Technology Transfer

The Effectiveness of Using Workshops to Change Audience Perception of and Attitudes about Xeriscaping

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Summary. Current estimates indicate that half of the water consumed in the urban environment is used to maintain landscapes. With this volume of water expended each year in landscape care, competition for the limited water exists. Xeriscaping reduces water demands while retaining an attractive landscape; however, the image of xeriscaping is frequently poor. In this project, workshops were conducted to measure audience perception, attitude, and knowledge of xeriscaping as a result of this type of activity. The effectiveness of the workshops was determined using pre- and postworkshop surveys. The audience's perception and attitude" toward xeriscaping improved in every area. The audience's general knowledge about the principles of xeriscaping increased significantly for almost every concept. Promotional aspects of attracting a large and diverse audience was the area needing further enhancement.

Water use is a daily concern to people in arid and semiarid regions. It has been estimated that 40% to 60% of the water used in urban communities is expended on the landscape (Lower Colorado River Authority, 1989). Arid and semiarid environments may consume even more water for landscape use. Stroud (1987) reported that a typical family uses 90,000 gallons of water each year to maintain its landscape. Rodiek (1984) further quantified water use by citing that the average family of four uses 6120 gallons of water per summer month on turfgrass maintenance alone. Given this volume of water expended on landscapes each year, competition for water resources has developed between agricultural and urban consumers (White, 1973). Water shortages and water rationing are now familiar occurrences in affected regions of the United States (Anderson et al., 1980; Stroud, 1987).

Currently, water conservation techniques in the landscape are highly promoted. The Denver Water Dept. coined the term xeriscaping to describe these concepts (National Wildflower Research Center, 1992). The basic principles of xeriscaping are to limit turf area, use drought-tolerant plants, incorporate soil amendments, mulch plantings, use appropriate maintenance, -design so that plants requiring similar amounts of water are grouped together, and irrigate efficiently (Hurst, 1989). Water savings using these principles vary drastically from 40% to 50% (Ahearn, 1978; Coate, 1985; Cotter and Chaves, 1979; Rodiek, 1984).

Efforts to promote xeriscaping have met with varied success. The notion that xeriscapes are inherently ugly has been pervasive. The concern that cactus and gravel are the only acceptable xeriscape plant materials has also become prevalent. The purpose of this project was to determine the attitude, perception, and general knowledge of workshop participants with regard to xeriscaping and to measure the effectiveness of the teaching and promotional materials used.

Materials and methods

Three xeriscape workshops were conducted during Spring 1994. The workshops were promoted to local educators, park maintenance personnel, area nursery professionals, local gardeners, and the general public. Radio and television advertisements, newspaper announcements, mailing lists, regional teacher in-service programs, and brochures were used to reach a varied audience.

All workshops used the same format. First, a preworkshop survey was administered to participants as they entered. After collecting the surveys, four regional experts

Table 1. *Positive changes in participants' perception and attitude of xeriscaping and chi-square value for nine semantic differentials.*

Semantic differential	Mean attitude scores		
	Prescore	Postscore	χ^2
Good–Bad	73.4	79.4	NS
Gloomy–Bright	63.4	90.6	*
Clean–Dirty	63.4	88.6	*
Easy–Hard	72.1	80.5	NS
Drab–Colorful	64.9	89.0	*
Ugly–Attractive	71.8	81.7	NS
Barren–Abundant	67.9	85.8	*
Valuable–Worthless	75.1	77.8	NS
Proud–Embarrassed	69.1	83.3	*

[z]*Applied the Kruskal– Wallis test (chi-square approximation) pooled across workshops.*

[NS],**Nonsignificant or sigificant at P 0.05.*

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Table 2. *The effect of the workshop experience on the audience's~eneval knowledge of xeriscaping.*

Question content	Questions answered correctly (%) Pre	Post	Significance[z]
Types of plant materials used	83.5	94.4	*
Water consumption in a landscape	57.0	78.1	NS
Irrigation techniques	5.1	84.8	*
Xeriscape myths	2.5	77.2	*
Design using oasis approach	11.4	60.8	*
Turf maintenance practices	63.3	68.4	NS
Xeriscape design	15.2	62.0	*
Turf selection	1.3	88.6	*
Mulching benefits	40.5	64.6	*
Xeriscape concept	65.8	83.5	*
Native plant advantages	64.5	74.7	NS
Turf replacement options	77.2	86.1	NS
Use of concrete in xeriscapes	22.8	79.8	*
Efficient irrigation systems	2.5	88.6	*
Soil amendments	5.1	43.0	*
Drought tolerant color plants	13.9	83.5	*
Drought tolerant native plants	39.2	63.3	*
Suitable mulching materials	58.2	89.9	*
Xeriscape maintenance practices	3.8	82.3	*
Meaning of the term xeriscape	93.7	97.0	*

