

A Positive Attitude Practice: The Best Solution to Mitigate Water Pollution

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ABSTRACT

The attitude of human create pollution. Pollution has to be addressed, and changing of human attitudes could be the only way to mitigate the pollution. The three pillars method to encourage humans to change their attitude so that our environment will at least maintain the strata quo of the current situation. The process of changing the human attitude is a long-term and time-consuming process, however, the end result is an encouraging one. The two examples quoted are the River of Life Project and the Sungai Way River rehabilitation project. Both projects have significant success stories of changing human attitudes. The first example is that the government has spent a lot of money to beautify and clean the river, an expensive clean-up, but it creates an awareness that is time for humans need to change their attitude to keep the environment clean (the application of Utilitarian attitude approach). The second example is the involvement of stakeholders, such as communities, students, teachers, merchants, factory owners, and traders. Who are knees to rehabilitate the river that flows beside their place of work, properties, residential area, schools, and playground (a good application of Normative Attitude). The environment can be reinstated to its natural state when humans change their attitude of habituation.

Keywords: attitude; pollution; environment; mitigate; change

INTRODUCTION

Water pollution is a severe problem in developing countries, and adequate water quality monitoring is required to identify the suitability for usage and assist with water quality management or improvement (Kozaki 2016). Wang ZY et al. (2015) recommended the practice of the Project Management Process to manage the river to achieve water security, economic benefits, mitigating pollution, and habitat restoration for long-term stability and sustainable development, which includes morphology and landscape, river uses, and ecology. The current Sustainable Development Goals (SDGs) introduced by United Nations, emphasized the need to contain the clean use of water. Less portable water is available for human usage, as reported by World Atlas (2018), only 0.4 percent of global water is available

and suitable for consumption by 7 billion people. Pollution not only contaminates our limited water resources but also destroyed marine habitats.

Human is the main culprit of pollution (Feng Liu et al., 2019). Human settlement produces domestic waste, manure, wrappers, PVC bottles, farm waste like fertilizer, pesticides, and industrial waste, and treats rivers as their dumping grounds. Water pollution is a particularly severe problem in developing countries and adequate promotion of correcting the humans' attitude toward preserving this limited precious life-saving water. Debora Reis, et al., (2020) stress that anthropogenic activities have a great influence on water quality and the availability of aquatic habitat and food resources. It is due to human behavior resulting from the combined effect of external contextual influences and internal psychological attributes (Martin et al., 2017).

RESEARCH OBJECTIVE

To explore human attitudes, a theoretical approach to create awareness and possible changes in human attitudes and behavior towards mitigating river water pollution.

RESEARCH QUESTION

What is the effect of human attitudes on river water pollution, that can be improved via Education, Persuasion (Promotion), and Penalty?

Debora Reis, et al., (2020) stress that anthropogenic activities have a great influence on water quality and the availability of aquatic habitat and food resources. Water pollution is a particularly severe problem in developing countries and adequate promotion of correcting the humans' attitude toward preserving this limited precious life-saving water. It is due to human behavior resulting from the combined effect of external contextual influences and internal psychological attributes (Martin et al., 2017).

LITERATURE REVIEW

According to the World Health Organization (WHO) (2007), during the last decade of the last century, about two billion people were victims of natural disasters, 85% of which were floods and droughts mainly due to pollution. Grayman et al. (2012), express their concern on water issues and water pollution will become even more important in the lives and activities of people. Many warnings and awareness messages from schoolers with figures and facts showing the extreme worse conditions to be expected on the water resource being polluted, and yet there is no one who figures out a concrete suggestion or research on how to reverse the situation from this worse situation.

