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Believe in Green Expo

Goals:

- 1) To educate and inspire community members to make environmentally-conscious lifestyle changes that can improve their quality of life.
- 2) To introduce new knowledge on “Things that we can do at home to take better care of the environment and biodiversity.”
- 3) To evaluate the impact of the conservation message at expo using a survey.

Abstract The purpose of this investigation was to educate and inspire community members to make environmentally-conscious lifestyle changes that can improve their quality of life and to evaluate the impact of conservation messages through the District 181 Foundation Environmental Expo. The goals of the expo were fund-raising, offer valuable services to donors, help local businesses engage with the target market, strengthen the Foundation’s profile, and expand the volunteer base. The Expo presented: Exhibits by businesses, nonprofits and school groups (eco-clubs, Science-Fair student-work, art projects from recycled materials); performances by school chorals; recycling; park clean-up; silent-auction of schools’ painted Rain Barrels; concessions. A pre & post- expo survey evaluated the impact of the expo on participants’ changes in environmental perceptions on how home activities help the environment. I predicted that the expo was going to have a significant impact on the types of activities that the participants would choose to help the environment during the expo compared to evaluations administered before the expo. Initial results indicated that the community is active in “reduce, reuse, recycle.” Monetary effects on reduction of water

usage and turning off lights when not in use are powerful directors on environmentally conscious lifestyle changes. Advertising conservation actions in the expo and increasing knowledge about “how home activities help the environment” can have an impact on expo participants. More diverse types of actions were chosen in the post survey compared to the pre-survey, as indicated by the Shannon Diversity index. Even though increased knowledge is no assurance that behavior change will occur, it is a stepping stone to empower people to make different choices that can help the environment.

Introduction

From the 1990's, scientists have caution about the outcomes of human economic activities and their effect on the ecological balance and the future existence in the planet (Cleveland *et al.* 2005). The outcome of this effect, such as climate change, urban air pollution, water shortages, environmental noise and loss of biodiversity represent some of the various environmental problems that pose a threat for environmental sustainability (Steg and Vleg 2009). As a result, changes of human's cultural values have occurred towards expressions of concern, eagerness to make sacrifices and undertakings of actions to help protect the environment (Ester *et al.* 2004). Since all these problems occur due to human behavior, if that behavior is changed, then environmental impacts could be reduced. However, some sort of appropriate knowledge is needed to facilitate behavior changes (Tanner and Kast 2003). Therefore, if this knowledge is introduced in the community, it would be possible to assess whether that intervention has been successful.

Due to human concern for the environment, more corporations are changing their marketing concept by retaining or enhancing both the welfare of customers and society. Their goal is geared toward seeking competitive advantage through environmental friendliness (Karna *et al.* 2003). Additionally, it has been demonstrated that eco-friendly products will definitely be crucial factors that will push customers to make the right purchase choice (Rashid 2009). Taking all of these ideas into consideration, the District 181 Foundation and I as a Board member, organized a “Believe in Green” Expo (BIG) to showcase District 181 students’ activities for the environment, to educate and inspire the community to make environmentally-conscious lifestyle changes to improve their quality of life, to engage the community on a path for a sustainable future (Campaign Earth, UNESCO 2002, Greguss 2009, Earth Day 2010, Chen *et al.* 2011), to raise the Foundation profile in the community, and to expand the Foundation’s volunteer base. In addition, to offer a valuable service to donors by helping local businesses engage with the target market.

I was interested on identifying if by increasing awareness (knowledge) in the community about possible “things to do at home to take better care of the environment, ” then the community would consider to change their chosen decisions to protect the environment and biodiversity. This thought was based on evidence that stakeholder participation can encourage them to consider other alternatives to protect the environment (Reed 2008).

Therefore, the goal of this investigation was to evaluate the impact of the BIG Expo by identifying how different were the responses to “things do at home to take better care of the environment” before and after visitors at the Believe in Green Expo were exposed to

that knowledge. This information was advertized throughout the expo using posted messages (Appendix A). Therefore, by providing knowledge on how these environmentally friendly initiatives can help the environment, I assumed that visitors would choose new everyday activities that they did not consider before the expo. I hypothesized that during the BIG Expo (for now on post survey), respondents to the survey were going to select more actions that were advertized in the event than those surveys that were distributed before the event when they were not exposed to these ideas.

