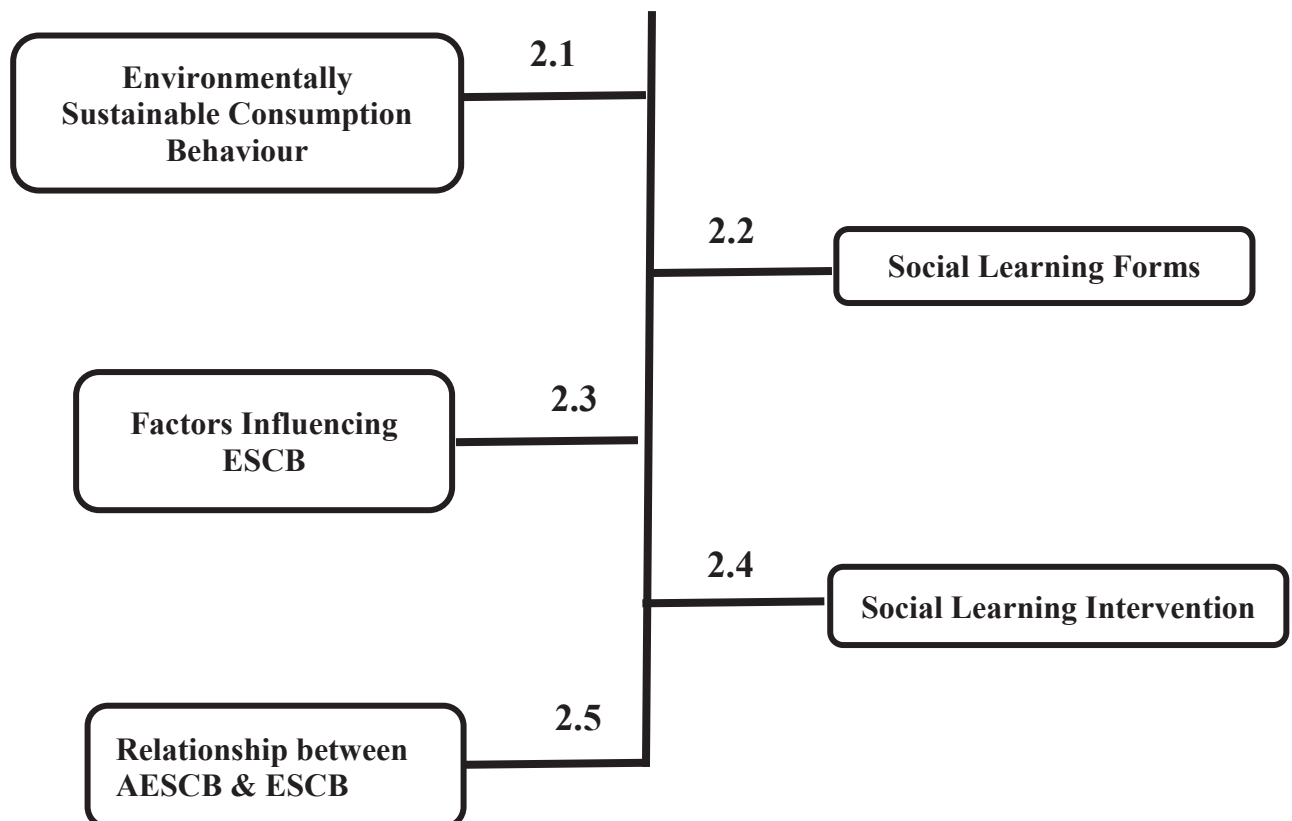


## CHAPTER 2

### LITERATURE REVIEW

---

In this chapter, we review and discuss the literature on environmentally sustainable consumption behavior (ESCB), social learning forms (SLF) comprising active learning (AL) and passive learning (PL) tools and various influencing factors of ESCB. Chapter two is divided into four sections. The first section describes environmentally sustainable consumption behavior (ESCB), its definition, origin. The second section will describe social learning, the difference between various social learning forms and various social learning tools. Section three explains various theoretical constructs of the Social Cognitive Theory (SCT) that influence environmentally sustainable consumption behavior in detail. Section four discuss various intervention related studies and reviewed how the intervention affects the behavior. Section five explained the relationship between attitude towards environmentally sustainable consumption behavior (AESCB) and environmentally sustainable consumption behavior. Related research studies that have been undertaken and published are discussed in detail in each section.

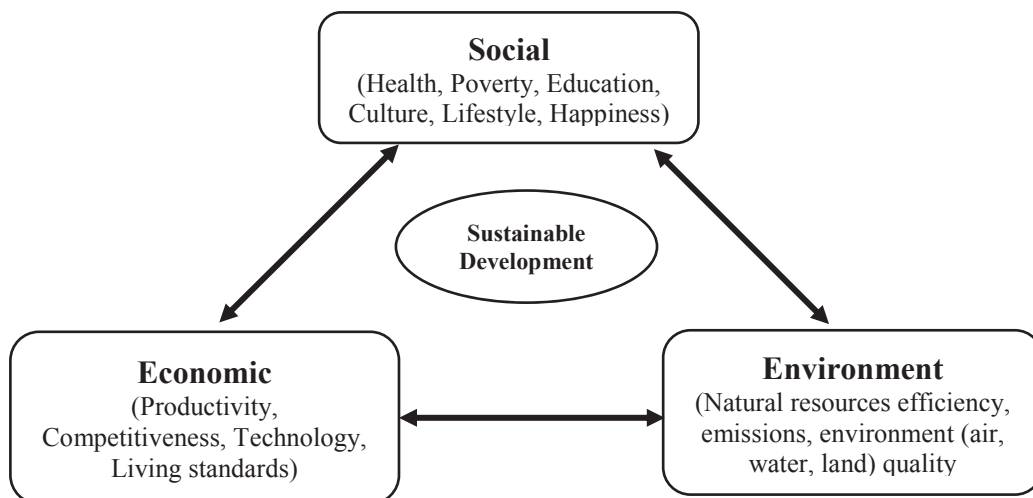


**Figure 3: A schematic representation of chapter 2**

## 2.1. Environmentally Sustainable Consumption Behavior (ESCB)

Rising environmental concern made “sustainability” the key issue in the twentieth century at multiple international forums - United Nations Conference on Human Environment, 1972; United Nations World Charter for Nature, 1982; World Commission on Environment and Development, 1992 and later at World Summit on Sustainable Development, Johannesburg, 2002. Sustainable Development (SD) refers to “*meeting the needs of current generations without limiting the ability of future generations to meet their own needs*” (Burtland Commission, 1987) and focuses mainly on three dimensions of sustainability: economic, social and environmental (Pezzoli, 1997, figure 4).

In recent years, 60 percent of environmental impact is accounted from household consumption where end use cause 80 percent of this impact (Ivanova et al., 2015, Park & Ha, 2012). Therefore, giving importance to environmental sustainability, importance of sustainable consumption is growing (Park & Ha, 2012). The concept of sustainable consumption (SC) was brought into the consideration about 20 years ago, in the Brundtland Report “Our Common Future” (Peattie & Collins, 2009).



**Figure 4: Schematization of three dimensions of sustainability**

Behavior that protects the environment is described by various terms by scholars, such as environmentally concerned behaviors, environmentally significant behaviors, environmentally responsible behaviors, and pro-environmental behaviors (Thogersen & Olander, 2002). Authors often use sustainable consumption, pro-environmental behavior, environmental behavior, environmentally-sustainable behavior, and environmentally-friendly behavior interchangeably (Park & Ha, 2012).

In 1994 a working definition of sustainable consumption (SC) was proposed in The Oslo Symposium which states SC as *“the use of goods and services that respond to basic needs and bring a better quality of life, while minimizing the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardize the needs of future generations”*. A similar definition for pro environmental behavior was proposed by The UNCSD International Work Programme in 1995 which was cited in UNEP, 2005 (Park & Ha, 2012). Steg & Vlek (2009) defined this term like *“behavior that harms the environment as little as possible, or even benefits the environment.”* An important research question that arises at this point was whether both public sphere and private sphere environmentalisms be considered for this study given the population of primary school children. To understand this issue and come to a logical answer, relevant literature was explored. Sawitri, Hadiyanto & Hadi (2015) definition was discovered which gives a comprehensive overview: *“Pro-environmental behavior is conscious actions performed by an individual so as to lessen the negative impact of human activities on the environment or and to enhance the quality of the environment. Examples of pro-environmental behavior include environmental activism (e.g., active involvement in environmental organizations), non-activist behavior in the public-sphere (e.g., petitioning on environmental issues), private sphere environmentalism (e.g., saving energy, purchasing recycled goods), and behavior in organizations (e.g., product design).”* Since, the component of 'pro-environmental behavior' comes closest to ESCB, and it applies well to children in terms of what they participate in, this component from an ESCB perspective was adopted.

In literature, Pro-Environmental Behavior (PEB) has been investigated from two perspectives: (a) Impact-oriented which defines as *“the extent to which the behavior changes the availability of materials or energy from the environment, alters the structure and dynamics of ecosystems or the biosphere itself.”* (b) Intent -oriented is defined as *“an outcome of individual decision making such as behavior, attitude, intention”* (Stern, 2000). This study focuses on the 2<sup>nd</sup> perspective, namely, intent-oriented environmental sustainable consumption behavior (ESCB).

Thus, the scope was finally fixed at - "private sphere environmentalism". Yet another study by Stern, Dietz, Abel, Guagnano & Kalof (1999) defined private sphere behavior as - behavior that saves materials or energy from the environment". Environmental behaviors that comprise the concept of private sphere include, the purchase of personal and household goods/services (e.g. energy for the home, travel), the use of environment-related goods (e.g. heating and cooling at home), household waste disposal, and green consumerism (e.g. buying

recycled products and organic foods). In this study, environmentally sustainable consumption behavior refers to purchasing, using and disposing off (figure 5) of personal & household products in the way that does not harm the environment.



**Figure 5: A schematic representation of sustainable consumption process.**

Researchers have used social learning literature- from higher education learning and student self -regulation to children’s dietary choices (Reynolds, Hinton, Shewchuk & Hickey, 1999) and the learning of aggression- and have applied the concept to the complex determinants of organizational behavior and human resources, interventions in areas such as drug use, sexual behaviors, and health community choices. As some of the prior research has explicitly acknowledged the importance of social learning process, a need exists to significantly expand on the perspective of ESCB. The next section addresses a brief overview of what social learning is, it’s evolution and importance in human learning and how it is well suited to investigate social learning for ESCB in the context of children.

## **2.2. Social Learning (SL)**

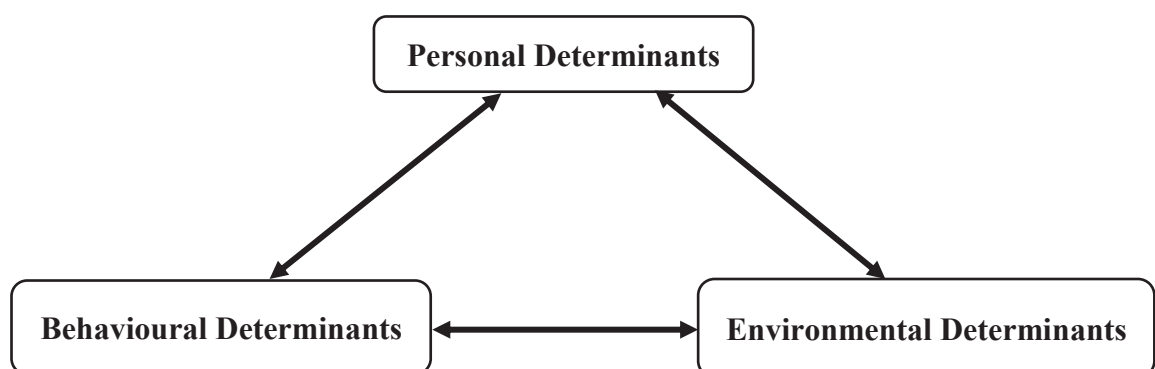
In the introductory quotes of World Commission on Environment and Development’s publication of *Our Common Future* (1987) from UNESCO states that *learning* becomes a vehicle for bringing more sustainable world for all (Glasser, 2009). Oxford American Dictionary defined learning as “*the process of acquiring knowledge, skills, norms, values, or understanding through experience, imitation, observation, modeling, practice, or study; by being taught, or because of collaboration.*” Learning helps us to acquire values, attitude, and concerns along with the reality. Learning helps us to acquire new information or exploit existing information. Learning also helps us to increase the possibility of testing acquired values, concern, and attitude against prevailing realism. Learning helps in taking necessary measures for rethinking about the values and then realigning attitude and behavior (Glasser,2009). Thus, it can be stated that learning is a crucial key to a more sustainable future (Sterling, 2007).