This research shows the gap in a study on the human attitude of the “take for granted” attitude. Their attitude of expect the river to clean itself when rubbish is dumped into the river (Owa, 2013). When this attitude of the community does not change, the pollution will continue to happen, pollution will be a norm and recurrent disruption of water supply will continue to happen and exert influential effects on the pollution in the river (Feng Liu, et al., 2019). Most of the rivers in the world have been nearly destroyed due to human activities and destruction (Mauerhofer et al., 2018). It affects the biodiversity and physical status of rivers resulting in decreases in the economic value of the river ecosystem, the over-exploitation of river ecosystem services has created pressure on ecosystems (Grizzetti et al., 2016). The challenges of mitigating the contaminations and pollution of these water resources are often replicated at the global and national scales. The SDGs (Goals # 6 and # 14) and national planning are tailored to achieve optimal water management to develop solutions to mitigate water pollution.

There is very limited literature about river and water resources governance (Francine et al. 2019) not to mention scholarly literature on managing river water pollution. In recent years, everyone is discussing “Pollution”, and trying to solve this millennium problem. But the situation of pollution continues to get from bad to worse, especially with the slow decomposing materials like plastic, foam, nylon, and others. The budget of millions of ringgits was allocated and reserved to spend on the upkeep of the river, cleaning the rivers, and with long/short term programs, but the root of the pollution problem was not established, addressed, or occluded.

This research has advocated that Humans have to change their bad attitude towards disposing of rubbish in the river. A call for action to change our environment is to change our attitude. Hogg, & Vaughan (2005) described one attitude as “a relatively enduring organization of beliefs, feelings, and behavioral tendencies towards socially significant objects, groups, events or symbols”. This statement explained the finding of Eagly, & Chaiken, (1993) that a psychological tendency is expressed by evaluating a particular entity with some degree of favour or disfavour. Carpenter et al. (2013) express their finding that attitude can be functional, and the development of one attitude to serve one goal. It is conceptually difficult to just introduce the concept of pollution without giving enough time to try to change human attitudes (Sinatra and Maso 2008). The attitude of a person is often a good predictor of one behaviour and the affected behaviour will likely involve the attitude strength and how significant the attitude is of the person and relates to self-interest, social identification, and value. Mcleod (2018) terms attitudes are related to self-image and social acceptance. To preserve a positive self-image, the responses may be affected by social desirability and acceptance. Therefore, our attitudes and behaviour are based on our personal self-beliefs and values. Bandura (1995) advocates that self-belief or self-efficacy is a belief in their own ability to complete certain tasks and achieve their goals. The self-belief of enough self-confidence to change and become a fixed mindset attitude.

This research explores the knowledge of attitudes and behaviors that may influence stakeholders with the “Big Five”, “Five-Factor Model (FFM)” personality traits of “Agreeableness”; “Conscientiousness”; “Extraversion”; “Intellect”; and “Emotional Stability” that serve as the focus for personal characteristics (John, O.P. 1999). The humans’ attitude toward pollution via education and promotion can be diverse into the “Big Five” personality traits.

Gelade, et al. (2006) have examined the stakeholders’ Affective Commitment (AC), in which the stakeholders’ AC is high where the settler is an extravert and when AC is low where the settler is neurotic. Extraversion is a personality trait associated with a positive effect, correlated with stakeholder commitment and emotional stability. Promotion of stakeholder traits is needed for the success in introducing mitigation of river pollution. According to Church (2000), traits are comparatively stable in personal differences in thoughts, feelings, and attitudes.

The implementation of local regulation for example recycling of solid waste encourages the target behaviour to enormously increase the amount of solid waste recycled (Kinnaman 2006). Empirically, perceptions of legitimacy and promotion help people gain awareness of pollution (Tyler and Fagan 2008). Legal authorities that perceived pollution as legitimate will prompted community members to feel morally obligated to perceive cooperation and compliance as moral imperatives (Tyler 2006). Audhesh Paswan et al., (2017) agreed to the statement of attitude, as described by Fishbein and Ajzen (1975), is a predisposition, and typically viewed as a latent or underlying variable that is assumed to guide or influence behavior. He continues to explain that the impetus for the pro-environmental behavior of most people might have a favorable attitude, but not all people will behave to the same level. Some people will be happily supporting the campaign toward pro-environmental behavior, while others will engage in lifestyle-altering behaviors and activities as Stern (2000) calls, active versus passive behavior. The motivation to impetus pro-environmental behavior needs continuous promotion. Milfont et al. (2012) study the time perspective on human nature to promote environmental sustainability. This research also examines the relationships between attitude toward time, and human interaction towards the intensity of pro-environmental behavior – supportive, active, and lifestyle-altering behavior. The behavior by others carelessly disposing of rubbish in the river, as mentioned by Rusell et al. (2017) is the external factor influencing an individual to do the same. With the rapid growth of the population, increasing the planting of crops increases anthropogenic pollution (J. Sun et al., 2019). People have been treating the river as their wastebasket. PVC bottles, plastic bags, kitchen waste, a broken bicycle, and those unable to sell are disposed of in the river.