Methods

The Believe in Green expo, was located at the Clarendon Hills Middle School. We invited Businesses, Non profits and School Groups to participate, and encouraged them to create interactive learning opportunities for the community, e.g. the Girls Scouts organized a “Trash for Treasure” activity in which visitors created an art project with recyclable materials. In addition, inspired by other Green Expos (Edutopia 2010, EECN 2010), we invited Student Science Fair projects, and art competition pieces made from recyclable materials to be showcased at the Expo. Singing groups and bands made presentations throughout the day; speakers gave seminars on recycling, landscaping, health and environmentally friendly automobiles; Recycling services were provided to the community (crayons, rulers, computers, telephones, batteries, eye glasses, buttons, hearing aids) through Waste Management, as well as Paper Shredding (Hinsdale Bank). All of these activities were in tune with community participation and voiced the importance of our actions for the environment. The intended audiences were 4,000

students and their families from Hinsdale, Clarendon Hills, Burr Ridge, Oak Brook and Willowbrook.

The survey: To evaluate the effect of pre- and post- exposure to new conservation ideas “to take better care of the environment,” a survey (Appendix B) was provided to a teacher in three of the nine schools in the district who gave the surveys as homework to students. A total of 112 responses were received from students of ages ranging from 7 to 14. The survey asked to write “10 Things to do at home to take better care of the environment & biodiversity.” This same survey was distributed to visitors during the BIG Expo and was used as a stepping stone to make biodiversity meaningful through education (Wals 2001, 2010). The goal was to compare the types and numbers of responses that the visitors would give without and with knowledge of potential actions to protect the environment. During the Expo, 52 poster-type neon-green fliers (Appendix A) were displayed throughout the premises to advertise this new knowledge and promote behavioral change in participants. Results were tabulated and presented in Table 1 (Appendix D) and as graphs.

Statistical Analysis: Data were tested for normality and homocedasticity prior to performing analysis of variance. Descriptive statistics were used to identify the distribution and range of responses for each question (Williams 2003). To find out if there was an increase in diversity of responses between the pre- and post surveys, responses were classified in two groups: pre- and post- surveys. To detect differences in diversity of responses between the pre- and post surveys, I used the Shannon Diversity Index (Shannon 1948, Gorelick 2006), and Evenness. These Indexes provide important

information about rarity and commonness of answers in a group of answers. The Shannon diversity index (H) is an index that is commonly used to characterize species diversity in a community, in this case, the diversity of actions selected by the respondents in a pool of answers. The proportion of actions i relative to the total number of actions selected (p_i) was calculated, and then multiplied by the natural logarithm of this proportion ($\ln p_i$). The resulting product was summed across answers, and multiplied by -1 (Shannon 1948):

$$H = -\sum_{i=1}^N p_i \ln p_i$$

Evenness was calculated as the value of H / \ln (total number of answers): $E = H / \ln N$, where E is the relative abundance of answers across all answers.

Results

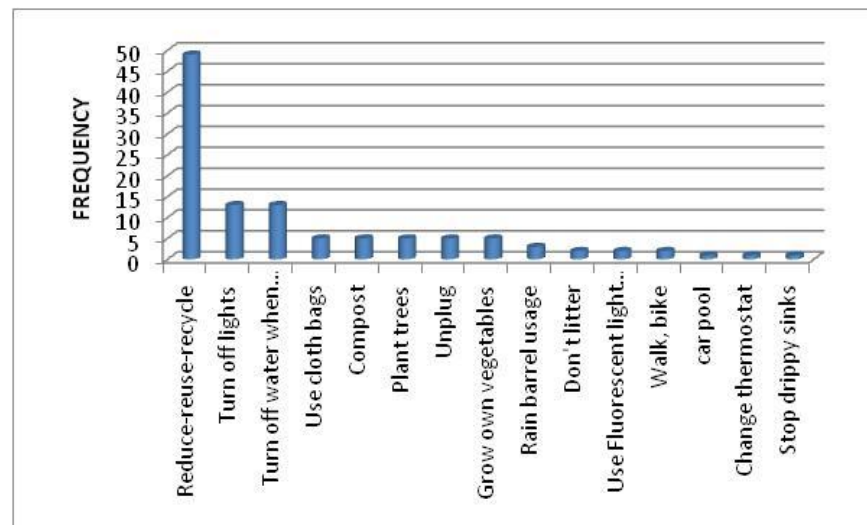


Figure 1: Number of times an action was mentioned by participants (Frequency) before the Believe in Green Expo occurred.

