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Raising Awareness of Assistive Technology in Older Adults through a Community-Based,  
Cooperative Extension Program

**Abstract**

The *Fashion an Easier Lifestyle with Assistive Technology* (FELAT) curriculum was developed as a needs-based, community educational program provided through a state Cooperative Extension Service. The overall goal for participants was to raise awareness of assistive technology. Program evaluation included a post-assessment and subsequent interview to determine short-term knowledge gain and longer-term behavior change. The sample consisted of mainly older, married females. The FELAT program was effective at raising awareness and increasing knowledge of assistive technology, and for many participants, the program acted as a catalyst for planning to or taking action related to assistive technology.

**Keywords**

Adaptive equipment, Adult education, Curriculum, Disability, Family and Consumer Sciences

## Raising Awareness of Assistive Technology in Older Adults through a Community-Based, Cooperative Extension Program

Descriptions of assistive technology (AT) vary, but usually refer to limitations, function, or disability, as in this definition by Hersh & Johnson (2008):

...a generic or umbrella term that covers technologies, equipment, devices, apparatus, services, systems, processes, and environmental modifications used by disabled and/or elderly people to overcome the social, infrastructural, and other barriers to independence, full participation in society, and carrying out activities safely and easily (p. 196).

According to a report from the U.S. Census Bureau (Brault, 2008), 18.7% of the civilian non-institutionalized population living in the United States reported some level and type of disability, with risk increasing with age. Equipment use is a common adaptation for individuals who are living with a disability (Verbrugge & Sevak, 2002). Assistive technology usage may help an individual compensate for disabilities (Edwards & Jones, 1998) and may promote independent living (Kaye, Yeager, & Reed, 2008; Sainty, Lambkin, & Maile, 2009). The use of assistive technology has also been linked to a reduction of the amount of personal help needed (Hoenig, Taylor, & Sloan, 2003), and may offer individuals opportunities to engage with their communities (Scherer & Glueckauf, 2005; Schreuer, 2009).

Individuals without a disability may find AT helpful in certain circumstances (e.g., a shorter person using a reacher to access items on the top shelf of a cabinet). Caregivers may decide to use AT for a variety of reasons, such as increasing safety (Kane, Mann, Tomita, & Nochajski, 2001). Assistive technology is usually acquired through the use of personal or family funds, private health insurance, or Medicare (Carlson & Ehrlich, 2006).

To use AT, individuals need to be aware of its existence. General education regarding the use of AT for people with disabilities has been suggested as a need (Dudgeon et al., 2008) and as a way of potentially increasing AT use (Kane et al., 2001).

### **Education and the Cooperative Extension System**

Education of the general public is a formal mission of the nation's more than 100 land-grant universities. This academic endeavor is called "extension," as the concept is to extend the reach of local universities to meet the needs of the citizens of their states. Those working within the Cooperative Extension Service (CES) translate research and academic inquiry into useable, practical, and informal educational programs and resources to benefit citizens and improve the quality of their lives. The CES is a nationwide, educational dissemination network that uses the local university as its foundation with state and local community offices. The structure is multifaceted, and involves partnerships including the United States Department of Agriculture (USDA), county governments, and others that may vary from state-to-state (United States Department of Agriculture, National Institute of Food and Agriculture, 2011).

The conceptual model of adult education is the underpinning of many CES programs. There is a concentrated national effort to continue to improve adult education outcomes and Extension scholars have provided recommendations for improving adherence to adult learning principles within the system (Driscoll, 2009; Franz, 2007; Franz, Garst, Baughman, Smith & Peters, 2009; Ota, DiCarlo, Burts, Laird, & Gioe, 2006; Peutz & Kroth, 2007). Need-based programming (NBP) is one aspect of adult education as it involves engaging local citizens in prioritizing programmatic needs.

