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Bridging the Generation Gap Across the Digital Divide: Teens Teaching Internet Skills to Senior Citizens

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Abstract
With the intent of closing the digital divide, the Teens Teaching Internet Skills Pilot Project engaged youth from 4-H Technology Teams in six states in training senior citizens to navigate and obtain information from the Medicare Web site. The teens perceived an improvement in working with seniors, project management, teaching, public speaking, and leadership. The workshops had a positive effect on seniors' comfort and skill levels towards technology. This intergenerational experience in leadership and technology training provided learning and skill development for both groups and led to positive changes in attitudes towards the other generation.

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Introduction and Background

The Teens Teaching Internet Skills (TTIS) Pilot Project was a pilot for a larger, national effort to engage youth in teaching senior citizens computer and Internet skills to navigate and obtain needed information from the Medicare web site. TTIS is a national, intergenerational partnership sponsored by the U.S. Department of Agriculture 4-H Youth Technology Leadership Team and the Health Care Financing Administration. The pilot involved youth and adults from the 4-H Technology Teams in six states, Connecticut, Florida, Iowa, Maryland, Virginia, and Washington. Training workshops were held in the six states during the time period of August 1999 to August 2000.

The U.S. Department of Commerce (2000) reports that people over the age of 50 had the lowest rate of Internet use (30%) compared to other age groups. However usage increased 11% from 1998 (19%). Research shows that senior citizens are interested in learning and using computers, citing various benefits (Dieter, 2000; Ito, Adler, Linde, Mynatt, & O'Day, 1998; Lensch, 1997; Thompson, 1995; Wright, 1998), including:

- Socialization;
- Learning new skills;
- Researching special interests;
- Staying informed of current events;
- Personal financial management;
- Developing online companionship;

- Shopping;
- Keeping in touch with family and friends; and
- Assisting the homebound or disabled.

Several programs have been established in which youth and young adults teach computer skills to older adults (Egan, 2000; Holmquist & Juricek, 1994; Lensch, 1997; Lundt & Vanderpan, 2000; Ogozalek, Hayeck, Bush, & Lockwood, 1994; Owen, 1991). These programs have shown positive results for both groups, including heightened learning of computer and interpersonal skills from interaction with another generation and improved attitude towards the other generation.

Seniors who participate in these programs show a positive change in attitudes towards computers and the Internet, and a gain in confidence in their own proficiency with technology. Youth who participate in these programs as the "teacher" show improved leadership skills and gain a sense of personal-worth based on their contributions to society. Research shows that intergenerational activity offers heightened learning for both groups, increases self-confidence, increases cross-generational comfort levels, eliminating stereotypes that each generation may hold for the other (Bullock & Osborne, 1999; Chen, 1997; Pinquart, Wenzel, & Sorensen, 2000; Shipman, 1999).

Teens involved in 4-H programs across the United States participate in many different types of leadership, teaching, and community service projects to enhance and build skills. Research on teens and skill building shows that after teens participate in workshops and programs that focus on areas of communication, leadership, and decision making, there is a significant increase in their perceived leadership skills, self esteem (Groff, 1992; Kleon & Rinehart, 1998), and life skills development (Boyd, Herring, & Briers, 1992). Research also supports the empowerment of teens in 4-H programs as a way to enable youth to take on leadership positions, assume responsibility, and overall become more productive citizens (Huebner, 1998). Tying together these 4-H programs in the area of technology with senior citizens appears to be a viable option for meeting the needs of both generations.

Purpose and Objectives of the Study

The hypothesis behind this evaluation reported here is that the added component of an intergenerational experience in leadership and technology training provides learning and skill development for both groups, leading to a positive change in attitude towards the other generation. The overall objective of the evaluation of TTIS was to assess the learning outcomes of both teen trainers and workshop participants.

The first part focused on measuring the impact the project had on the teen trainers in teaching senior citizens computer and Internet skills. This included assessing the teens' perception of improvement in their skills, such as leadership, project management, ability to teach, and self-confidence, as well as changes in their attitudes towards working with another generation. Furthermore, the evaluation assessed changes in senior workshop participants' comfort and skill level in using technology and the Medicare Web site, both immediately after the workshop and at a 6-month follow-up. It also addressed changes in the senior citizens' attitudes towards working with teens after participating in the workshop.

