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**ENERGY, ENVIRONMENT, AND POLICY CHOICES:**  
**SUMMER INSTITUTES FOR SCIENCE AND SOCIAL STUDIES EDUCATORS**

**FINAL REPORT TO THE DEPARTMENT OF ENERGY  
CONTRACT NO. DE-FG02-92ER75744**

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**MASTER**

Spring, 1997

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## INTRODUCTION

The Center for Energy Education (CEE) is a partnership linking the University of Oklahoma, Close Up Foundation and Department of Energy. Based upon the theme of energy, environment and public policy, the CEE's main purposes are to:

- \* educate teachers on energy sources, environmental issues and decision-making choices regarding public policy;
- \* develop interdisciplinary curricula that are interactive in nature (see attachments);
- \* disseminate energy education curricula;
- \* serve as a resource center for a wide variety of energy education materials;
- \* provide a national support system for teachers in energy education; and
- \* conduct research in energy education.

The CEE conducted its first two-week experientially-based program for educators during the summer of 1993. Beginning at the University of Oklahoma, 57 teachers from across the country examined concepts and issues related to energy and environment, and how the interdependence of energy and environment significantly influences daily life. During the second week of the institute, participants went to Washington, D.C. to examine the processes used by government officials to make critical decisions involving interrelationships among energy, environment and public policy. Similar institutes were conducted during the summers of 1994 and 1995 resulting in nearly 160 science and social studies educators who had participated in the CEE programs. Collectively the participants represented 36 states, the Pacific Territories, Puerto Rico, and Japan.

## ACCOMPLISHMENTS

Much has been accomplished during the past four years and the most significant of those are listed below.

- \* One hundred fifty-eight science and social studies educators have participated in summer institutes.

- \* Approximately 1,000 additional teachers have been involved in energy education programs conducted by the CEE participants.
- \* A national network has resulted and provides continued support to participating teachers.
- \* Approximately 130,000 students have been affected by this energy education network.
- \* Outreach programs have also involved civic groups and state agencies.
- \* Many teachers have received prestigious awards for their energy education projects.
- \* Teachers have developed interdisciplinary curricula in energy education.
- \* These experiential, student-centered curricula are being field-tested and will be disseminated nationally.
- \* A C-SPAN program featuring the Secretary of Energy, Hazel O'Leary, was televised nationally.
- \* Six additional one-hour C-SPAN programs were produced and telecast and featured the CEE's energy education project.
- \* Private funding was provided by the AMOCO Foundation to produce C-SPAN programs.
- \* Institute presenters have included CEO's of major corporations, U.S. senators and representatives, heads of federal agencies, cabinet members, directors of national special interest groups, and eminent scholars in the fields of science and social studies.

Staff members of the CEE have presented numerous papers at national conferences for researchers and practitioners in social studies education and in science education. Additionally, two energy education articles have been published in The Science Teacher (Marek and Chiodo, 1994; Gerber and Marek, 1996); and another is in review for the Journal of Environmental Education (Cavallo, Gerber, Marek and Chiodo, 1996).

## EVALUATION SUMMARY OF PAST INSTITUTES

Data from past institutes indicate that the interdisciplinary summer institutes significantly influenced teachers' attitudes, opinions and understandings of energy and related issues. Throughout all institutes care was taken by the CEE staff to present a balance between various perspectives regarding energy, environment and governmental policy. In all seminar sessions contrasting views were represented in business, environmental and public policy. The participants came to understand that agents of these three views work interdependently toward a sound energy policy. The teachers' experiences with policy makers and industry leaders may explain the shift in teachers' opinions toward the understanding that government, industry and consumers are genuinely trying to solve energy problems.

Post-institute surveys and essays showed that the participants had gained significantly, important understandings of energy sources, environmental issues, public policy and their interrelationships. They were able to make informed decisions about complex energy issues. Thus, they had gained experiences which improved their critical thinking and helped them formulate understandings leading to establishing philosophical positions in energy education. Detailed results of three years of project evaluations are documented in the attached evaluation reports.

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**ENERGY, ENVIRONMENT, AND POLICY CHOICES:  
SUMMER INSTITUTES FOR SCIENCE  
AND SOCIAL STUDIES EDUCATORS**

**An Evaluation of Year One**

**The University of Oklahoma  
Close-Up Foundation  
U.S. Department of Energy**

**U.S. Department of Energy Contract No. DE-FG02-92ER75744**

**1994**

This report is an evaluation of year one of a three year program titled, "Energy, Environment, and Policy Choices: Summer Institutes for Science and Social Studies Educators." The program is sponsored by a grant from the United States Department of Energy and is administered through the Center for Energy Education (CEE). The CEE is a partnership which includes personnel at the University of Oklahoma in Norman, Oklahoma and the Close Up Foundation which is located in Washington D.C. This evaluation report was compiled by Edmund A. Marek, Project Director, Ann M.L. Cavallo, Evaluation Specialist, and Brian L. Gerber, Research Assistant.

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## **Introduction**

Energy is one of the major issues for the American public of the 1990's, consequently there exists an urgent call for energy education in our schools. This exigency has prompted educators in science and social studies education at the University of Oklahoma, in collaboration with personnel at the Close Up Foundation in Washington, D.C., to develop a national project for the education of teachers and the dissemination of energy related teaching materials.

During the summer of 1993, personnel from the University of Oklahoma in partnership with personnel from the Close Up Foundation conducted an intensive two-week program for educators from across the country. Beginning at the Sarkeys Energy Center on OU's campus, fifty-seven program participants spent a week examining the concepts and issues related to energy and the environment, and how the interdependence of energy and environment deeply influences daily life. The second week was spent in Washington D.C., where participants were exposed to processes with which policy makers and politicians grappled while addressing the critical interrelationships of politics, economics, energy and the environment.

Participants of the institute were selected in pairs composed of science and social studies educators and most of the participants were teamed with another educator from the same school district. This grouping arrangement was used to facilitate the development of an interdisciplinary teaching unit which would address a selected energy issue and a correlating policy making concept. The interdisciplinary curricula are to be designed to stress critical thinking abilities and content mastery, and these curricula are being implemented in science and social studies classrooms during this academic school year.

The program's participants consisted of secondary school teachers and curriculum specialists who were carefully chosen from twenty-one states and American Samoa. Additionally, two experienced teachers were also invited to attend the 1993 institute to model the curricula they had developed as a result of their involvement in a pilot program conducted in 1991. Extensive evaluation instruments were administered to the participants during the two-week institute. This report summarizes the year one results of the comprehensive evaluation of "Energy, Environment, and Policy Choices: Summer Institutes for Science and Social Studies Educators."

## Year One Evaluation Plan

A thorough evaluation plan (Figure 1) was implemented to assess the impact of the institute on the teacher participants. The evaluation plan places particular emphasis on the domains of cognitive and affective development (Krathwohl, Bloom & Masia, 1964). Within these two domains, the attainment of the major goals of this project were assessed, specifically: the mastery of energy concepts and related subject matter; the attainment of interrelated meaningful understandings of politics, economics, energy, and the environment; and the enhancement of attitudes and motivation towards learning about energy and related social studies issues.

In addition to cognitive and affective measures, participants were also asked to respond to questions regarding their satisfaction with various programmatic aspects of the institute. See the Appendices of this report for samples of all assessment instruments administered to the participants. Assessment instruments are listed below.

Background Information: A questionnaire was administered at the beginning of the institute to acquire background information on the participants' gender, ethnic origin, teaching assignments, education, and methodological teaching preferences.

Attitude Questionnaire: A questionnaire was designed to examine participants' attitudes toward various energy issues as well as their fundamental attitudes and values toward different energy sources.

Cognitive Assessment: This instrument required participants to respond to an open-ended question and was used to measure participants' meaningful understandings of energy and their ability to integrate this knowledge with politics, economics, and the environment. This measure was administered to the participants at the beginning and at the end of the institute.

Session Evaluation: Sections of this form were to be completed during each day of the institute. Each of the thirty-six sessions that comprised the institute was listed and participants were asked to rate the quality of each session, give their opinion of its relevance, and provide any additional comments.

Institute Evaluation: This questionnaire was developed to gain feedback from the participants about ease of integrating institute information into their classrooms, travel and hotel accommodations, organization and administration, and recommendations for future institutes.

In addition to the assessment instruments mentioned above, teacher participants and their students will also be evaluated through the use of items forwarded to the CEE from the teacher participants during the school year. These items will include but are not limited to the following.

Journals: Teachers are to keep a journal or log of all pertinent information related to the implementation of the curricula in their teaching. This includes information on the content of the curricula, the processes used in teaching the curricula and the impact of the curricula on their students' knowledge and attitudes toward energy, environment and policy choices. When completed, the journals are to be sent to the CEE.

Tests: A copy of all tests and questionnaires designed by the teachers to measure students' knowledge and attitudes toward energy, environment and policy choices are to be sent to the CEE.

Supportive Information: Any information that shows the impact of energy, environment and policy choices on the knowledge and attitudes of the teacher participant and the students is to be forwarded to the CEE. This information may include items such as letters, student projects and video tapes.

Closing Questionnaire: A closing questionnaire will be forwarded to each participant in April, 1994. The questionnaire will ask participants to evaluate the implementation of energy, environment and policy choices curricula in their teaching during the 1993-94 academic year.

Curricula: At the end of the academic year, teachers will submit the curricula they have developed and implemented.

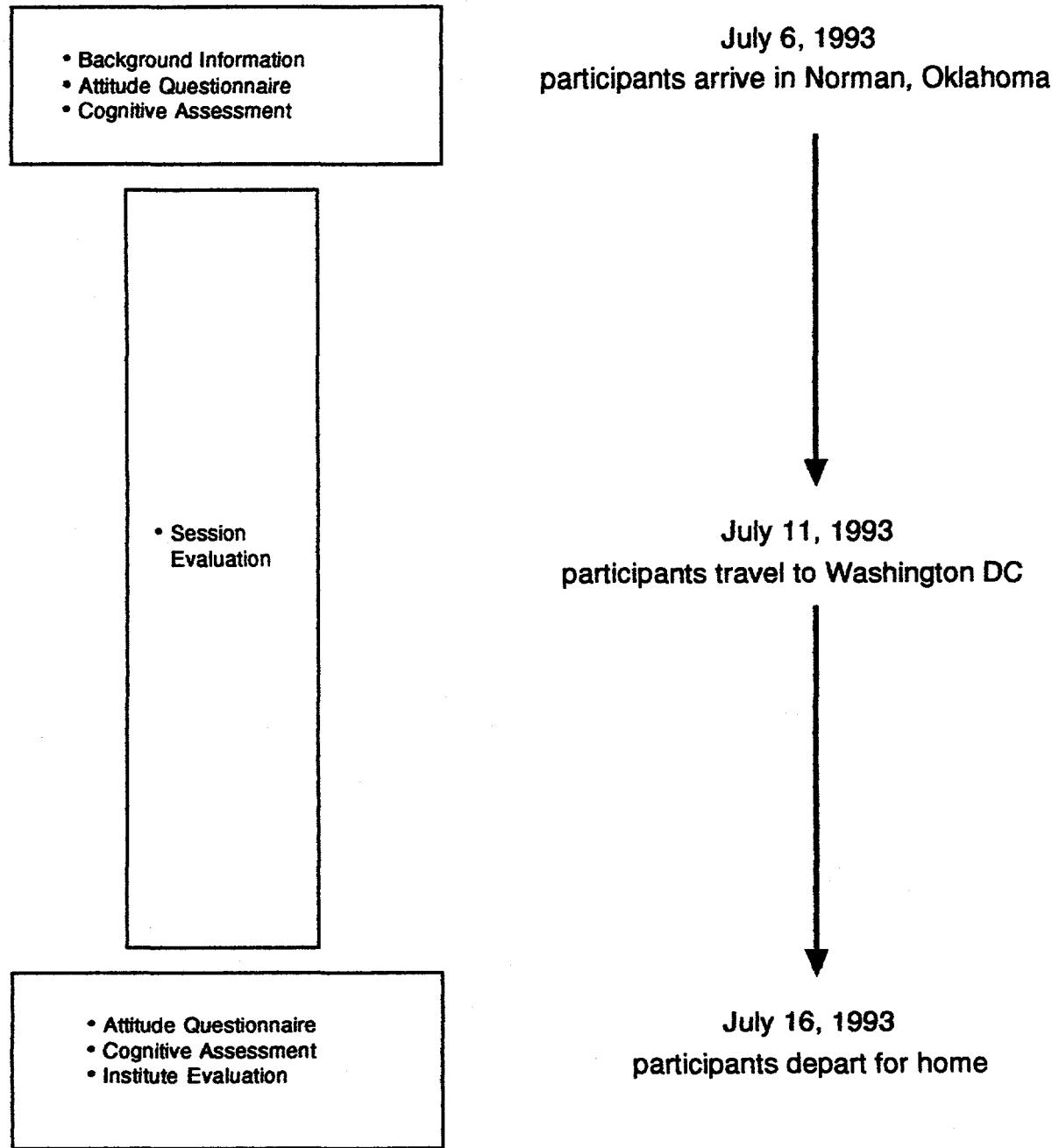


Figure 1. 1993 Energy, Environment and Policy Choices Evaluation Plan

## Results

The effect of the institute on the attitudes and knowledge of the fifty-seven participants was assessed by means of questionnaires and written essays. Analyses of the participants' responses to these instruments can be summarized by the following statements:

1. Participants thought that the organization and administration of the institute were excellent.
2. Participants gained a more positive attitude toward energy and related issues in politics, economics, and the environment as a result of the institute.
3. Participants added to their knowledge bases of energy, environment and policy choices and gained a greater understanding of the interrelationships among them.
4. Participants thought that virtually all of the thirty-six sessions they attended throughout the institute were highly relevant and well presented.
5. Participants thought that this was one of the best educational institutes they had ever attended.

### Background Information

Of the fifty-seven participants that took part in the 1993 institute (Table 1), all but three were practicing classroom teachers. Many of the questions on the background information questionnaire were not applicable to the non-teachers since they were administrators or curriculum specialists that served more than one school. For this reason, none of the data

provided by these three people are included in the figures or narrative of this section.

Of the fifty-four persons for which data are reported, 48% were from the social sciences and 52% from the natural sciences. Most of the participants were female (Figure 2), Caucasian (Figure 3), and came from suburban or rural schools (Figure 4). Most participants had earned at least a master's degree (Figure 5) and represented a relatively even distribution of years of teaching experience (Figure 6).

As reported by the participants, the combined ethnic composition of the schools in which they currently teach consists predominately of Caucasians (66.1%) with Hispanics making up the next largest category (13.0%). See Figure 7. The combined socio-economic composition of the schools in which the participants teach consists primarily of middle income families (42.7%). See Figure 8. Participants reported more low income families (23%) than upper-middle income families (15.5%) and more than twice as many at or below poverty level (14.1%) as compared to those considered as high income families (4.7%).