## **Need-based Educational Programming**

The Kansas State University Agricultural Experiment Station and Cooperative Extension Service offers adult educational programming on a wide variety of subjects to clientele, with one unit dedicated to Family and Consumer Sciences (FCS). Educational programs within this unit are provided in nutrition, health and wellness, child and family development, financial management, and adult development and aging. These services are based on current and emerging state and local needs, are research-based, and are provided by employees (“agents”) through district and county offices.

In 2007, a needs assessment within the area of FCS was conducted to help determine educational programming priorities and included a survey of stakeholders (Peters, 2007). Within the topic area of aging-related issues, 89.6% of respondents indicated that helping older people remain in their homes as they age was important or somewhat important, the highest-ranking concern. “Attending a program on a specific topic” was the highest ranked response (81.1%) for a question that asked about the preferred method of receiving information (K-State Research and Extension, Family and Consumer Sciences). Additionally, in 2009, 18.9% of adults in Kansas reported activity limitations due to physical, mental, or emotional problems, and 7% reported having a health problem that required the use of special equipment, such as a cane, a wheelchair, or a special bed or telephone (Kansas Department of Health and Environment, 2009).

The *Fashion an Easier Lifestyle with Assistive Technology (FELAT)* program was developed as a needs-based, Cooperative Extension educational offering at Kansas State University in 2008 to address these issues and to raise awareness of assistive technology to facilitate its use and potential to impact positively upon the quality of life of citizens. The conceptual model was based upon the philosophy of experiential learning espoused by the

Cooperative Extension System and adult learning principles as developed by Malcolm Knowles (1973, 1980, 1986, 1989).

### **Program Development**

Within the parameters of program development, AT was operationally defined as a “broad category of devices and strategies that can be applied to all aspects of life.” FELAT content focused on low-tech AT tools that individuals could use to complete everyday tasks, such as attending to personal care, preparing meals, accomplishing basic household chores, and participating in recreational activity.

**Program Objectives.** The program had three main objectives for participants related to the overall goal of raising awareness: (a) gain knowledge of different devices in the areas of personal care, food preparation, housecleaning, and recreation; (b) learn how AT can be purchased and implemented; and (c) discover how AT can help fashion an easier lifestyle.

**Audience.** The program was developed to be potentially attractive and useful to any adult in Kansas concerned with making everyday tasks easier for him- or herself or for someone for whom s/he provided care.

**Program Content and Resources.** Multiple program resources were made available to the leaders (agents and volunteers) of the program. Essential resources included a demonstration toolkit, leader’s guide, fact sheet, and participant program evaluation, and were considered crucial to successful implementation. Others, including an exhibit display, leader program evaluation form, Power Point presentation, stickers, postcards, and jar openers (given to participants) were optional and acted as aids to leaders for marketing or training purposes or to provide additional feedback for program improvement.

Three main educational learning opportunities constituted the program content. The first activity consisted of brainstorming in small groups. Individuals were asked to consider the kinds of AT they may already use in their own lives. The second activity utilized demonstration toolkits, was central to implementation, and implemented fully the commitment to adult education principles and experiential learning. The toolkit consisted of approximately 40 different AT devices. Each item was demonstrated and passed around the group for people to experiment with, handle, and use. Leaders led participants in discussion related to use, benefits and challenges, and potential applicability within their lives or the lives of someone they knew. The third activity involved a review of important information about AT devices, including the cost, possible sources of funding, where AT devices could be found, and where to locate additional information.

### **Research Questions**

The overall goal for the program was to raise awareness of assistive technology. The program's development included three objectives targeted to help achieve this goal. In turn, the research questions for the program included:

1. Would participants in the program demonstrate an increase in knowledge and/or change in attitude related to the subject matter?
2. Would participants in the program demonstrate an intention to change behavior related to the subject matter?
3. Would participants in the program demonstrate a change in behavior related to the subject matter?

## **Program Implementation**

The program was selected as one of three for statewide implementation in 2008-2009 by The Kansas Association for Family and Community Education, a Cooperative Extension organization historically dedicated to addressing issues of importance to women. Leader trainings were conducted with members of this organization as well as with Cooperative Extension agents at Kansas State University. These leaders then implemented the program with their members, and agents delivered the program to general audiences throughout the state of Kansas.