Learning has been embedded within social contexts. Learning influences the way of people thinking, feeling and acting. One learns through experiences, and it happens consciously and subconsciously. It also requires social skills. This means that learners will need skill which makes them capable of social interaction (Niemi, 2002). The same would be expected to hold

for young learners. A brief peep into the psychology of young children's learning (Pollard, 2001) reveals that social constructivism (influence of 'culture and interactions with others' on learning) and symbolic interactionist approach (developing a sense of self and identity which later formed the basis to act), both formed important building blocks for understanding how children learn in the social context. This brings to the next foundational concept in our study, namely, Social Learning (SL). The concept of Social Learning (SL) came into existence about ten years ago and enabled the researcher to understand about how learning is taking place in groups, social systems, and communities (Wildemeersch, 2007). Social learning (SL) is defined as the *"learning taking place in group, communities, networks and social systems that operate in new, unexpected, uncertain and unpredictable circumstances; it is directed at the solution of unexpected context problems, and it is characterized by an optimal use of the problem-solving capacity which is available within this group or community"* (Wildemeersch, 2007). In the book, 'Social learning- Towards a Sustainable World' by Wals (2007) brings together contributors from a wide range of perspectives. One of them by Glasser (2009) first gives ideas and definition by researchers and thinkers regarding SL and then puts his understanding about SL - *"as long as learning by individuals or collectives involves some form of input drawn from others, I characterize it as social learning."* Individuals engaged in the learning process are more employed in observation, imitation, modeling, self-instruction, conversation, and mentoring. All these types of learning involve some type of interaction with living beings. In terms of environmental management social learning is defined as *"the collective action or reflection that occurs among different individuals and groups as they work to improve management of human and environmental interrelations."* Glasser (2009) then addresses the question if SL will lead to sustainability, and mentions that while this cannot be expected to happen automatically, his offer to address a tentative set of challenges could show the way. For sustainability, social learning pursues individuals to engage individuals in action. Three main reasons for social learning for sustainability are: a) need to challenge the mental models that lead communities to unsustainable practices, b) new learning approaches that helped in building skills enabling changes and c) jointly exploring new options for sustainable futures. (Tilbury, 2007). Social learning for sustainable development is essential as it provides facilities for developing knowledge, values, and action which increase possibilities of an individual's or groups to participate effectively in solving personal, organizational or societal issues.

Miller & Dollard (1941) from their work stemmed out theory name Social Learning Theory. They suggest that if humans were motivated to learn a behavior that particular behavior

would be learned by observation through modeling. By observing others, one forms rules for conducting particular behavior, and in future, such rules serve as a guide for action (Bandura, 1986). Social learning theory is the idea that people learn by watching what others do and that human thought processes are central to understanding personality. The social learning theories by various authors explains that a continuous interaction among cognitive, behavioral and environmental influences helps in understanding human behavior (Mostert et al., 2007). Albert Bandura in 1986, published an inclusive outline for understanding human behavior change and human social behavior. Social Cognitive Theory (SCT) was an extended version of social learning theory. Social learning theory has been used as an explanatory framework process of change in various setting such as university setting, community action, public debates (Wildemeersch,1999, 2007). Bandura’s social cognitive theory a version of the social learning theory has been useful when applied to behavior change. Bandura’s in 1986 referred that human behavior is explained as a triadic reciprocity between three factors that is behavior, cognitive/personal and environmental (Figure 6). Environmental factors such as family support, create opportunities, introduce barriers, teach skills and provide reinforcement for behavior change. Personal factors such as perceived self-efficacy, outcome expectations which provide direct causal influences on behavior and are used to interpret information from the environment. The behavior itself, once enacted, can modify beliefs and directly influence the environment through a mechanism such as meeting new friends who support behavior. The theory suggests that there are continuous and dynamic relationships. Also, they all operate as an interacting determinant of each other. The term reciprocal refers here as the mutual action between causal factors. A change in one component has implications for change in the others (Bandura,1986).



**Figure 6: Schematization of the triadic reciprocal causation between the three determinants**

- The **person-behavior interaction** involves the interaction between thought, affect and action. Expectations, beliefs, self-perceptions, goals, and intentions give shape and direction to behavior. What people think, believe, and feel, affects how they behave (Bandura, 1986). The natural and extrinsic effects of their actions, in turn, partly determine their thought patterns and emotional reactions. The personal factor also encompasses the biological properties of the organism.
- The **environment – person segment** of reciprocal causation is concerned with the interactive relation between personal characteristics and environmental influences. Human expectations, beliefs, emotional bents and cognitive competencies are developed and modified by social influences that convey information and activate emotional reactions through modeling, instruction, and self-persuasion (Bandura, 1986). People also evoke different reactions from their social environment by their physical characteristics, such as their age, race, sex and physical attractiveness, quite apart from what they say and do (Lerner, 1982). People similarly activate different social reaction depending on their socially conferred roles and status. By social status and observable characteristics, people can affect their social environment before they say or do anything. For example, children who have a reputation as tough aggressors will elicit different reactions from their peers than those reputed to be unassertive.
- The final interaction between **behavior and the environment**. In the everyday life, behavior alters environmental conditions and is, in turn, altered by the very condition it creates. The environment is not a fixed entity that indeed interrupts upon individuals. When mobility is constrained, some aspects of the physical and social environment may encroach on individuals whether they like it or not. But most aspects of the environment do not operate as an influence until they are activated by appropriate behavior. For example, Lecturers do not affect students until they attend their class, hot stove tops do not burn unless they are touched. The aspect of the possible environment that becomes the actual environment for the given individual thus depends on how they behave. Because of this bi-directionality influence, people are both products and producers of their environment.

Thus, in brief, it can be explained with an example, as one's interpretation of his own's behavior may impact beliefs of self-efficacy or outcome expectation (personal factor), which in turn affect subsequent behavior. Similarly, the behavior may be affected by environmental

factors, such as social or situational influences, and also alter the environment itself (e.g., social norms).

Bandura (1977) proposed that various forms of social learning frequently match experiences in real life. In addition to direct experiences, the consumer learns by observing others around them such as peers, parents and that shown in the media. Bandura (1986) in his theory stated that observation through modeling helps most human learn new behaviors. It enables the individual to enhance their own knowledge and skill based on information acquired through others. Modeling helps in forming rules for performing a behavior and in future these rules guides one's action. Therefore most of the social learning is enhanced by observing one's actions and the consequences of those actions to them. Therefore, the modeling helps in transmitting knowledge to a vast number of peoples through the medium of symbolic models. Also, modeling outsets rules for generating different forms of behavior to suit different purposes and circumstances. By transmitting information through modeling, observer learns about the transmission of subskills into new patterns. Different forms of modeling are not at all equally effective because they might differ in the amount of information they convey and their power to command attention. Different levels of cognitive processing are involved in different modeling modes. Social learning is based on causal or directed observation of other people in everyday situation such as physical demonstration, pictorial representation or verbal description. Social learning also takes place through symbolic modeling provided by films, visual media, television, etc. Glasser (2009) in his book gave two forms of social learning namely Active and Passive, into the context of sustainable development.

Salomon (1984) believes that individual learns and remember more when they put more cognitive efforts for extracting relevant information. Therefore, different social learning tools are to be identified that can be effective for conveying information and enhancing ESCB. A brief description of important characteristics of active learning (AL) and passive learning (PL) is given in the subsection followed by a comparison of their effectiveness as evident from literature.

### **2.2.1. Overview of Active Learning**

*Active inquiry, not passive absorption, is what engages students. It should pervade the curriculum* (Johnston, 1989).

When students are doing something besides listening active learning (AL) takes place (Ryan & Martens, 1989). AL is inherently dialogical, built on conscious interaction and communication between at least two living entities and leads to the construction of new



understanding, attitudes & thoughts (Bonwell & Eison, 1991; Luckner & Nadler, 1997). AL supports multiple loop learning which helps in questioning existing practices and the values that initiate them. Use of such techniques will be applicable to the context as it is governed by the interest, openness, preparedness, and social dynamics of the collective because it can involve diverse players with competing or even conflicting values and interests (Wals, 2007).

AL results in making exemplary nonliteral, paraphrased lecture notes, monitoring one's level of understanding the subject matter and writing questions in lecture notes when confused and asking questions at appropriate points in an instructor's presentation. In the context of classroom Bonwell & Eison (1991) defines active learning as *"anything that involves students in doing things and thinking about the things they are doing."* Grimley, Green, Nilsen, Thompson & Tomes (2011) in their book explained active learning *"as the intentional opportunity for students to engage in the learning process. It connects learners to the content through movement, reflection, or discussion, making students the center of the learning process as they take the initiative to learn."* Active learning can be behavioral and/or cognitive, supporting a variety of instructional objectives from recall through synthesis. Kyriacou (1992) described active learning as *"the use of learning activities where pupils are given a marked degree of ownership and control over the learning activities used, where the learning experience is open-ended rather than tightly pre-determined and where the pupil can actively participate in and shape the learning experience."* Authors address the question of what makes learning active. For e.g., Silberman (1996) in his paper states that during active learning student works on learning the idea, solving the problem and at the end applying those learning. It is fast paced, fun, supportive and personally engaging". Authors suggest that active learning method engages and motivates students by enhancing and understanding their performance (Guillaume, Yopp & Yopp, 2007; Silberman, 2006).

Bonwell & Eison (1991) in their book explained characteristics that make a learning method an active learning. They are as follows:

- Students are involved in more than listening
- Less emphasis is placed on transmitting information and more on developing students' skill
- Students are involved in higher order thinking (analysis, synthesis, evaluation)
- Students are engaged in activities (e.g., reading, discussing, writing)
- Greater emphasis is placed on students' exploration of their attitudes and values.

Silberman (1996) explains the importance of active learning. He explained that when a student hears about the problem, see it, ask a question about it, and discuss it with others, he learns well. Above all students learn by doing. Cognitive research supports that students learning styles are best addressed with multiple instructional methodologies (Bonwell & Eison, 1991). Active learning is important where learning is to be transferred from short-term to long-term memory and can be easily regained. Active learning concept relates directly to the native American proverb, *“I hear, and I forget; I See, and I remember; I do, and I understand”* (Asokhia, 2009). Faust & Paulson (1998) have described active mode as a set of strategies where students are involved in learning by doing things that are meaningful and related to the topic.

### **2.2.2. Overview of Passive Learning**

Learning that rests on the former learning of others is defined as passive learning. Wals (2007) explained that passive learning does not require inputs in the form of communication from other individuals. Direct feedback from other living beings is also not given in passive learning. Passive learning happens when students act as a “receptacles of knowledge” where students do not directly participate in the learning process (Ryan & Martens, 1989). Passive learning also includes observing the practices of, and interactions among others (Wals, 2007). Passive learning results as sitting in class inattentively, dividing one’s concentration between episodes of daydreaming and periods of attentiveness to the lecture, and listening and occasionally taking written notes (Charlton, 2006). In most of the cases learning in our world is passive because most of the time our learning relies on the received knowledge of others. It helps in readily propagate behaviors that are of less interest to others.