This research studies the human attitude and behavior toward pollution and explores the possible change in human attitude and behavior. To in-depth the study, the methods and techniques to monitor the human attitude by Cluster analysis (CA), or Factor analysis (Kukrer and Mutlu, 2019, Kamal and Ramjee, 2019). The research of Winz et al. (2008) portrayed a methodology to address dynamically complex problems in water resources management. However, there is no mention clear description of how to address the complex problems, not until Chua’s (2021) research proposal of the “Three Pillars” strategy method of changing the human attitude toward mitigating river water pollution. Therefore, Whitney et al., (2019) expressed that changing the attitude and composition of the community settling alongside the river can improve the condition of water pollution.

To change people’s Attitudes – the practice of **The Three Pillar Method** (Chua, 2021) changes the attitude of people favourable or unfavourable, or positive or negative.

Education

Classical education system changed the attitude of young children. A long- term perspective of the reform agenda directs the positive attitude change process.

Education influence the amount of attention and the type of judgment at a young age, and gives them a specific attitude component. The thought of attitude has three components affective (feelings), behavioural (the effect of the attitude on behaviour), and cognitive (belief and knowledge) components. An example of a positive attitude toward recycling waste. The attitude teaching should result in positive feelings toward recycling: "Recycling makes me feel good" or "I enjoy knowing that I have contributed to improving the environment and reducing waste that might end up in the river". This attitude feeling shall be reflected in one behaviour to actually recycle the waste as much or as often as once able. An educated attitude is a knowledge-related attitude. It organized and interpreted the positive attitude of the young and train them to feel the Ego of esteem to practice recycling waste and these attitudes will be extended in mitigating pollution in all aspects.

Persuasion

Campaign or Promotion of persuading people to do or change their implicit attitude on pollution. A constant reminder of the importance of a correct their implicit attitude on pollution and how to act on disposal of rubbish and discharge. The contemporary models of persuasion address the importance of ability and motivation to elaboration and valence of recipients' thinking about persuasive messages (Anthonia G, 2015).

Persuasion not only motivates and changes people's implicit attitudes but also promotes and strengthens those explicit people the need to practice reducing pollution. Persuasion corrects and redirects those people with a "cognitive dissonance" attitude, who may have mental stress or discomfort individual who has two or more contradictory beliefs, ideas, or values at the same time, or is confronted by new information that conflicts with their existing beliefs, ideas, or values. Strengthen their cognitive attitude toward pollution through rationalization of new information.

Penalty

An act of coercion by Authorities to mitigate the pollution. Normally the penalty is by monetary fine, but for the serious offender, a jail sentence will be imposed or both. This is not a popular action but it gives an immediate effect to discourage the illegal act of pollution. The current enforcement acts under Section 34A of the Environmental Quality Act of offenders fine of not more than RM500,000 or in prison term of up to maximum of five years cannot stop or discourage the culprits from polluting the environment. Stiffer penalties are being draft to increase and imposed for environmental offences of up to a RM 5million, and monetary reward will be awarded to whistle blowers. Beside Penalty by mean of monetary fine and or imprisonment, the authorities participate directly in battling the polluted environment by upgrading the rivers in Kuala Lumpur.

