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A study about the attitude of grade eight students for the use of plastic in Gwarko, Balkumari, Lalitpur district

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Abstract

The paper sets out a systematic empirical investigation for understanding the use of plastic materials for grade eight students. A survey method was conducted with a five point Likert scale to measure attitude. The paper developed an overall understanding of the knowledge towards behavior under the impact of plastic use. A gap between knowledge and behavior was located under the challenges from knowledge gain, to attitude building, and behavior change. Transferring knowledge to behavior lost some knowledge due to mode and instrument of transfer. Academic knowledge transfer rate was very good but the process was affected by educational barriers and other societal factors.

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1. Introduction

In daily life, most plastics, or substantially related products are simple to use. Plastic bags are extremely common, and in the household, most products are made of plastic. Children are habituated to use them from an early age without knowing the negative impacts of plastic. Through family, school, and literature, it is fairly easy to obtain information regarding the negative impact plastic has on the environment. What are the attitudes of using plastic? This is the issue this study seeks to investigate. Attitudes reflect the learning impacts on behavior (Greenwald, 1968). Hence, if attitudes are changing due to education, then this will indicate that the current education system influences strongly on students life and their thinking. To create a better environment for all, it is important to realize the negative impacts of plastic, and limiting the use of plastic products in everyday life. Presenting the attitudes of grade eight students of Nepal regarding the use of plastic materials is the major focus of this paper. "Theory of Planned Behavior" by Icek Ajzen gives the direction for this study.

Alexander Parkes, a native of Birmingham, England, first invented the plastic in 1862 (Who invented it, 2012). However, according to Trueman (2000), Leo Baekeland - a Belgium chemist, invented the truly synthetic plastic. He got the patented of this plastic in 1907. After the invention of plastic, it created massive economic impacts to the world economy. From 1960 to 2000, within the 40 years, the volume of manufacture and ingestion of plastics in the US increased by a factor of 13%, which helped create millions of jobs around the world. In contrast, household

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refuse and industrial disposal of plastic materials caused a major increase in the level of solid waste. By 1995, 73% of urban solid waste (MSW) was disposed in landfills which caused the aesthetic damage to the environment (Flores, 2008, p.1). After long term use, Nepal is faced with severe damages due to plastic products. In 2002, the Supreme Court ordered the government to ban plastic bags. Later, the Ministry of Environment promulgated the Plastic Bags Regulation and started a nationwide campaign of banning plastic bags. Practices such as bringing one's own shopping bag to the shops were introduced (Rai, 2011). Nevertheless, plastic bags are still available.

According to Ferguson (2004), attitudes were built up with affective customs of emotions or feelings. Cognitive formulations regarding belief, opinions, and behavioral conduct regarded how one should behave towards the project. After learning about the positive and negative impacts of using plastic, as well as the response to minimize the use of plastics simultaneously, meant that leaning is not in right track. To overcome this situation, revision of pedagogical techniques, teacher training methods, as well as the problems of teaching aids and instruments need to be focused on life and behavior. The area of this study, "Gwarko", is s prominent area in the Lalitpur district and could reflect the present urban situation where all possible opportunities of access towards knowledge were available for students. This study tried to find that, including how much the current education system makes an impact on building personal attitudes concerning the use of plastic. The outcome will be helpful for educational personnel of Nepal, in order to create a realistic curriculum for students to understand.

2. Literature reviews

2.1. Attitude

In most theories, attitude has two components. The first is emotional. This dimension involves feelings. The second is cognitive aspect. This refers to dispassionate facts and beliefs. Lutz (1981) defined attitudes are as representing covert feelings of favorability or unfavorability toward an object, person, issue, or behavior. People learn attitudes over time by being in contact with the object directly (experience) or through receiving information about the object (Lutz, 1981, p. 234 as cited in Hatzios, 1996). Rosenberg & Hovland's (1960) three−component model (The ABC model: affective – behavioral – cognitive) implies that the behavioral component will be highly correlated with the cognitive and affective components (Rosenberg & Hovland, 1960 as cited in Standen, 2012). Attitude is identified, as being associated with the behavioral intention, with intention leading to the actual behavior (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980 as cited in Ismail, Serguieva, & Singh, 2011).