Passive learning has an advantage over learning by doing. It can reach to the same result at much less time, cost, effort and have less risk of failure. It may also yield new insights for individuals. The drawback of passive learning is that its results are mostly accepted on trust. Table 1 contrasts essential characteristics of AL and PL forms (Hartley, 1969; Wilke, 2003; Michel, Cater & Varela, 2009; Mahmood, Tariq & Javed, 2011).

### **2.2.3. Review of Active and Passive Learning studies**

In the past decade, a significant number of studies have begun to empirically examine the cognitive effects of active teaching tools on learning outcomes (Seipel & Tunnell, 1995; Ebert-May, Brewer & Allred, 1997; Cook & Hazelwood, 2002; Benek-Rivera & Matthews, 2004; Sarason & Banbury, 2004; Strow & Strow, 2006; Tomcho & Foels, 2008). However, the results are mixed and often contradictory (Michel, Cater & Varela, 2009). For example, some

empirical studies demonstrate that active teaching tools are superior to lecture (Serva & Fuller, 2004; Michel, Cater & Varela, 2009) while others suggest that there is no real difference (Miner, Jr, Das & Gale, 1984; Dorestani, 2005; Stewart & Black, 2005). Thus, further research is reasonable.

**Table 1: Contrasting AL and PL forms of SL on important characteristics.**

<b>Characteristics</b>	<b>Active Learning</b>	<b>Passive Learning</b>
<b>Retention, the order of thinking, orientated to, attention.</b>	Better retention, higher order thinking, Student-oriented.	Poorer retention, lower order thinking, teacher oriented.
<b>Student attention</b>	Greater	Lower level needed
<b>Collaboration</b>	Encourages collaboration	Student works in isolation
<b>Emphasis area</b>	Emphasis on process	Emphasis on memorization
<b>Source of information</b>	Multimedia programs, group discussions, dramatic presentation, simulations, tutoring.	Newspaper, movie, radio program, books, pamphlets.
<b>Goals</b>	Construct own knowledge about subject areas Discover relationship that exists among items of information, Organize subject matter themselves.	More information in less time, Information sources can be prepared well in advance, Important concepts and content identified concrete, organized, and meaningful manner.
<b>Advantages</b>	Supports widely different levels of engagement and inquiry	Lower cost regarding time, effort and less risk of failure.
<b>Examples</b>	Role playing, case studies, just in time teaching, group project.	Reading assignment, lecture, audio visual.

Studies that have been carried out by researchers to identify the effectiveness of active and passive learning tools of instruction have been briefly discussed in table 2.

As discussed in table 2, these were the studies that have been conducted among universities for identifying the effectiveness of active learning methods and passive learning methods. In recent years' researchers started focusing school students as their targets groups. Overview of few recent studies is mentioned in table 3.

Thus, literature review shows that while effectiveness of AL methods over PL methods was found (Kitzerow, 1990; Kyriacou, 1992; McCarthy & Anderson, 2000; Omelicheva & Avdeyeva, 2008; Michel, Cater & Varela, 2009), some students may actually learn better through PL methods because of differences in learning styles (Rodrigues, 2004) or students are paid higher incentives to study before each class as opposed to studying only the night prior to

exam (Michel, Cater & Varela, 2009). Hwang, Lui & Tong (2008) investigated the effects of teaching method and type of questions with students in a Hong Kong university. They found that students in a passive learning environment show better learning outcomes when they experience cooperative learning. The authors conclude that students are able to, and will, adapt to cooperative learning if the course is well-structured. Thus, while the importance of none of these methods can be negated, it would be desirable to suit the choice of teaching methods to context. However, results in the above studies are suggestive rather than conclusive because most of the studies are not truly experimental, i.e., neither there is a random selection of samples, nor there was control of confounding factors such as differences in instructor performances.

There is a lack of compelling evidence examining the actual effectiveness of active learning methods relative to passive learning methods regarding cognitive and behavioral aspect. One of these challenges “identifying well documented testable SL tools which help people in understanding their value & concerns to be able to link them to daily actions & practices”- formed the base of our study. As per my knowledge of literature review till date no research has convincingly identified the effectiveness of active learning tools and passive learning tools on ESCB among children Hence, to study this the following research question was formed.

**RQ1. What are the important active and passive forms of social learning affecting ESCB in primary school children?**

The question was in turn explored via the following objective was formed:

**Objective 1: To identify active and passive forms of social learning affecting ESCB.**

**Table 2: Overview of recent research studies in universities on AL and PL tools**

<b>Author name</b>	<b>Students studied</b>	<b>Design</b>	<b>Method</b>	<b>Test</b>	<b>AL tools</b>	<b>PL tools</b>	<b>Subject</b>	<b>Result</b>
Kyriacou (1992)	secondary schools	Descriptive	survey	Frequency	practical work, computer assisted learning, role play, group discussion, problem-solving, project	lecture	Mathematics	Traditional lecture was preferable teaching methods in lower school classes
Ebert, Brewer & Allerd (1997)	undergraduate students	experimental	pre-post design	ANCOVA	individual or group quiz, concept map, peer teaching, team writing and speaking activities, simulation, discussion and debate	lecture	science	AL methods helped in enhancing self-efficacy related to doing, analyzing data and explaining biological terms. But there were no significant differences in broad subject matter learning outcomes
Hake (1998)			Meta-analysis			lecture		Test scores of student taught by active learning method was significantly higher than those taught with lecture

Sivan, Leung, Woon & Kember (2000)	Polytechnic University				games, simulation, discussions, debates, student presentations, videos and library exercises	lecture		Students preferred seminars over lectures, and that active learning enhanced the use of deep approaches to learning
McCarthy & Anderson (2000)		experimental		Bivariate regression analysis	role playing and collaborative activities	lecture	history and political science	students in AL group performed significantly better than those exposed to traditional lecture method
McClanahan & McClanahan (2002)	university students				mini lecture/learning activity/ debrief	lecture		There were significant grade improvements in classes taught with AL techniques compared to lecture method
Dowling, Godfrey & Gyles (2003)	Undergraduate students	Experiment			Multi-media resources			Evidence suggests that the multimedia approach enhances course grades.
Cahyadi (2004)	undergraduate students				peer instruction, demonstration	lecture	physics	AL techniques improved more conceptual understanding than lecture method

Heagy & Lehmann (2005)	undergraduate and graduate levels				Problem-based learning (PBL)		Accounting Information Systems	Results showed that PBL does not significantly influence exam performance at either the undergraduate or the graduate levels
Omelicheva & Avdeyeva (2008)	Undergraduate students	experimental		Independent samples t-test and Wilcoxon rank-sum test	debate	lecture		debates impact students' attitudes, concerns more than lectures.
Hwang, Lui & Tong (2008)	Hong Kong University				Case study	lecture	Accounting students	Results confirmed that a cooperative learning approach could be more effective than the lecture
Michel, Cater & Varela (2009)	Undergraduate business students			OLS and median regression.	projects and quiz	lecture		AL improved cognitive outcomes in classes but does not appear to be superior to PL. There was no significant difference between students learning outcomes of both the type of class

Leauby, Szabat & Maas (2010)	Undergraduate students				Concept mapping	Financial accounting lectures	concept mapping did not enhance students' learning
------------------------------	------------------------	--	--	--	-----------------	-------------------------------	--

**Table 3: Overview of recent research studies in school on AL and PL tools**

Author name	Students studied	Method	Test	AL tools	PL tools	Subject	Result
Bachelor, Vaughan & Wall (2012)	Grade 7 and Grade 9,10,11,12	Pre-test and Post test	t-test	Jigsaw, presentations, Stand and share, true False sort, Question and answer match, Written Dialects	Lecture		It encouraged cooperation and student engagement
Kristiawan (2013)	Grade 8	Observation, Interview	Qualitative analysis	Cooperative learning	-	English	Cooperative learning was effective
Marusic & Slisko (2014)	Senior high school	Pre-test and Post test	Wilcoxon Signes Ranks Test	Experimenting and discussion, Reading-presentation-question		Physics	Both forms are significantly effective



### **2.3. Factors Influencing ESCB**

To move into the context of the present section, two aspects need to be mentioned and/or clarified: 1) Regarding scope of the study population: specifically, that children could play an active role with respect to environmental issues on two counts: a) that the early childhood is a receptive period for the development of personality, cognition, socio-emotional & physical status that lends potential to develop desirable attitudes towards environment (Muderrisoglu & Altanlar, 2011; Kahriman-Ozturk, Olgan & Tuncer, 2012) and b) they are potential future managers and consumers of resources. Thus they constitute a group of particular interest while addressing ESCB; 2) pro-environmental behavior differs from environmentally sustainable consumption behavior or ESCB in the sense that formerly refers to behavior that consciously seeks to minimize the negative impact of one's actions on the natural and built world (Kollmuss & Agyeman, 2002) while later covers "purchase-use-dispose-off" stages (Phipps et al., 2013).

Sustainable Consumption (SC) can be formulated as a purchase, use and dispose-off behaviors that keep sustainability issues in focus (Phipps et al., 2013). It comprises of choosing environment friendly products and minimizing the range of consumption (purchase), maximizing functionality & extending life of the product (use) and segregating & recollecting the waste for recycling or reusing purpose (dispose-off) (Belz & Peattie, 2009)

The importance of investigating ESCB and its predecessor factors lies in the fact that while many studies focused on understanding pro-environmental behaviors of elementary and secondary level students (Gokdere, 2005; Tuncer, Tekkaya, Sungar, Cakiroglu, Ertepinar & Kaplowitz, 2009; Cetin & Nisanci, 2010; Yurttas & Sulun, 2010) where they have looked at children's environmental sustainable behaviors, only a limited number of research studies exist that delved into environmentally sustainable consumption behavior of primary school level children (Said, Yahaya & Ahmadun, 2007; Lee, 2009; Kopnina, 2011)

In a very recent work in this area, Sawitri, Hadiyanto & Hadi (2015) explains the need for establishing a theoretical framework for understanding the development of behavior that is environmental friendly. In her paper, she takes the perspective of social cognitive theory to explain environmental friendly behavior. On similar lines, this work posits use of SCT for explaining ESCB.

Lee (2014) too examined SCT's framework to explain SCB among educated consumers. He described how three main components of SCT could explain one's sustainable consumption behavior. The author addressed two critical ongoing feedback loops: (1) future sustainable behaviours affected by past sustainable behaviours and (2) personal and

environmental factors, affected by past sustainable behaviours and in turn, changing future behaviours (Figure 6). It was the first paper explaining empirically SCT constructs for sustainable consumption behavior.

This section attempts to make a comprehensive identification and elaboration of the factors that could affect ESCB among children. Reciprocal determinism of SCT is summarized schematically in Figure 6 which shows how behavior (including past behavior), cognitive/personal factors and environmental factors operate interactively and act as determinants of each other. SCT comprises many factors that act as regulators and stimuli of established personal/cognitive and behavioral skills.

Environmentally Sustainable Consumption (ESC) has been defined in many ways Hume (2010) describes ESC as *consumption that balances time, monetary expenditure while satisfying basic needs of life and the future needs of generations*. While Phipps et al., (2013) states ESC as consumption that simultaneously optimizes the environmental, social, and economic consequences of the acquisition, use, and disposition to meet the needs of both current and future generations. A simple definition which makes more relevance to the population of this study was given by Park & Ha (2012), and it says that ESC is consumers' purchase, use, and disposal of personal and household products in ways that preserve the environment (Park & Ha, 2012). Therefore, the definition given by Park & Ha (2012) has been considered for this study which covers a broad range of consumption activities that have been broadly clubbed into four stages/phases namely purchase, reduce, reuse and dispose-off. Reference to other studies that attempt to classify ESC activities (Budak, Budak, Zaimoglu, Kekec & Sucu, 2005; Tilikidou, 2007; Muderrisoglu & Altanlar, 2011) and subsequent discussion with experts showed that the four phases devised by Park & Ha (2012) were comprehensive and did not miss out on any aspect of ESC.