Before the Believe in Green Expo, the community was well aware of the recycling program (Figure 1). Forty Four percent of respondents (49) thought about recycling,

while 11% thought about turning off water or lights that were not in use. Four percent of responses regarded using cloth bags, composting, planting trees, unplugging electric equipment, while 2% mentioned rain barrel usage, not littering, use of fluorescent bulbs or walking, biking or carpooling. A couple of respondents (0.9%) mentioned changing the thermostat to reduce electric usage and repairing drippy sinks.

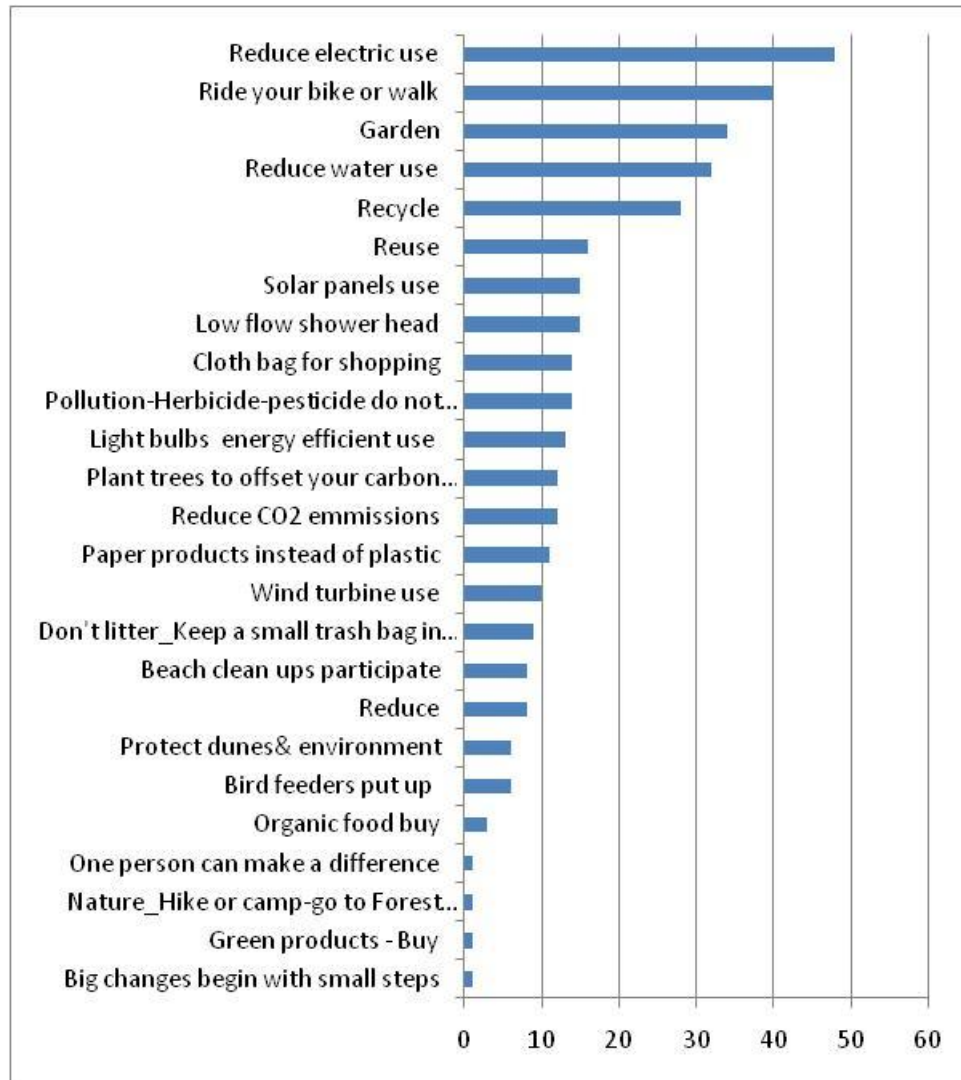


Figure 2: Number of times an action was mentioned by participants (Frequency) during the Believe in Green Expo.