Methodology

Pre- and post-test evaluation and retrospective thinking techniques (Caudle, 1994; Dean, 1994; Fink & Kosecoff, 1985; Fitz-Gibbon & Morris, 1978; Miller, 1994; Scheirer, 1994) were used to collect data on change in skills and attitudes over time with participation in the project as either a teen trainer or a workshop participant. At the beginning of the project in August 1999, the evaluators held a focus group with the teens to collect qualitative data on their initial perception of their skills, including leadership, project management, ability to teach, and self-confidence, and their attitudes towards senior citizens. At the end of the project, the teens were administered an online questionnaire to measure perceived changes in their skills and their attitudes towards working with another generation.

To measure change in seniors' comfort and skill level in using technology and the Medicare Web site, the seniors completed an intake form (pre-test) at the beginning of the workshop and an online workshop evaluation form (post-test) at the end of the workshop. Upon agreement of the seniors, the evaluators followed up 6 months later through a telephone interview. This survey measured whether their comfort and skill level in using technology and the Medicare Web site had changed over time. This survey also addressed changes in their attitudes towards working with teens. All survey instruments were pre-tested by both trainers and project managers. Quantitative data were analyzed utilizing SPSS for Windows (1999). Qualitative data were analyzed using N-Vivo (1999).

Results and Findings

Teens--Perceived Improvement in Skills

The focus group held with the teen trainers at the onset of the project identified several skill areas in which the teens hoped to see improvement through their participation in the project. These skill areas included: working with seniors, improved public speaking, teaching and leadership skills, and

working as a volunteer. At the end of the project, the teens were asked to assess the extent they perceived their skills improved because of their participation, on a scale of one to ten, with one being "not at all improved," five being "moderately improved," and ten being "extremely improved."

The results show that, on average, the teens perceived their skills to have improved in all areas, specifically working with seniors, project management, teaching, public speaking, leadership, and knowledge and understanding of the Medicare Web site (Table 1). The mean score ranged from 6.45 to 8.45, indicating that the teens felt these skills had moderately to greatly improved.

Results of the qualitative data that followed this question suggest that a low score given by a teen does not suggest a negative experience in the project. Several teens noted that they indicated "1," that there has been no change in their skills, as they already felt that their skills were strong in the given area before participating in the project.

Table 1.
Descriptive Statistics--Perceived Improvement in Skill Areas After Teens' Participation in TTIS (N=11)

Skill Area	Mean**	Median	Mode	Min	Max
Working with senior citizens	8.45	10	10	4	10
Knowledge of the Medicare Web site	8.36	10	10	4	10
Understanding information on the Medicare Web site	7.73	10	10	4	10
Teaching skills	7.64	8	5, 8*	5	10
Preparing for a workshop	7.27	8	5, 9*	2	10
Developing a curriculum	7.27	8	5, 10*	2	10
Training teens	6.90	8	8	3	10
Working with other 4-H teens	6.81	8	8, 10*	1	10
Public speaking skills	6.64	6	8	4	10
Leadership skills	6.45	6	8	2	10
Self-confidence	5.73	5	5	1	10
Recruiting teens	5.64	6	7	2	7
Recruiting seniors	4.45	4	3	1	8

*Multiple modes exist as indicated
**Scale 1-10, 1 being "not at all improved," 5 being "moderately improved," and 10 being "extremely improved"

Teens--Changes in Attitudes Towards Senior Citizens

The focus group at the beginning of the project assessed the teens' initial attitudes towards working with senior citizens. Although several felt that some seniors might be resistant to work with technology, most recognized that learners would seek training in order to improve technology skills and benefit from learning about the Medicare Web site. The youth also expected to work with a variety of skill levels at the workshops, with the possibility that some people would not have any skills in using the computer or the Internet. Overall, the teens felt that this project would serve to introduce or improve upon the computer and Internet skills of seniors, as seniors could use and benefit from the information on the Internet, specifically those in more rural areas.