The Three Pillars Method

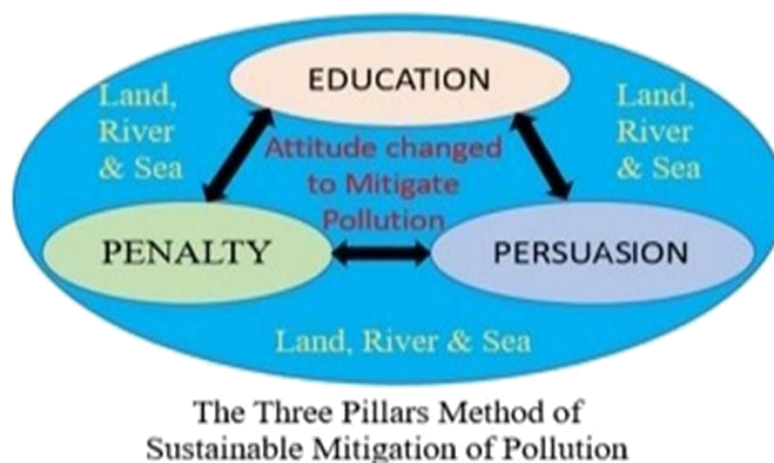


FIGURE 1: The Three Pillar Method of Sustainable Mitigation of Pollution.

Source: ECSA 58 Poster presentation by Chua Boon Pin (2021).

The success story of practicing the 3 pillars method

(1) The clean Singapore campaign commenced in 1969. The persuasion to change the Singaporean's attitude begins with advertisements, posters, campaigns by NGO, and Celebrities performing their duties to show an example of a good citizen by participating in the campaign, etc.

(2) The next step by authorities is to pass bills such as "EPMA 1999" for 1st conviction of polluting the environment, a fine of not exceeding S\$50,000, or imprisonment for a term not exceeding 12 months or both. There are international laws governing transboundary river waterways and oceans. Examples of such laws are as follow:

- a. UN Convention on the Law of Sea, 1982 (signed by over 120 nations);

- b. London (Dumping) Convention, 1972;
- c. MARPOL International Convention for the Prevention of Pollution from Ships, 1978; and
- d. OSPAR Convention for the Protection of the Marine Environment of the North- East Atlantic

(3) Singapore education curriculum of Character and Citizenship Education (CCE) provides opportunities for children to learn social-emotional, competencies, and values. The provision of Normative attitude cultivation from the young community by helping out on beach cleaning or litter picks to keep our rivers and seas that little bit cleaner.

Attitude

Definition of attitude: As defined by Dictionary.com, Attitude originated during 1660-70, Italian attitude; Late Latin aptitudini- (stem of aptiudo) aptitude.

The Princeton University online WordNet (1997) definition of attitude as “a complex mental orientation involving beliefs and feelings and values and dispositions to act in certain ways”, while the Collins Cobuild Student’s Dictionary (2003) explains that: “Your attitude to something is the way you think and feel about it”. This explained the finding of Allport’s (1968) considering attitude is “the most distinctive and indispensable concept in contemporary psychology. The concepts such as attitude, attraction, attribution of dispositions, liking, and behavioural intentions have been generally labeled as “Attitude”. This leads to confusion and ambiguity on the attitude concept, and many researchers may not agree on an explicit definition of attitude (cf. McGuire, 1969; Elizur, 1970; Kieler, Collins, and Miller, 1969). The researchers have attempted to provide an integration of these different definitions (Allport, 1935; Nelson, 1939).

However, they have tended to acknowledge “the diversity of attitude definitions and despair of finding consensus or justification for one definition as opposed to others” (Greenwald, 1968). And McGuire (1969) has pointed out, most researchers intuitively select a particular measurement procedure that seems to fit the purpose of their study. Kiesler, Collins, and Miller (1969) have pointed out, “social psychologists have tried to make their definition of attitude both a conceptual definition and a theory of the concept”. Gerd Bohner (2014) and most researchers agreed that “attitude” can be changed and “a learned predisposition to respond in a consistently favourable or unfavourable manner for a given object”. Psychological theories on attitudes refer to an evaluative, emotional reaction (i.e. the degree of like or dislike associated with the attitudinal object) comprising three components: affect, cognition, and behaviour (used to call the ABC or Tripartite model of Attitude) (Zimbardo & Lieppe 1991), these components change when there is “dissonance” or disagreement between them (Mantle-Bromley, 1995). The “dissonance” is due to people experiencing Mental Discomfort after being stormed with new information. As a result of the Dissonance, people subconsciously or consciously try to control this discomfort through three processes that are interrelated to each other. The processes ease the discomfort and make them select which information to consume, remember, or interpret.