Later studies (Hines, Hungerford & Tomera, 1987; Robert & Bacon, 1997; Kaiser, Ranney, Hartig & Bowler, 1999; Straughan & Roberts, 1999; Thogersen & Olander, 2002; Bamberg & Moser, 2007; Lee, 2009; Lee, 2010; Wahid, Rahbar & Shyam, 2011; Lee, Choi, Kim, Ahm & Katz, 2012) explained different SCT factors as formulated by Bandura (1977, 1986) that influence ESCB. Various studies have looked at the levels of environmental sustainable consumption behavior among varied target audience but tried to relate by correlation or by experimental methods the construct of SCT to ESCB or pro environmental behavior. This section is broadly divided into two sub sections: The first section enumerates studies relating the above-mentioned constructs in the adult population and university students while the second sub section focuses on studies related to children.

Here the focus of many studies has been to investigate pro-environment stance of individuals. Popular constructs were pro-environmental concern (Strong, 1998; Said, Yahaya & Ahmadun, 2007) pro-environmental awareness or knowledge about pro-environmental issues (Kuhlemeier, Van, Lagerweij, 1999; Onder, 2006; Mansuroglu, Karaguzel Atik & Kinikle, 2009; Oguz & Kavas, 2010), pro-environmental attitude (Kuhlemeier, Van & Lagerweij, 1999; Budak, Budak, Zaimoglu, Kekec & Sucu, 2005; Mansuroglu, Karaguzel Atik & Kinikle, 2009; Muderrisoglu & Altanlar, 2011) and pro-environmental behavior (Kuhlemeier, Van & Lagerweij, 1999; Budak, Budak, Zaimoglu, Kekec & Sucu, 2005; Onder, 2006; Muderrisoglu & Altanlar, 2011). The findings of these studies have not only covered a broad range of perspectives but also are not entirely consistent with each other. The consideration in these studies has been related to a more general set of issues which are pro-environment.

A meta-analysis of environmentally responsible behavior studies was taken by Hines, Hungerford & Tomera (1987). He identified variables that influence or motivates individual for taking action that is environmentally responsible. For environmental responsible behavior, the most associated variable found were knowledge of issues, the locus of control, attitudes, verbal commitment, and sense of responsibility.

Kaiser, Ranney, Hartig & Bowler (1999) in his study examined how an individual feel responsible (morally or conventionally) towards the environment as a significant predictor of environmental behavior. SEM results revealed that people feel morally more responsible than conventionally responsible. In 2002, Thogerson & Olander tested the hypothesis that does sustainable consumption pattern influenced by individual value priorities. SEM draw the causality and direction about the same.

Bamberg & Moser (2007) conducted a meta-analysis of 57 studies on psycho-social determinants of pro-environmental behaviour. It is a replication and extension of Hines, Hungerford & Tomera (1987) meta-analysis. Correlation between psycho-social variables and pro-environmental behavior was determined. Meta-analytic SEM suggested a structural relationship between eight determinants (problem awareness/knowledge, attitude, PBC, social norm, moral norm, and intention) of pro environmental behaviour. Results of MASEM confirms that intention mediates the impact of psycho-social variables on pro-environmental behaviour. It also identified norm as one of the important predictor other than the attitude and intention.

Perceived consumer effectiveness was found correlating more than altruism (Straughan & Roberts, 1999) and environmental concern (Roberts & Bacon, 1997) with environmentally

friendly consumer behaviour. Similar type of studies have their results in common and found that people with internal locus of control are more likely to engage in sustainable consumption behaviour than external locus of control. (Schwepker & Cornwell, 1991; Allen & Ferrand, 1999; Cleveland, Kalamas & Laroche, 2005, 2012).

Wang, Liu & Qi in 2014 surveyed rural resident's sustainable consumption behavior (SCB) of China and revealed the role of environmental knowledge, environmental value, the perception of consequence, perceived behavioral control, environmental responsibility, response efficacy, and environmental sensitivity. Path analysis identified explaining the power of each variable towards SCB among adults.

All the above studies in the sub section point to the importance of examining factors responsible for ESCB in different populations. Since no study exists to determine or assess the ESCB levels of primary school children in India the importance of the current study holds importance. Accordingly, the researcher attempt to determine factors influencing ESCB for primary school going children from class third to class five.

The second sub section brings literature review closer to our selected population as it talks about those studies that have investigated constructs related to ESCB in context of school going children

Lee in 2010, after surveying 6010 school going students of grade 7 to 12 examined factors predicting green purchase behaviour. With the help of hierarchical regression, analysis author predicted the role of given six predictors in the order of high to low influence: peer influence, local environmental involvement, parental influence, environmental awareness, and media exposure to environmental messages.

Lee, Choi, Kim, Ahm & Katz (2012) in another study identified interrelationship among environmentally related predictors (environmental concern, perceived consumer effectiveness, environmental knowledge, and environmental affect,) with pro-environmental behavior focusing three types of behavior: green purchase, green product use, and green product disposal.

In concluding this section, it can be said that while factors responsible to ESCB have been investigated by authors, but assessment for primary school children has hardly been done. Therefore, it is worthy to check on factors influencing ESCB for new population of children Hence, to study this, the following research question was formed:

**RQ2. What are the important factors which affect ESCB in primary school children?**

The question was in turn explored via the following objective was formed:

## **Objective 2: To identify the influence of various cognitive and external factors on ESCB.**

To fulfill above objective, our research has identified various factors affecting ESCB. The detailed procedure of which is discussed in the methodology section.

### **2.3.1. Development of hypothesis for factors influencing ESCB**

Independent variables were drawn from literature and related to children's environmentally sustainable consumption behavior. 12 independent variables were found to be determinants of the dependent variable named ESCB. These variables were clubbed into three categories of SCT: personal/cognitive factors (environmental attitude, environmental concern, environmental value, environmental sensitivity, environmental knowledge, environmental responsibility, self-efficacy, self-regulation, outcome expectation, outcome expectancies), environmental factors (peer and parental influence) and behavior (ESCB).

- **Environmental Attitude**

Environmental attitude has been defined by many authors in their research papers. Dooms (1995) defined environmental attitude as *“a set of values and feelings of concern for the environment.”* Lee (2008) in his paper refers environmental attitude as *“individuals' value judgment of environmental protection.”* Singh & Gupta (2013) explained environmental attitude as *“the collection of beliefs, affect and behavioural intentions a person holds regarding environmentally related activities.”* Many studies have researched environment attitude as a predictor of general concern for ESCB (Hines, Hungerford & Tomera, 1987; Sudarmadi, Suzuki, Kawada, Netti, Soemantri & Tri, 2001; Meinhold & Malkus, 2005; Sinnappan & Rahman, 2011) as well as particular concern for ESCB such as recycling behavior (Schultz, Oskamp & Mainieri, 1995; Park & Ha, 2012).

Studies have explored the relationship or the influence of environmental attitude to 'concern for environmental,' 'pro-environmental behavior' or 'sustainable consumption behavior' among varied target audience by correlation or by experimental methods. This variable has been studied by various authors, therefore, to discuss in detail this section is broadly divided into two sub sections: first section briefly enumerates studies relating the above-mentioned constructs in the adult population and university students while the second sub section focuses on studies related to children.

Meta-analysis of 51 studies was conducted by Hines, Hungerford & Tomera (1987) found corrected correlation coefficients of .347 indicating the existence of a relationship between pro-environmental behavior and environmental attitude. Kollmuss & Agyeman (2002)

studied theoretical frameworks (Early US Linear Models, Theory of planned behavior, Altruism, Empathy, and Prosocial Behavior Models) explaining what shapes pro environmental behavior. After analyzing these frameworks in detail, proposed own framework and found environmental attitude to be one of the most important factors that have a positive influence on pro environmental behavior.

A quantitative study by Sudarmadi, Suzuki, Kawada, Netti, Soemantri & Tri (2001) investigated differences in environmental attitude regarding environmental conservation concerns among educated and community group of Jakarta. Chi square and Logistic regression results revealed participants having a better attitude. In 2007, Kalantari, Fami, Asadi & Mohammadi conducted a study to find the relationship among attitude towards the environment, personal factors, and environmental behavior among urban residents of Tehran. He found the direct or indirect influence of personal factors and environmental attitude on environmental behavior.

Another distinct comparative study between two different consumer group was conducted by Park & Ha (2012) with the aim of investigating differences in environmental attitude regarding pro-environmental behavior. MANOVA results revealed a higher level of environmental attitude among green product purchases. A study conducted amongst undergraduate students of Turkey university with an aim determining the relationship between environmental attitude and environmental behavior by Muderrisoglu & Altanlar (2011). He found high support for environmental attitude and consumerism behavior. In 2011, Sinnappan & Rahman conducted a study among Malaysian consumers for identifying the antecedents of green purchasing. He found environmental attitude as the best predictor of green purchasing behavior.

An another study to understand predictors of green purchase behavior by Wahid, Rahbar & Shyan (2011) revealed that having a high environmental attitude does not translate into green purchase behavior. In another study by Hessami & Yousefi (2013) found environmental attitude as a significant predictor of environmental behavior among consumers. Research study conducted by Singh & Gupta (2013) and Khare (2015) also revealed environmental attitude as a predictor of environmental behavior in Indian consumers

In concluding this, it can be said that while environmental attitude for environmentally sustainable consumption behavior has been investigated by few authors, environmental attitude assessment for children has hardly been done. Additionally, since environmental attitude for environmental sustainable behavior has differed for existing studies, it is worthy to check on environmental attitude level for pro environmental behavior for a new population of children.

An early study was given by Meinhold & Malkus (2005) investigated high school students environmental attitude about pro-environmental behavior and found that students environmental attitude significantly predicts environmental behavior. Lee (2008) conducted rather extensive studies with multiple variables and found environmental attitude to be significantly second the last predictor of green purchase behavior among adolescents of Hong Kong. Sahin & Erkal, (2010) examined the influence of environmental attitudes of students of 6th, 7th, and 8th grade. T test, single-factor analysis, and Tukey's tests analyzed the data related to school and class attitudes of middle school students towards the environment were found positive and significant.

All the above studies in the sub section repeatedly point to the importance of examining environmental attitude in relevant populations which can be stepping stone to deeper investigations to understand ESCB later. Since no study exists to determine or assess the environmental attitude of primary school children in India the importance of the current study holds water. Therefore, the following hypothesis can be formed

**H1a: Environmental Attitude positively influences ESCB among primary school children.**

- **Environmental Concern**

According to Schultz (2001), environmental concern refers to *“a wide range of indicators such as beliefs that the environment is under threat, that there are adverse consequences to environmental degradation and general concern for human-caused environmental problems.”* *“Degree of emotional involvement in environmental issues”* is also defined as an environmental concern by Lee (2008) in his study. Aman, Harun & Hussein (2012) also refers environmental concern as the emotional disposition of consumers toward environment such as anger towards the destruction of nature. From the Bang, Ellinger, Hadjimarcou & Traichal (2000) study it could also be found that for renewable energy consumers are willing to pay more if they are more concerned about the environment. In this current study, the environmental concern can be referred as *“an affective attribute that can represent a person’s worries, compassion, likes and dislikes about the environment.”*

Several authors correlated environmental concern to environmentally friendly behavior. Also, many studies have investigated the influence of environmental concern on environmental sustainable behavior (Schultz, Oskamp & Mainieri,1995; Mostafa, 2007; Fuji, 2006; Sinnappan & Rahman, 2011; Wahid, Rahbar & Shyam,2011; Lee, 2012; Bedi & Gulati, 2014).