Quantitative data using retrospective thinking techniques were collected after the teens'

participation in the project to measure change in their attitudes towards working with another generation. A scale from one to ten was used, where one represented the lowest level of evaluation and ten represented the highest level of evaluation (ex. very uncomfortable to very comfortable for teens' comfort level in working with senior citizens). As depicted in Table 2, the differences in the mean responses indicates a positive change in attitude towards working with senior citizens. Even with the small sample, paired sample t-tests showed that three of the four pairs of variables were significant.

Table 2.
Mean Responses and Paired T-Test of Changes in Teens Attitudes Towards Working with Senior Citizens After Participating in the TTIS Pilot Project (N=11)

Pair #	Variable	Mean†	St. Dev.	T
1	Comfort level in working with senior citizens--before TTIS	7.45	1.75	-3.39*
	Comfort level in working with senior citizens--after TTIS	9.27	.90	
2	Senior citizens' willingness to try new things--before TTIS	5.18	2.82	-3.22*
	Senior citizens' willingness to try new things--after TTIS	7.72	1.68	
3	Senior citizens' openness to new technology--before TTIS	6.18	2.96	-1.74
	Senior citizens' openness to new technology--after TTIS	7.64	1.50	
4	Senior citizens' ability to learn new things--before TTIS	4.82	2.60	-5.22*
	Senior citizens' ability to learn new things--after TTIS	8.36	1.50	

†Scale from 1-10, 1 represents the lowest level of evaluation and ten represents the highest level of evaluation, i.e. very uncomfortable to very comfortable for teens' comfort level in working with senior citizens.
*Significant finding P ≤ .01

Senior Citizens--Short-Term Changes in Comfort and Skill Level

The majority of senior citizens who responded to the intake form either disagreed or held a neutral opinion when given a statement that they are comfortable or skilled at using computers. The results of the online workshop evaluation indicate that immediately following the workshop, the majority of seniors felt more comfortable and that their skills had improved with using computers. The 6-month follow up with seven of the seniors who agreed to be contacted and were able to be reached (41% of original sample), show that the comfort and skills level of those who have continued to use computers after the workshop remained high. These results are depicted in Figures 1 and 2.

Figure 1.
Senior Citizens' Level of Agreement with Statements Regarding Comfort in Using a Computer, Before, After, and 6 Months After Workshop

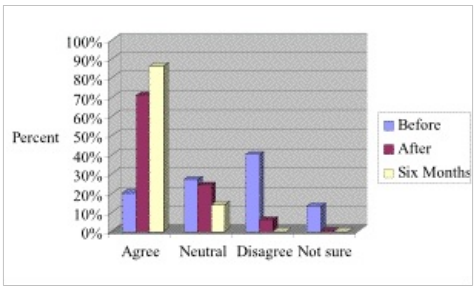
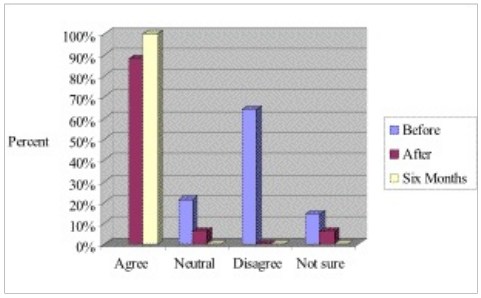


Figure 2.
Senior Citizens' Level of Agreement with Statements Regarding Skill Level at Using a Computer, Before, After, and 6 Months After Workshop



Similarly, most respondents to the intake form either disagreed or held a neutral opinion when given a statement on their comfort and skill level at using the Internet. Follow-up questions from the online workshop show positive perceived change, as the majority agreed that they are more comfortable with using the Internet. These results are presented in Figures 3 and 4.