Table 1. Origin of Participants by State

| <u>State</u>        | <u>Number of Participants</u> |
|---------------------|-------------------------------|
| Alaska.....         | 4                             |
| Arizona.....        | 2                             |
| California.....     | 2                             |
| Colorado.....       | 2                             |
| Delaware.....       | 1                             |
| Florida.....        | 1                             |
| Hawaii.....         | 4                             |
| Illinois.....       | 2                             |
| Indiana.....        | 2                             |
| Kansas.....         | 2                             |
| Kentucky.....       | 2                             |
| Massachusetts.....  | 2                             |
| Missouri.....       | 1                             |
| Montana.....        | 1                             |
| New Jersey.....     | 2                             |
| New York.....       | 3                             |
| North Carolina..... | 4                             |
| Ohio.....           | 2                             |
| Oklahoma.....       | 6                             |
| Texas.....          | 8                             |
| Wyoming.....        | 3                             |
| American Samoa..    | 1                             |

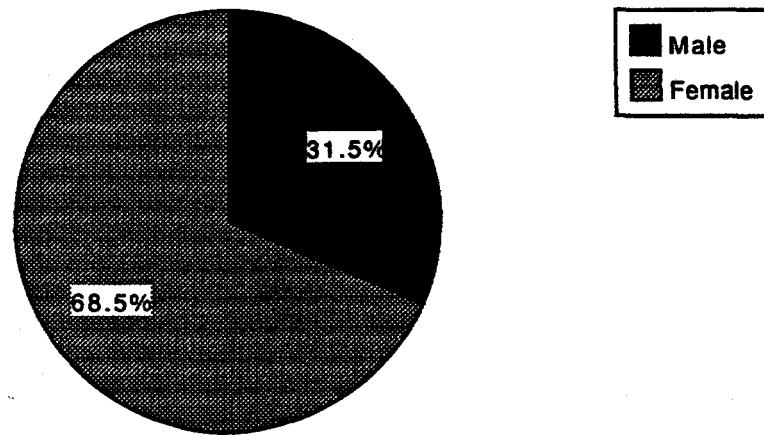


Figure 2. Gender of Participants

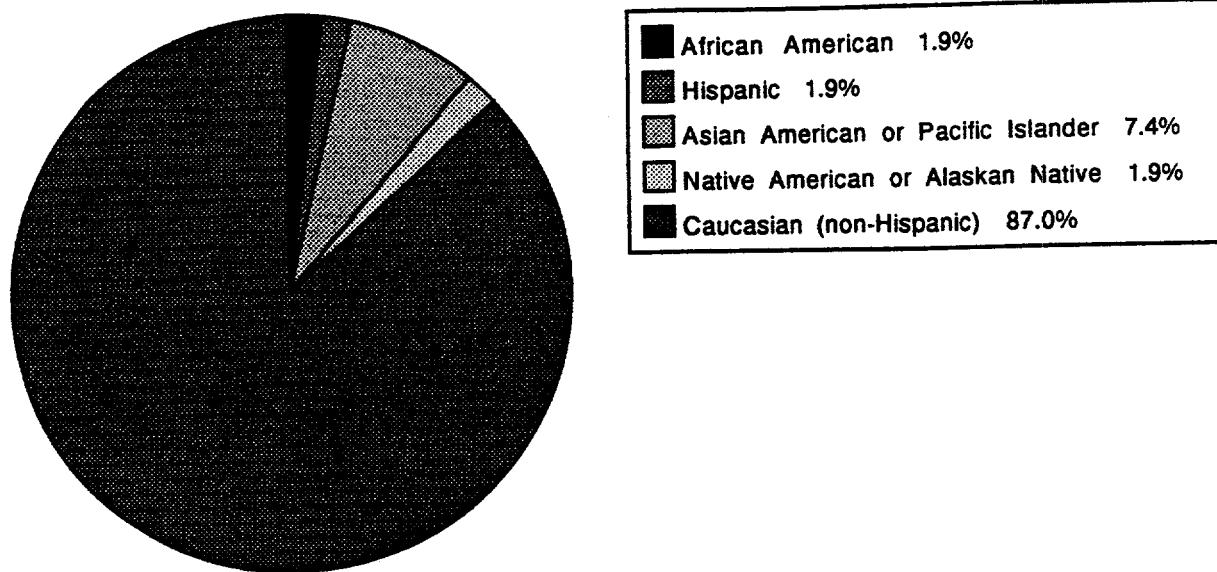


Figure 3. Ethnic Origin of Participants

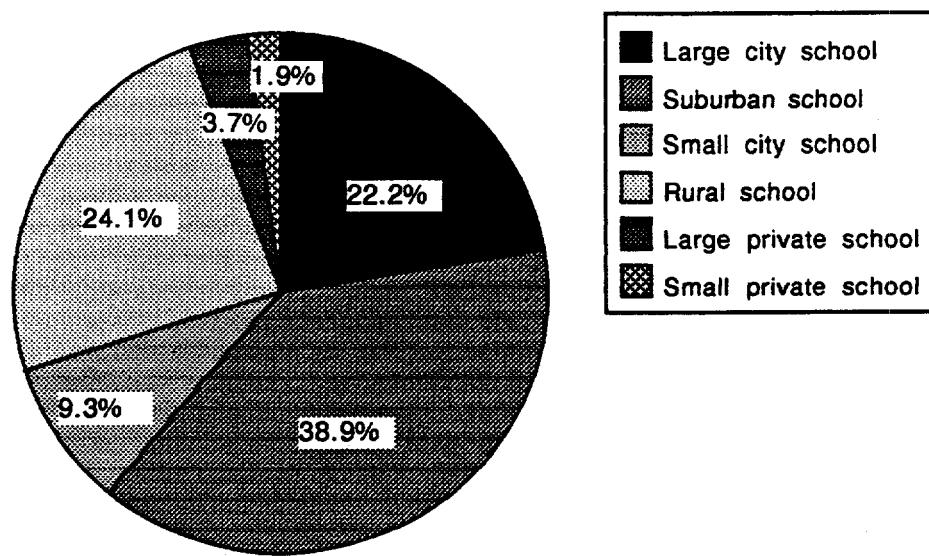


Figure 4. Types of Schools Where Participants Teach

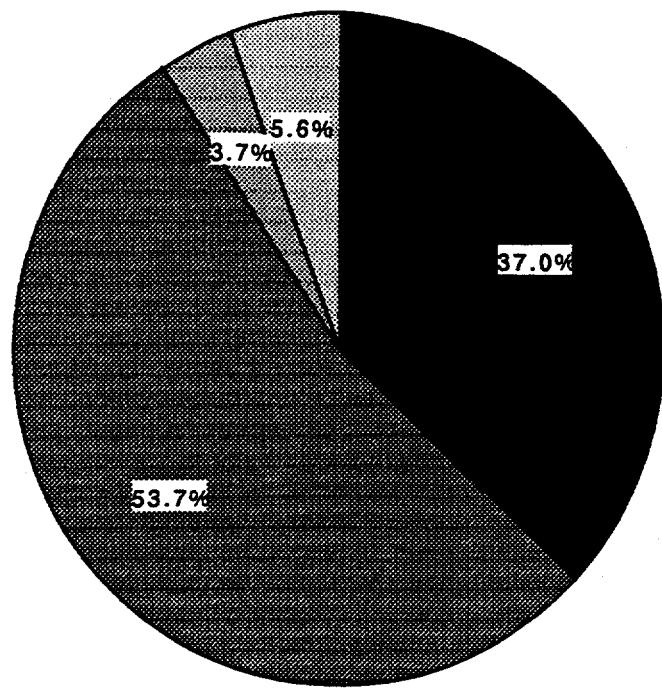


Figure 5. Highest Academic Degree

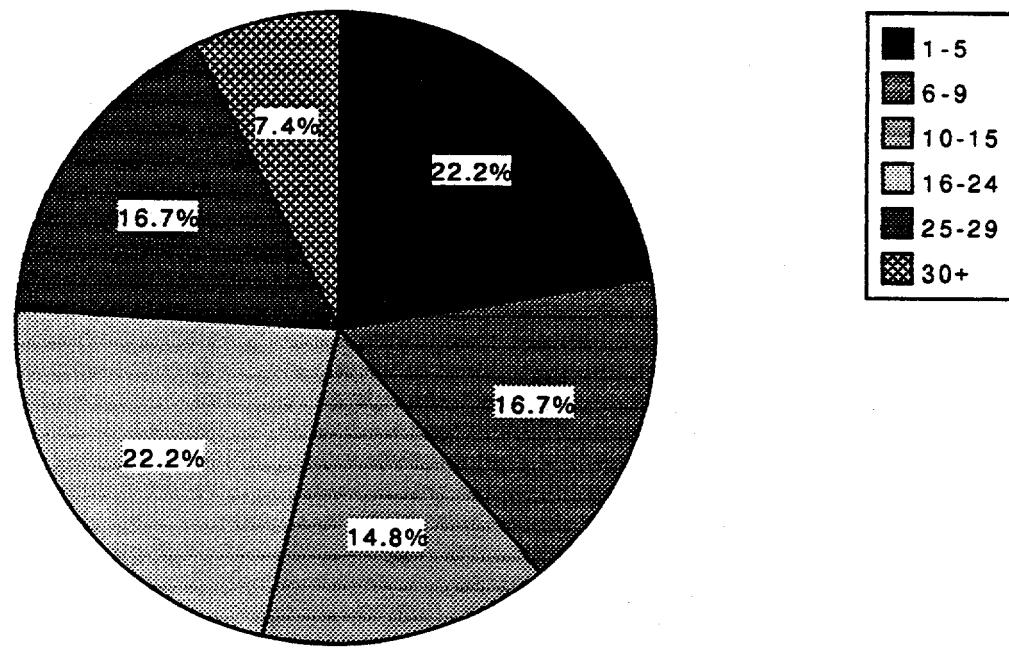


Figure 6. Years of Teaching Experience

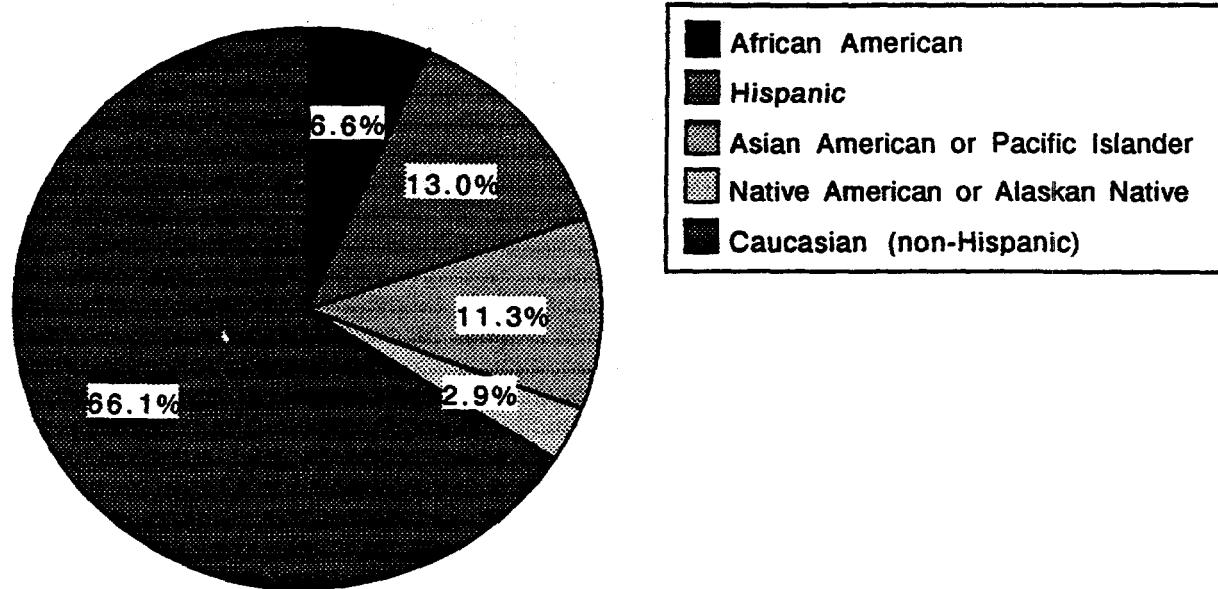


Figure 7. Ethnic Composition of the Schools Where Participants Teach

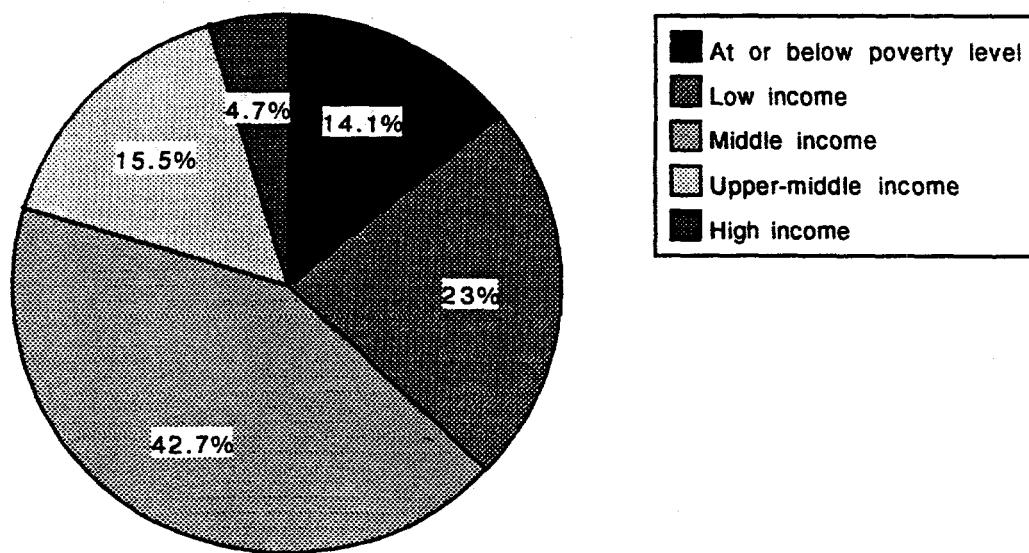


Figure 8. Socio-economic Composition of the Participants' Schools

### Attitudes Assessment

This 57-item instrument was administered to the participants before and after the institute and consisted of two fundamentally different sections. Thirty-one questions examined relationships between energy issue perceptions and fundamental attitudes and values (Jackson, 1985). The remainder of the instrument was designed to assess attitudes toward energy related issues in politics, economics, and the environment (Barrow & Morrisey, 1987).

Jackson (1985) described the environmental position a person or group may take as ecocentric or technocentric. Ecocentricity is the pro-environmental view in which the biosphere is seen as limited and thus imposes constraints on industrial and technological development. Thus, limiting the growth of development is viewed as beneficial since this growth must come at the expense of the environment. The opposite position, technocentricity, is characterized as one in which the biosphere is perceived as containing a limitless supply of resources with an infinite ability to absorb wastes generated by sustained economic growth. This view is characterized by the assessment of life through quantitative or material measures.

Participants' scores ranged from ecocentric to technocentric with the majority of scores in the moderate ranges (Table 2). Table 3 shows participants' mean scores as well as the range of scores on both the pre- and post-institute segment of the attitudinal measure of environmental position. There was very little change between pre- and post-institute with means remaining in the moderate ecocentric environmental position.

Tables 4-6 present the participants' frequency of responses to the twenty-six item section of the questionnaire measuring attitudes toward energy and related issues in politics, economics, and the environment. No significant change from pre- to post-institute scores was seen on any of the statements. However, the largest change

came in statements "f" and "g" of Table 4. Pre-institute scores reflected an overall disagreement with the statements that the federal government and industry are genuinely trying to solve our energy problems. As a result of the institute, the post-institute scores reflected a positive shift in their general attitudes that the federal government and industry are genuinely trying to solve our energy problems.