## **Method**

### **Sample**

Descriptive statistics are provided in Table 1. Participants in the program consisted primarily of traditional Cooperative Extension audiences from across the state. Examples include individuals from Family and Community Education units, senior centers, low income senior housing units, and community centers. The sample included 872 people with the vast majority consisting of females (93.2%) with a mean age of 67.41 years (Range = 21 – 96; SD = 14.88). The majority were either married (59.2%) or widowed (28.9%). A majority of the participants reported their health as being good (38.8%), very good (34.9%), or excellent (12.6%). Others reported their health as being fair (12.3%) or poor (1.4%). Almost one-quarter (23.7%) provided care for someone else.

### **Procedure**

The research protocol was approved by the Kansas State University Institutional Review Board and included an informed consent process. At the conclusion of the FELAT program,



attendees had the opportunity to complete an anonymous standard paper survey and to leave contact information if interested in participating in a detailed telephone interview.

## Measures

**Paper survey.** The survey consisted of questions related to knowledge gain (“amount learned”) and intent to change behavior (“action”). To assess the amount learned, respondents were asked, “Because of your participation in this program, did you learn anything new?” with the option of responding “yes” or “no.” The respondents were then asked an open-ended question, “If yes, what did you learn?” Participants also responded to the question, “As a result of taking part in this program, I have more positive feelings about this topic” by rating their response on a 5-point scale, ranging from *Definitely False* (1) to *Definitely True* (5). Four items assessed actions participants planned to take. Respondents were asked to respond “yes” or “no” to the question, “Because of your participation in this program, do you plan on taking any action or changing anything in your life?” This was followed by an open-ended question, “If yes, what?” Finally, two True/False questions were asked: (a) “I am planning on finding additional information about assistive technology,” and (b) “I am planning on buying assistive technology for myself or someone else.”

**Telephone interview.** The telephone interviews were intended to gather data about the longer-term outcomes of the FELAT program. Those who participated in the telephone interview were asked six open-ended questions: (a) “Has your understanding of assistive technology changed since your participation in the program? How?” (b) “Has your attitude toward assistive technology changed since your participation in the program? How?” (c) “Have you taken any action or changed your life in any way because of your participation in the program? Would you describe that for me?” (d) “What do you feel was most helpful about this program?” (e) “What

do you feel was the least helpful?” and (f) “Do you have anything else that you would like to share with me?”

### **Data Analysis**

The data represents a time period of August 2008 through March 2010. The paper survey was completed by 897 participants with 25 surveys noted as incomplete. Analyses were conducted using the 872 usable surveys. Of these, 296 participants indicated on the survey their willingness to participate in a future telephone interview about the FELAT program. Each participant who indicated their willingness to participate in a telephone interview was called by the first author or a graduate research assistant one time approximately 6 months after their attendance at the FELAT program. We were unable to reach 234 participants due to no answer, busy phone lines, and disconnected numbers. We were able to speak with 62 participants and of those, 52 participants were willing to be interviewed by telephone. A majority of these participants were female (96%) with a mean age of 73.83 years (Range = 26 – 92; SD = 12.25). The majority were married (57.1%) or widowed (34.7%), and reported their health as being good (46%), very good (26%), or excellent (12%). Slightly over one-quarter (26.5%) provided care for someone else. Overall, this subsample was representative of the larger sample, but the telephone interview participants were statistically significantly older than the larger sample ( $p < .01$ ).

Descriptive analyses were conducted to examine the means, standard deviations, and frequencies for the quantitative data. Qualitative data were transcribed into text files using Microsoft Word. Data were analyzed through utilization of open and focused coding processes. During open coding, the first and second authors individually familiarized themselves with the data, and began coding by looking for themes within each question (both from the paper survey and from the telephone interviews). Codes were not developed in advance so that they could be

developed inductively from the data. After the data were coded independently, the authors conferred to determine commonalities and differences in the codes. From this discussion, lists of codes that exist in the data were generated.