- (1) The first process of exposing themselves to or attending to that information or messages that are in tune with their already present attitudes and beliefs. It is called Selective Attention or Exposure;
- (2) The second process is to keep the information in mind and retain the messages in tune with their previously existing attitudes and beliefs; and
- (3) Third selective Perception is people plausibly predict messages or information in a manner that is in tune with their already existing attitudes and beliefs. Beliefs have been defined as “mental constructions of experience” (Sigel, 1985) that is held to be true and that guide behaviour (White, 1999).

What is attitude explained by Gawronski B. (2007), that attitude is a stable entity stored in memory versus temporary judgments constructed on spot from the information. Attitude can be a learned predisposition (Kiesler, Collins, and Miller, 1969) that attitude can be a guide or influence behaviour, and it is not identical to observed response consistency. Attitude can be defined as a positive or negative evaluation of people, objects, event, activities, ideas, or just about anything in our environment.

Eagly and Chaiken (1993) define an attitude as “A psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disavowal.” Although it is common to define attitude as an effect toward an object. The effect of overall arousal may be taken as distinct from attitude as a measure of favourability. The definition of attitude by Eagly and Chaiken (1993) that one’s evaluation of an attitude object to vary from extremely negative to extremely positive, at the same time admits that an individual can also be conflicted or ambivalent towards an object meaning that might at different times express both positive and negative attitude towards the same object. This led to a discussion of whether the individual could have multiple attitudes towards the same object. More research to consider on the topic of whether attitudes are explicit (deliberately formed) versus implicit (subconscious). Zimbardo & Lieppe (1991) advocate that attitudes are acquired and can be changed fairly predictable. Attitudes cannot be observed directly but can be inferred from observed consistency in behaviour. The variations of definitions of attitude can be emphasized four attitudes predispose:

- (1) Action;
- (2) Imply evaluation;
- (3) Affective component; and
- (4) Are learned

The characteristic of attitudes predisposes provide us with a response to predict behaviour in different situations related to a particular attitude. The central attribute of the attitude concept is the ability to evaluate the positive or negative valence. Attitudes can be learned from others or through socialization, and develop from experience. Since attitudes can be learned, therefore they are able to be taught by education, persuasion, and promotion, since they are enduring enough to be stable and are temporary enough to be transformed. Chave (1928) describes factors that influence a person’s predisposition: “An attitude is a complex of feelings, desires, fears, convictions, prejudices, or other tendencies that have given a set or readiness to act to a person because of varied experiences”. Krech and Cruchfield (1948) defined attitude as “an enduring organization of motivational, emotional, perceptual, and cognitive processes concerning some aspect of the individual’s world.” As attitudes are learned they have the ability to be taught or educate to perform and enduring enough to be stable and able to transform. Attitudes can guide individual thoughts, behavior, and feelings. Attitude can be changed anytime when an attitude is modified. The person’s continued commitment to mitigating pollution will not be changed if their mindset is fully committed. As Farrukh et al.

(2017) research show that emotional stability, conscientiousness, extraversion, agreeableness, and openness (Big Five personal traits/Five-Factor Model) have negative associations with, and are not correlated with continuance commitment. They (Big Five/Five-Factor Model) are highly correlated with affective commitment, while affective commitment and agreeableness are significantly related to normative commitment as reported by Gungor et al. (2013). That affective and normative commitment has a strong relationship with agreeableness traits. The attitude of confidence as Bandura A. (1997) Self-Efficacy Theory express that people believe in one’s effectiveness in performing specific tasks, in this case, the motivation to change their attitude toward mitigating pollution. Let’s look into Bandura 4 sources of self-efficacy theory:

- (1) Performance Accomplishments (Enactive Mastery);
- (2) Vicarious Experience (Self-Modelling);
- (3) Social Persuasion (Verbal encouragement); and

(4) Physiological and Emotional states (Emotional Arousal).