Literature supports an association between environmental concern and interest in renewable energy sources (Joskow, 1996). A positive relationship between environmental concern and recycling example of ecologically responsible behavior was found by Simmons & Widmar (1990); Authors have studied the effect of environmental concern on pro-environmental behavior that is affected by one's own willingness to make sacrifices for their habits (Fujii, 2006; Oreg & Katz, 2006). All the above studies state that environmental concern has a significant influence on environmental sustainable behaviour among adults. Very few studies (Tan & Lau, 2009; Kianpour, Anvari, Jusoh & Othman 2014; Lasuin & Ng, 2014) have been conducted among university students for determining the influence of environmental concern, and researchers found diverse results. Tan & Lau (2009) has done his research among 280 university students of Malaysia and concluded that there is no significant environmental concern towards environmental consumption behavior. A study of Kianpour, Anvari, Jusoh & Othman (2013) found environmental concern as an important motivator for green product purchase among university students of Malaysia. Moreover, a study of Lasuin & Ng (2014) had been conducted to identify the influence of environmental concern on green purchase among university students in Malaysia and found to have a significant positive relationship.

From the above studies, we can see that studies for determining the influence of environmental concern on environmental sustainable consumption behavior have been done among adults or university students. But very few studies have been conducted for examining the influence of environmental concern among adolescents or school.

Said, Yahaya & Ahmadun (2007) conducted his study among secondary school students. Results of the analysis identified a significant positive correlation between environmental concern and sustainable consumption behavior. Influence of environmental concern was also analyzed for high school students by Lee (2008) in his study and found concern as the second most significant predictor of environmental purchase behavior.

In concluding this section, while level of environmental concern has been investigated among adults, university students, high school students by various authors it is worthy to check on influence of environmental concern on ESCB among primary school children. Therefore, the following hypothesis can be formed:

**H2a: Environmental Concern positively influences ESCB among primary school children.**



- **Environmental Value**

According to Allport (1961) “*A value is a belief upon which a man acts by preference.*” Most of the psychological stories and theories on values are based on work of Schwartz (1977). Where Schwartz (1977) defined value as: “*a desirable trans situational goal varying in importance, which serves as a guiding principle in the life of a person or other social entity.*” Fraj & Martinez (2006) in his paper explained values “*as the criterion that individuals use to select and justify their actions and to value objects and the other’s conducts.*” People’s experiences and learning process shape one’s values (Kahle,1996). That means if people behave in the environmental way they express their value for the environment by purchasing green products, reusing products and by recycling. Stern in 2000 validated that values play a significant role in explaining behavior and thus acts as an important predictor.

In environmental psychology, there are studies based on Schwartz’s (1992,1994) examined the influence of values on behavior (Schultz & Zelezny, 1998; Stern, 1999; Joireman. Lasane, Bennett, Richards & Solaimani, 2001; Nordlund & Garvill, 2002, 2003; Garling Fujii, Garling & Jakobsson, 2003). A study conducted by Karp (1996) examined that Schwarz’s values were significantly correlated with behaviors, which are important to protect the environment e.g., recycling behavior, consumer behavior, etc.

Various researchers have examined the relationship between values and environmental behavior (Kollomus & Agyeman, 2002; Thogersen & Olander, 2002; Fraj & Martinez, 2006; De Groot & Steg, 2008; Hessami & Yousefi, 2013; Kianpour, Aanvai, Jusoh & Othman, 2014; Taufique, Siwar, Talib & Chamhuri, 2014; Wang, Liu & Qi, 2014).

Thogersen & Olander (2002) examined causality relationship between values and environmentally friendly behavior among relationship. Structural Equation Modelling results state that environmental value leads to environmentally friendly behavior. In a study conducted by Lopez in 2014 examined influence of environmental value on ecological behavior among adults. Path analysis results revealed that environmental value shows a positive and moderate relationship with ecological behavior.

With the help of DEMATEL test, Hessami & Yousefi in 2013 investigated 24 adults green purchase behavior and found environmental values relative to the green purchase behavior.

Wang, Liu & Qi (2014) examined the role of environmental value among adults in China. With the help of path analysis result, it was revealed that environmental value has a significant indirect effect on sustainable consumption and direct effect on behavior intention.

Therefore, from all the above studies we can suggest that environmental value plays a major role in predicting environmentally sustainable behavior among adults. But no study has been found who has determined the influence of environmental value on environmental sustainable consumption behavior. Hence, it is worthy to check on importance of environmental value on ESCB among primary school children therefore

**H3a: Environmental Value positively influences ESCB among primary school children.**

- **Environmental Sensitivity**

Peterson (1982) defined environmental sensitivity as *“a set of affective attributes which result in an individual viewing the environment from an empathetic perspective.”* Hungerford & Volk (1990) explained sensitivity as *“an empathetic perspective toward the environment.”* Chawla (1982) in his paper reviewed a lot of literature and assumed that it is not an empathy and defined environmental sensitivity as *“a predisposition to take an interest in learning about the environment, feeling concern for it, and acting to conserve it, on the basis of formative experiences.”* Influence of environmental sensitivity on environmentally sustainable consumption behavior has been studied by very few researchers (Sia, Hungerford & Tomera 1986; Mansuroglu, Karaguzel, Atik & Kinikli, 2009; Wang, Liu & Qi, 2014). Sia, Hungerford & Tomera in 1986 examined the influence of environmental sensitivity on environmental behavior among adults and found as a top most predictor. Similarly, Wang, Liu & Qi (2014) also determined environmental sensitivity as a significant predictor of sustainable consumption behavior among adults. Mansuroglu, Karaguzel, Atik & Kinikli (2009) in his study identified the important difference between levels of environmental sensitivity among males and females with the help of correlation and also found to be less correlated with environmental behavior.

From the above literature, we can see that very few researcher has studied the influence of environmental sensitivity on sustainable consumption behavior among adults and from all the above studies we can suggest that environmental sensitivity plays a significant role in predicting environmentally sustainable behavior among adults. But no study has been found who has determined the influence of environmental sensitivity on environmental sustainable consumption behavior among students (university, school). Hence, study on influence of environmental sensitivity on ESCB among primary school children becomes noteworthy therefore:

**. H4a: Environmental Sensitivity positively influences ESCB among primary school children.**

- **Environmental Knowledge**

Various authors (Schultz, Oskamp & Mainieri, 1995; Mainhold & Malkus, 2005; Hissami & Yousefi, 2013; Al-Balushi, & Al-Aamri, 2014; Carmi, Arnon & Orion, 2015) have defined environmental knowledge in their research papers. Wang, Liu & Qi (2014) defined environmental knowledge as “*knowledge that refers information about the environmental concept, environmental problems, strategies to solve those problems.*” Many studies have not only looked at assessing the levels of environmental knowledge among varied target audience but also tried to relate by correlation or by experimental methods the construct of environmental knowledge to ‘concern for environmental,’ ‘attitude towards environmental issues’ and pro-environmental behavior or ESC. This section is broadly divided into two sub section: the first section briefly enumerates studies relating the constructs mentioned above in the adult population and university students while the second sub section focuses on studies related to children.

An early study was given by Wong (2003) investigated Chinese university student level of awareness about pro-environmental issues and found that students were quite aware of the environmental problems being faced in China. Another study to understand University student’s awareness about pro-environmental problems and their practice of both ESC and pro-environmental behavior by Onder (2006) showed that while students exhibited enough knowledge, they also were geared to implement positive behaviors. Lee (2010) conducted rather extensive studies with multiple variables and found environmental knowledge to be significantly related to green purchase behavior among the adult population of Hongkong. Another distinct study conducted amongst 16 plus age group in Norway by Hanss & Bohm (2013) attempted to check the impact of pro-environment knowledge enhancing intervention on actual ESC purchase. He found a significant impact of the intervention on the purchase of sustainable groceries. In 2014, Wang, Liu & Qi conducted a study to determine the relationship between groups of independent variables (environmental knowledge, Perceived Behavior control, environmental values, and environmental sensitivity) to dependent variables namely, behavioral intention and ESC. He found following relationships to be significant: environmental knowledge to behavioral intention, behavioral intention to ESC and environmental knowledge to ESC.

All the above studies in the sub section repeatedly point to the importance of examining environmental knowledge in adults. Another section looks some of the research studies examining the importance of environmental knowledge in children.

One of the earliest studies which match very closely to the context of the current study was done by Grodzinska-Jurczak, Bartosiewicz, Twardowska & Ballantyne (2003) where he investigated six-year-old familiarity with the basic notion of pro-environmental issues and their identification of improper behavior in the same areas. He found that while the children were both familiar and could identify inappropriate behavior for simpler environmental issues their capabilities became worse as the problems became more complicated. Said, Yahaya & Ahmadun (2007) researched regarding environmental comprehension and participation of Malaysian secondary school students of the age group 14-17 years designed descriptive study using survey method and found that there was a high level of awareness about environmental problems, and there was a significant positive correlation between sustainable consumption practices (similar to ESC defined in this study) with environmental concern and knowledge. In the year 2010 three studies involving children were put forth by Cetin & Nisanci (2010), Yuttra (2010) and Hassan, Noordin & Sulaiman (2010). While Cetin & Nisanci (2010) found that student's environmental awareness was positively affected by new instructional methods. Hassan, Noordin & Sulaiman (2010). found secondary school students to possess high levels of environmental awareness which had a positive, although weak relationship with pro environmental practices, attitude and moral values.

In the same year, Yuttra's (2010) interviewed 8<sup>th</sup>-grade students using multiple choice and close ended question to find perception student had and found that of the students had moderate level awareness environmental problems. In concluding this, it can be said that while levels awareness for pro environmental issues has been investigated by few authors, environmental knowledge levels' assessment for children has hardly been done. Additionally, since knowledge level for pro environmental issues has differed for existing studies, It is worthy to not only check on knowledge level for pro environmental issues for a new population of children. Therefore, the following hypothesis can be formed:

**H5a: Environmental Knowledge positively influences ESCB among primary school children.**

- **Environmental Responsibility**

Hines, Hungerford & Tomera in 1987 defined environmental responsibility as individual's feelings of duty or obligation to the environment. Environmental responsibility is formally identified by Taufique, Siwar, Talib & Chamhuri (2014) as a "*state in which a person expresses an intention to take action directed toward remediation of environmental problems,*

*acting not as an individual consumer with his/her own economic interests, but through a citizen consumer concept of societal-environmental wellbeing.*” Ebreo, Hershey & Vining (1999) and Pieters (1991) refers environmental responsibility as consumption activities that do not harm environment and benefits in the protection of the environment.

Hines, Hungerford & Tomera (1987) in his paper meta-analyzed six studies which have examined the relationship between environmental responsibility and environmentally responsible behavior. The resulted correlation coefficient (.328) determines that individuals who feel some sense of responsibility towards the environment are engaged more in pro environment behavior. Researchers have studied environmental responsibility as a significant predictor of environmentally sustainable consumption behavior (Hines, Hungerford & Tomera, 1987; Kaiser, Ranney, Hartig & Bowler, 1999; Kollomus & Agyeman, 2002; Sinnappan & Rahman, 2011; Taufique, Siwar, Talib & Chamhuri, 2014; Wang, Liu & Qi, 2014). Most of the studies have identified this relationship among adults. In Kaiser, Ranney, Hartig & Bowler (1999) study structure equation analysis revealed that if people feel guilty about what they are doing, in that case, they feel more responsible towards the environment. He assessed the relative influence of responsibility on ecological behavior.