2.1.1. Student attitude

Students' attitudes are perceived to be a function of the effect associated with the beliefs a person holds about the object (Fishbein & Ajzen, 1972, p. 507 as cited in Black, 2006). Student attitude can influence positively or negatively, the perception of social pressure (subjective norm), such as media, peers, family and parents by the Theory of Respond Action (TRA) (Fishbein and Ajzen, 1975 as cited in Ismail et al, 2011).

2.1.1.1. Plastic

The first man-made plastic was created by Alexander Parkes who publicly demonstrated it at the 1862 Great International Exhibition in London. The material called Parkesine was an organic material derived from cellulose that once heated could be molded, and retained its shape when cooled. However, in 1907, Leo Hendrik Baekeland improved phenol-formaldehyde reaction techniques by inventing the first fully synthetic resin to become commercially successful, trade named Bakelite (Bellis, 2012). The global demand for plastic is dominated by the thermoplastic type's polypropylene (21%), low- and linear low-density polyethylene (18%), polyvinyl chloride (17%), and high-density polyethylene (15%). Other plastic types with high demand are polystyrene and expandable polystyrene (8%), polyethylene terephthalate, PET (7%, excluding PET fiber), and the thermosetting plastic polyurethane (6%; figures for 2007; Plastics Europe MRG, 2008 as cited in Lithner, 2011). Plastic bottles and bags are examples of post-consumer waste, which have become common items in recycling programs. It does not degrade

naturally, and can produce dangerous dioxins when incinerated. Additionally, it can find its way into oceans, damaging marine ecosystems. Recycling has offered fresh promise that a remedy has been found for reducing these impacts (Palko, 2005). In Nepal, plastic wastes are increasing. In 1976, it was only 0.3% by weight. However, in 1999, it was 11.4% by weight among the composition of all waste (Regional Resource Centre for Asia and for the Pacific [RRC.AP], n.d.). In one year, over 200,000 plastic water bottles were disposed of in the Annapurna Conservation Area (Mission Eco Trek, 2008). Discarded plastic is an urban nightmare because it doesn't rot or turn into compost. Plastic bags discarded in fields decrease the productivity of arable land (Sharma, n.d. as cited in Pradhan, 2000).

2.1.1.1.1 Theoretical framework

Theory of planned behavior suggests that behavior is dependent on one's intention to perform the behavior. Intention is determined by an individual's attitude (beliefs and values about the outcome of the behavior) and subjective norms (CommGap, n.d.). According to Ajzen and Fishbein, in 1862 psychologists introduced the theories that showed relationships between attitudes. Theories suggested that, attitude could explain human actions (Ajzen and Fishbein, 1980, p. 13). This is the beginning point, which made the social psychologists to see attitudes as predictors of behaviors. Those ideas have been studied and ran on strong until the early 1960s (Kelli Mc Cormark Brow, 1999, p.1 as cited in Mega Essays, 2001). In 1969, Wicker conducted a survey and argued that, attitudes are more likely to be unrelated or only slightly related to behaviors because the early theories present the relationship between attitudes and behaviors as a one-way association (Mega Essays 2001. para 1). Indeed, Azjen & Fishbein (1977) argued that attitudes can predict behavior, if both are assessed at the same level of generality. Many classic studies, which failed to find an attitude behavior relationship, assessed just single instances of behavior (Stroebe, 2000 as cited in Standen, 2012. p.1). Most modern theories agree that attitudes are represented in memory, and that an attitude's accessibility can exert a strong influence on behavior (Fazio, 1986 as cited in Standen, 2012). By definition, strong attitudes exert more influence over behavior because they can be automatically activated. One factor that seems to be important is direct experience (Standen, 2012. p.1).

3. Methodology

3.1. Objective of the study

The objective of the study is to understand the status of knowledge, understanding, and practice regarding the use of plastic among the students of class eight in Gwarko area, Balkumari, Lalitpur.

3.1.1. Analyses and results

This study takes place in urban schools of Gwarko area and all students are under sample. The study was done by survey method and quantitative approach was used for data analysis. The concept of measuring attitude is found in many areas, including social psychology and the Social Sciences; they can be complex and difficult to measure. The purpose of this study is to explore the particular method of measuring attitude using Likert Scales (Likert, 1932), and to determine their effectiveness and values about attitudes, views, and experiences of learners. Likert formats are ranging from "Strongly Agree=5" to "Strongly Disagree=1" for positive statements and in reverse for negative statements.