zAnalysis is with the G test (likelihood ratio chi square) *pooled across workshops. NS,*Nonsignificant or significant at P ≤ 0.05*

presented the basic principals of xeriscaping, focusing on effective irrigation techniques, mulches, appropriate plant selection, soil amendments, designing functional plantings, reducing turf area, and appropriate maintenance techniques. After the formal presentations, workshop participants discussed the techniques presented during question and answer sessions. After the discussions, lists of drought-tolerant plants for the region, brochures outlining basic xeriscape concepts, laboratory exercise instructions, and lists of educational objectives were distributed. The participants completed a postworkshop survey before breaking for lunch. Immediately after the break, the participants were given a tour of an attractive, functioning xeriscape. Planting techniques, irrigation "equipment, mulches, and plants were reviewed. A "question and answer session followed the tour.

The survey instrument used to determine the effectiveness of the workshops was composed of three sections. A semantic differential technique section consisting of nine bipolar adjective scales, as outlined in Sherry and Piotrowski (1986), measured the participant's change in attitude and perception of xeriscaping. The points on the scale were given a numerical value, and the polarity of the scale was randomized for control. A second section of multiple-choice questions determined the audiences' general knowledge about water conservation and xeriscaping. The final section of the survey consisted of multiple-choice and fill-in-the-blank questions through which audience demographics were derived. The results of the three workshops were pooled together for analysis. The semantic differential data were analyzed using the Kruskal-Wallis test, and the multiple-choice data were analyzed using the G test (Sokal and Rohlf, 1981).

Results and discussion

The workshops positively changed the audiences perception of xeriscaping (Table 1). Every question in the semantic differential technique section had a measurable improvement. In five of the nine questions, the attitude and the perception improvement was significant at $P = 0.05$ (Table 1).

Analysis of the multiple-choice data determined the changes in the audience's general knowledge of water conservation techniques and xeriscaping. In each question, four plausible choices were given, as well as a fifth choice of "I don't know." This prevented the participants from being forced into guessing if they were not familiar with the information. Every question from the multiple-choice format yielded a positive increase in the participants' general understanding of xeriscaping (Table 2). Sixteen of the twenty questions had a significant increase in general knowledge when comparing the pre- and postsurveys. In general, the questions involving turfgrass management, water consumption, and the advantages of using native plants showed the least improvement.

Analysis of participant demographics showed the average participant to be 45 years old, with at least 1 year of college education, and an even likelihood of being male or female. The audience had a wide variety of gardening experience, with 43% of the participants having < 1 year and 30% having > 5 years. Concerning educational level, 89% had attended college and 60% had attained at least one degree. This level of education indicated that a substantial section of the population was either not reached or was not interested in attending a free workshop of this nature. Alternative methods of encouraging workshop attendance might include free promotional items, such as bagged mulch, soil amendments, soil tests, or drip-irrigation supplies.

The effectiveness of the promotional methods was quite diverse. The largest percentage of the audience (34%) was reached through a press release given to the local newspaper (Table 3). The next largest section of the audience was familiar with the workshops through campus activities located where the workshops were held. The two most costly methods in terms of dollars were producing brochures distributed through local nurseries and subsequently mailing them through the mailing list of the sponsoring academic unit. These methods accounted for 20. 3% of the audience contacts. Notable, only 10.1% of the participants was motivated to come from speakers at a club,

Table 3. *Percentage of workshop participants reached by nine promotional methods.*

Promotional method	Total participants (%)
From a friend	8.9
Alumnae mailing list	12.7
Campus activities	25.3
Newspaper article	34.2
Extension activities	2.5
Announced at a club	6.3
Television interview	1.3
Promotional pamphlet	7.6
Through employment	0.0
Not sure	1.3

interviews on a television spot, or promotion through the extension service. This indicates that the time and effort used to make these personal contacts could better be used in other promotional activities. The television interviews, which were aired at various times for several weeks, had the least impact of any form of contact, with 1.3% of the audience indicating it saw the spot.

In general, the workshop model successfully improved the attitude and perception of xeriscaping while enhancing the audience's general knowledge about xeriscaping. The one area of deficiency was in attracting a larger and more-diverse audience.

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