During focused coding, each author used the list and coded the qualitative data accordingly. After each author coded the qualitative data, the codes were compared. Agreement occurred between the researchers in 75% of the cases. When there were disagreements in coding, responses were examined and codes were determined after discussion.

## **Results**

The purpose of this study was to explore the amount learned and the actions taken by participants in the FELAT program. Results from the quantitative and qualitative questions on the paper survey as well as findings from the telephone interview are reported.

### **Quantitative Results**

As a result of the FELAT program, and in relation to the first research question, 99.4% of the participants indicated that they learned new information while 94.1% said they had more positive feelings about this topic. In reference to the second research question, participants also indicated plans to take action (60.4%), plans to find additional information about AT (73.4%), and plans to buy AT for oneself or someone else (72.3%).

### **Qualitative Results**

**Paper survey.** In reference to the first research question, responses to the open-ended question about what participants learned were categorized into five broad categories: (a) availability of AT, (b) AT is available and helpful, (c) who uses AT, (d) how AT works, and (e) locating resources.

**Availability of AT.** Three-hundred eight participants learned about the availability of AT. Availability of AT was discussed in two ways: AT is generally available (211 items) and an item is specifically available (97 items).

*AT is generally available.* Participants reported learning AT is generally available by describing the number of AT devices or increased awareness of AT. For example, one said, “I didn’t know there were so many nifty tools!” and another explained, “Most of these items were new to me. I had no idea these items existed.”

*An item is specifically available.* Respondents described learning about a particular AT device that would help them or someone else in their daily living: “I hadn’t seen the sock helper and the foam tubing uses were great. The key cover would help with starting the car with arthritis.” Another said, “[The] key leverage attachment may help someone I know – been looking for such unsuccessfully for long time.”

**AT is available and helpful.** Respondents also mentioned that *AT is available and helpful* (116 items). One participant learned about the “wide variety of aids to help with everyday living,” and another said, “There are tools out there than can help make life easier.”

**Who uses AT.** Participants of the FELAT program also reported learning about who uses AT (235 items). Four general categories of people who use AT were identified including: (a) specific vulnerable populations (167 items), (b) me (37 items), (c) everyone (17 items), and (d) someone I know (14 items).

*Specific vulnerable populations.* When respondents described a specific vulnerable population that may use AT, they most often referred to people who were aging and those with a disability. One respondent said, “There are many tools to help do the things for us that is too hard

for us to do as we age or have disabilities” and another explained she learned there are “many new devices available to assist elderly or handicapped individuals be independent.”

*Me.* Some participants learned that AT may be of use to them: “As I am 93 years old, I found there are many new ‘time savers’ that would make life easier for me while living in my home.” When asked what she learned, another responded, “That there are products available to help me with my arthritis and carpal tunnel.”

*Everyone.* After attending the FELAT program, it was apparent to some respondents that one does not need to have disabilities or be an older adult in order to take advantage of AT: “New ideas to assist even able-bodied persons – like the zipper pull for ladies back zipper” or “Assistive technology can be used by anyone.”

*Someone I know.* Finally, some respondents mentioned they know someone who could benefit from AT. One respondent explained that she learned about “a lot of new technology that is very useful to me at this time because my [family member] is just getting out of rehab for a mini stroke.” Another said, “[I] learned of additional items and aides for easier ways in our daily life, especially additional ideas for my 89-year-old [family member].”

***How AT works.*** Sixty-five respondents described learning about how AT works or how AT can be helpful: “How much something so little can help someone or make a change in someone’s life” and “How to use all the new and useful items demonstrated!”

***Locating resources.*** Finally, 58 respondents said they learned how to locate AT, including learning about catalogs, websites, stores, and available local programs to assist in obtaining assistive technology. One respondent learned about “several devices that were new to me, but more important where to find them” and another said, “Where to look for information to purchase some of these items.”

Relating to the second research question, participants were asked what actions they would take. Four categories were identified: (a) self now, (b) other now, (c) possible future, and (d) no action.