Table 2. Frequency and Percent of the Environmental Position of Participants

|                          | Pre-institute             |                         | Post-institute            |                         |
|--------------------------|---------------------------|-------------------------|---------------------------|-------------------------|
|                          | frequency of participants | percent of participants | frequency of participants | percent of participants |
| strongly ecocentric      | 9                         | 15.8                    | 8                         | 14.5                    |
| moderately ecocentric    | 28                        | 49.1                    | 19                        | 34.5                    |
| moderately technocentric | 17                        | 29.8                    | 22                        | 40.0                    |
| strongly technocentric   | 3                         | 5.3                     | 6                         | 10.9                    |

Table 3. Range and Mean for Pre- and Post-institute Scores Measuring Environmental Position

|                | Minimum score | Maximum score | Mean score      |
|----------------|---------------|---------------|-----------------|
| Pre-institute  | 48            | 87            | 64.6 (SD = 8.0) |
| Post-institute | 52            | 86            | 67.0 (SD = 8.5) |

Table 4. Frequency of Responses by Participants on Attitudes Toward Energy

|  | Pre-institute     |                 |              | Post-institute |                   |                 |
|--|-------------------|-----------------|--------------|----------------|-------------------|-----------------|
|  | Strongly Disagree | Mildly Disagree | Mildly Agree | Strongly Agree | Strongly Disagree | Mildly Disagree |
| a) The people in my region have no serious energy problems.  | 33                | 17              | 6            | 1              | 26                | 16              |
| b) America should develop energy independence even if it means that energy will cost more.                 | 2                 | 7               | 30           | 18             | 2                 | 12              |
| c) The average citizen cannot have any influence in what the government does about energy problems.        | 34                | 15              | 5            | 3              | 34                | 16              |
| d) The average citizen cannot have any influence in what manufacturing companies do about energy problems. | 32                | 18              | 4            | 3              | 31                | 17              |
| e) The average citizen cannot have any influence in what oil companies do about energy problems.           | 32                | 17              | 4            | 4              | 30                | 16              |
| f) The federal government is genuinely trying to solve our energy problems.                                | 11                | 26              | 20           | 0              | 3                 | 11              |
| g) Industry is genuinely trying to solve our energy problems.  | 14                | 26              | 17           | 0              | 2                 | 19              |
| h) Consumers are genuinely trying to solve our energy problems.  | 12                | 26              | 19           | 0              | 5                 | 24              |
|  |                   |                 |              |                |                   | 25              |
|  |                   |                 |              |                |                   | 1               |

Table 5. Attitudes of Participants Toward Potential Health and Safety Problems Associated with Various Energy Sources

|   | Pre-institute        |                       |                |                          | Post-institute       |                       |                |                          |
|---|----------------------|-----------------------|----------------|--------------------------|----------------------|-----------------------|----------------|--------------------------|
|   | Extremely<br>Serious | Moderately<br>Serious | Not<br>Serious | No Potential<br>Problems | Extremely<br>Serious | Moderately<br>Serious | Not<br>Serious | No Potential<br>Problems |
| Coal mining   | 27                   | 26                    | 1              | 0                        | 16                   | 34                    | 4              | 0                        |
| Offshore drilling and the<br>Alaskan oil pipeline         | 8                    | 41                    | 6              | 1                        | 5                    | 36                    | 13             | 1                        |
| Coal powered generators                                   | 14                   | 38                    | 4              | 0                        | 11                   | 35                    | 9              | 9                        |
| Importing or shipping foreign oil<br>to the United States | 7                    | 33                    | 15             | 1                        | 9                    | 26                    | 19             | 1                        |
| Nuclear powered generators                                | 22                   | 24                    | 8              | 2                        | 9                    | 28                    | 17             | 1                        |
| Solar power   | 0                    | 21                    | 34             | 1                        | 1                    | 1                     | 21             | 32                       |
| Wind powered generators                                   | 0                    | 1                     | 19             | 36                       | 0                    | 1                     | 21             | 33                       |
| Conversion of biomass<br>to usable energy                 | 1                    | 18                    | 28             | 9                        | 2                    | 17                    | 22             | 14                       |
| Use of natural gas  | 2                    | 26                    | 24             | 4                        | 0                    | 23                    | 27             | 5                        |

**Table 6. Attitudes of Participants Toward Potential Environmental and Pollution Problems Associated with Various Energy Sources**

|  | Pre-institute     |                    |             |                       | Post-institute    |                    |             |                       |
|--|-------------------|--------------------|-------------|-----------------------|-------------------|--------------------|-------------|-----------------------|
|  | Extremely Serious | Moderately Serious | Not Serious | No Potential Problems | Extremely Serious | Moderately Serious | Not Serious | No Potential Problems |
| Coal mining  | 32                | 20                 | 4           | 0                     | 25                | 26                 | 3           | 0                     |
| Offshore drilling and the Alaskan oil pipeline         | 24                | 28                 | 3           | 1                     | 16                | 33                 | 5           | 0                     |
| Coal powered generators                                | 26                | 29                 | 1           | 0                     | 18                | 35                 | 2           | 0                     |
| Importing or shipping foreign oil to the United States | 17                | 33                 | 5           | 1                     | 14                | 34                 | 7           | 0                     |
| Nuclear powered generators                             | 22                | 21                 | 8           | 5                     | 13                | 27                 | 12          | 3                     |
| Solar power  | 0                 | 1                  | 18          | 37                    | 1                 | 3                  | 21          | 30                    |
| Wind powered generators                                | 0                 | 3                  | 20          | 33                    | 0                 | 2                  | 23          | 30                    |
| Conversion of biomass to usable energy                 | 4                 | 17                 | 22          | 13                    | 2                 | 21                 | 21          | 11                    |
| Use of natural gas                                     | 9                 | 28                 | 17          | 3                     | 8                 | 19                 | 22          | 6                     |

## Cognitive Assessment

This knowledge assessment instrument consisted of one open-ended question designed to measure participants' meaningful understandings of energy and its interrelationships with policy choices and the environment. This measure was administered pre- and post-institute to determine if any changes in participants' understandings of these issues occurred during the course of the institute. Responses were analyzed and separated into the following four categories.

**NO UNDERSTANDING:** No response or an inappropriate response was provided.

**LITTLE UNDERSTANDING:** Responses included two of the three issues and in general were emotional in their replies and focused on the importance of students learning the issues.

**MODERATE UNDERSTANDING:** At least all three issues mentioned with some demonstration of understanding the interrelationships among them.

**SOUND UNDERSTANDING:** The interrelatedness of all three issues were discussed with examples provided.

In pre-tests, participants tended to give vague, incomplete examples in their explanations. In contrast, participants responded in a thorough and thoughtful manner with at least half of the post-test responses citing experiences and knowledge gained through the institute. A typical example of this is reflected in the pre-institute and post-institute comments of the participant cited below.

Pre-institute comment: "Clearly policy choices influence the energy sources we use and subsequently affect the environment. Decisions to support certain industries, then supports certain energy types. If the government supports the auto industry then they in essence are supporting petroleum interests."

Post-institute comment: "The area in which my knowledge expanded most was definitely policy choices. I now know how policy, specifically energy policy, is formulated and changed. This is good because this is where I as a science teacher draw connections to social studies. I have seen how various special interest groups, advocacy groups, and politicians all do work to promote their special needs. I have also seen how compromise and give and take are so important to the process of defining our energy policy. I have always understood the relationship between energy and the environment but I leave with a much more thorough understanding of energy acquisition and distribution."

The statements above demonstrate that the institute positively impacted the participants' knowledge base. The teachers responding in this manner demonstrated they had gained a better understanding of the interrelationships between energy, environment and policy choices.

In contrast, some individuals showed lesser understandings on the post-test as compared to the pre-test. While it is possible that participants lost understanding, it is much more likely that these contradictory results may be attributed to one or more of the following.

- \* The post-test was administered on the final day of the institute, immediately after breakfast, and while participants were in social groups. This testing situation may have interfered with the participants' ability to produce thoughtful responses.
- \* Participants were anxious to depart as many had been separated from their families for the past two weeks. Their flights home were scheduled for later that same morning.
- \* Participants were tired after an activity-filled and physically strenuous two-week institute.
- \* Participants may have been overwhelmed by the amount of content material they acquired over such a short period of time. They may require time to assimilate and fully understand the information.

Participants cited many of the concerns listed above in other evaluation measures. Some responses that are representative of the entire group of participants include:

"Not enough time to sit down and observe reading materials."

"Perhaps we should have gotten the evaluation program... earlier in the week so we could have had it in mind ..."

"Some days were very long and fatigue caused us not to appreciate some of the days."

"Asking us to read after a long and tiring trip or a full day of activities is not practical."

"The articles we received were good. I'll have to take a bit of time absorbing all of this when I get home."

"I really didn't have enough time to read all the materials."

### Session Evaluation

Throughout the institute, participants were asked to rate the quality of each of the thirty-six sessions from "excellent" to "poor" and to rate the relevance of each session from "extremely" relevant to "not at all" relevant. These data are provided in Table 7.

Along with these ratings, participants were invited to make comments concerning each of the sessions they attended throughout the two-week institute. The comments from each session were distilled and summarized as briefly as possible without losing the original proportion of positive and negative comments as well as the main idea(s) of the statements. See Table 8.

When analyzing the evaluation data from Tables 7 and 8 always consider both tables together. Do not interpret a session evaluation solely from the data provided by only one table. Some participants did not write any comments yet indicated a rating or relevance. In some cases the opposite was true. A comment was written but no rating or relevance was provided. This also explains why the total number of participants responding, as indicated in Tables 7 and 8, varies widely across the sessions.

Table 7. Participant Ratings of each Session  
of the Institute

ENERGY, ENVIRONMENT AND POLICY CHOICES  
1993 Participants' Session Evaluation Results

| KEY FOR RATING                      |  | KEY FOR RELEVANCE                     |    |    |    |    |    |
|-------------------------------------|--|---------------------------------------|----|----|----|----|----|
|                                     |  | N = number of participants responding |    |    |    |    |    |
|                                     |  | ET = extremely                        |    |    |    |    |    |
|                                     |  | VE = very                             |    |    |    |    |    |
|                                     |  | MD = moderately                       |    |    |    |    |    |
|                                     |  | SW = somewhat                         |    |    |    |    |    |
|                                     |  | NA = not at all                       |    |    |    |    |    |
| RATING OF SESSION                   |  | RELEVANCE OF SESSION                  |    |    |    |    |    |
| UNIVERSITY OF OKLAHOMA WEEK         |  |                                       |    |    |    |    |    |
| July 7, 1993                        |  | N                                     | EX | GD | AV | FR | PR |
| PURPOSE OF INTERACTIONS BETWEEN     |  | N                                     | ET | N  | ET | VE | MD |
| SCIENCE & SOCIAL STUDIES            |  | 58                                    | 19 | 30 | 6  | 3  | 0  |
| "OIL" WALTER QUANSTROM, AMOCO       |  | 57                                    | 19 | 27 | 8  | 1  | 2  |
| "RENEWABLES" LAWRENCE MURPHY, NREL  |  | 56                                    | 11 | 18 | 15 | 8  | 4  |
| "COAL" WILLIAM WAHL, AMAX, INC.     |  | 57                                    | 18 | 25 | 12 | 2  | 0  |
| "NUCLEAR" PAUL SKIERKOWSKI, OU      |  | 57                                    | 35 | 15 | 6  | 1  | 0  |
| BIZZELL LIBRARY                     |  | 56                                    | 17 | 24 | 11 | 3  | 1  |
| CANDLE-BURNING MODEL FOR CURRICULUM |  | 57                                    | 39 | 15 | 3  | 0  | 0  |
| July 8, 1993                        |  |                                       |    |    |    |    |    |
| TOTAL PETROLEUM REFINERY            |  | 56                                    | 23 | 29 | 2  | 2  | 0  |
| "MICROBIAILY ENHANCED OIL RECOVERY" |  |                                       |    |    |    |    |    |
| JOHN COATES, OU                     |  | 56                                    | 42 | 13 | 1  | 0  | 0  |
| ENERGY CENTER LABORATORIES, OU      |  | 55                                    | 25 | 22 | 4  | 3  | 1  |
|                                     |  |                                       |    |    |    |    |    |
| 58                                  |  | 23                                    | 18 | 9  | 8  | 0  | 0  |

Table 7. cont.

| OU WEEK cont.                                | RATING OF SESSION |    |    |    |    | RELEVANCE OF SESSION |    |    |    |    |    |    |
|--|-------------------|----|----|----|----|----------------------|----|----|----|----|----|----|
|  | N                 | EX | GD | AV | FR | PR                   | N  | ET | VE | MD | SW | NA |
| KIRKPATRICK CENTER                           | 57                | 44 | 12 | 1  | 0  | 0                    | 57 | 26 | 17 | 13 | 1  | 0  |
| OK NATURAL GAS UNDERGROUND FACILITY          | 56                | 10 | 23 | 18 | 4  | 1                    | 56 | 14 | 21 | 16 | 5  | 0  |
| PLANNING YOUR CURRICULUM                     | 50                | 26 | 19 | 5  | 0  | 0                    | 48 | 35 | 8  | 4  | 1  | 0  |
| JULY 10, 1993                                |                   |    |    |    |    |                      |    |    |    |    |    |    |
| "ENERGY EFFICIENT SYSTEMS"                   |                   |    |    |    |    |                      |    |    |    |    |    |    |
| JOHN ROBISON, ROBISON & BECK ARCH.           | 52                | 11 | 18 | 15 | 3  | 5                    | 51 | 18 | 13 | 12 | 6  | 2  |
| "GLOBALIZATION OF OIL & GAS INDUSTRY"        |                   |    |    |    |    |                      |    |    |    |    |    |    |
| RON EVANS, OU                                | 51                | 22 | 22 | 6  | 1  | 0                    | 52 | 24 | 22 | 6  | 0  | 0  |
| "WIND POWER" PETER HUBNER, BERGEY WIND POWER | 53                | 14 | 26 | 11 | 2  | 0                    | 53 | 21 | 22 | 9  | 1  | 0  |
| "WHO CARES ABOUT ENERGY?" JOCK CAMPBELL, OU  | 53                | 27 | 20 | 6  | 0  | 0                    | 53 | 30 | 20 | 2  | 1  | 0  |
| "CURRICULUM IMPLEMENTATION" GAYLE THIEMAN    | 54                | 26 | 22 | 4  | 2  | 0                    | 53 | 31 | 12 | 8  | 2  | 0  |
| BIZZELL LIBRARY                              | 54                | 11 | 17 | 16 | 6  | 4                    | 54 | 12 | 12 | 16 | 14 | 0  |

Table 7. cont.

| WASHINGTON D. C. WEEK                 |    | RATING OF SESSION |    |    |    |    |    | RELEVANCE OF SESSION |    |    |    |    |   |
|---------------------------------------|----|-------------------|----|----|----|----|----|----------------------|----|----|----|----|---|
| July 12, 1993                         | N  | EX                | GD | AV | FR | PR | N  | ET                   | VE | MD | SW | NA |   |
| "INFLUENCING THE PROCESS" BOB BATES   |    |                   |    |    |    |    |    |                      |    |    |    |    |   |
| CORP. SEC., MOBIL CORP.               | 55 | 40                | 13 | 2  | 0  | 0  | 55 | 31                   | 19 | 4  | 1  | 0  |   |
| "INFLUENCING THE PROCESS"             |    |                   |    |    |    |    |    |                      |    |    |    |    |   |
| SCOTT PETERS, MGR. PUBLIC RELATIONS   | 55 | 20                | 30 | 5  | 0  | 0  | 55 | 20                   | 24 | 10 | 1  | 0  |   |
| US COIN FOR ENERGY AWARENESS          |    |                   |    |    |    |    |    |                      |    |    |    |    |   |
| "INFLUENCING THE PROCESS" JOHN COHEN, |    |                   |    |    |    |    |    |                      |    |    |    |    |   |
| DIR. ENERGY & NAT RES.                |    |                   |    |    |    |    |    |                      |    |    |    |    |   |
| NAT. ASSOC. OF MANUFACTURERS          | 55 | 18                | 27 | 10 | 0  | 0  | 55 | 19                   | 22 | 14 | 0  | 0  |   |
| MICHAEL BENNET, ACCURACY IN MEDIA     | 51 | 24                | 19 | 3  | 3  | 2  | 51 | 20                   | 11 | 13 | 7  | 0  |   |
| GREENPEACE                            | 2  | 0                 | 1  | 1  | 0  | 0  |    | 2                    | 1  | 1  | 0  | 0  | 0 |
| PUBLIC INTEREST RESEARCH GROUP        | 11 | 3                 | 7  | 1  | 0  | 0  |    | 11                   | 5  | 4  | 2  | 0  | 0 |
| INSTITUTE FOR ENERGY CONSERVATION     | 12 | 9                 | 3  | 0  | 0  | 0  |    | 13                   | 12 | 1  | 0  | 0  | 0 |
| FRIENDS OF THE EARTH                  | 13 | 11                | 1  | 1  | 0  | 0  |    | 14                   | 11 | 2  | 1  | 0  | 0 |
| SIERRA CLUB                           | 10 | 5                 | 1  | 3  | 0  | 1  |    | 10                   | 7  | 0  | 3  | 0  | 0 |

