our suggestions above. This should preferably be done in teamwork with such experts as architects, urban planners, industrial designers and technologists who do explicitly consider the effects of contextual factors. Multiple levels of analyses in measurement and statistical models may be very useful to examine to what extent behaviour depends on contextual factors, motivational factors, and the interaction between them. Such research may lead to intervention programmes aimed at behaviour changes for which exterior obstacles have to be eliminated while feasible substitutes are apartment in place.

3.3. Habitual behavior

The notional frameworks converse in part largely implies that persons create logical choice.Though, in many cases, behave our is consistent and guide by automatic cognitive processes, Relatively than being lead by complex analysis. Aarts, Verplanken, and Van Knippenberg (1998) distinct three significant characteristics of habits. Initial, lifestyle involve a goal to be achieve. Second, the similar track of achievement is possible to be repetitive while outcome are usually reasonable. Third, habitual responses are arbitrate by psychological process. When people normally proceed in the similar way in a meticulous location, that state will be spiritually connected with the applicable goal-directed behaviour. The innovative frequently this occurs, the stronger and extra available the relationship become, and the extra probable it is with the intention of an human being act Therefore consequently, habitual behaviour is trigger by a cognitive organization that is educated, store in, and retrieve beginning recollection when persons differentiate a exacting situation. Habits refer to the way behavioural choices are made, and not to the incidence of behaviour. Aarts and Dijksterhuis (2000) developed a so-called response-frequency determine of universal habit strength, relying on the assumption that goals automatically activate mental representations of habitual choices. This measure is distant extra accurate than basically ask population how frequently they employ in a meticulous behaviour, since it focuses on how choice are made. The compute has been productively working in a range of studies on environmental protective behaviour . Habitual

behaviour may occupy misperceptions and discriminating consideration community tend to focus on in sequence that confirm their choice, and disregard information that is not in procession with their habitual behaviour. In worldwide, habits are reconsider only when the context changes significantly. This suggests that habitual drivers have inaccurate, and modifiable perceptions of the pros and cons of alternative transport modes. In order to design effective interventions to modify habitual environmental behaviour, it is important to consider how habits are formed, reinforced and sustained. Computer simulation is an interesting methodology to study the formation and reinforcement of habits, for example, by formalisingbehavioural determinants and processes in simulated.

4. Considerate environmental protective behavioural change through communication

In many of the conference it was supposed that in order to explain environmental problems, it was essential, as well the scientific and technical solutions so as to everyone adopt a diverse behaviour towards the environment. Developing a ' environmental protective behaviour' became one of the responsibilities of environmental education. Unfortunately changing behaviour throughout environmental education established itself as a difficult task. A communication approach can give us a new perspective of environmental protective behaviour. It allows us to consider it not only from the individual perspective but also from a social perspective. The initial approach connecting knowledge to attitude and attitudes to behaviour proved wrong in practice and environmental education was forced to change and develop its practice. Various environmental education researchers and practitioners sanctify themselves to understand the environmental protective behaviour in order to improve environmental education. The 'environmental protective behaviour' is defined as " the whole of actions of an individual within the society, that takes into account, in a conscious way, the perennial and harmonious relationship among these actions and environment". Communication is a method of future and explanation process in society and it can be defined as " the exchange processes among the individual and group members of a given society".In the field of environmental education, the research on environmental protective behaviour has been directed in two main directions:

• The predictors of a environmental protective behaviour within the individual,

• The link between environmental protective behavioural change and its outcomes in practice.

The environmental protective behaviour is the product of personality factors, action skills and knowledge that influenced the intention to act.The communication approach explains the difficulties to change behaviour from the lack of stability of the innovation. In this case, the information that the persons disposed to learn and change their behaviour towards the environment are influenced by the communications they have with other persons.

Communication approach in responsible environmental protective behaviour:

In day by day speaking communication is frequently concentrated to provide information, advertising or technical resources that are part of the so-called information and statement technologies. This is not what communication is concerning beginning a scientific perspective. Communication we use it is a way of future and explanation procedure in the social order. Like arithmetic or financial side it foster a scrupulous way of recitation the earth. It is an extra crack in the box during which we can seem at certainty, Even though reality can only be explained partly from our perspective.We can describe communication as "the replace processes between the personality and grouping member of a particular society" These processes, that occupy interlocutors, system, association, method and comfortable, can symbolize a unusual position of observation to view shared phenomenon considering the individual level and also the individual in relation to other individuals, groups and institutions