Self-Efficacy developed through these four stages of action or emotion and acquired the behavioral attitude in a positive mindset to mitigate the pollution.

Sources of Self-Efficacy

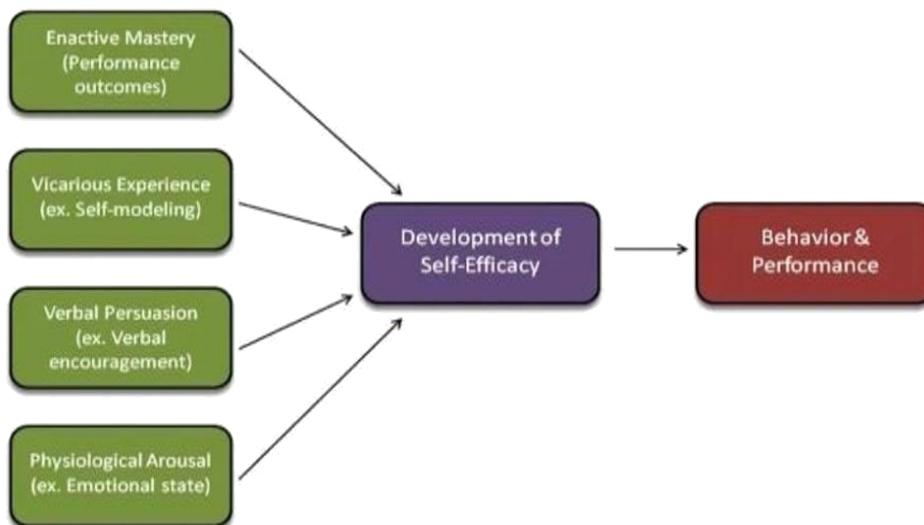


FIGURE 2: Four Sources of Self-Efficacy.
 Source: Adapted from Bandura (1997) Self-Efficacy.

Allen and Meyer (1991) indicated that people’s commitment is characterized by their own suitable “Mindsets”. There are affective, continuance, and normative commitments that show their self-confidence and self-efficacy.

Stewart et al. (2006) continued the research and mentioned in their research, that people with a high degree of openness deserve opportunities to deal with difficult situations and convert their attitudes to change the environment.