Table 7. cont.

| RATING OF SESSION  |               |    |    |    |    | RELEVANCE OF SESSION |    |    |    |    |    |    |    |
|--|---------------|----|----|----|----|----------------------|----|----|----|----|----|----|----|
| WASH., D. C. WEEK cont.  | July 13, 1993 | N  | EX | AD | AV | FR                   | PR | N  | ET | VE | MD | SW | NA |
| KATHLEEN MCGINTY, DIR.,<br>WHITE HOUSE OFFICE ON ENVIR. POLICY | 54            | 44 | 10 | 0  | 0  | 0                    | 0  | 54 | 41 | 11 | 2  | 0  | 0  |
| "VIEW FROM THE ADMINISTRATION"                                 |               |    |    |    |    |                      |    |    |    |    |    |    |    |
| JIM MIETUS, POLICY ADVISOR ON ENERGY                           | 54            | 7  | 22 | 15 | 6  | 4                    | 50 | 15 | 15 | 15 | 4  | 1  |    |
| HAZEL OLEARY, SEC OF ENERGY                                    | 55            | 49 | 6  | 0  | 0  | 0                    | 55 | 50 | 4  | 1  | 0  | 0  |    |
| "GREENLIGHTS PROGRAM"  |               |    |    |    |    |                      |    |    |    |    |    |    |    |
| MIRIKA DELACARA, EPA   | 51            | 7  | 13 | 24 | 2  | 5                    | 52 | 13 | 11 | 18 | 8  | 2  |    |
| "PLANNING YOUR CURRICULUM PROJECT"                             |               |    |    |    |    |                      |    |    |    |    |    |    |    |
| LORRAINE GOWAN   | 30            | 10 | 10 | 4  | 2  | 4                    | 29 | 8  | 9  | 6  | 4  | 2  |    |
| July 14, 1993  |               |    |    |    |    |                      |    |    |    |    |    |    |    |
| "VIEW FROM CONGRESS"   |               |    |    |    |    |                      |    |    |    |    |    |    |    |
| CONGRESSIONAL SEMINAR  | 49            | 32 | 15 | 2  | 0  | 0                    | 49 | 31 | 17 | 1  | 0  | 0  |    |
| "VIEW FROM CONGRESS"   |               |    |    |    |    |                      |    |    |    |    |    |    |    |
| PROFESSIONAL STAFF SEMINAR                                     | 50            | 31 | 19 | 0  | 0  | 0                    | 50 | 34 | 12 | 4  | 0  | 0  |    |
| "VIEW FROM CONGRESS"   |               |    |    |    |    |                      |    |    |    |    |    |    |    |
| WALKING WORKSHOP   | 40            | 26 | 10 | 4  | 0  | 0                    | 40 | 26 | 6  | 7  | 1  | 0  |    |

Table 7. cont.

| WASH., D. C. WEEK cont.  | RATING OF SESSION |    |    |    |    |    | RELEVANCE OF SESSION |    |    |    |    |    |    |
|--|-------------------|----|----|----|----|----|----------------------|----|----|----|----|----|----|
|  | July 15, 1993     | N  | EX | GD | AV | FR | PR                   | N  | ET | VE | MD | SW | NA |
| "DEFINING NATIONAL ENERGY STRATEGY"                              | 53                | 41 | 12 | 0  | 0  | 0  | 0                    | 53 | 44 | 7  | 2  | 0  | 0  |
| "CURRICULUM IMPLEMENTATION AND PLANNING YOUR CURR. PRESENTATION" | 43                | 14 | 16 | 7  | 2  | 4  | 4                    | 43 | 15 | 12 | 10 | 3  | 3  |
| CURRICULUM PRESENTATIONS   | 53                | 31 | 17 | 3  | 2  | 0  | 0                    | 52 | 33 | 13 | 5  | 1  | 0  |
| WALKING VISIT TO DC LANDMARKS                                    | 51                | 39 | 9  | 2  | 1  | 0  | 0                    | 51 | 34 | 6  | 10 | 1  | 0  |

Table 8. Summary of Session Evaluation Comments from Participants

**Session Evaluation Comments**

**"Purpose of and Interactions between Science and Social Studies"**

Of the thirty-eight participants that responded with written comments, many noted the importance of a session such as this setting the focus for the institute by emphasizing the interdisciplinary relationships between science and social studies. Others commented on the high interest level, good discussions, importance of allowing participants to develop the ideas, and the enthusiastic nature of the presenters.

Some participants were not as positive, noting that connections between science and social studies could have been made in a much shorter time, material was covered that was already known, that more up-to-date information was needed, and the participants already have an idea of the purpose of the institute. Others provided suggestions with several participants mentioning the effectiveness of the presentation would have been heightened by combining both presentations into one, have more group activities, and make sure ties are made between science and social studies.

**"Oil". Walter Quanstrom, Amoco Corporation**

Of the thirty-nine participants that responded with written comments, many appreciated the honesty of his presentation and responses to questions. He was entertaining, knowledgeable, positive, interesting, and a good spokesman for the oil industry. Many participants also mentioned that his most thought-provoking comment concerned the lack of influence the U.S. oil industry has on government policy. Mr. Quanstrom's presentation was also described as thoughtful, excellent, organized, and containing valuable examples. One participant mentioned that copies of his visuals should have been made available to everyone.

A few participants felt he was simply an oil industry advocate and that he did not describe the downside of oil, gave too many personal opinions and rambled in his presentation, and spent too much time giving excuses and apologizing for the oil industry. Other comments included such things as: more relevant information (e.g. oil reserves and future oil usage) needed to be presented, he does not realize the influence of the oil industry, should alter his presentation style, and the presentation was thought to be boring.

**"Renewables". Lawrence Murphy, National Renewable Energy Laboratory**

Of the forty-four participants that responded with written comments, many felt that valuable information was presented through the use of graphics on the overhead. Others indicated that Mr. Murphy was knowledgeable, presented good background information on renewables, and mentioned both the pros and cons. Some felt the presentation was very interesting and clear but that he had so much information that he needed more time. Several participants mentioned how well he did during the question and answer time.

Many participants indicated that Mr. Murphy tried to present too much information in such a short time that the information presented was much too technical and complicated for them to understand. Others felt as though he spoke in a monotone voice, seemed rushed, and stood in front of the overheads blocking their view. Other comments from the participants included: the idea that the speaker never took a stand on what he supported, presented outdated information, and failed to make the purpose of the presentation clear.

**"Coal". William Wahl, AMAX, Inc.**

Of the thirty-six participants that responded with written comments, many felt the presentation provided a helpful overview of the coal industry. The good slides and video, along with the information presented by Mr. Wahl, made the session informative, clear, well organized, and enjoyable. The presenter was described as competent and knowledgeable. The participants felt he gave honest, informed answers throughout the session and that he handled the question and answer period very well.

The participants identified 3 main areas of the presentation they did not enjoy. First, the environmental issues were not addressed; second, the presentation was seen as propaganda for the coal industry; and third, Mr. Wahl gave too much "company line" and came across as simply a coal industry advocate rather than someone willing to address all sides of the issue.

Table 8. cont.

#### "Nuclear". Paul Skierkowski, The University of Oklahoma

Of the forty participants that responded with written comments, many described Dr. Skierkowski in positive terms. Some of those descriptors included: entertaining, dynamic, approachable, fun, excellent, knowledgeable, well prepared, outstanding, captivating, interesting, funny, clear, animated, and a good model of valuable and interesting teaching methods. The session itself was described as enlightening, thought provoking, and informative. Many participants especially liked the active demonstration with excellent examples of radioactivity from common items.

From the negative comments, two main areas became clear. First, many did not like what they called an intimidating, assaultive style of presenting in which he picked on people in the group. Secondly, he was seen as overly biased toward his industry and glossed over environmental issues and the disposal of spent nuclear fuel. Other comments included: the presenter's argument was an old one and errors were made, flippant, simplistic answers were given to complex problems and Dr. Skierkowski's cavalier attitude is partly to blame for the public's negative attitude toward nuclear.

#### Bizzell Library

Of the thirty-nine participants that responded with written comments, the most frequent positive responses centered around how impressive the History of Science Collection was and how nice the library tour personnel were. Other comments included: excellent tour, loved the trip, gave me some ideas, special, and the resources available were impressive.

Nearly all of the negative comments centered around the element of time. The participants did not feel they had enough time to view the collections but more importantly, not enough time to utilize the resources available in the library for the purpose of the institute. Other comments included: they were not able to use the computer lab, it was never made clear why they were at the library, and they were already familiar with current library research capabilities.

#### "Candle Burning: Model for Curriculum Project"

Of the forty-six participants that responded with written comments, most had very positive comments. The most frequently repeated comments mentioned that the session provided a good model for teaching and for the curriculum the teams were to develop, it brought fun to learning and the group work was very enjoyable, and it was a great hands-on activity that created interest. Other comments included: good way to end a long day, worthwhile, very useful ideas, next year include more activities like this, got everyone involved, good process, very impressive, excellent, simple yet relevant, good exercise, very informative, active student involvement, and well coordinated.

Those participants mentioning negatives about the session most frequently commented that it needed to be more interdisciplinary in nature, the session went too long leading to some inactive time, and that it should not be done after dinner and after a long tiring day. Other comments included: no direct connection with energy seen, more time needed to explain learning cycle (history, applications, successful programs), and more information on what concepts are formal and concrete.

#### Total Petroleum Refinery Tour

Of the thirty-two participants that responded with written comments, most had positive comments about the Total Petroleum Refinery tour. Comments included: well worth the time, educational, good experience (on site visits), learned much, thoughtful tour, interesting, appreciated hands-on tour of the lab, and fascinating to learn and see the effects of government regulations on the industry. The personnel directing the tours were described as gracious, fun, helpful, dedicated, accommodating, excellent, patient, informative, and able to talk on my level and answer all questions.

The disappointment mentioned most frequently by the participants was the fact that they did not get a chance to take the complete walking tour of the plant due to construction and the miscommunication about wearing long pants and sleeves. Two suggestions echoed by a few of the participants included having a crash course in petroleum refining before they go on the tour and break down into smaller groups when going through the labs. Other comments included: no effort to relate it to social studies teachers, too technical, did not see the "whole picture," superficial, more public relations than anything, need more time for tour and need more information on environmental impact.

#### "Microbially Enhanced Oil Recovery". John C. Coates, The University of Oklahoma

Of the thirty-three participants that responded with written comments, all had something positive to say about the session. Comments included: very interesting, excellent presentation, exciting, awesome, great speaker, good visuals, we were all able to keep up with him, learned something, well done, understandable to the layman, excellent and clear, informative, promising technology, good information on actual oil production and oil fields, responded well to the audience, straightforward, innovative, and state of the art technology. Participants remarked that there was not enough time allotted for his presentation or for the question and answer period.

Table 8. cont.

#### Energy Center Laboratories, The University of Oklahoma

Of the forty-three participants that responded with written comments, many found the labs very interesting and the scientists very enthusiastic. Other comments included: fascinating, excellent labs, impressive professors, never found rocks interesting before now, demonstrated hands-on activities, unique, varied, up-to-date, helpful, fun, scientists did an excellent job of explaining their topics to the social science person, good to see the applications, important to see the interaction between university and business, fantastic, and will transfer well to the classroom.

Nearly all of the negative comments were from participants who felt that the information was too technical, they spent too much time in each lab, or they were tired of standing for such a long period of time. Other comments included no attempt was made to relate the labs to social studies teachers, four labs in a row was too many, the labs needed a more hands-on approach, and a structured introduction to the labs would have helped.

#### Kirkpatrick Center, Oklahoma City, Oklahoma

Of the thirty-five participants that responded with written comments, many found the Kirkpatrick Center lots of fun, extremely enjoyable, hands-on activities great, and a nice break from the highly academic activities of the previous days. Other descriptors included: attractive, stimulating, wonderful, impressive, well organized, interesting, amazing, great, and outstanding. Other participants found the Kirkpatrick Center a wonderful place of integration where science, art, and social sciences blend, and a place which stimulated many ideas about demonstrations to do in the classroom.

The few negative comments centered around only three topics. A few participants did not find much relevance in terms of content to use in the classroom. Two participants felt that the visit did not contribute to the central purpose of the institute, and one participant thought that the tour of the facility should have been earlier in the day.

#### Oklahoma Natural Gas, Underground Natural Gas Storage Facility, Natural Gas Powered Vehicle

Of the forty-three participants that responded with written comments, many thought it was very interesting, they provided good handouts for the teachers, and the natural gas powered vehicles was probably the best part of the trip. Other comments included: some participants thought there were underground storage tanks, not what was expected, easy to relate to the students, great, good experience, and amazing facts about CNG in auto engines.

Many participants had something negative to say about the tour. Nearly all of these comments centered around how loud the plant was which made it difficult to hear, how hot it was and so the tour should have been in the morning, or that there was not much to see there and it could have been better understood with visuals in the classroom. Other comments included, could have been passed up for something else, wanted to know more about what natural gas is, still do not know how oil/gas is drilled for, and needed more time for questions with the CNG engineer.

#### Planning Your Curriculum Project

Of the thirty-seven participants that responded with written comments, many thought it was nice to have planning time built into the schedule, liked exchanging ideas with other group members, thought it was a good opportunity to begin planning and processing ideas, and appreciated the fact that staff members were there to help them. Other comments included: hashed out misconceptions, good timing, developed major objective, time to confer with Dr. Marek, productive evening, began to focus, informal discussions were valuable, and good start on our thinking.

The two most frequently cited negative comments included: the planning session was too early in the institute to get much done, the Washington experience was needed, and more guidelines, structure, and examples should have been provided. Other comments included: participants should have been encouraged to turn in a 50-75% completed project, too tired to take advantage of time, evening hours are unproductive, should have been done earlier, and schedule time in smaller chunks.

Table 8. cont.

**"Energy Efficient Systems". John Robison, Robison & Beck Architects**

Of the forty-two participants that responded with written comments, the most commonly cited positive comments included interesting, good information, slides were good, and interesting viewpoint. Other comments included innovative, some good ideas and thoughts, loved him, tells it like it is, easy to listen to, loved his style, theory was good, excellent, good perspective, and a needed perspective on energy use and global responsibility.

Of the numerous negative comments, the most common centered on his failure to discuss energy efficient designs (the purpose of his talk) until only the last 15 minutes of the presentation. Some participants felt too much of the presentation was devoted to his personal and political views. Other comments included disorganized, too philosophical, slow, redundant, boring, not practical, philosophy was very esoteric, very poor, disjointed, too theoretical, too much repetition, lacked a focus, not well organized, felt he needed to preach, poor planning, too long, hard to follow, needs to be directed, never got to main points, and did not understand why he was there based on his presentation.

**"Globalization of Oil & Gas Industry". Ron Evans, The University of Oklahoma**

Of the thirty-five participants that responded with written comments, most were positive and centered around his excellent abilities as a speaker and how good, easy to use, and understandable the data were that he presented during the session. Other comments included: useful foreign policy angle, loved him, could have listened longer, ton of great information, informative, mature perspective, brought up important considerations for the future, candid, confident, focused, one of the best speakers, and reinforced the critical need for educating the next generation.

Of the few negative comments only two were repeated. They were that the presentation was too biased and that the information presented was repeated from previous sessions. Other comments included not dynamic, never seemed to get to his topic, statistics seem to be manipulated, too long, and slow moving.

**"Wind Power". Karl Bergey(Peter Hubner), Bergey Wind Power**

Of the thirty-two participants that responded with written comments, most were positive. The most frequent comments included: interesting, informative, relevant, very well done, good job of presenting, very knowledgeable, and excellent because they gave us statistics that can be used in class. Other comments included valuable, provided new information, and intriguing concept.