CONCLUSION

The international community is serious about achieving even a modest degree of global environmental sustainability and sustainable development.We need moral education to instill genuine environment respecting moral values in the young Following interventions based on observations, discussion, research, writing, reflection and idea comparison, young children seem to be able to construct the conception that pollution can be hazardous to their health, starting from the idea that pollution only constitutes visible waste. We believe experiential learning and the socio-constructivist approach, as experienced, contribute to significant learning and encourage *learning* . Indeed, Novak explains that at the point where significant learning occurs, new concepts are integrated into the previous cognitive structure as long as sufficient *effort* is made to favour that integration. This significant learning is opposed to learning 'by heart' (memorisation), an approach often used in schools.Perhaps the effort required of these last interventions that sustain the cognitive conflict between peers' and adults' ideas favours learning better than traditional methods of information-explanation and learning by heart. As Hassard would say, *hands-on* experience is not enough; we also need *minds-on* experiences.The communication perspective opens the door to another kind of tools that environmental educators can use in order to improve the educational practice.Environmental psychologists have an significant responsibility to play in the organization of environmental problems by the encouragement of behavioural changes. Behavioural interventions are usually more efficient what time they are thoroughly planned, implemented and evaluated. Four key issues to be addressed are: (1) identification of the behaviour to be changed, (2) examination of the major factors primary this behaviour, (3) application of intervention to modify the applicable behaviours and their determinants, and (4) evaluation of interference possessions on the behaviour itself, its main determinants, environmental quality, and human quality of life. Interdisciplinary collaboration is needed

to effectively address these issues, because environmental problems are not just psychological problems; they are also ecological, technological, and socio-cultural problems. For a detailed discussion on the added value, conditions, and pitfalls of interdisciplinary research, see SchootUiterkamp and Vlek (2007). We have illustrated how these four issues have been studied so far, and indicated various topics for future research. These can be summarised as follows: It is advisable to measure actual behaviour whenever possible, and to pay attention to the validity and reliability of self reportedbehaviour measures. The conditions under which a particular theory is most successful in explaining environmental protective behaviour need more attention, and the merits of various theories should be studied more systematically. The effects of contextual factors on environmental protective behaviour need to be examined in more detail, as well as how these factors affect various environmental protective behaviours motivational factors. This may lead to extensions of existing theoretical models. It is important to study for which types of behaviour and under which conditions which intervention strategy is most effective for encouraging environmental protective behaviour. In particular, the role of various types of rewards and punishments needs further scrutiny. Interventions need to be evaluated following experimental research designs. Changes in the relevant behaviour, behavioural antecedents, environmental quality, and individual quality of life should be assessed before and after the implementation of an intervention, and 'treatment' effects should be compared to those in a control group not exposed to the intervention. The way subjects adapt to environmental policies and why policy preferences change over time, e.g., before and after policy implementation, need to be clarified. Individuals can contribute significantly to achieving long-term environmental sustainability by adopting environmental protective behaviour patterns. The challenge for environmental psychologists is to understand the cognitive, motivational and structural factors and processes so as to pressure environmental sustainability, so that environmental protective behaviours could be facilitated and appear universal.

REFERENCES

[1] **Aarts, H., &Dijksterhuis, A. P. (2000).** The automatic activation of goal-directed behaviour: the case of travel habit. Journal of Environmental Psychology, 20, 75–82.

[2] **Aarts, H., Verplanken, B., & Van Knippenberg, A. (1998).** Predicting behaviour from actions in the past: repeated decision making or a matter of habit? Journal of Applied Social Psychology, 28, 1355–1374.

[3] **Abrahamse, W., Steg, L., Vlek, C., &Rothengatter, J. A. (2005).** A review of intervention studies aimed at household energy conservation. Journal of Environmental Psychology, 25, 273–291.

[4] **Abrahamse, W., Steg, L., Vlek, C., &Rothengatter, J. A. (2007).**The effect of tailored information, goal setting and feedback on household energy use, energyrelated behaviors and behavioral determinants. Journal of Environmental Psychology, 27, 265–276.

[5] **Bamberg, S. (2002).**Effects of implementation intentions on the actual performance of new environmentally friendly behaviours – results of two field experiments. Journal of Environmental Psychology, 22, 399–411.

[6] **Bamberg, S., & Rö¨lle, D. (2003).** Determinants of people's acceptability of pricing measures – replication and extension of a causal model. In J. Schade, & B. Schlag (Eds.), Acceptability of transport pricing strategies (pp. 235–248). Oxford: Elsevier Science.

[7] **Bamberg, S., & Schmidt, S. (1999).** Regulating transport: behavioral changes in the field. Journal of Consumer Policy, 22, 479–509.

[8] **Bamberg, S., & Schmidt, S. (2003).** Incentives, morality or habit?Predicting students' car use for university routes with the models of Ajzen, Schwartz and Triandis. Environment and Behavior, 35, 264–285.

[9] **Black, J. S., Stern, P. C., &Elworth, J. T. (1985).** Personal and contextual influences on household energy adaptations. Journal of Applied Psychology, 70, 3–21. Cialdini, R. B., Kallgren, C. A., & Reno, R. R. (1991). A focus theory of normative conduct: a theoretical refinement and reevaluation of the role of norms in human behavior. Advances in Experimental Social Psychology, 24, 201–234.