Advertisement of actions to help protect the environment had an effect on the results which increased the diversity of responses (Fig 2) in the post-survey compared to the pre-survey. Thirteen percent of respondents (48) chose to reduce electricity-use in different ways: turn down heat in winter and up in summer, use less ice, turn off lights, TV, computer and electronics when not in use, open windows instead of using lights, use energy efficient windows, use a fan in the attic, hang clothes to dry, and insulate your attic. Surprisingly, 11% of respondents (40) chose to ride a bike or walk. Even though this was a way to reduce carbon emissions, I excluded it from the group due to its overwhelming response. In the pre-survey, only two responses were chosen on this category. Gardening seems to be an important activity in this community with 9.5% of the respondents (34) considering composting, making your own mulch (which was advertised in the Fair with 18 respondents choosing this action), worm farming, planting a garden or growing your own vegetables, and freezing-canning food you grow. The 3rd, 4th and 5th highest responses were reduce water use (8.9 %; 32 responses), recycle (7.8%, 28 responses), and Reuse (4.5%; 16 responses). These actions were also chosen in the pre-survey. However, in the post survey, new actions to reduce water use were chosen that either were advertised in the Fair or the participants suggested. Among those actions were: to wait to do laundry until you have a full load, put a brick in the toilet*, use low flush toilets, and use a rain barrel to water your lawn. Between 3% and 4% of the respondents (10-15) chose to use solar panels*, a low-flow shower head*, cloth bags for shopping*, avoid using herbicides or pesticides and pull weeds instead*, use energy efficient light bulbs, plant a tree*, reduce CO₂ emissions*, use paper products instead of plastic*, and use a wind turbine to produce electricity*. The items with an asterisk represent those actions that were advertised in the Fair and that were not

mentioned in the pre-survey. All other surveys that only had the word “reduce” were lumped in this category that represented 2% (8) of the responses. In the pre-survey, this category was also mentioned in tandem with the “Reuse, reduce, recycle” campaign. However, given the many other options, people did not use “reduce” as often in the post-survey. “Participate in Beach clean ups” was mentioned in 2.2 % (8) of the responses. This action was new and advertized in the Fair. All other actions were mentioned 1-6 times and were represented by the slogans: protect dunes*, and the environment, use bird feeders*, buy organic food, one person can make a difference*, hike or camp* or visit the Forest Preserve, buy green products, big changes begin with small steps*. The actions with an asterisk were advertized in the Fair.

Shannon Diversity Index (H) and Evenness (E). The diversity (H) and evenness (E) in this Expo were both much higher in the post-survey ($H = 3.47$; $E = 0.59$) than in the pre-survey ($H = 2.36$; $E = 0.50$). This is an indication that the Believe in Green expo influenced the audience’s responses with a resulting greater number of actions (56) in the post-survey compared to the pre-survey (17). Furthermore, the responses to those actions as a group were distributed more equitably in the post- survey, e.g.. over 11% of the responses (40/361) belonged to the action “*Ride your bike or walk,*” which was only 1.8 % in the pre-survey. In the pre- survey, there were 1.5 fewer actions than in the post-survey, and over 40% of the individual responses (47/112) belonged to a couple of actions: *Reuse & Reduce*. These results suggest that advertising conservation actions and increasing knowledge about “how home activities help the environment” can have an impact on expo participants. Because diversity indices provide more information than simply the number of actions present (i.e., they account for some actions being rare

and others being common), they serve as valuable tools that enable conservationists to quantify diversity of actions in a community and describe its numerical structure.