Most of the negative comments centered around the fact that the speaker was soft-spoken and very difficult to hear. Other comments included: low key, not an energetic speaker, speaker not too interesting, and did not provide handouts.

**"Who Cares About Energy". Jock Campbell, The University of Oklahoma**

Of the thirty-two participants that responded with written comments, most were very positive. The most frequently repeated comments included: good presentation, excellent, handouts were good, and speaker was very knowledgeable. Other remarks by the participants included: interesting, very personable speaker, my favorite presentation about energy resources, good graphics, great way to tie together and compare forms of energy, great speaker, best one yet, worthwhile, wonderful sense of humor, impressive speaker, and outstanding.

There were very few negative comments. They included: old statistics, unclear about what his point was, hard to follow his fast pace, and boring.

**"Curriculum Implementation". Gayle Thieman**

Of the forty-one participants that responded with written comments, the most frequent positive response was that it was great to hear other ideas and be involved in this group sharing activity. Other comments included: helpful to focus us on our task, enjoyed trying to help colleagues, made ideas for lesson easier to organize, handouts were helpful, Gayle was well prepared, an excellent facilitator, concise, and practical.

Of those commenting negatively about the session, the most frequently cited reason was that they would liked to have had the session and the information it provided earlier in the institute. Other comments included: would have appreciated more direction and concrete guidance, more time was needed, did not appreciate Gayle's superior attitude, and time would have been better spent in library.

Table 8. cont.

**Bizzell Library: Gather material for curriculum development**

Of the thirty-nine participants that responded with written comments, few were very positive. The comments included: we needed this time, good to meet with partner and get started on project, personnel were very helpful, excellent, allowed my partner and I to narrow in on a topic, and valuable in that it gives some idea of what a library search might yield on topics associated with our projects.

Nearly all of the frequently cited negative comments centered on the fact that the participants did not feel they had enough time to make effective use of the library. Other comments included: some areas of the library were not open or available, we will be using resources close to home, and I cannot work in a library when I'm under pressure.

**"Influencing the Process", Bob Bates, Corporate Secretary, Mobil Corporation**

Of the thirty-six participants that responded with written comments, most indicated they came away with a better understanding of what a lobbyist does and how lobbyists that are effective present themselves. The participants noted that he was a very articulate, persuasive speaker with a wonderful voice. They appreciated the fact that he sensed a need for political balance and that he was very candid and honest even when dealing with the tough questions.

A few participants felt he was slanted toward industry and their rights. A little too much company line. However, those feeling this way were far outnumbered by the participants seeing educational value to his presentation.

**"Influencing the Process", Scott Peters, Manager of Public Relations, US Council for Energy Awareness**

Of the twenty-three participants that responded with written comments, most seemed to feel he was simply a lobbyist for nuclear energy. Some felt it was a hype for nuclear and that in fact the word nuclear should be in the name of his organization.

While some participants were intimidated to ask questions because of his one-sidedness, they did see that he believed in his position and did a thorough job of presenting the position of the nuclear industry. He provided very helpful comments and good materials.

**"Influencing the Process", John Cohen, Director, Energy & Natural Resources, National Association of Manufacturers**

Of the twenty-three participants that responded with written comments, most left the session somewhat unclear about the goals of the NAM and the positions its members take on the issues. While some participants liked the information given, others felt it was insufficient and that it was presented with stereotypes and cliches. Some participants indicated they saw value in his explanation of horizontal trade associations and the importance of compromise.

**Michael Bennett, Accuracy in Media**

Of the forty-eight participants that responded with written comments, the majority of participants clearly had a love/hate relationship with Mr. Bennett. They loved that he was so entertaining, interesting, and controversial and made them really think and discuss the issues all the rest of the day. Many of the same participants that loved him also noted that he was pompous, eccentric, egotistical, opinionated, a nut and a devil's advocate. Many also noted that he demonstrated his own message (reporters do not research the entire truth) by presenting material to the group that was unfounded in scientific fact.

**Greenpeace**

The one participant that responded with written comments felt there was some bit of scheduling confusion and that a presentation by their members was a surprise to them. However, the participant did appreciate being able to hear both sides of various issues within such a short time in the day's activities.

**Public Interest Research Group**

Of the nine participants that responded with written comments, most felt it was interesting to hear viewpoints from the other side and that they would have liked to have heard from more than just one environmental group.

Table 8. cont.

**Institute for Energy Conservation**

Of the twelve participants that responded with written comments, all seemed to think it was extremely worthwhile. They noted the wealth of information presented as well as his effectiveness as a presenter. It was even suggested that a time slot be allocated so that everyone could hear his presentation.

**Friends of the Earth**

Of the eleven participants that responded with written comments, most thought this to be an excellent presentation that was in good contrast to Mr. Bennett. Dawn, the presenter, was described as knowledgeable, candid, open to questions, great, and effective in communicating what her organization does and stands for.

Several participants noted the effectiveness of small group activities. They felt it was much easier to get all their questions asked and answered, and that the discussions were more personal and special.

**Sierra Club**

Of the nine participants that responded with written comments, most noted that there was some sort of mix-up in schedules that manifested itself in a low-key, undynamic presentation that lacked real information.

**"View from the Administration", Kathleen McGinty, Director, White House Office on Environmental Policy**

Of the thirty-five participants that responded with written comments, the overwhelming majority indicated Kathleen as enjoyable, competent, well-informed, willing to listen to educator's concerns, intelligent and a signal of hope and promise to Clinton's team.

**"View from the Administration", Jim Mietus, Policy Advisor on Energy**

Of the thirty-nine participants that responded with written comments, many noted that he was a poor speaker that rambled and presented disjointed information that was confusing to understand. Some participants indicated that they walked out unsure of what he was really trying to convey to them.

In contrast, some participants mentioned that he was great one-on-one and that he was a wealth of information. He was simply unable to convey it in front of a large group. Suggestions were made that perhaps next time we could break up into small groups for him.

**Hazel O'Leary, Secretary of Energy**

Of the forty-four participants that responded with written comments, most were extremely positive. She was described as personable, smart, charming, informal, polished, intelligent, sincere, dynamic and an excellent speaker. They appreciated the fact that she spoke clearly and concisely and was excited about her job.

Many also felt the C-SPAN taping was educational and a unique opportunity in itself having never been behind the scenes of a television broadcast before. One participant did question whether the C-SPAN format stifles interaction between the speaker and audience and wondered how the discussion would have differed without the cameras present.

**"Greenlights Program", Mirika DellaCara, EPA**

Of the forty-two participants that responded with written comments, most felt the presentation was boring and the information presented was not really a continuation of the institute. More importantly, they felt as though the EPA had been slammed by presenters throughout the institute and that this person was unable to present the EPA perspectives on the issues. Many felt that by not having an EPA spokesperson present during the institute that could explain their goals, processes, functions, and roles a massive gap was left in the policy processes of the institute since the EPA plays a central role in the issues.

Several participants also tagged this session as being poorly timed. The combination of a long day and the excitement of the C-SPAN broadcast left them tired. This, combined with the dark video, long slide show and soft, comfortable chairs that accompanied this presentation left many participants asleep in their seats.

Every participant did not feel the same way however. A few people indicated the speaker to be organized and informative and proof that the EPA has quality and workable programs. Some felt good to hear what people and business are doing to make a difference in the environment.

Table 8. cont.

**"Planning Your Curriculum Project", Lorraine Gowan**

Of the twenty-three participants that responded with written comments, most indicated that this session was not needed. She was described as a nice lady but too negative, boring and focused on her own experience and school system rather than making the information applicable to a wider audience. Some mentioned the information she presented could have been done so in a more straightforward, concise and quicker fashion. While a few saw the time as an opportunity to put their heads together and work, most felt they had done that enough and that while they were in Washington they should be enjoying the city and not working in their hotel room.

**"View from Congress", Congressional Seminar**

Of the thirty-three participants that responded with written comments, most described it as valuable, educational, and a tremendous opportunity to have two influential senators take time to talk to them and answer questions. Another important aspect mentioned by several participants was to be able to hear the staffers and get a feel for their roles even though they did not always think the staff members were being truthful to them.

Some participants saw the senators as being too political in their talk with them. The data presented by them was too brief and slanted. One participant even felt insulted that the senators' beliefs, with appropriate evidence, were not just presented so they could make up their own mind rather than being patronized and persuaded to a decision.

**"View from Congress", Professional Staff Seminar**

Of the thirty participants that responded with written comments, most described the session in positive terms. They felt it was insightful, well done, important, frank, and the perfect opportunity to find the relevance of energy, environment and policy choices. The participants were very impressed to be in the presence of such powerful people who work with energy issues. While some felt they spent too much time campaigning, talking about taxes and not sticking to the subject of energy, talking with people in the loop was important.

**"View from Congress", Walking Workshop**

Of the thirty-three participants that responded with written comments, some felt the tour was a little unorganized and as a result they had to do extra walking. Several participants also felt that they missed the opportunity to speak to an elected official from their state. There were suggestions to let future institute participants know when time would be available and to make arrangements for them to meet with an official from their own state. Aside from this, they enjoyed the sights afforded them on the walk. Their tour guide did a good job of explaining how a bill becomes a law while all the while it was somewhat inspiring to be walking such a great building and in the footsteps of great men.

**"Defining National Energy Strategy"**

Of the forty-seven participants that responded with written comments, the great majority centered on how adaptable the activity was and that they were going to implement the role-playing in their own classrooms. Some felt the institute should contain much more of this type of activity and that it was one of the best of the whole institute. It provided opportunities to hear many different viewpoints, gain experience in compromising, and in general, model how true politics works. Only a very few participants felt like information was repeated by attending this seminar or that by changing rooms during the seminar disjointed the activity.

**"Curriculum Implementation and Planning Your Curriculum Presentation"**

Of the twenty-seven participants that responded with written comments, some felt that they needed the time to work and that various hints that were given to them, such as enforcing administrative support, were very helpful. On the other hand, an approximately equal number of responses were very negative. Some went so far as to indicate that it was a complete waste of time and that no suggestions were given that were helpful. One participant suggested that a handout or guide be devised to lead them in curriculum planning.

Table 8. cont.

#### Curriculum Presentations

Of the forty-three participants that responded with written comments, many thought it was a wonderful opportunity to hear what others were doing but that the format should be changed because it just lasted too long. Many suggested that it be divided into two days while others offered suggestions such as having groups write a one page synopsis and copying it for everyone or having each group do a poster outlining and/or describing in some way their project. They felt these alternative methods might lead to a less tedious presentation and more small group interactions.

While there were those who thought it was too long, there seemed to be just as many respondents who indicated it was a blast, fantastic, the culmination of all our work and provided them with much information and ideas. Some thought the 3 min. rule was wise and that it kept the presentations from becoming boring. One participant even indicated 3 min. was not enough time and it should be extended to 5 min.

#### Walking Visit to DC Landmarks

Of the twenty-nine participants that responded with written comments, some thought it was an excellent opportunity to see the sights and that it was fun and informative. Unfortunately, the combination of heat and heavy schedule made it tiring for some and not as enjoyable as it could have been. Perhaps a morning visit rather than afternoon when it's hot would have been helpful. While some participants had visited Washington previously and therefore did other things during this time, they acknowledged the importance and thrill it must have been for first timers. One participant mentioned that a night tour of the sights would have been nice too.

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#### Institute Evaluation

At the close of the institute, participants were asked for their opinions concerning general aspects of the institute, such as those dealing with organization and administration or ease of integrating institute information into their classrooms. They could indicate an opinion from "strongly disagree" to "strongly agree." They were also asked their opinions concerning the logistics of the institute such as travel, food, and lodging accommodations. They could indicate an opinion ranging from "excellent" to "poor." These data are provided in Table 9.

Along with these ratings, participants were invited to make comments concerning logistics, organization and administration, and strengths and weaknesses of the institute. The comments from each question were distilled and summarized as briefly as possible without losing the original proportion of positive and negative comments as well as the main idea(s) of the statements. See Table 10.

When analyzing the evaluation data from Tables 9 and 10 always consider both tables together. Do not evaluate the responses to a question solely from the data provided by only one table. Some participants did not write any comments yet did indicate an opinion. In some cases the opposite was true. A comment was written but no opinion rating was provided. This also explains why the total number of participants responding varies widely across the questions.

Table 9. Ratings Summary of General and Programmatic Areas of the Institute

**Part I: General**

|   | Strongly Disagree | Neutral | Strongly Agree |       |
|---|-------------------|---------|----------------|-------|
| 1. I had the opportunity to actively participate during the institute.  | 1                 | 0       | 0              | 4 51  |
| 2. The institute provided the opportunity to work and discuss with other participants.  | 0                 | 2       | 0              | 11 43 |
| 3. I feel that the Energy, Environment and Policy Choices curricula will require extra planning time in order to effectively use it in teaching.  | 1                 | 0       | 2              | 18 35 |
| 4. I am not comfortable with using the Energy, Environment and Policy Choices curricula in my classroom.  | 38                | 12      | 2              | 2 2   |
| 5. Development of the Energy, Environment and Policy curricula was difficult.   | 11                | 16      | 17             | 9 3   |
| 6. As a result of the Energy, Environment and Policy Choices Institute I feel more knowledgeable about energy and the environment.  | 1                 | 1       | 1              | 10 43 |
| 7. I feel that the information obtained during this institute will be easy to implement and interpret in my classroom.  | 0                 | 10      | 8              | 29 9  |
| 8. I will implement Energy, Environment and Policy Choices institute curricula in my classes during the coming year.  | 1                 | 2       | 1              | 6 45  |
| 9. My students' understanding of policy choices related to energy and the environment will be greatly enhanced through the use of information I have gained by participating in this institute. | 0                 | 0       | 2              | 14 39 |
| 10. As a result of this institute, I am able to integrate topics on Energy, Environment and Policy Choices in my teaching.  | 0                 | 0       | 1              | 15 39 |

Table 9. cont.

**Part II: Programmatic**

11. What is your opinion of the air travel arrangements (home state to Oklahoma to Washington, D.C. to home state made for you during this institute)?

| excellent | good | average | fair | poor |
|-----------|------|---------|------|------|
| 36        | 17   | 1       | 2    | 0    |

12. What is your opinion of the ground travel arrangements for the institute?

| excellent | good | average | fair | poor |
|-----------|------|---------|------|------|
| 48        | 8    | 0       | 0    | 0    |

13. What is your opinion of the hotel accommodations during this institute?

| excellent | good | average | fair | poor |
|-----------|------|---------|------|------|
| 48        | 8    | 0       | 0    | 0    |

14. What is your opinion of the meals provided for you during the institute?

| excellent | good | average | fair | poor |
|-----------|------|---------|------|------|
| 41        | 13   | 2       | 0    | 0    |

15. What is your opinion of the required reading material for the institute?

| excellent | good | average | fair | poor |
|-----------|------|---------|------|------|
| 12        | 29   | 13      | 1    | 1    |

16. What is your opinion of the organization and administration of institute activities and events?

| excellent | good | average | fair | poor |
|-----------|------|---------|------|------|
| 49        | 7    | 0       | 0    | 0    |

17. In general, how do you feel about the Energy, Environment and Policy Choices summer institute?

Overall, I feel it was:

| excellent | good | average | fair | poor |
|-----------|------|---------|------|------|
| 53        | 3    | 0       | 0    | 0    |

Table 10. Summary of Institute Evaluation Statements

**Institute Evaluation Summary (Programmatic Section)**

**What was your opinion of the air travel arrangements?**

Thirty-nine participants responded and the majority were very positive. Some comments included: absolutely no problems, I had nothing to worry about, nice to have flexible return times and dates available, and I appreciate the extra effort made to accommodate my needs.

The few negative comments included: we should have been wait-listed on the DC flight the others were taking, better if I were going straight home instead of a layover, and I wish I had an earlier flight home.