Table-1: knowledge (M= mean, SD= Standard Deviation)

Statement	***Male***		***Female***		***Total***	
	M	SD	M	SD	M	SD
'Reuse' of plastic bag is good.	3.2	1.8	2.6	1.5	2.9	1.7
Awareness is essential for saving our environment from the plastic hazards.	4.3	1.2	4.7	1.0	4.5	1.1

In the ground, plastic materials are sustain long time and decrease the soil quality.	3.8	1.5	4.6	0.7	4.2	1.2
Chocolate, Mini, Biscuit covers we cannot throw anywhere because these things does not effect in the environment pollution.	4.5	0.5	4.6	0.5	4.6	0.5
To keep the environment beautiful we need to be free of plastic products.	4.6	0.5	4.9	0.3	4.8	0.4

Knowledge levels of the students are moderately in a good position. Students were found to access knowledge from a variety of sources, including teacher's notes from formal instruction, informal interactions with the teacher, observation of and interaction with other students, as well as sources outside the classroom (Venville, Rennie, & Wallace, 2004). Knowledge will impact students self learning, managing behavior, situation awareness, and decision making (Lorenz, Gehrke, Hammer, Langer, & Timm, 2005). So, knowledge about plastic will aware students about the plastic impacts on the environment. Educational systems always want to transfer knowledge to better inflence a person, as well as a society (Clark, 1986). It is expected that knowledge will transfer to attitude because knowledge has a significate effect on attitude (Ramzan, 2004). Regarding the gender prospective, among all the responses, female responses were more concrete and positive than the boys, and this reflection is apparent in every question.

Table 2: Attitude

Statement	*Male*		*Female*		*Total*	
	M	**SD**	**M**	**SD**	**M**	**SD**
Is it not right to throw plastic products anywhere after use.	4.8	0.4	4.9	0.3	4.9	0.3
People should be conscious to use plastic products.	4.4	0.8	4.6	0.5	4.5	0.6
Plastic thrown by the people does damage the environment.	4.4	1.1	4.8	0.5	4.7	0.8
Plastic products are more user friendly than any other products.	3.1	1.4	3.0	1.2	3.1	1.3
Black colour of plastic bags is more attractive than other colour.	3.0	1.7	2.7	1.4	2.8	1.5
Everyone needs to aware of use of plastic products	3.4	1.6	4.6	0.5	4.3	1.3
School environment can be plastic free	4.2	1.3	4.8	0.4	4.5	1.0

Increase in knowledge brings change in attitudes among the students (James, Reddy, Taylor, Jinabhai, Empelen, & Borne, 2005). Though students sensitize knowledge about plastics, ratio of knowledge transfer to attitude found less. Around 70% of the students understand the negative impacts of plastic. Few people believed that lifestyle effects their attitude. At the same time, attitude were found at the same level of students though they have differences in lifestyles (Abramson, 2008). From a gender perspective, female respondents had stronger attitudes than male partners. Female students' attitudes are more concrete forming during childhood. At the primary level, female students showed more positive attitudes than male students (Black, 2006).

Table 3: Behaviour

Statement	*Male*		*Female*		*Total*	
	M	**SD**	**M**	**SD**	**M**	**SD**
We should not throw away all the used plastic materials rather than recycle.	3.5	1.6	2.9	1.7	3.2	1.6
We should REUSE the plastic bags.	2.7	1.6	3.3	1.3	3.0	1.5
We should replace the plastic bags with jute or other bags.	3.5	1.6	4.6	1.0	4.1	1.4
It is not essential to give a plastic bag while we buy something from the shop.	3.9	1.3	4.7	0.9	4.3	1.2

Though knowledge about plastic use is known by the students, the practical field of implementation is exactly half of the percentage, and shapely low from the knowledge level. In addition, knowledge is gradually deceased in attitude and behavior on the practical level. There is a gap between knowledge and behavioral situation for implication. One of the reasons behind this is that knowledge acqired is often forgotten shortly after it is acquired (Kennedy, 2004). By using 'Mind Gap' model developed by Kollmus and Agyeman (2002), discussing the 'gap' between education and knowledge-behavior found that critical thinking - 'behavior change' gap; the direct action - indirect action gap; the gender gap etc. were the main reasons for this gap (Kollmus and Agyeman, 2002 as cited in Rogers & Hall, 2010). To reduce the gap between knowledge and behavior, "Closing the Gap Between Knowledge and Behavior: Turning Education into Action," was organized, and examined topics as diverse as the implications of

brain biology on behavior, effective programs that incorporate change theory (National Endowment for Financial Education [NEFE], 2006). Gaps between knowledge and behavior has not always happened. Sometimes, knowledge improves fast. Through education, knowledge and attitudes can change in very rapidly (Ngowi, Mkupas, Lekule,Willingha, & Thamsborg, 2011) which can reflect in behavior in a positive way.