***Self now.*** Two-hundred fifty respondents reported definitive actions they planned to take for themselves as a result of participating in the FELAT program. One participant said, “I intend to locate a gas cap tool so I don’t have to ask for help at the service station.” Another said, “[I] plan to shop for several of these things new to me just to help this 84-year-old continue to keep house and live at home.”

***Other now.*** One-hundred six participants reported they would take action for someone else as a result of the FELAT program. In most cases, participants mentioned purchasing AT devices for family members. “Because my [family member] will be needing some of these devices, my siblings and I can look into obtaining some... Also, my [family member] has arthritis in his wrists, so several ‘gadgets’ will eventually probably be helpful to him.” Others mentioned obtaining AT for friends: “Maybe I can help some of my friends that are older with things I hadn’t thought of before.”

***Possible future.*** Eighty-six participants responded that they may possibly obtain AT devices in the future for themselves and for friends and family. “As I age, I intend to get some of these items to help with my reach and grip,” and “Maybe help with my folks for gifts as they age.”

***No action.*** Finally, 82 responded that they did not plan to take action. In most cases, the participants already used AT or they did not see a use for it yet. One respondent said, “At this time, I do not require these items, but it is important to know they are available.”

**Telephone interview.** The data from the telephone interviews were classified into six categories. Categories related to the first research question included (a) The program was helpful, (b) AT is available, (c) AT is helpful, (d) AT is available and helpful, and (e) Knew/used already. The category related to the third research question was Took action.

***FELAT program was helpful.*** Forty-two of the 52 telephone participants indicated that the program was helpful with particular emphasis given to the experiential aspects (76 items). One respondent said, “Being able to see the things and to touch them, I think, makes a big difference in the way that you look at it. You can see it in a catalog, but to see it in person makes a difference.” Another stated, “I just think that [the presenter] did such a wonderful job and she was interactive with the group...It was such a hands-on thing and things that we could look at and had a practical use.”

***AT is available.*** A total of 38 items were coded as *AT is available*, representing 27 respondents. One said, “I know that there are lots of devices available if I would need it or someone in my family would need it” while another explained learning about the availability of AT as well as where to purchase it. “...It informed me and lets me know what’s out there and available because unless you are told, you don’t know things are on the market. You know where to go to get them.”

***AT is available and helpful.*** Twenty-seven participants explained they learned that AT is both available and can be helpful in one’s daily life (39 items). One respondent explained:

I did not know that a lot of that stuff was available. There is a lot of little helpful things that you could use if you’re living alone and have problems. It’s nice to know that it is available and worked. My sister is living with me and she has a lot of problems and could use some of those things.

Another respondent simply said, “It made me aware of where I could go get help and what was out there for assisting people and to keep people in their homes.”

***Knew/used already.*** Although a majority of the participants indicated learning new things through the FELAT program, 23 participants reported that they already used some of the AT devices shown, or they already knew about AT (35 items). Oftentimes when participants described already using AT, they mentioned the helpfulness of the particular device. One respondent said:

There are many helps out there. For instance, I had a hip replaced a few years ago and the government helped out a lot with providing me with certain things that made it easier for me. There was a grabber and I still use it so I don’t have to reach up real high or bend down real low, and those kinds of things are very handy even when a person is younger. Other times, the participants mentioned items they have used before, but then described other things they learned through the FELAT program. When asked what was least helpful about the FELAT program, one answered, “Probably some of what I already knew, like reachers and stuff. The other stuff, that was new to me.”

***Took action.*** A total of 27 items were coded as *took action*, representing 21 of the 52 telephone respondents (40.4%). One described obtaining an item seen during the FELAT program: “I was happy to find the lamp switch enlargers. I did go out and get them.” Another shared the information learned with others: “I haven’t done anything yet, but I have left the contact material with someone else. A lot of the people I know can’t do simple things. Putting on socks is one of the things they mention all the time.” Another described changing something in the home and purchasing an item: “Last week I got rid of all the scatter rugs even though they had non-slip backing. I got a grabber.”