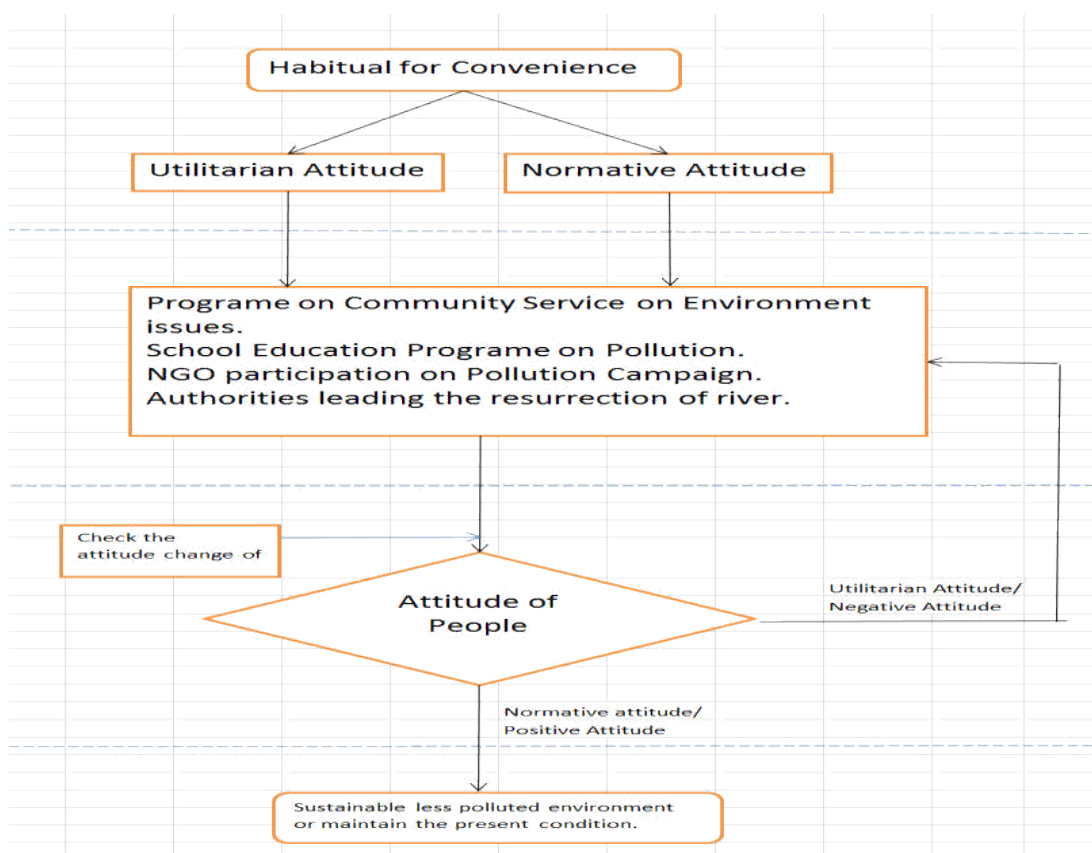


FIGURE 3: Theoretical framework of Attitude.
 Source: Derived from this research.

McLeod, S. (2018) has quoted Hogg, & Vaughan's, (2005) definition of attitude as "a relatively enduring organization of belief, feelings, and behavioural tendencies towards socially significant objects, groups, events or symbols". "...a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour" Eagly, & Chaiken, (1993) explains further to this content. Millikan, (2000) defines "Attitude" as a self-propelled movement producing a functional interaction between humans and their environment, such as finding a mate or fleeing from a predator. Sterelny, (2003) further explains the human ability to adapt and change their attitude and behaviour to suit the circumstances.

McLeod, S. (2018) defines "Attitude" as three components of the "ABC model of Attitudes" or "Tripartite Model".

- (1) Affective component: A person's feelings/emotions about the attitude object, which might be a positive or negative initial reaction of a fear-based reaction or an excitement-based reaction.
- (2) Behavioral (or conative) component: The way the attitude influences how to act or behave.
- (3) Cognitive component. This involves a person's belief/knowledge about an attitude object and pausing to really think hard about it before reacting.

The assumptions between attitudes and behaviour are usually expected the behaviour of one person to be consistent with his attitudes.

CONCLUSION

The River Project starts to understand the damage created by pollution and the change of attitude from carefree disposal of waste to concerned communities for environmental cleanliness. The change of attitude also prompted the communities to keep an eye on the litterbug. Environment improvement brings nature back to life, changes the habitat suitable for river life beginning to breed, tree and flower start to grow and flower. Mother nature return to the environment and nature is restored to its natural state. It is hard to believe that these pandemics slow down human activities and in return, the environment has the chance of breathing in a natural way, the environment has returned to its natural state.

The pollution is made by the human, its rectification has to be by the human, and only the human himself able to solve it by changing their attitude towards pollution. River Project management is the best solution to mitigate river pollution.

The research paper illustrated

- (1) the model and process of river project management which can be applied to most rivers;
- (2) The river pollution is created by humans and it needs humans to solve it by themselves;
- (3) The attitude of people can be changed with proper guardant, and education plays an important role to change people's attitudes;
- (4) That it is easier to stop the pollution at the river than trying to clean the sea or ocean when the pollutants reach the sea or ocean;
- (5) That with the full cooperation of stakeholders (Internal and External), can achieve success in mitigating river pollution; and
- (6) The fulfilment of SDGs # 14 can be achieved with the implementation of the River Project Model.

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