**What was your opinion of the ground travel arrangements for the institute?**

Thirty participants responded and all but two were very positive. A sample of the positive comments included: buses were great, first class, timely and efficient, on time and had air conditioning, and bus drivers were polite, helpful, and safe. The two negative comments included: I was not aware of the Airport Residence Inn Shuttle so I had to pay \$30 fare of Royal Limo, and buses in Norman after 9 p.m. were poor.

**What is your opinion of the hotel accommodations during this institute?**

Thirty-five participants responded and all had positive comments about the Residence Inn in Norman. Comments included: the Residence Inn was perfect in OK, hotel arrangement in Norman were excellent, and we were in a state of luxury as far as I was concerned. While there were some positive comments about the hotel accommodations in Washington, most were negative. Some comments included: perhaps we could stay in a Residence Inn in DC, Stouffer had some problems - no cold water, could have had some facilities better maintained, air conditioning should have been on at least an hour before we got there, hallway needs fans, and they should do better.

**What is your opinion of the meals provided for you during the institute?**

Thirty-four participants responded and most were positive. Some of the comments included: appreciated the choices of fruit available in the morning breaks in Norman and for breakfast in DC, much variety, quality of food super, and food was wonderful and leaned toward a more healthy mode (not fried).

There were several negative comments and a sample of those included: I would like more consideration given to low fat choices, more fruit and vegetables, bag lunches were not the most nutritious, Hotel Washington service was rude, and I was ready for something other than chicken.

**What is your opinion of the required reading material for the institute?**

Forty-one participants responded with written comments. There was an even mix of positive and negative comments. A sample of the positive comments included: well balanced, very informative, appropriate, and we can use all these materials in our programs.

Many of the negative comments included the fact that they should have received the reading material before the institute. Other comments included: not as up-to-date as it could have been, some were unnecessary, and most of the material was related to science and social studies teaching rather than energy, environment, and policy choices which I can use in my classroom.

**What is your opinion of the organization and administration of institute activities and events?**

Thirty-six participants responded and most had very positive comments. Those items mentioned included: good team work between three organizations, everyone was knowledgeable and it was worry-free for the participants, I could not have asked for anything better organized, this is by far the best I have attended and I have attended many good institute before, and it is evident that a great deal of time and genuine effort were put into organizing this event.

The few negative comments mostly centered around the very busy schedule, especially the first day of the institute. Other comments included: a bit more information on kinds of clothes to bring to OK and DC, more specifics in letters as to how many dress up vs. casual activities, tell about pool in Norman, add a day in DC for museums, shopping, etc. so that people aren't bugging out of scheduled activities, and would have liked an overview, including expectations, on the opening evening.

Table 10. cont.

**In general, how do you feel about the Energy, Environment and Policy Choices summer institute?**

Thirty-three participants responded and all but three were positive. A sample of the positive comments included: best institute I have ever attended, I was treated as a professional and given opportunities few participants in other programs have, it was by far the best institute I have attended in my 21 years in the educational field, it far exceeded my expectations, 23 years of other institutes pale in comparison, this ranks at the top of institutes I have attended, and I have learned so much and the opportunity to meet corporate executives, Senators, and Cabinet members was fantastic.

The three negative comments included: very disappointed to learn that graduate credits are not awarded until '94 and not this year - has cost me \$1700 - you really need to make that clear, could have involved more in-depth study of various resources, and at times I was unclear about whether the thrust was for the development of curricula or for delineating the connections between energy, environment and policy choices.

**What were the strengths of the Energy, Environment and Policy Choices Institute?**

Fifty-four participants responded and nearly all included some mention of either the excellent quality of the speakers, great organization of the entire institute, or the professional staff. Other comments mentioned repeatedly included: the high quality and varied background of the participants, frequent opportunities for sharing ideas, numerous informative and educational field trip experiences, and the wide variety of activities.

**What would you like to see maintained or added to future Energy, Environment and Policy Choices institutes?**

Forty-nine participants responded and many indicated that the following broad categories should be maintained: good lodging and travel arrangements, full schedule of site-based activities, and excellent speakers, staff and organization. Items mentioned to add to the institute included: longer lunch breaks, free day in DC, more hands-on activities related to teaching, more time to access resources, more information from environmental side, more sharing time with other participants, more research time, presentation on how a bill becomes a law, end of day debriefing sessions, and more interaction between groups.

**What were the weaknesses of the Energy, Environment and Policy Choices institute?**

Forty-six participants responded and many indicated some minor changes could be made. None of the weaknesses mentioned appeared to be serious. Comments included: not enough was done to show social studies teachers what we were learning and doing in OK could be integrated, some teachers felt they needed to "compete" to ask the most questions, lack of complete overview in beginning, too much packed into some days, staying with the same group through all activities, heavy emphasis on oil and gas, some of the teacher participants were here for food and travel rather than to gain a new perspective on teaching, not enough research time in library, and lack of strong definitive direction for developing lesson plans.

**What would you like to see eliminated or modified in the Energy, Environment and Policy Choices institute for future years of the institute?**

Thirty-six participants responded and several indicated: more interaction among participants, eliminate or modify the natural gas storage facility without eliminating the CNG cars, more independent study and research time, free time in DC, and modify some of the long days. Other comments included: modify the format of presenters from previous institutes, more advance materials, more time devoted to renewable energy resources, and a little less time devoted to the petroleum industry.

**What are the main reasons you applied for the Energy, Environment and Policy Choices institute?**

Fifty-three participants responded and many indicated that their primary reason for applying to the institute was to work or interdisciplinary curriculum units. Other comments included: to learn more about all the issues, get involved with Close Up Foundation to travel and have new experiences, belief of a need for energy education, exchange of information with other educators, and it provided a chance to visit Washington.

**My expectations were met in the following way(s):**

Forty-four participants responded and many indicated that it was the quality of the people involved that really made the institute the positive experience that it was. The powerful speakers, the other participants, and the excellent organizational staff really defined the institute. Other comments mentioned frequently included: came away with a much clearer understanding of the interrelatedness of energy, environment and policy choices, the great amount of information provided and the array of various activities were educationally stimulating, and the opportunity to visit DC was important.

**My expectations were not met in the following way(s):**

Twenty-two participants responded and several indicated that curriculum development was still vague and that they needed more information on how to achieve their goals. Other comments included many already mentioned such as: expected to see more of an emphasis on renewables, lack of free time in DC, more sharing activities, tiring schedule of events, lack of coverage of environmental issues, and need some further explanation of some things over our heads.

## **Conclusions and References**

Analyses of the questionnaires and written essays completed by the fifty-seven participants indicated an overwhelming satisfaction with the logistical arrangements, organization, administration, and personnel associated with the institute. Participants' pre- and post-institute attitude measures and comments indicated that more positive opinions toward energy and related issues in politics, economics, and the environment were attained as a result of the institute. In addition, cognitive assessments indicated that participants gained more meaningful understandings of energy, economics, politics, and the environment and demonstrated this by directly citing examples and experiences gained during the institute.

As a result of comments made by participants, several aspects of the evaluation procedures will be changed for the following year. Namely, post-institute measures will be administered in a testing situation on the day prior to the participants departing for their home destinations. Also, the open-ended cognitive assessment produced opinions, emotional responses and references to teaching which were not appropriate commentary for this instrument. Therefore, the directions for this measure will be reworded to more accurately reflect the strictly cognitive responses desired. Finally, all other assessment instruments will be reviewed and modified as some questions created redundant responses.

On the institute summary questionnaire, participants were asked how their expectations were met by the institute. The following statements are representative of the comments echoed by the participants of the 1993 summer institute, "Energy, Environment and Policy Choices."

**"I learned a lot - best institute I have ever attended."**

**"First class. Well organized and friendly. I never felt uncomfortable, ignorant, or alone. It was a wonderful experience."**

"I learned a great deal about current energy information that I was not familiar with and I was able to identify methods of instruction to take back to my class. I was treated as a professional and given opportunities few participants in other programs have."

"It was by far the best institute I have attended in my twenty-one years in the educational field. Important information presented with relevant activities".

"Twenty-three years of other institutes pale in comparison."

"A fantastic learning and sharing experience. I came with a somewhat cynical attitude and am leaving truly enriched."

"What I have learned and all resources will be shared with all the teachers of my state."

"I have been rejuvenated. I am excited about teaching energy policies to my kids and am very prepared to do so."

## References

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## **Appendices**

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## BACKGROUND INFORMATION

Initials: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
First Middle Last

Birth Date: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Month Day Year

**INSTRUCTIONS:** Answer the following questions by circling the appropriate letter(s) or writing in your response where indicated.

1. Subject Area : (a) Social Science (b) Natural Science
2. Gender : (a) Male (b) Female
3. Ethnic Origin : (a) African American (b) Hispanic  
(c) Asian American or Pacific Islander (d) Native American  
(e) Caucasian (non-Hispanic) or Alaskan Native  
(f) other \_\_\_\_\_

4. What is the approximate ethnic composition of your school?

|                                    |         |
|------------------------------------|---------|
| African American                   | _____ % |
| Hispanic                           | _____ % |
| Asian American or Pacific Islander | _____ % |
| Native American or Alaskan Native  | _____ % |
| Caucasian (non-Hispanic)           | _____ % |
| Total                              | 100 %   |

5. What is the approximate socio-economic composition of your school?

|                           |         |
|---------------------------|---------|
| At or below poverty level | _____ % |
| Low income                | _____ % |
| Middle income             | _____ % |
| Upper-middle income       | _____ % |
| High income               | _____ % |
| Total                     | 100 %   |

6. What grade(s) do you teach?

(a) 6 (b) 7 (c) 8 (d) 9 (e) 10 (f) 11 (g) 12 (h) other \_\_\_\_\_

7. What is the approximate number of students in your school building?

|                 |                 |                 |               |
|-----------------|-----------------|-----------------|---------------|
| (a) under 100   | (b) 100 - 399   | (c) 400 - 699   | (d) 700 - 999 |
| (e) 1000 - 1299 | (f) 1300 - 1599 | (g) 1600 - 1899 | (h) over 1900 |

8. How many grades are represented in your school building?

(a) 1 (b) 2 (c) 3 (d) 4 (e) 5 (f) 6 (g) 7 (h) over 7

9. In what type of school do you teach?

|                       |                          |                          |
|-----------------------|--------------------------|--------------------------|
| (a) large city school | (b) suburban school      | (c) small city school    |
| (d) rural school      | (e) large private school | (f) small private school |
| (e) other _____       |                          |                          |

10. What is your average class size?

- |                    |                    |                    |
|--------------------|--------------------|--------------------|
| (a) 1-9 students   | (b) 10-14 students | (c) 15-19 students |
| (d) 20-24 students | (e) 25-29 students | (f) 30+ students   |

11. What is the highest academic degree that you hold?

- |                          |                       |
|--------------------------|-----------------------|
| (a) B.S., B.A., or A.B.  | Subject Area(s) _____ |
| (b) M.S., M.A., or M.Ed. | Subject Area(s) _____ |
| (c) Ed.D. or Ph.D.       | Subject Area(s) _____ |
| (d) other _____          | Subject Area(s) _____ |

12. In what area(s) do you hold certification? (please list in the space below)

13. How many years of teaching experience do you have?

- (a) 1-5    (b) 6-9    (c) 10-15    (d) 16-24    (e) 25-29    (f) 30+

14. On the average, how many activity or laboratory centered lessons do you have per week?

- (a) 0    (b) 1 - 2    (c) 3 - 4    (d) 5 - 6    (e) 7 - 8    (f) 9 - 10    (g) over 10

15. How often per year do you take your students on field trips (i.e., out on the school grounds, museums, factories or businesses, etc.)?

- (a) 0    (b) 1 - 2    (c) 3 - 4    (d) 5 - 6    (e) 7 - 8    (f) 9 - 10    (g) over 10

16. The following is a three-part question. Read the entire question before responding.

A. When testing your students, what question format do you most often use?  
(circle only one)

- |                     |                  |                 |               |
|---------------------|------------------|-----------------|---------------|
| (a) multiple choice | (b) matching     | (c) true/false  | (d) practical |
| (e) essay           | (f) short answer | (g) other _____ |               |

B. Why do you choose to use this particular question format?

C. Do you use this question format in combination with other question formats?

- (a) Yes (list letters from "A" above) \_\_\_\_\_    (b) No \_\_\_\_\_

17. Approximately how many days do you currently teach energy and environment related topics in your classroom as part of your yearly curriculum?

- |               |              |              |             |
|---------------|--------------|--------------|-------------|
| (a) every day | (b) 150 days | (c) 100 days | (d) 50 days |
| (e) 25 days   | (f) 15 days  | (g) 5 days   | (h) never   |

18. Approximately how many days do you currently teach environmental policy in your classroom as part of your yearly curriculum?

- |               |              |              |             |
|---------------|--------------|--------------|-------------|
| (a) every day | (b) 150 days | (c) 100 days | (d) 50 days |
| (e) 25 days   | (f) 15 days  | (g) 5 days   | (h) never   |

19. The following is a three-part question. Read the entire question before responding.

**A. How often do you use each of the following in your teaching?**

|                                       | never | rarely | sometimes | frequently | always |
|---------------------------------------|-------|--------|-----------|------------|--------|
| (a) lecture                           | 1     | 2      | 3         | 4          | 5      |
| (b) discussion                        | 1     | 2      | 3         | 4          | 5      |
| (c) demonstration                     | 1     | 2      | 3         | 4          | 5      |
| (d) reading                           | 1     | 2      | 3         | 4          | 5      |
| (e) student activity<br>or laboratory | 1     | 2      | 3         | 4          | 5      |

B. Which one of the following do you most prefer to use in your teaching.



C. Explain why you prefer this one technique over the others.

20. The following is a two-part question. Read the entire question before responding.

A. Rank the following in the order you normally use them to teach a given topic or unit.

**For example:** Rank (1) for the method you normally use to introduce a topic, (2) for the method you use next, etc. Leave blank any methods you do not use in your teaching.