4. Concluion

Grade eight students have good knowledge about how to protect their land form the hazards of plastic products. More accurate, concrete, situational based knowledge will be more appropriate to apply at the practical level. In regard to gender, female students are holding knowledge that is more concrete, and they apply this knowledge at practical level, more often than their male partners. This survey found that transferring knowledge to behavior will take some time. Through time, knowledge can also be lost due to transferring types. The loss of transferring knowledge depends on various issues, such as mode of transfer, instrument of transfer etc. From the educational prospective, the present education system and curriculum design can generate the positive idea about impact of plastic products among the grade eight students. The ratio of convert from knowledge to attitude and behavior among students are fairly good, yet not enough. Educational experts need to work more to get the best output from the knowledge of the students. The society also needs to be aware and come forward for this type of environmentally friendly work. Schools and students should convince society and govenment to help tranfer the knowledge regarding awareness of plastic use.

References

Abramson, R. (2008). *Plastic Recycling Awareness among Students at UC Berkeley*. Unpublished Dissertation Retrieved from http://nature.berkeley.edu/classes/es196/projects/2008final/Abramson_2008.pdf

Mega Essays. (2001). *Attitude - Behaviour Relations*. Retrieved May 1, 2012 from http://www.megaessays.com/viewpaper/20312.html

Mission Eco Trek. (2008). *Environmental Issues*. Retrieved May 1, 2012, from http://www.enepalholidays.com/nepal-trekking-packages/environmental-issues.php

CommGap. (n.d.). *Theories of Behavior Change*. Retrieved May1, 2012, from http://siteresources.worldbank.org/EXTGOVACC/Resources/BehaviorChangeweb.pdf

Who Invented It. (2012). *Who Invented Plastic*? Retrieved March 28, 2012, from: http://www.whoinventedit.net/who-invented-plastic.html

Bellis, M. (n.d.). *The History of Plastics: TimeLine of Plastics*. Retrieved May 1, 2012, from http://www.thebuttonmonger.com/content/The_History_of_Plastics.pdf

Black, A. M. (2006). *Attitudes to Reading: An Investigation Across the Primary Years.* Unpublished Master's Thesis, Australian Catholic University, Australia.

Clark, B. R. (1986). *The higher education system: Academic organization in cross-national perspective.* Available from http://books.google.no/books?hl=en&lr=&id=j_-YKg7DuqAC&oi=fnd&pg=PR11&dq=The+higher+education+system:+Academic+organization+in+cross-national+perspective.&ots=upAJ1W-DSL&sig=PDFjIPkYud6bik-VbEMT3eaXgHo&redir_esc=y

Ferguson, D. T. (2004). *Chapter 6: Attitudes* Social Psychology. Retrieved from PSY3510, Utah State University:http://www.usu.edu/psy3510/attitudes.html

Flores, M. C. (2008). Plastic Materials and Environmental Externalities: Structural Causes and Corrective Policy. *Lethbridge Undergraduate Research Journal*, 3 (2). Retrieved from https://www.uleth.ca/dspace/bitstream/handle/10133/1215/Flores.pdf?sequence=1

Greenwald, A. G. (1968). Cognitive learning, cognitive response to persuasion, and attitude change. *Psychological foundations of attitudes*, 147-170. New York: Academic Press INC.

Hatzios, M. K. (1996). Effective Models For Measuring Students' Attitudes Toward The Marketing Education Program. Journal of Vocational and Technical Education.*13(1) Retrieved from http://scholar.lib.vt.edu/ejournals/JVTE/v13n1/hatzios.html*

Ismail, S., Serguieva, A. & Singh, S. (2011). Integrative model of students' attitude to educational loan repayment: A structural modelling approach. *Journal of International Education in Business*, 4 (2), 125 – 140 doi: 10.1108/18363261111189522

James, S., Reddy, P. S., Ruiter, R. A., Taylor, M., Jinabhai, C. C., Van Empelen, P., & Van Den Borne, B. (2005). The effects of a systematically developed photo-novella on knowledge, attitudes, communication and behavioural intentions with respect to sexually transmitted infections among secondary school learners in South Africa. *Health Promotion International*, 20(2), 157-165. Retrieved from http://heapro.oxfordjournals.org/content/20/2/157.short

Kennedy T., Regehr G., Rosenfield J., Roberts S.W., & Lingard L. (2004). Exploring the gap between knowledge and behavior: a qualitative study of clinician action following an educational intervention. *Academic Medicine: Journal of the association of American Medical College,* 79(5), 386-93. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/15107277#

Likert, R. (1932). A Technique for the Measurement of Attitudes. New York: Archivés of Psychology.