Kollomus & Agyeman (2002) conducted the conceptual study by analyzing most influential analytical frameworks that describe pro environmental behavior and examined factors that have a positive or negative influence on pro-environmental behavior. In his study, he proposed a model that explains pro environmental behavior and found environmental responsibility as one of the important influencers in his model.

Predictors of green purchasing behavior in young Malaysian consumers were studied by Sinnappan & Rahman (2011). With the help of t-test analysis and multiple regression analysis environmental responsibility was found one of the significant predictors of green purchase behavior. A similar type of study was conducted by Wang, Liu & Qi (2014) among rural residents of China. Path analysis results revealed responsibility as a significant predictor of sustainable consumption behavior.

Till date, most of the studies were conducted among adults. A very few study has been carried out in children, i.e., by Lee (2008) who examined the environmental responsibility as a significant predictor of green purchasing behavior among adolescents Hierarchical Regression analysis found environmental responsibility as one of the important predictors.

As there are very few studies, who have identified the influence of environmental responsibility on environmentally sustainable consumption behavior it will be noteworthy to conduct this study among primary school children.

**H6a: Environmental Responsibility positively influences ESCB among primary school children.**

- **Self-Efficacy**

Bandura (1977) coined the term self-efficacy and defined it as *“one's belief in one's ability to succeed in specific situations or accomplish a task.”* Bandura (1986) in his Social Cognitive Theory explained how self-efficacy helps in explaining one's behavior. He described it as *“judgment of one's capability to accomplish a certain level of performance.”* He is not concerned with the skills one has but with judgment of what one can do with whatever skills one possesses. In various papers, self-efficacy is coined as perceived consumer effectiveness (Lee,2012; Hissami & Yousefi, 2013), Locus of control (Hines, Hungerford & Tomera, 1987; Kollomus & Agyeman, 2002) and Response efficacy (Wang, Liu & Qi, 2014). Hines, Hungerford & Tomera (1987) in his paper defined locus of control as *“individual's perception of whether he or she has the ability to bring about change through his or her own behavior.”*

Several authors have conceptually and descriptively studied the relationship between self-efficacy and responsible environmental behavior supports an association between self-efficacy and pro environmental behavior and sustainable consumption behavior. (Hines, Hungerford & Tomera, 1987; Sia, Hungerford & Tomera, 1986; Kollomus & Agyeman, 2002; Meinhold & Malkus, 2005; Ojedokun & Balogun, 2010; Sinnappan & Rahman, 2011; Hissami & Yousefi 2013; Kianpour, Anvari, Jusoh, 2013; Failla & Gopalakrishna, 2014; Wang, Liu & Qi, 2014).

Hines, Hungerford & Tomera (1987) meta-analyzed fifteen studies for determining a relationship between locus of control and environmental behavior. Resulted correlation coefficient of .365 states to have a relation between existing variables. Whereas in the study conducted by Sia, Hungerford & Tomera (1986) step wise multiple regression does not found to have a significant influence of locus of control on environmentally responsible behavior.

Self-efficacy was studied as a moderating variable between environmental attitude and environmental behavior by Meinhold & Malkus (2005) among 858 students. Regression analysis revealed that self-efficacy does not show significance as a moderator but has a significant influence on environmental behavior.

We find a positive relationship between self-efficacy and environmentally responsible behavior (Ojedokun & Balogun, 2010; Sinnappan & Rahman, 2011). Wang, Liu & Qi (2014) explained the role of response efficacy among rural residents of China. Path analysis results revealed response efficacy as a significant predictor of sustainable consumption behavior. A similar study was done by Lin & Hsu (2015) in adults and found self-efficacy as an important predictor of green consumption behavior. Lee (2012) also investigated the relationship between self-efficacy and pro-environmental behavior and found a significant positive association.

Although very few studies have explored the influence of self-efficacy on sustainable consumption behavior till date and resulted as a significant predictor of sustainable consumption behavior among adults. No study has investigated such relationship in children. Therefore, it becomes necessary to investigate the influence of self- efficacy on environmentally sustainable consumption behavior among primary school children. Therefore, the following hypothesis can be formed

**H7a: Self-Efficacy positively influences ESCB among primary school children.**

- **Self-Regulation**

Albert Bandura (1986) in his Social Cognitive Theory explained Self-Regulation. In 1991, Bandura demonstrated that self-regulation of an individual operates through a) monitoring one's behavior, determinants of that behavior and effect of that behavior, b) judging own behavior concerning personal standards and environmental condition, c) through effective self-reaction. Self-regulation mediates the effect of external influences as well as provide the basis for action. Bandura (1991) defined self-regulation “*as when individual beliefs about what they can do, anticipating consequences of their actions, setting goals and planning a course of action that brings desired a course of action.*” This construct of SCT has been mainly studied as an important predictor of health behavior such as nutrition behavior, dietary behavior, etc.

A study conducted by Anderson & Krathwohl (2007) to determine significant predictor of nutrition behavior among adults (N=712) found that self-regulation is the best predictor. A similar study was carried out by Doerksen & McAuley (2014) among university employee's dietary behavior. Results of multiple regression analysis revealed that self-regulation was not an associated with this behavior. Hence was not a significant predictor.

Rovniak, Anderson, Winett & Stephens (2002) identified different factors influencing physical activity among 277 university students. Structural Equation Modelling revealed self-regulation as a significant predictor of physical activity.

From the above few studies, we cannot identify that is self-regulation a significant predictor of behavior. Also, there is no study which has examined its relationship with environmentally sustainable consumption behavior among students. Therefore, it becomes necessary to investigate the influence of self- efficacy on environmentally sustainable consumption behavior among primary school children. Therefore, the following hypothesis can be formed

**H8a: Self-Regulation positively influences ESCB among primary school children.**

- **Outcome Expectation**

Definition of outcome expectation was given by Bandura (1986, 1997). Based on SCT he explained it as “*the outcome that one expects from their action.*” Researchers have studied it as a predictor of behaviour in their studies (Anderson & Krathwohl,2001; Anderson & Winett 2007; Branscum & Sharma, 2011; Rovniak, Anderson, Winett & Stephens, 2012; Doerksen,2014). Anderson & Winett (2000,2007) examined outcome expectation as an important and significant predictor of nutrition behaviour among 712 adults using structural equation modeling. Another study by Doerksen (2014), identified outcome expectation as a significant predictor of dietary behaviour among university employees.

Branscum & Sharma (2011) studied it as a predictor of snack and food consumption among 212 grade four and five students. Multiple regression results do not reveal it as a significant predictor. A similar study was conducted by Rovniak, Anderson, Winett & Stephens (2002) among university students, and SEM results do not show as a significant predictor of physical activity behaviour.

Outcome Expectation is considered as an important predictor of behaviour by Bandura in this SCT theory and from above studies, we can see that outcome expectation has been investigated as a predictor of behaviour related to health and found diverse results. It has not been studied as a predictor of environmentally sustainable consumption behaviour among adults or children and therefore becomes noteworthy to examine the influence of outcome expectation on environmentally sustainable consumption behaviour among primary school children. Therefore, the following hypothesis can be formed

**H9a: Outcome Expectation positively influences ESCB among primary school children.**



- **Outcome Expectancies**

Outcome expectancies was another construct of SCT theory given by Bandura (1986). It was defined as *“how much the individual values outcomes of performing the task.”* Outcome expectancy was not much-studied variable. Very few researchers identified the influence of outcome expectancy as a predictor of behavior. Branscum & Sharma (2011) examined the influence of outcome expectancy on snack and food consumption behavior among 212 grade four and five students. Stepwise multiple regression analysis identified it a non-significant predictor. Leutzinger & Newman (1995) examined the role of outcome expectancies in the use of medical self-care skills among adults. ANOVA results in revealed a significant change in outcome expectancies and found an important precursor for behavior change

Bandura (1986) in his study states it a significant predictor of behavior but has not been studied much in diverse population. No study has considered such relationship in children. Therefore, it becomes necessary to explore the influence of outcome expectancies on environmentally sustainable consumption behavior among primary school children. Therefore, the following hypothesis can be formed

**H10a: Outcome Expectancies positively predict ESCB among primary school children.**

- **Social Influence (Peer Influence & Parental Influence)**

Salazar, Oerlemans & Stroe-Biezen (2013) in his paper described social influence as *“change in an individual’s attitude or behaviour that results from the interaction with other individuals or social group.”* DeLamater, Myers & Collett (2014) states that social influence is when another person’s actions influence one’s attitude and behavior. It can be by persuading or by threatening. Wahid, Rahbar & Shyan (2012) and Lasuin & Ng (2014) in their paper stated that *“social influence is a representation of subjective norm.”* Subjective Norm is one of the important constructs of Theory of Planned behavior (Ajzen, 1985). He explained subjective norm as whether an action should be performed by an individual from a referent’s point. Here referent could be parents, friends, peer, etc. In this study, social reference is referred as a change in behavior or attitude through the influence of peer, and parents.

The various researcher conducted experimental or descriptive studies for identifying the influence of social influence and subjective norm on environmental sustainable behavior (Kalafatis, Pollard, East & Tsogas, 1999; Wahid, Rahbar & Shyan, 2011; Salazar, Oerlemans & Van, 2012; Khare, 2015). Salazar, Oerlemans & Van (2012) in his behavioral experimental studied influence of family and friends on the decision to choose environmentally friendly

products. 135 participants comprising high school students and teachers participated in the experiments. Results of the experiment revealed that participants who were informed about their “peer choices involving friends and family members” behaved significantly different than those who were not.

Influence of social norm (incorporating peer influence) was found to be a significant predictor in various studies conducted in a diverse population of adults (Kalafatis, Pollard, East & Tsogas, 1999; Wahid, Rahbar & Shyan, 2011; Khare, 2015). Mei, Ling & Piew (2012) also determined in their research about peer influence green purchasing among Malaysian consumers

Although there are not many studies identifying peer and parental influence on environmental sustainable consumption behavior. Very few studies have been found in literature who have studied peer and parental influence on sustainable consumption behavior among children. In the study conducted by Lee (2008, 2010) among 6010 adolescents of Hong Kong. Multiple regression found peer influence as the top predictor of green purchasing behavior. Parental Influence was also identified as a significant predictor among 6010 adolescents of Hong Kong by a researcher (Lee, 2010).

From the above studies, we can see that although social influence is found to be an important predictor in different population but still it has not been explored in the field of primary school children. Hence this study aims to study the influence of peer and parental influence on primary school children in context to ESCB

**H 11a: Peer Influence positively predict ESCB among primary school children.**

**H12a: Parental Influence positively predicts ESCB among primary school children.**

## **2.4 Social Learning Intervention**

Riley-Tillman (2011) in his book defined intervention as “*a planned modification of the environment made for the purpose of altering behavior in a prespecified way.*” Intervention is a word derived from “*intervene*” which signifies a systematic orientation and planned approach for changing behavior (Sharma & Petosa, 2012). Gresham (1991) in his paper defined intervention as an ability of given treatment to change behavior in the desired direction. Based on the analysis done by researchers a desirable intervention should have following characteristics: a) effective, b) inexpensive, c) decentralized i.e. controlled by local groups, d) flexible i.e. inputs by participants should be welcomed e) sustainable with local resources, f) simple, g) compatible with existing resources, needs, and values (Barnett, Bell & Carey, 1999).

### **2.4.1. Impact of Social Learning intervention on ESCB**

In the past researchers, have studied the effectiveness of intervention in various fields such as health behavior (Campbell, DeVellis, Strecher, Ammerman, DeVellis & Sandler, 1994; Leutzinger & Newman, 1995; Richard, Green & Potvin, 1996; Kroeze, Werkman & Brug, 2006), physical activity behavior (Blair, Piserchia, Wilbur & Crowder, 1986; Lombard, Lombard & Winett, 1995; Wadsworth & Hallam, 2010; Williams & French, 2011; Metcalf, Henley & Wilkin, 2012) etc.