- lecture
  - discussion
  - demonstration
  - reading
  - student activity or laboratory

**B. Explain why you normally use the teaching techniques indicated in this particular order.**

# ENERGY, ENVIRONMENT AND POLICY CHOICES

CENTER FOR ENERGY EDUCATION

1993 SUMMER INSTITUTE

## ATTITUDE QUESTIONNAIRE

|   | Strongly<br>Disagree | Mildly<br>Disagree | Mildly<br>Agree | Strongly<br>Agree |
|---|----------------------|--------------------|-----------------|-------------------|
| 1. There is more oil and gas left to be discovered in the United States than we have used so far.                         | A                    | B                  | C               | D                 |
| 2. The solution to energy problems is the rapid development of renewable sources of energy such as solar and wind power.  | A                    | B                  | C               | D                 |
| 3. The price of energy should include the cost of preventing or repairing environmental damage due to energy development. | A                    | B                  | C               | D                 |
| 4. The development of nuclear power is one of the best ways to meet the United States' future energy needs.               | A                    | B                  | C               | D                 |
| 5. Maximum efforts must be made to expand the United States' energy supplies.   | A                    | B                  | C               | D                 |
| 6. Short cuts will have to be made in the area of environmental protection to keep energy costs low.                      | A                    | B                  | C               | D                 |
| 7. Scientists will find ways to solve energy problems.  | A                    | B                  | C               | D                 |
| 8. Our present energy sources are sufficient for our needs only for the next ten or twenty years.                         | A                    | B                  | C               | D                 |
| 9. If people had to use less energy, their standard of living would suffer.   | A                    | B                  | C               | D                 |
| 10. The environmentalists needlessly interfere with energy projects and the rapid development of our energy resources.    | A                    | B                  | C               | D                 |
| 11. In the long run, any energy crisis is merely the result of poor planning.   | A                    | B                  | C               | D                 |
| 12. Solving energy problems is best left to the experts.  | A                    | B                  | C               | D                 |

|   | Strongly<br>Disagree | Mildly<br>Disagree | Mildly<br>Agree | Strongly<br>Agree |
|---|----------------------|--------------------|-----------------|-------------------|
| 13. In comparison with the vast scale of the earth, the impacts of human's activities are small and insignificant.          | A                    | B                  | C               | D                 |
| 14. Reducing pollution and environmental damage is more important than increasing our living standards.                     | A                    | B                  | C               | D                 |
| 15. A way of life that bases itself on materialism cannot last long.  | A                    | B                  | C               | D                 |
| 16. Too much has been written about the costs and problems of economic growth, and not enough about the benefits.           | A                    | B                  | C               | D                 |
| 17. The government's main priority should be to increase Americans' standard of living.                                     | A                    | B                  | C               | D                 |
| 18. In the long run, there are no limits to the extent to which we can raise our standard of living.                        | A                    | B                  | C               | D                 |
| 19. Large-scale technology is partly to blame for our past and present environmental problems.                              | A                    | B                  | C               | D                 |
| 20. Pollution and environmental damage are too high a price to pay for increasing living standards.                         | A                    | B                  | C               | D                 |
| 21. Nature should be protected from human activities whenever possible.   | A                    | B                  | C               | D                 |
| 22. The best way to solve pollution problems is the development of more efficient technology.                               | A                    | B                  | C               | D                 |
| 23. Unavoidable and irreversible damage will result if present trends in world population growth and resource use continue. | A                    | B                  | C               | D                 |
| 24. Nuclear power plants can be operated without a threat to the quality of the environment.                                | A                    | B                  | C               | D                 |
| 25. A good measure of a person's success in life is his or her income.  | A                    | B                  | C               | D                 |
| 26. There are limits to which the environment can provide raw materials for industrial development.                         | A                    | B                  | C               | D                 |

|   | Strongly<br>Disagree | Mildly<br>Disagree | Mildly<br>Agree | Strongly<br>Agree |
|---|----------------------|--------------------|-----------------|-------------------|
| 27. The United States' known resources cannot sustain economic growth indefinitely.                         | A                    | B                  | C               | D                 |
| 28. Improved technology is the key to a better society and prosperity in the future.                        | A                    | B                  | C               | D                 |
| 29. High living standards do not necessarily bring happiness.   | A                    | B                  | C               | D                 |
| 30. Economic growth is purely a matter of human choice and not of limits set by the natural environment.    | A                    | B                  | C               | D                 |
| 31. Improved technology will make it possible to discover unlimited new resources in the future.            | A                    | B                  | C               | D                 |
| 32. The people in my region have no serious energy problems.  | A                    | B                  | C               | D                 |
| 33. America should develop energy independence even if it means that energy will cost more.                 | A                    | B                  | C               | D                 |
| 34. The average citizen cannot have any influence in what the government does about energy problems.        | A                    | B                  | C               | D                 |
| 35. The average citizen cannot have any influence in what manufacturing companies do about energy problems. | A                    | B                  | C               | D                 |
| 36. The average citizen cannot have any influence in what oil companies do about energy problems.           | A                    | B                  | C               | D                 |
| 37. The federal government is genuinely trying to solve our energy problems.                                | A                    | B                  | C               | D                 |
| 38. Industry is genuinely trying to solve our energy problems.  | A                    | B                  | C               | D                 |
| 39. Consumers are genuinely trying to solve our energy problems.  | A                    | B                  | C               | D                 |

For each of the following statements, 40 - 48 please indicate how serious you consider the potential health and safety problems.

|  | Extremely<br>Serious | Moderately<br>Serious | Not<br>Serious | No Potential<br>Problems |
|--|----------------------|-----------------------|----------------|--------------------------|
| 40. Coal mining  | A                    | B                     | C              | D                        |
| 41. Offshore drilling and the Alaskan oil pipeline         | A                    | B                     | C              | D                        |
| 42. Coal powered generators                                | A                    | B                     | C              | D                        |
| 43. Importing or shipping foreign oil to the United States | A                    | B                     | C              | D                        |
| 44. Nuclear powered generators                             | A                    | B                     | C              | D                        |
| 45. Solar power  | A                    | B                     | C              | D                        |
| 46. Wind powered generators                                | A                    | B                     | C              | D                        |
| 47. Conversion of biomass to usable energy                 | A                    | B                     | C              | D                        |
| 48. Use of natural gas                                     | A                    | B                     | C              | D                        |

For each of the following statements 49-57 please indicate how serious you consider the potential environmental and pollution problems.

|  | Extremely<br>Serious | Moderately<br>Serious | Not<br>Serious | No Potential<br>Problems |
|--|----------------------|-----------------------|----------------|--------------------------|
| 49. Coal mining  | A                    | B                     | C              | D                        |
| 50. Offshore drilling and the Alaskan oil pipeline         | A                    | B                     | C              | D                        |
| 51. Coal powered generators                                | A                    | B                     | C              | D                        |
| 52. Importing or shipping foreign oil to the United States | A                    | B                     | C              | D                        |
| 53. Nuclear powered generators                             | A                    | B                     | C              | D                        |
| 54. Solar power  | A                    | B                     | C              | D                        |
| 55. Wind powered generators                                | A                    | B                     | C              | D                        |
| 56. Conversion of biomass to usable energy                 | A                    | B                     | C              | D                        |
| 57. Use of natural gas                                     | A                    | B                     | C              | D                        |

**ENERGY, ENVIRONMENT AND POLICY CHOICES**  
**CENTER FOR ENERGY EDUCATION**  
**1993 SUMMER INSTITUTE**

**COGNITIVE ASSESSMENT**

Initials        /        /         
first      middle      last

Birth Date        /        /         
month      day      year

**INSTRUCTIONS:** The purpose of this open-ended question is to allow you to express your knowledge in a complete and thorough manner. Be sure to fully explain your response.

**Explain how you perceive the relationships between energy, environment and policy choices.**

Write your response in the space below and use additional pages if necessary. You may use examples to help in your explanation.

# ENERGY, ENVIRONMENT AND POLICY CHOICES

CENTER FOR ENERGY EDUCATION

1993 SUMMER INSTITUTE

## SESSION EVALUATION

Initials   /  /    
first   middle   last

Birth Date   /  /    
month   day   year

**INSTRUCTIONS:** This form is to be worked on daily throughout the institute. After participating in each session of the institute listed below, rate the session and give your opinion of its relevance. Please provide any additional comments in the space provided below each item.

**Wednesday, July 7**

**1. Workshop:**

"Purpose of and Interactions  
between Science and Social  
Studies"

*Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

**2. Speaker Panel:**

"Oil"

Walter Quanstrom  
Amoco Corporation

*Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

**3. Speaker Panel:**

"Renewables"

Lawrence Murphy  
National Renewable Energy Lab

*Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

4. Speaker Panel:

"Coal"

William Wahl  
AMAX, Inc.

*Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

5. Speaker Panel:

"Nuclear"

Paul Skierkowski  
The University of Oklahoma

*Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

6. Campus Resources:

Bizzell Library

*Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

7. Workshop:

"Candle Burning-  
Model for Curriculum  
Project"

*Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

## Thursday, July 8

### 8. Tour:

Total Petroleum Refinery

#### *Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

#### *Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

### 9. Speaker:

"Microbially Enhanced Oil Recovery"

John C. Coates  
The University of Oklahoma

#### *Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

#### *Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

### 10. Laboratory:

Energy Center Laboratories  
The University of Oklahoma

#### *Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

#### *Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

## Friday, July 9

### 11. Visit:

Kirkpatrick Center  
Oklahoma City, Oklahoma

#### *Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

#### *Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

**12. Tour:**

Oklahoma Natural Gas  
Undergound natural gas  
storage facility  
Natural gas powered vehicle

*Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

**Comments:**

**13. Workshop:**

Planning your  
curriculum project

*Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

**Comments:**

**Saturday, July 10**

**14. Speaker Panel:**

“Energy Efficient Systems”

John Robison  
Robison & Beck Architects

*Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

**Comments:**

**15. Speaker Panel:**

“Globalization of Oil &  
Gas Industry”

Ron Evans  
The University of Oklahoma

*Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

**Comments:**

**16. Speaker Panel:**

"Wind Power"

*Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

Karl Bergey

Bergey Wind Power

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

**17. Speaker Panel:**

"Who Cares About Energy"

*Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

Jock Campbell

The University of Oklahoma

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

**18. Workshop:**

"Curriculum Implementation"

*Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

Gayle Thieman

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

**19. Research Time:**

Bizzell Library

*Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

Gather material for

curriculum development

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

**Monday, July 12**

**20. Speaker Panel:**

"Influencing the Process"

Bob Bates  
Corporate Secretary  
Mobil Corporation

*Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

**21. Speaker Panel:**

"Influencing the Process"

Scott Peters  
Manager of Media Relations  
U.S. Council for Energy  
Awareness

*Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

**22. Speaker Panel:**

"Influencing the Process"

John Cohen  
Director of Energy and  
Natural Resources  
National Association of  
Manufacturers

*Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

**23. Luncheon Seminar:**

Michael Bennett  
Accuracy in Media

*Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

24. Advocacy Onsites: *Rating:*

**Please circle the advocacy group you visited:** 1. excellent 2. good 3. average 4. fair 5. poor

Greenpeace

Public Interest Research Group

Institute for Energy Conservation

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

**Tuesday, July 13**

25. Speaker Panel: *Rating:*

**"The View from the Administration"** 1. excellent 2. good 3. average 4. fair 5. poor

*Relevance:*

Kathleen McGinty  
Director, White House Office on  
Environmental Policy

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

26. Speaker Panel: *Rating:*

**"The View from the Administration"** 1. excellent 2. good 3. average 4. fair 5. poor

*Relevance:*

Jim Mietus  
Policy Advisor on Energy, OMB

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

27. Seminar: *Rating:*

Hazel O'Leary  
Secretary of Energy 1. excellent 2. good 3. average 4. fair 5. poor

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

Comments:

28. Seminar: *Rating:*  
"Greenlights Program" 1. excellent 2. good 3. average 4. fair 5. poor  
Mirka Dellacara  
Environmental Protection Agency  
*Relevance:*  
1. extremely 2. very 3. moderately 4. somewhat 5. not at all  
Comments:

29. Workshop: *Rating:*  
"Planning your curriculum  
project" 1. excellent 2. good 3. average 4. fair 5. poor  
Lorraine Gowan  
*Relevance:*  
1. extremely 2. very 3. moderately 4. somewhat 5. not at all  
Comments:

### **Wednesday, July 14**

30. Capitol Hill Visit: *Rating:*  
"The View from Congress" 1. excellent 2. good 3. average 4. fair 5. poor  
Congressional Seminar  
*Relevance:*  
1. extremely 2. very 3. moderately 4. somewhat 5. not at all  
Comments:

31. Capitol Hill Visit: *Rating:*  
"The View from Congress" 1. excellent 2. good 3. average 4. fair 5. poor  
Professional Staff Seminar  
*Relevance:*  
1. extremely 2. very 3. moderately 4. somewhat 5. not at all  
Comments:

**32. Capitol Hill Visit:**

*Rating:*

"The View from Congress"

1. excellent 2. good 3. average 4. fair 5. poor

Walking Workshop

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

**Comments:**

**Thursday, July 15**

**33. Activity:**

*Rating:*

"Defining a National Energy Strategy"

1. excellent 2. good 3. average 4. fair 5. poor

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

**Comments:**

**34. Workshop:**

*Rating:*

"Curriculum Implementation and Planning Your Curriculum Presentation"

1. excellent 2. good 3. average 4. fair 5. poor

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

**Comments:**

**35. Workshop:**

*Rating:*

Curriculum Presentations

1. excellent 2. good 3. average 4. fair 5. poor

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

**Comments:**

**36. Visit:**

Walking visit to various  
Washington D.C. landmarks

*Rating:*

1. excellent 2. good 3. average 4. fair 5. poor

*Relevance:*

1. extremely 2. very 3. moderately 4. somewhat 5. not at all

**Comments:**

**37. In the space below, please write any additional evaluative comments you would like to make concerning any activities of the institute.**

# ENERGY, ENVIRONMENT AND POLICY CHOICES

CENTER FOR ENERGY EDUCATION

1993 SUMMER INSTITUTE

## INSTITUTE EVALUATION

Initials       /      /        
first   middle   last

Birth Date       /      /        
month   day   year

### Part I: General

**INSTRUCTIONS:** The following questionnaire was developed to ascertain your opinion about the institute you have just completed on energy, environment and policy choices. Please be candid and thoughtful as you respond to each item.

|  | Strongly<br>Disagree | Neutral | Strongly<br>Agree |
|--|----------------------|---------|-------------------|
| 1. I had the opportunity to actively participate during the institute.   | A                    | B       | C                 |
| 2. The institute provided the opportunity to work and discuss with other participants.   | A                    | B       | C                 |
| 3. I feel that the Energy, Environment and Policy Choices curricula will require extra planning time in order to effectively use it in teaching. | A                    | B       | C                 |
| 4. I am not comfortable with using the Energy, Environment and Policy Choices curricula in my classroom.   | A                    | B       | C                 |
| 5. Development of the Energy, Environment and Policy curricula was difficult.  | A                    | B       | C                 |
| 6. As a result of the Energy, Environment and Policy Choices Institute I feel more knowledgeable about energy and the environment.               | A                    | B       | C                 |
| 7. I feel that the information obtained during this institute will be easy to implement and interpret in my classroom.                           | A                    | B       | C                 |

|   | Strongly<br>Disagree | Neutral | Strongly<br>Agree |
|---|----------------------|---------|-------------------|
| 8. I will implement Energy, Environment and Policy Choices institute curricula in my classes during the coming year.  | A                    | B       | C                 |
| 9. My students' understanding of policy choices related to energy and the environment will be greatly enhanced through the use of information I have gained by participating in this institute. | A                    | B       | C                 |
| 10. As a result of this institute, I am able to integrate topics on Energy, Environment and Policy Choices in my teaching.  | A                    | B       | C                 |

## Part II: Programmatic

**INSTRUCTIONS:** For the following items, chose one response that best reflects your feelings or opinions about the question presented. Please explain your choice by writing comments in the space provided below each question.

11. What is your opinion of the air travel arrangements (home state to Oklahoma to Washington, D.C. to home state made for you during this institute)?

1. excellent    2. good    3. average    4. fair    5. poor

Comments:

12. What is your opinion of the ground travel arrangements for the institute?

1. excellent    2. good    3. average    4. fair    5. poor

Comments:

13. What is your opinion of the hotel accommodations during this institute?

1. excellent    2. good    3. average    4. fair    5. poor

Comments:

14. What is your opinion of the meals provided for you during the institute?

1. excellent    2. good    3. average    4. fair    5. poor

Comments:

15. What is your opinion of the required reading material for the institute?

1. excellent    2. good    3. average    4. fair    5. poor

Comments:

16. What is your opinion of the organization and administration of institute activities and events?

1. excellent    2. good    3. average    4. fair    5. poor

Comments:

17. In general, how do you feel about the Energy, Environment and Policy Choices summer institute?

Overall, I feel it was:

1. excellent    2. good    3. average    4. fair    5. poor

Comments:

### **Part III: Recommendations**

**INSTRUCTIONS:** Please provide candid, constructive feedback in response to the following questions.

18. What were the strengths of the Energy, Environment and Policy Choices institute?

19. What would you like to see **maintained** or **added** to future Energy, Environment and Policy Choices institutes?

20. What were the **weaknesses** of the Energy, Environment and Policy Choices institute?

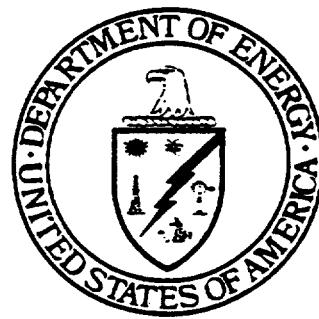
21. What would you like to see **eliminated** or **modified** in the Energy, Environment and Policy Choices institute for future years of the institute?