Discussion /Conclusions

The BIG Expo had the ability to raise awareness and evoke action, both of which are important goals for an effective conservation campaign (Rhode & Lee 2008). Because not everyone thinks and perceives things the same way (Donnell 2010), it is imminent for organizations like the district 181 Foundation, which is looking for some transformation in people's behavior, to identify in their targeted audience those factors that could influence individuals behavior change (Schwartz *et al.*, 2000). One way to identify those factors is by helping people make connections between the natural world and their role in it (Saunders 2003, Farrior 2005). Some of those factors, or pro-Environmental actions, including "recycling", "water saving," and "energy saving," are closely related to people's recognition of environmental changes, and their intrinsic values (Zheng 2010). These environmental actions work best for simple, easy-to-do behaviors such as consumer decisions of saving water and electricity (Coyle 2004). These are vitally important and can be measured. Additionally, people are much less inclined to take steps that will disrupt lives (Lane 1996) and more prone to those that can make them feel in control, such as those that give them access and convenience, i.e curbside recycling as compared to taking materials to local recycling centers which are less accessible and inconvenient. Therefore, the actions advertised in the BIG Expo to help protect the environment were reasonable and comply with those characteristics that make people feel in control, are simple and easy to do, have easy access, are

convenient to perform and help people make the connection between their actions and the natural world.

In spite of this evident increase in knowledge on environmental actions, there is no assurance that behavior change will occur (Bell *et al.* 1995, Monroe 2003, Wals 2010). It is necessary to foster stewardship to achieve an improved environment, better-planned communities, more vibrant economy and optimal human health (Coyle 2004).

Therefore, to achieve behavior change through stewardship it has been recommended that people need to pledge in writing which actions they are willing to do at home in order to enhance their environmental consciousness while contributing to a better understanding of the environment (Farrior 2005). Consumers could also be asked to demonstrate their commitment to protecting the environment through bumper stickers, letter-writing campaigns, and other visible symbols of compliance with pro-environment norms (Rhode & Lee 2008). These commitments will teach them not only how to think but what to think about the environment (Jickling & Wals 2008). As a result we would expect to find 'educated' citizens who are active participants in on-going decision-making processes within their communities.

Reflections/Next Steps

In order to engage students and the community in environmental stewardship, a poster competition (Appendix C) could be launched based on the list of Ways to make a difference for the environment (Appendix A). The students could choose a message and convey their interpretation using any media (sand, crayons, paint, feathers, recyclable materials, others). Winners will receive a medal. A web page or blog could be designed

and the art projects could be posted on it. All participating children, their parents, relatives, friends, and friends of friends, could vote for the project that they like best. While in the web page or blog, visitors will find out about the mission of the District 181 Foundation and the Believe in Green Expo.

Action Component: Conservation awareness was promoted by displaying 53 posters (Appendix A) throughout the BIG Expo with messages on “Things to do at home to take better care of the environment.” Writing about those posters was a way to make people think on how to help the environment and biodiversity.

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Appendixes

- A. Posted messages of Things to do at home to take better care of the environment & biodiversity
- B. Survey
- C. Announcement for poster competition (BELIEVE_IN_GREEN_POSTER_COMPETITION_11MAR11.pdf).
- D. Table 1: Actions chosen by respondents and categorized as “new,” “advertized in the Expo” or in the “pre-survey.”

Acknowledgements

Thank you to the District 181 Foundation and the community for participating in this conservation campaign.

Appendix A

Posted messages of Things to do at home to take better care of the environment & biodiversity

 <p>Visit your local farmer's market</p>	 <p>Add a bag to your toilet tanks</p>	 <p>Avoid food products in plastic or Styrofoam containers</p>	 <p>Avoid use of chemical fertilizers</p>
 <p>Avoid using pesticides</p>	 <p>Change your AC filter</p>	 <p>Eat sustainable – caught seafood</p>	 <p>Install Low-Flow shower heads</p>
 <p>BIG CHANGES BEGIN WITH SMALL STEPS</p>	 <p>Collect rainwater from your home's downspouts</p>	 <p>Get a free energy audit from your utility company</p>	 <p>Insulate your water heater</p>
 <p>Buy live saltwater fish NOT caught in the wild for your aquarium</p>	 <p>Do not litter. Keep a small trash bag in your car</p>	 <p>Go on hikes & camping</p>	 <p>Keep beaches clean</p>



Keep the tires on your car adequately inflated



Keep your car tuned up



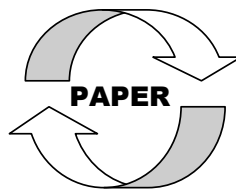
Move your heater thermostat 2° up in winter 2° down in summer