Campbell, DeVellis, Strecher, Ammerman, DeVellis & Sandler, (1994) studied does the computer tailored messages as an intervention enhances the intake of fruit. 30 days long intervention among 394 adults showed a significant decrease in fat food consumption among experimental group. Leutzinger & Newman (1995) studied how the three intervention (video tape, home study, and small problem -solving discussion) among adults can enhance the constructs of social cognitive theory (self -efficacy, outcome expectation and behavioural capabilities) concerning health behaviour. Statistical analysis revealed that the intervention did enhance significantly the SCT construct which ultimately improves the health behaviour. Richard, Green & Potvin (1996) reported the result of a 5-year longitudinal study of identifying the effectiveness of Drug abuse resistance education, a school based prevention curriculum in the U.S. Significant effect of the intervention was observed for measures of student's attitudes towards drugs and for resisting peer pressure. Kroeze, Werkman & Brugin 2006 reviewed 30 publication related to computer tailored promotion for dietary change (26 publication), physical activity (11 publication) and some investigated multiple behaviors. 23 studies found a significant effect of computer tailored information.

Similarly, the effectiveness of the intervention was studied for enhancing physical activity which shows different results. Blair, Piserchia, Wilbur & Crowder in 1986 conducted a quasi-experimental study for two years for enhancing physical activity. The intervention comprises three experimental situations, i.e., annual health screen with medical encouragement to initiate or maintain regular exercise, environmental changes to support regular exercise and availability of exercise programs. An intervention showed a significant increase in physical activity. Lombard & Winett (1995) assessed the effectiveness of highly-structured telephone prompts for exercise adherence. The intervention (control, high frequency/low structure, high frequency/high structure prompt, low frequency/low structure prompt and low frequency/high structure prompt) were carried out for 24 weeks. Treatment condition was found to have a significant effect for enhancing exercise.

In 2010, Wadsworth & Hallam, examined the impact of the intervention on SCT variables (self-efficacy, outcome expectancy and self-regulation) among 86 participants. A one hour four educational sessions showed a significant increase in self-regulation and outcome expectation. Williams (2011) reviewed papers and conducted a meta-analysis for determining the effectiveness of the intervention on self-efficacy and physical activity behaviour. Results showed a small significant effect of the intervention on change in self-efficacy and physical activity behaviour. Metcalf, Henley & Wilkin (2012) conducted a meta-analysis of 30 studies for determining to what extent physical activity intervention affect overall activity of children. Intervention effect across all the studies was less for total physical activity.

From the above literature, it can be seen that intervention has enhanced the behavior in various fields. There are studies (Becker,1978; Hutton, Mauser, Filiatraut & Ahtola, 1986; Brandon & Lewis, 1999; Staats, Leeuwen & Wit, 2000) that have examined the effectiveness of the intervention on the consumption of electricity, gas and water use (Table 4).

But very few studies have studied the intervention effectiveness on the part of consumption behavior, i.e., either purchase behavior (Geller, Farris & Post,1973; Hanss & Bohm, 2012), recycling behavior (Austin, Hatfield, Grindle & Bailey, 1993; Hanssman, Loukopoulos & Scholz, 2009) and litter control behavior (Burgess, Clark & Hendee,1971; Geller, Brasted, Williams & Mann, 1980). These studies have mostly focused on the sustainable consumption behavior of adults. Studies that have focused on adults (Geller, Farris & Post, 1973; Geller, Brasted, Williams & Mann, 1980; Winett, Leckliter, Chinn, Stahl & Love, 1985; Austin, Hatfield, Grindle & Bailey, 1993; Schultz, 1999; Abrahamse, Steg, Vlek & Rothengatter, 2005; Abrahamse, Steg, Vlek & Rothengatter, 2007; Hanssman, Loukopoulos & Scholz, 2009; Hanss & Bohm, 2012; Hanssman & Steimer, 2015, 2016) are discussed in the below paragraph.

A study by Geller, Farris & Post (1973) evaluated the effectiveness of four prompting techniques for the selection of soft drinks in returnable rather than nonreturnable containers by consumers entering a grocery shop. In the four-week period of intervention, with different prompting techniques and a control group were employed in a Latin square design. All prompting techniques were equally effective in increasing the purchase of soft drinks in a returnable bottle by an average of 25%.

**Table 4: Overview of research studies determining the effects of intervention**

<b>Author(s)</b>	<b>Intervention(s)</b>	<b>N</b>	<b>Population</b>	<b>Target behaviour</b>	<b>Duration</b>	<b>Effect during intervention</b>
Becker (1978)	(1) Feedback (2) Goal setting (3) Information	100	Adults	Electricity use	1 month	Feedback group reduced electricity use.
Bittle, Valesano & Thaler (1979)	(1) Feedback	30	Adults		42 days	Feedback group reduced electricity use by 4%, conserved more than the control group.
Geller, Brasted, Williams & Mann (1980)	(1) Information	117	Adults	Electricity, gas and water use	3 hours	The workshop increased levels of determinants.
Hirst & Grady(1982)	(1) Information	850	Adults	Gas use		One year after home visits: gas savings of 2%, compared to control group.
Hutton, Mauser, Filiatrault & Ahtola(1986)	(1) Feedback (2) Information	300	Adults	Gas and electricity use		Feedback along with information group and information the only group conserved more energy than controls
Luyben (1982)	(1) Information (televised plea)	210	Adults	Lower thermostat settings to 65/F2		No difference in thermostat settings between those who had and had not heard the plea.
Winett et al. (1985)	(1) Modeling (2) Information	150	Adults	Gas and electricity use	5 weeks	Exposure to TV program resulted in electricity savings of 10%.
Winett et al. (1985)	Information	150	Adults	Electricity and natural gas consumption	3 weeks	simple strategies modeled in the programs which led to savings of approximately 10%
Staats, Wit & Midden (1996)	(1) Informational	94	Adults	Natural gas consumption	Two 4-week	6% reduction of gas consumption was accounted.

Geller, Brasted, Williams & Mann (1979) experimented a shopping mall for examining the relationship among waste receptacles design and litter control behavior. ABABA design was used. Litter control behavior in the experiment was measured by weighing trash deposited in six trash cans three times a week for forty-one weeks. Litter count was found less near the bird's receptacle designed trash cans. That means bird trash cans attract considerably more litter than other trash cans.

Winett, Leckliter, Chinn, Stahl & Love (1985) in his study evaluated the effectiveness of specially designed 20 minutes' television program about residential energy conservation for middle-class homeowners (N=150). This experiment lasts for five weeks. ANCOVAR results indicated a significant difference between the two groups, i.e., control and experimental. Further results revealed 10% rise in energy consumption by adopting simple strategies showed in a television program.

Austin, Hatfield, Grindle & Bailey (1993) investigated the effectiveness of two prompts sign for recycling office waste of 217 faculty, staff and students in two academic departments for seven weeks. Out of two prompt sign, one was for recycling posted above recycling trash, and another was proper disposal of trash above the trash can. Multiple baseline design results revealed that recycling prompt increased recycling behavior in two departments. Also, prompts posted near the trash can rises 54% of behavior than the trash cans where prompts were posted far.

A field experiment for increasing the curbside recycling behavior among adults by using feedback intervention was conducted by Schultz (1999). 605 residents in the community were randomly assigned to five experimental conditions: a) plea, b) plea plus information, c) plea plus neighborhood feedback, d) plea plus individual household feedback and e) the control condition. This field experiment lasted for four weeks. ANOVA results revealed a significant effect of individual feedback and group feedback at ( $p < .05$ ). The information and plea-only interactions were nonsignificant at ( $p < .05$ ).

Abrahamse, Steg, Vlek & Rothengatter (2007) designed an experiment for encouraging households (N=189) to reduce their direct and indirect energy use using an internet based tool having a combination of tailored information, goal setting, and tailored feedback. Households were exposed for five months to this intervention and results revealed that households exposed to intervention saved significantly (5.1 %) more energy than other household members. Also, they adopted significantly more energy behavior with an increase in knowledge levels for energy conservation.

In a Swiss field study conducted by Hanssman, Loukopoulos & Scholz (2009) determined characteristics of effective slogans for battery recycling behavior. A 9-week experiment in supermarkets (N=21) results revealed that informative and easily comprehensible factual slogan showed positive effect than a humorous slogan concerning the pre-intervention baseline. They increased returned batteries weighted 35.8%.

Hanss & Bohm (2012) in a randomized pre-post 8-week study among 145 adults identified how providing information about how consumers can help in reducing environmental and social problem through their day to day purchase can increase purchase intention of sustainable groceries. The t-test revealed a significant difference among intervention group for sustainable purchase decision ( $p < .001$ ).

Hansman & Steimer (2015) analyzed (N=82) face-to-face conversations with persons from target groups and creative posters to counteract littering in experimental design. He indicates that posters focusing on the benefits of not littering the environment are more effective, and better accepted. ANOVA and T- test results revealed face to face conversation to be significantly more effective than posters. Hansman & Steimer (2016) identified the effectiveness of three anti-littering posters and one control group on four railway station in his work. ABABA design was used for the experiment. Researcher and his associates observed some littered flyers which were distributed to the passengers. In each experiment, 96 flyers were distributed. ANOVA results revealed significantly 54% and 64% of litter reduction on the station where humorous and environmentally oriented posters were distributed as compared to control group where no posters were distributed. Authorities posters also resulted in significant litter reduction (25%) as compared to control group. He found that creative posters focusing on benefits for the environment are more effective and better accepted than authoritarian, commanding posters.

Few more studies that have considered the effectiveness of the intervention on consumption behavior are summarized in table 5.

However, intervention studies that have focused on sustainable consumption behavior of children are very scarce (Burgess Clark & Hendee, 1971; Reeder, Durdan & Hecht, 1985; Moreland, 2014).

Burgess Clark & Hendee (1971) in a field experiment at 14 different occasions in two theatres with ABA design method among children studied the effectiveness of 5 intervention conditions for anti-littering behavior. Five intervention conditions were: a) providing litter bags, b) providing litterbags with instructions to use them, c) providing extra trash cans, d) showing a special anti-litter film before the feature film, and e) providing incentives for the

appropriate deposit of litter. Results showed that the incentive procedures encouraged children to remove over 90% of all litter in two theatres.

**Table 5: Overview of research studies determining the effects of the intervention on consumption behavior.**

Author(s)	Intervention(s)	N	Population	Target behavior	Duration	Effect during intervention
Bacon-Prue (1980)	Information, Incentive			Litter control behavior	103 days	Marked item procedure accounted the reduction in the amount of litter on the campus grounds.
Staats (1996)	(1) Information (mass media campaign)	704	Adults	Pro-environmental behaviors		Media campaign showed slight increase in willingness for pro environmental behaviors.
Staats (2000)	Information	94	Adults	Natural gas consumption	Two 4-week	6% reduction of gas consumption was accounted.
Lawrence (2008)	Information		adults	Water consumption behavior	36 months	the behavior of participants showed significant water saving than non-participants

In a six-week intervention study, Reeder, Durdan & Hecht (1985) examined the effectiveness of written prompts urging not to litter on litter behavior at University cafeteria setting. Log Linear analysis and Chi-Square analysis revealed that written prompts significantly decrease littering around their surroundings.

Moreland in 2014 experimented for 30 days where students were exposed to four treatments (new waste collection infrastructure, education, eco-feedback and social influence) for enhancing recycling behavior. Results showed that children's treatment improved the sorting accuracy for recycling. Also, perceptions of children about recycling and composting changed significantly after experiencing the intervention.