[10] **Cialdini, R. B., Reno, R. R., &Kallgren, C. A. (1990).** A focus theory of normative conduct: recycling the concept of norms to reduce littering in public places. Journal of Personality and Social Psychology, 58, 1015–1026.

[11] **Cook, S. W., &Berrenberg, J. L. (1981).** Approaches to encouraging conservation behavior: a review and conceptual framework. Journal of Social Issues, 37(2), 73–107.

[12] **Corral-Verdugo, V. (1997).** Dual 'realities' of conservation behavior: self-reports vs observations of re-use and recycling behavior. Journal of Environmental Psychology, 17, 135–145.

[13] **Corraliza, J. A., &Berenguer, J. (2000).** Environmental values, beliefs and actions. Environment and Behavior, 32, 832–848.

[14] **Daamen, D. L., Staats, H., Wilke, H., &Engelen, M. (2001)**. Improving environmental behavior in companies: the effectiveness of tailored versus nontailored interventions. Environment and Behavior, 33, 229–248.

[15] **De Groot, J. I. M., &Steg, L. (2007).**Value orientations and environmental beliefs in five countries: validity of an instrument to measure egoistic, altruistic and biospheric value orientations. Journal of Cross-Cultural Psychology, 38, 318–332.

[16] **De Groot, J. I. M., &Steg, L. Morality and prosocial behavior:** the role of awareness, responsibility and norms in the norm activation model. Journal of Social Psychology, in press.

[17] **De Groot, J., &Steg, L. (2008).** Value orientations to explain beliefs related to environmental significant behavior: how to measure egoistic, altruistic, and biospheric value orientations

[18] **Gatersleben, B., Steg, L., &Vlek, C. (2002).**Measurement and determinants of environmentally significant consumer behaviour. Environment and Behavior, 34, 335–362.

[19] Geller, E. S. (1995). Actively caring for the environment: an integration of behaviourism and humanism. Environment and Behavior, 27, 184–195.

[20] Geller, E. S. (2002). The challenge of increasing proenvironmental behavior.In R. B. Bechtel, & A. Churchman (Eds.), Handbook of environmental psychology (pp. 525–540). New York: Wiley.

[21] Geller, E. S., Winett, R. A., & Everett, P. B. (1982). Preserving the environment: New strategies for behavior change. Elmsford, NY: Pergamon.

[22] Green-Demers, I., Pelletier, L. G., & Menard, S. (1997). The impact of behavioral difficulty on the salience of the association between self-determined motivation and environmental behaviors. Canadian Journal of Behavioural Sciences, 29, 157–166.

[23] Guagnano, G. A., Stern, P. C., & Dietz, T. (1995). Influences on attitude-behavior relationships: a natural experiment with curbside recycling. Environment and Behavior, 27, 699–718.

[24] Harland, P., Staats, H., &Wilke, H. (1999). Explaining pro environmental behavior by personal norms and the theory of planned behavior. Journal of Applied Social Psychology, 29, 2505–2528.

[25] Heath, Y., & Gifford, R. (2002). Extending the theory of planned behaviour: predicting the use of public transportation. Journal of Applied Social Psychology, 32, 2154–2185.

[26] Hunecke, M., Blo¨baum, A., Matthies, E., & Ho¨ ger, R. (2001). Responsibility and environment: ecological norm orientation and external factors in the domain of travel mode choice behavior. Environment and Behavior, 33, 830–852.

[27] Jager, W., &Mosler, H. J. (2007). Simulating human behavior for understanding and managing environmental resource use. Journal of Social Issues, 63(1), 97–116.

[28] Jakobsson, C., Fujii, S., &Ga¨ rling, T. (2000). Determinants of private car users' acceptance of road pricing. Transport Policy, 7, 153–158.

[29] Jakobsson, C., Fujii, S., &Ga¨ rling, T. (2002). Effects of economic disincentives on private car use. Transportation, 29, 349–370.

[30] Kaiser, F. G. (1998).A general measure of ecological behavior. Journal of Applied Social Psychology, 28, 395–422.

[31] Kaiser, F. G., &Gutscher, H. (2003). The proposition of a general version of the theory of planned behaviour (TPB): predicting ecological behaviour. Journal of Applied Social Psychology, 33, 586–603.

[32] Kaiser, F. G., Wolfing, S., & Fuhrer, U. (1999). Environmental attitude and ecological behaviour. Journal of Environmental Psychology, 19, 1–19.

[33] Klockner, C. A., Matthies, E., &Hunecke, M. (2003). Problems of operationalising habits and integrating habits in normative decision-making models. Journal of Applied Social Psychology, 33, 396–417.