Figure 3.
Senior Citizens' Level of Agreement with Statements Regarding Comfort in Using the Internet, Before, After, and 6 Months After Workshop

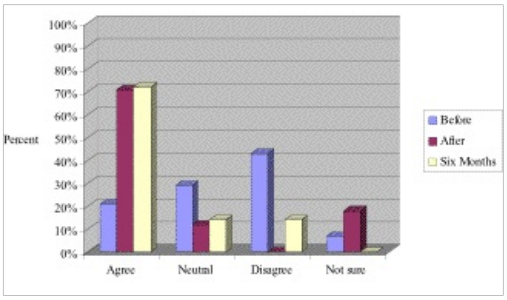
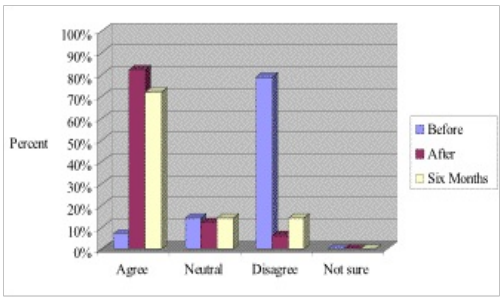


Figure 4.
Senior Citizens' Level of Agreement with Statements Regarding Skill Level at Using the Internet, Before, After, and 6 Months After Workshop

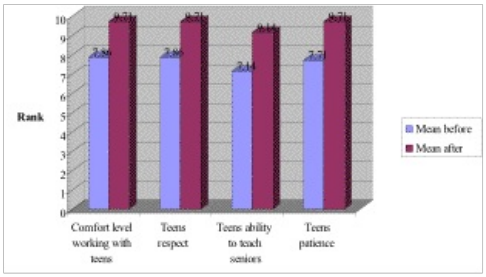


Senior Citizens--Change in Attitudes Towards Working with Teens

Quantitative data using retrospective thinking techniques were collected 6 months following the workshops to measure change in the attitude of seniors towards working with teens. Participating in this workshop led all seniors to report a positive attitude towards working with teens. Figure 5 depicts the mean rank of responses to four questions related to seniors' attitudes towards working with teens. On a scale from one to ten, where one represented the lowest level of evaluation and ten represented the highest level of evaluation (ex. very uncomfortable to very comfortable for seniors' comfort level in working with teens), the mean rank of responses increased after the workshop in all categories. Although the sample size is small, paired sample t-tests show that the

mean changes in all four pairs were statistically significant ($p \leq .01$).

Figure 5.
Mean Rank of Senior Response Towards Working with Teens



Conclusion

Participating in the TTIS pilot project as either a teen trainer or a senior learner resulted in a positive learning experience. Results from the post-test of the project indicate that the teens perceive an improvement in all skill areas, specifically working with seniors, project management, teaching, public speaking, leadership, and knowledge and understanding of the Medicare Web site. Further, this intergenerational experience led to a positive change in attitude of the teens towards working with seniors and teaching them skills in technology. This change in attitude included an increased comfort level and belief that seniors are willing, able, and open to learning new technology.

Results of the intake form completed by senior citizens before the workshop indicate that although some were comfortable or skilled at using computers and the Internet, many participants did not feel comfortable or skilled. The workshop evaluation indicates that attending had a positive impact on the learners' perception of their comfort and skill level. The majority of respondents indicated that they were more comfortable and felt their skills had improved in using technology after the workshop. Although a few people continued to doubt their comfort and skill after the workshop, this may be due to the fact that learners with little to no experience in using technology attend TTIS workshops.

The 6-month follow up with seven of the seniors who agreed to be contacted and were able to be reached, indicate that their perceived comfort and skill level with computers has remained high following a longer period of time after the workshop. However, the results were not as positive for the Internet. This suggests that the TTIS workshops had an immediate and positive effect on seniors perceived comfort and skill level towards technology. However, after a longer period of time following the workshop, the comfort and skill level decreased for some of the seniors in using the Internet.

This intergenerational experience fostered a positive attitude among the seniors with regard to their comfort in working with teens and the teens' respect for, ability to teach, and patience with senior citizens. Overall, results suggest that intergenerational learning experiences benefited both groups in learning and skill development and led to a positive change in attitude towards the other generation.

Based on positive results, the Cooperative State Research, Education, and Extension Service and other agencies should continue to pursue the use of technology as a medium for different generations to work together, expand skills and knowledge base, and build a common ground of understanding. Other programs could be developed with 4-H teens and/or senior citizens to reach other generations or diverse audiences, such as teaching technology skills to economically disadvantaged youth and adults, special needs groups, or geographically isolated populations with limited access to training.

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