## Discussion

The *Fashion an Easier Lifestyle with Assistive Technology* program results reported here represent an older, female population from one state and demonstrates that the program was effective in raising awareness and increasing knowledge of AT in this sample. For many participants, the program acted as a catalyst for planning to, or taking action related to AT.

Results demonstrated that the majority of respondents learned new information about AT in the short-term including the availability, availability and helpfulness, and users of AT. Knowledge gain related to the availability and availability and helpfulness of AT appeared sustainable across time as demonstrated by interview responses approximately 6 months after program attendance.

The FELAT program was effective for motivating respondents to plan to take action either through learning more about AT or through the purchase of items. The most common theme indicated plans by respondents to engage in behavior to help themselves.

Of interest, however, are findings that appeared contradictory, and found within the theme of users of AT when discussing what they learned that was new. Respondents mentioned specific, vulnerable populations most often; far fewer indicated that they saw themselves as users (“Me”). Yet, respondents mentioned taking action for themselves more often than taking action for others. This may be related to the wording across the questions asked in the paper survey, as the “taking action” question specifically referenced “your life.” The differences in wording and the overt personal context within the one question may have potentially affected the responses that were received (Schwarz & Oyserman, 2001).

The sample was largely comprised of older women; it may be that respondents placed themselves in the specific, vulnerable population category (aging; with disability) due to an

acknowledgement of their own aging process. This possibility is supported by the presence of the “possible future” category; responses here demonstrate a separation of self from aging or disability at the current time. Also, a majority of respondents indicated that they held more positive feelings about AT as a result of their participation in the program. Although they may have viewed themselves as older adults, or possibly as adults with disabilities, they may have become more open to the idea of personally applying AT use in their own lives.

Of particular interest is the effectiveness of the program in influencing behavior. About 40% of the respondents in the telephone interview indicated they had taken action in some way, either through the purchase of items, sharing the information with others, or changing their home environment. These results are of particular interest as the program was developed in response to the need to raise awareness of AT. It may be that a program designed for a longer duration and with an additional emphasis on personal application and action planning could strengthen the potential for behavior change. Future efforts might include this consideration and assess the impact.

Also of note is the major theme that emerged during the telephone interviews related to respondents generally finding the program to be helpful. Within this theme, respondents mentioned a variety of aspects, including the way the material was presented, benefit to self or others, interactivity, the hands-on approach, and opportunity to see and use items on display. These results are of particular interest as the program was conceptually designed within an adult education framework and strove to implement these principles. It may be that programs using other methods of instruction (e.g., a slide presentation instead of a demonstration tool kit) may not have been as effective in demonstrating knowledge gain and behavior change. A comparison

of alternative methods of instruction might reveal additional information regarding the specific aspects of the program that are most or least effective.

Although the FELAT program was effective in raising awareness about AT, there were challenges during program development and implementation that should also be considered in future efforts. While adoption by The Kansas Association for Family and Community Education assisted the program with statewide implementation, it did preclude obtaining a more representative sample. Additionally, given that fewer than half of the FELAT participants indicated a willingness to be contacted for the telephone interviews, there could be some self-selection bias, which may affect the representativeness of the longer-term outcomes. Leaders attended a training to prepare them for program implementation, but others who did not attend the training could potentially offer the program in their local communities, and program fidelity across the state could not be enforced. Additional questions related to actual behavior change in the telephone survey would have afforded a deeper, richer understanding of actual behavior change and possible variations of expression.

### **Conclusions**

The FELAT curriculum met the overall goal to raise awareness about AT for this sample. The majority of respondents indicated an increase in knowledge gain that appeared to sustain across time. This sustainability may have been related to the experiential aspects of the program, as ‘finding the program helpful’ was a major theme expressed by respondents in the subsequent telephone interviews. A majority of respondents planned to take action in their own lives, and the program had success in changing behavior for about 40% of the telephone respondents through purchasing of items, sharing the information with others, or changing the home environment.

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