Pull weeds instead of using herbicides



Participate in beach cleanups



Buy paper products instead of disposable plastic



Provide up birdfeeders, birdhouses, and birdbaths



Plant trees to offset your carbon footprint



Protect dunes



One person can make a difference



Use compact fluorescent bulbs



Walk or Ride your bike



Run the dishwasher only with a full load








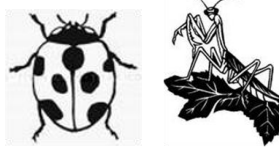

Use cold-full wash loads to wash your clothes



Reuse grocery bags



Take shorter showers

 <p>Turn off your computer, TV, when not in use</p>	 <p>Use insect deterring plants to avoid pests</p>	 <p>Use solar panels (they generate electricity for your home)</p>	 <p>Turn off lights when not in use</p>
 <p>Use a wind turbine (to generate wind energy for your home)</p>	 <p>Use natural predators to control pests</p>	 <p>Make your own mulch</p>	<p>Make a difference: protect Biodiversity and the Environment</p>

Appendix B: Survey

10 Things We Can Do at Home

(to take better care of the environment and biodiversity)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Appendix C: Announcement for poster competition (See

BELIEVE_IN_GREEN_POSTER_COMPETITION_11MAR11.pdf)

Appendix D: Table 1: Actions chosen by respondents and categorized as “new,” advertized in the Expo (“New in Fair”) or in the “pre-survey.” e 17

ACTION	votes	new	New in Fair	pre-survey
Beach clean ups participate	8		8	
Big changes begin with small steps	1		1	
Bird feeders put up	6		6	
Car - tune up	1		1	
Car- do not let idle	1	1		
Car -hybrid - use	3	3		
Car tires inflated	2		2	
Carpool	5			5
Don't litter_Keep a small trash bag in your car	1		1	
Don't litter-clean up	8		8	8
Garden_Freeze and can food you grow	1	1		
Garden_Make your own mulch	18		18	
Garden_Worm farm	2	2		
Garden-Compost	5			5
Garden-Grow vegetables-plant a garden	8	8		8
Green products - Buy	1		1	
Light bulbs energy efficient use	13			13
Low flow shower head	15		15	
Nature_Hike or camp-go to Forest Preserve	1		1	
One person can make a difference	1		1	
Organic food buy	3			
Paper products instead of plastic	11			11
Plant trees to offset your carbon footprint	12		12	12
Pollution-Herbicide-pesticide do not use	11		11	
Pollution-Herbicides avois-instead Pull weeds	3		3	
Protect dunes& environment	6		6	
Recycle	28			28
Reduce	6			6
Reduce electric use-Turn down heat in winter,up in summer	10		10	10
Reduce electric use_Less ice use	1	1		
Reduce electric use-Turn off lights when not in use	18			18
Reduce electric use-Turn off tv, printer, computer, recharges w	7		7	7
Reduce electric use-Windows - open insted of using lights	1	1		
Reduce electric use-Windows energy efficient	3	3		
Reduce energy use - put Fan in attic	1	1		
Reduce energy use_Energy audit	2		2	
Reduce energy use_Energy efficient - appliances purchase	2			
Reduce energy use_Insulation to attic	1	1		
Reduce enery use_Hang clothes to dry	2			
Reduce paper use_Books from library instead of buying them	1	1		
Reduce paper use_Cancel catalogs that you don't use	1	1		
Reduce water and energy use_Laundry wait until you have a lo	2	2		
Reduce water use - Shorter showers	16			16
Reduce water use -Put a brick in the toilet	1		1	
Reduce water use_Low flush toilettes	3	3		
Reduce water use_Rainbarrel use	2	2		2
Reduce water use_Turn off water while brushing teeth	7	7		7
Reduce watering your lawn	3	3		
Reusable bag for shopping	14		14	14
Reuse	14			14
Reuse - buy from thrift shops	1	1		
Reuse wateruse_lawn with used water	1	1		
Ride your bike or walk	40		40	40
Solar panels use	15		15	
Wash veggies with tap water instead of with bottled	1	1		
Wind turbine use	10		10	
TOTAL	361	44	194	224