A shortcoming of the studies mentioned above is that interventions were evaluated concerning changes in only one of the targeted consumption behaviors, either purchase or dispose-off behavior, and not concerning changes in all the three steps of environmentally sustainable consumption behavior namely purchase, use and dispose off. From the aforesaid literature, we can deduce that very few studies have identified the effectiveness of the intervention on ESCB of primary school children.



In conclusion, it can be seen that studies have investigated both active forms (Burgess, Clark & Hendee, 1971; Ballantyne & Packer, 2005; Grodzinska-Jurczak, Bartosiewica, Twardowska & Ballantyne, 2003; Abrahamse, Steg, Vlek & Rothengatter, 2007; Lieflander & Bogner, 2014.) and passive forms (Austin, Hatfield, Grindle & Bailey, 1993; Staats, Wit & Midden, 1996; Hanssman, Loukopoulos & Scholz, 2009; Hanssman & Steimer, 2015) of intervention to bring about desired changes in behavior. Therefore, the purpose of this research was to investigate the effects of social learning forms specifically active and passive given as interventions on ESCB amongst primary school children from classes III to V. Hence, to study this the following research question was developed:

**RQ3. Are the active learning forms effective in impacting ESCB among primary school children?**

**RQ4. Are the passive learning forms effective in impacting ESCB among primary school children?**

The question was in turn explored via the following objective was formed:

**Objective 3: To identify the impact of social learning forms on ESCB.**

To investigate objective mentioned above, two hypotheses are developed:

**H13a: Active Learning Forms have a positive impact on ESCB.**

**H14a: Passive Learning Forms have a positive impact on ESCB.**

#### **2.4.2. Impact of Social Learning intervention on AESCB**

From the above literature, we can see that different types of intervention create an impact on behavior. Similarly, very scarce researchers have studied the effect of the intervention on attitude towards the behavior. Geller, Brasted, Williams & Mann (1980) experimented on 117 adults for determining how the information delivered in the workshop can impact the attitude for electricity, gas and water use. This exercise was carried out for 3 hours and increases the level of attitude towards electricity, gas and water use.

Similarly, Goldenher & Connell (1993) carried out an experimental study with two recycling educational intervention and one control group among 349 university students. This study identified the impact of these interventions on attitude towards newspaper recycling. Results revealed that interventions had a significant impact on attitude towards newspaper recycling which was mediated by intentions to recycle.

Brandon & Lewis (1999) used different ways of feedback (comparative feedback, individual feedback, cost feedback, environment feedback leaflet feedback and computerized feedback) as an intervention to create an impact on attitude towards gas and electricity use.

This experimental study was carried out for two months and found that comparative feedback, cost feedback and environment feedback created the most impact on the attitude towards gas and electricity use than the control group that was given no feedback.

Various theorist (e.g., Theory of Reasoned Action by Fishbein(1980), Theory of Planned Behavior by Ajzen (1985)) have suggested that attitude is one of the most important antecedents of behavior. Using these theories as for the backdrop in the studies mentioned above where the authors have identified the effectiveness of the intervention on various stages of consumption behavior they have indirectly considered the effectiveness of the intervention on attitude formation also.

The shortcoming of studies mentioned above is that interventions were evaluated concerning changes in the only attitude towards pro-environmental behavior and not towards the consumption behavior and also as we can see that there are scarce studies which have directly identified the effectiveness of the intervention on AESCB of primary school children.

Therefore, there comes a need to investigate the effect of social learning techniques as an intervention on attitude towards ESCB (AESCB) amongst primary school children from classes III to V. Hence, to study this the following research question was formed:

**RQ5. Are the active learning forms effective in impacting AESCB among primary school children?**

**RQ6. Are the passive learning forms effective in impacting AESCB among primary school children?**

The question was in turn explored via the following objective was formed:

**Objective 4: To identify the impact of social learning forms on AESCB.**

To investigate objective mentioned above, two hypotheses are developed:

**H15a: Active Learning Forms have a positive impact on AESCB.**

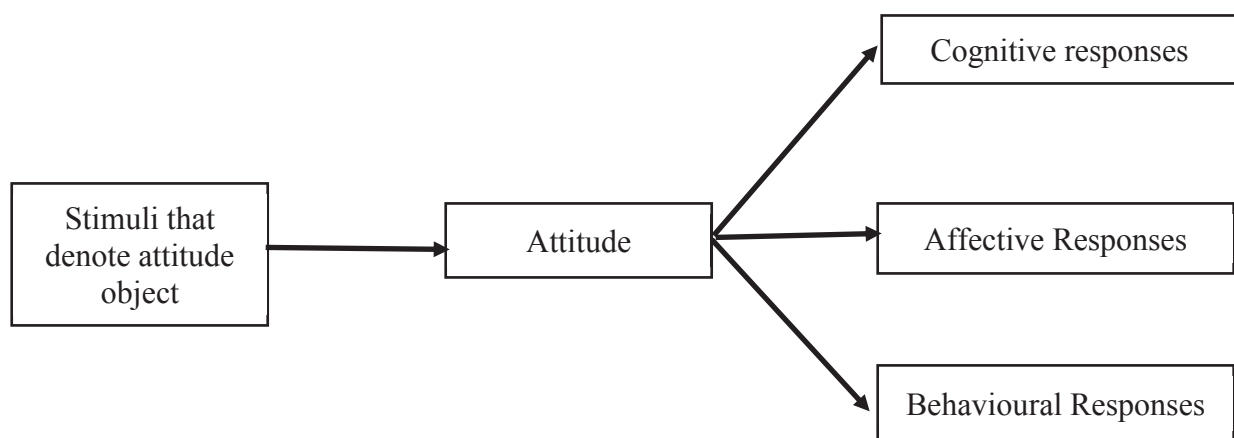
**H16a: Passive Learning Forms have a positive impact on AESCB.**

## **2.5 Attitude towards ESCB**

### **2.5.1 Brief on Attitude**

Eagly & Chaiken (1993) in his book defined attitude as “*a psychological tendency that is expressed by evaluating a particular entity with some degree of favour and disfavour,*” where he states that it is internal to the person & is defined as a psychological tendency. All classes of evaluative responding whether overt or covert, cognitive, affective, or behavioural refers to evaluation or attitude. Thus, an attitude develops on an evaluative basis. An individual has an

attitude only when he or she responds to an entity on an affective, cognitive or behavioural basis. According to the author, an attitude is a hypothetical construct which is not directly observable but can be inferred from observable responses (Eagly & Chaiken, 1993). Out of numerous implicit states, attitude is one of them which explains that why people react in the ways they do, in the presence of certain stimuli. Scientists have summarized that responses that express evaluation should be divided into three classes- cognitive, affective and behaviour, such that- the cognitive category contains thoughts that people have about the object; the affective category consists of feelings or emotions that people have in relation to the attitude object & the behavioural category encompasses people's actions with respect to the attitude object (Figure 7) (Eagly & Chaiken, 1993).



**Figure 7: Attitude as an inferred state, with evaluative responses divided into three classes**

### **2.5.2. Influence of attitude on behaviour**

The underlying psychological processes by which attitudes might serve as causes of behaviour first appeared in the published literature in the 1960's (Fishbein, 1967). Many investigators have maintained a traditional approach of predicting behaviour from the attitude towards targets (Fazio & Zanna, 1981; Fazio, 1989; Miller & Tesser, 1986). While the same relationship has been greatly contradicted by Wicker (1969), later supported by Schuman & Johnson (1976), and similar pattern of support or contradiction has been shown by other studies too; it becomes important to check this relationship in new contexts and for the issues at hand – especially given that many studies on ‘environmental attitudinal’ showed that attitude fails to change in behaviour (Hines, Hungerford & Tomera, 1987; Schultz, Oskamp & Mainieri, 1995) while studies with opposite conclusion have also been found (1) Stern, Dietz & Guagnano (1995) identified that presence of strong environmental attitude results in willingness to support environment-oriented actions; 2) Milfont & Duckitt (2004) in his studied

identified the relationship between pro-environmental attitudes with self-reported environmentally responsible behaviour and found significant influence among university students; 3) Collado, Staats & Corraliza, 2013 in his research study among children during summer camp predicted a significant relationship between ecological attitude and pro-environmentally behaviour.

Similarly, yet another question that could merit attention would be to check on what researchers have often asked, and it is: “does attitude influence behaviour or does behaviour influence attitude?” Research has shown that “attitude-behaviour relationship” is bi-directional and both influence each other (Holland, Verplanken & Van, 2002). He investigated the role of attitude strength as a moderator variable about the direction of impact between attitudes and behaviour. The researcher found that strong attitude guide behaviour, whereas weak attitudes follow behaviour. Given that the strength of attitudes can vary over the innumerable attitudes people hold, it will be incorrect to proceed by generalizing the issue of “attitude-behaviour relationship” by simply saying that attitude influences behaviour. Rather this issue needs clarification and verification for different instances. The current study aims to provide one such platform for checking out if attitudes influence behaviour in the first place. The reverse relationship has not been included in the scope of the current study.

Literature for attitude-behaviour relationship was explored to look at important moderator factors that if present would be expected to lead to a positive correlation between attitude and behaviour. These have been briefly summarized in the passages that follow.

One of the important prescriptions in this area was related to ‘measurement factors’ mentioned by Aizen and Fishbein in 1977 and later refine them (Aizen and Fishbein, 2005) to the level of a principle, namely, Principle of Aggregation, which states that a general attitude will predict a behavioural domain but not a particular behaviour). This concept which was about the specificity of attitude being measured was investigated by many other authors (Davison and Jaccard, 1979: attitude –behaviour for birth control pills; Mainieri, Barnett, Valdero, Unipan & Oskamp (1997) and Tanner, Kaiser & Wofing (2004): both used in this concept in suggesting that measures of explicit attitudes rather than general measures predict environmental behaviour).

In the current study, the design of the study was aimed to check the correlation between ‘attitude towards ESCB and ESCB as a behaviour to incorporate the dictate of specificity (where components are: action, target, context and time as per Aizen and Fishbein, 1977) in the design. Although, we mostly believe that specificity is a matter of degree and is a relative

concept and acknowledge that the setting of the current study although an attempt to factor specificity, it is in no way close to perfection.

Another aspect that has been shown to moderate the relationship between attitude and behaviour is the amount of control. At least two variables which contribute to moderation in this way are perceived behavioural control (Aizen, 1985) and self-efficacy (coined by Bandura in 1977 and later incorporated in SCT framework by him in 1986 where he propounded that self-efficacy can predict behaviour). Later researchers studied this variable as a moderating variable between environmental attitude and environmental behaviour (Meinhold & Malkus, 2005), although this relationship was found insignificant in Meinhold's study.

For the current study perceived behavioural control was factored to be in the context of the study design as a preliminary investigation regarding product categories in which the population at hand views to be influential in some way or to some extent was studied and only those categories where the perceived influence was maximum (as assessed by children themselves and both their parents) was considered. Attempts to enhance self-efficacy were ingrained in the interventions that were developed. Hence, it can be expected that there will be a positive correlation between AESCB and ESCB.

The last factors that were considered in this string were whether attitudes were formed from direct or indirect experience, as it has been found that attitude-behaviour correlation is much stronger when attitude formation is a result of direct experience as opposed to indirect experience (Regan & Fazio, 1977). In this study, since children were exposed to intervention – which included both active and passive interventions, where they had different degrees of involvement with the subject, it can be expected that there will be a positive correlation between AESCB and ESCB on one more additional count.

Accordingly, the following research question was framed:

**RQ7. To what extent do AESCB influence ESCB among primary school children?**

The question was in turn explored via the following objective was formed:

**Objective 5: To identify the influence of AESCB on ESCB among primary school children**

In turn, to investigate above objective following hypotheses was formed:

**H17a: AESCB is significantly correlated to environmentally sustainable consumption behaviour.**