Lithner, D. (2011). Environmental and health hazards of chemicals in plastic polymers and products.Unpublished doctoral Dessertation. Gothenbeg University, Sweden. Retrieved June 22, 2012, from https://gupea.ub.gu.se/bitstream/2077/24978/1/gupea_2077_24978_1.pdf

Lorenz, M., Gehrke, J. D., Hammer, J., Langer, H., & Timm, I. J. (2005). Knowledge Management to Support Situation-aware Risk Management in Autonomous, Self-managing Agents. In H. Czap., R. Unland., C. Branki & H. Tianfield (Eds.), *Self-Organization and Autonomic Informatics* (pp. 114–128). Netherlands: IOS Press.

National Endowment for Financial Education. (2006). Closing the Gap between Knowledge and Behavior: Turning Education into Action. *Association for Financial Counseling Planning Education*, 17(1), 73-90 Retrieved from http://www.afcpe.org/publications/journal-articles.php?volume=151&article=286

Climate Himalaya. (2011, August 23*). Nepal: Govt likely to ban use of plastic bag form next week*. Retrieved May 1, 2012, from http://chimalaya.org/2011/08/23/nepal-govt-likely-to-ban-use-of-plastic-bag-form-next-week/

Palko, K. (2005). *Shifting the Pollution Problem: Recycling Plastics in Southern China*. Unpublished Master's Thesis, Saint Mary's University, Halifax, Nova Scotia.

Pradhan, S. (2000, January 20). India/Pakistan Plastic Bags to be binned. *Asia Times Online*. Retrieved from http://www.atimes.com/ind-pak/BA20Df02.html

Rai, B. (2011, October). Out of sight is not out of mind. *Nepali times.* Retrieved May 1, 2012, from http://www.nepalitimes.com/issue/2011/10/14/Nation/18627

Ramzan, M. (2004). *Does Level of Knowledge Impact Librarians' Attitude Toward Information Technology (IT) Applications?* Retrieved from http://ir.inflibnet.ac.in/dxml/bitstream/handle/1944/311/04cali_5.pdf?sequence=1

Regional Resource Centre for Asia and for the Pacific (RRC.AP). (n.d). *State of Environment, Nepal 2001*.Retrieved June 20, 2012 from http://www.rrcap.ait.asia/reports/soe/nepalsoe.cfm

Rogers, L., & Hall, C. P. (2010). Gaps in Mind: Problems in environmental knowledge-behaviour modelling research. *Environmental Education Research*, 8(3), 283-297.
doi: 10.1080/13504620220145438

Standen, J. (2012). The relationship between attitudes and behaviour. *Zotero* Retrieved from http://www.jeffstanden.net/attitudes%20behaviour%2001.htm

Trueman, C. (2000). Plastic. *History learning site*. Retrieved Marh 28, 2012, from: http://www.historylearningsite.co.uk/plastic.htm

Venville, G., Rennie, L., & Wallace, J. (2004). Decision Making and Sources of Knowledge: How Students Tackle Integrated Tasks in Science, Technology and Mathematics. *Research in Science Education*, 34,115-135 Retrieved from http://www.asms.sa.edu.au/pd/atip/Documents/Decision%20making%20and%20sources%20of%20knowledge.pdf

Ngowi, H. A., Mkupasi, E. M., Lekule, F. P., Willingham III, A. L. & Thamsborg, S. M. (2011). Impact of farmer education on their knowledge, attitudes, and practices in southern Tanzania: a case for Taenia solium control. *Livestock Research for Rural Development*. 23(2). Retrieved December 14, 2012, from http://www.lrrd.org/lrrd23/1/ngow23002.htm

Wolf, B. (2010, December 10-16). Plastic-free. *Nepali times.* Retrieved from http://www.nepalitimes.com/issue/2010/12/10/Letters/17719.