22. What are the main reasons you applied for the Energy, Environment and Policy Choices institute?

23. How did the Energy, Environment and Policy Choices summer institute **meet** or **not meet** your expectations?

My expectations were met in the following way(s):

My expectations were not met in the following way(s):



**ENERGY, ENVIRONMENT, AND POLICY CHOICES:  
SUMMER INSTITUTES FOR SCIENCE  
AND SOCIAL STUDIES EDUCATORS**

**An Evaluation of Year Two**

**The University of Oklahoma  
Close Up Foundation  
U.S. Department of Energy**

**U.S. Department of Energy Contract No. DE-FG02-92ER75744**

**1995**

This report is an evaluation of year two of a three year program titled, "Energy, Environment, and Policy Choices: Summer Institutes for Science and Social Studies Educators." The program is sponsored by a grant from the United States Department of Energy and is administered through the Center for Energy Education (CEE). The CEE is a partnership which includes personnel at the University of Oklahoma in Norman, Oklahoma and the Close Up Foundation which is located in Washington D.C. This evaluation report was compiled by Edmund A. Marek, Project Director, Ann M.L. Cavallo, Evaluation Specialist, Brian L. Gerber, Research Assistant, and Connie Cowan, Lindsay High School.

## **Center for Energy Education**

### **The University of Oklahoma**

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**Project Director**

**John J. Chiodo**  
**Co-Principal Investigator**

**Ann M. L. Cavallo**  
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**Stephen A. Janger**  
**President**

**Charles M. Tampio**  
**Program Planner**

**George Dieter**  
**Implementation Specialist**

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## **Introduction**

This is the second in a series of three evaluation reports (1994 - 1996) to be produced annually as a result of "Energy, Environment and Policy Choices: Summer Institutes for Science and Social Studies Educators." During the summer of 1994 personnel from the University of Oklahoma in partnership with personnel from the Close Up Foundation conducted an intensive two-week program for educators from across the country.

The program's participants consisted of fifty-seven secondary school teachers and curriculum specialists who were carefully chosen from twenty-five states and Palau. Additionally, two experienced teams of teachers were also invited to attend the 1994 institute to model the curricula they had developed as a result of their involvement in the 1993 institute. This report summarizes the year two results of the comprehensive evaluation of this project.

## Year Two Evaluation Plan

The evaluation plan for year two of the project (Figure 1) was nearly identical to that of year one. A complete description of the evaluation instruments as well as copies of all instrumentation can be found in the Appendices of the year one report (Marek et al., 1994).

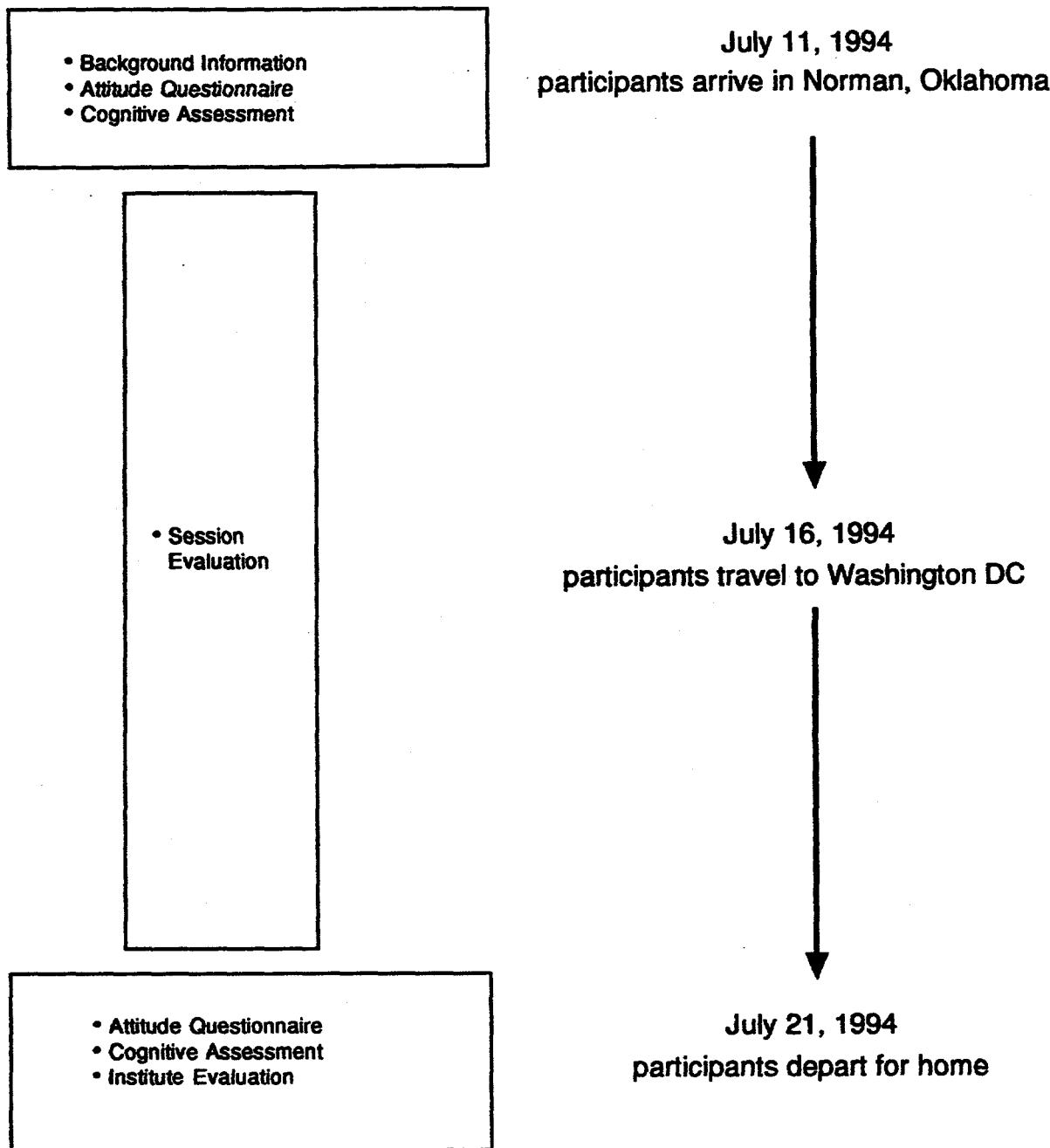


Figure 1.1994 Energy, Environment and Policy Choices Evaluation Plan

## Results

### Background Information

Fifty-eight individuals were selected to attend the 1994 institute. At a very late date, one person withdrew from the project. In addition to the fifty-seven participants that took part in the 1994 institute (Table 1), two teams of exemplary participants from the 1993 institute were invited to return and mentor the new participants in curriculum development techniques. Four of the new participants were either administrators or teachers who taught by correspondence, therefore, many questions on the Background Information Questionnaire were not applicable. Because of this, none of the data provided by these four participants or the returning mentors are included in the figures or narrative of this section.

Of the fifty-three persons for which data are reported, 53% were from the social sciences and 47% from the natural sciences. Approximately half of the participants were male and half were female (Figure 2). The majority of the participants were Caucasian (Figure 3), and came from suburban or large city schools (Figure 4). Most participants had earned master's degrees (Figure 5) and represented a relatively even distribution of years of teaching experience (Figure 6).

As reported by the participants (Figure 7), the combined ethnic composition of the schools in which they currently teach consists predominately of Caucasians (75.4%) with African Americans making up the next largest category (12.1%). The combined socio-economic composition of the schools in which the participants teach (Figure 8) consists primarily of middle income families (38.0%). Participants reported more upper-middle income families (23.1%) than low income families (20.3%) and nearly three times as many families at or below poverty level (13.7%) as compared to those considered as high income families (4.8%).

Table 1. Origin of Participants by State

State      Number of Participants

|                     |   |
|---------------------|---|
| Alaska.....         | 3 |
| Arizona.....        | 2 |
| Arkansas.....       | 1 |
| California.....     | 4 |
| Connecticut.....    | 2 |
| Georgia.....        | 2 |
| Illinois.....       | 2 |
| Indiana.....        | 3 |
| Kansas.....         | 2 |
| Massachusetts.....  | 1 |
| Michigan.....       | 2 |
| Minnesota.....      | 4 |
| Mississippi.....    | 1 |
| Nebraska.....       | 2 |
| New Hampshire.....  | 1 |
| New Jersey.....     | 2 |
| North Carolina..... | 4 |
| North Dakota.....   | 1 |
| Ohio.....           | 2 |
| Oklahoma.....       | 8 |
| Oregon.....         | 1 |
| Pennsylvania.....   | 2 |
| Texas.....          | 1 |
| Vermont.....        | 1 |
| Wisconsin.....      | 2 |
| Palau.....          | 1 |

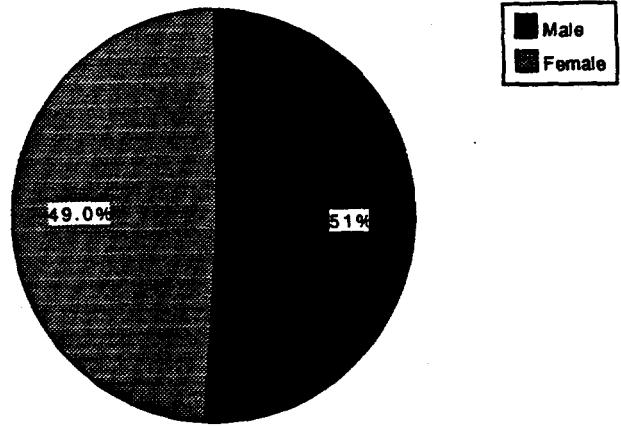


Figure 2. Gender of Participants

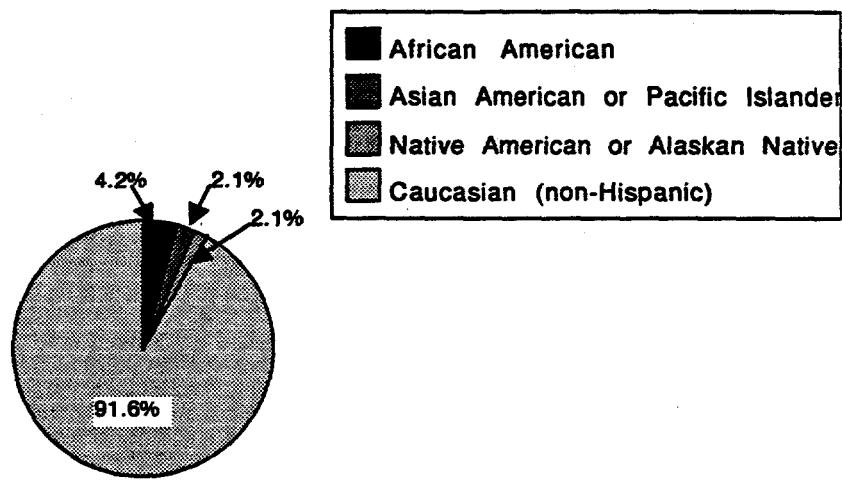


Figure 3. Ethnic Origin of Participants

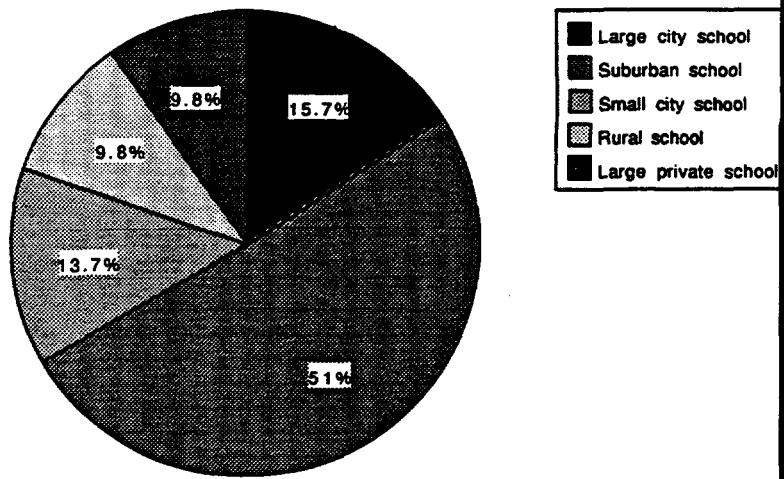


Figure 4. Types of Schools Where Participants Teach

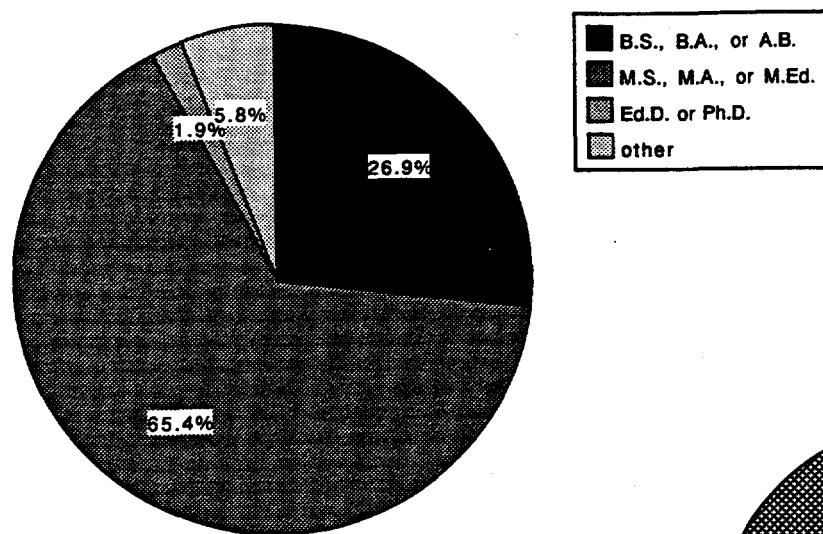


Figure 5. Highest Academic Degree

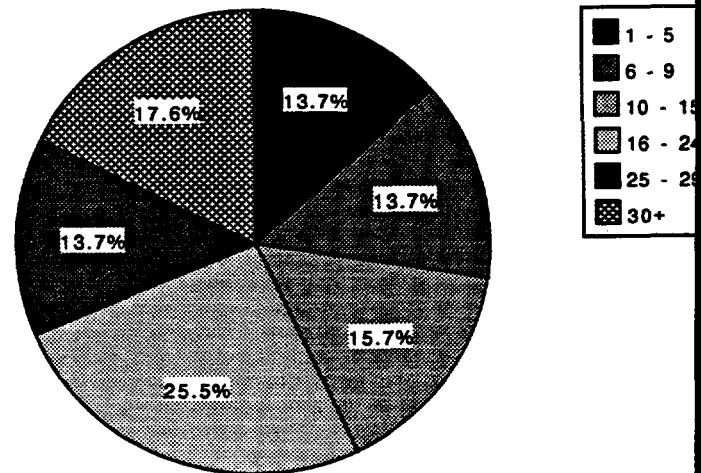


Figure 6. Years of Teaching Experience

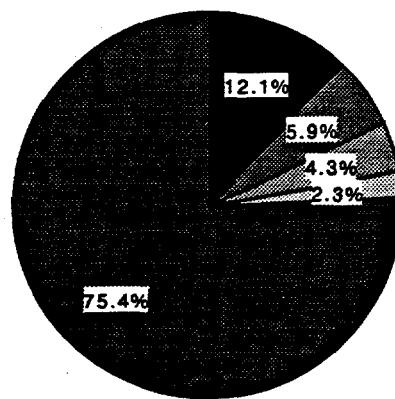
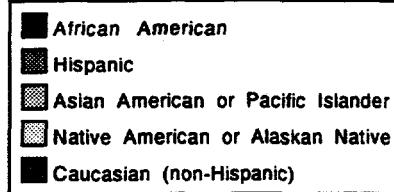


Figure 7. Ethnic Composition of the Schools Where Participants Teach

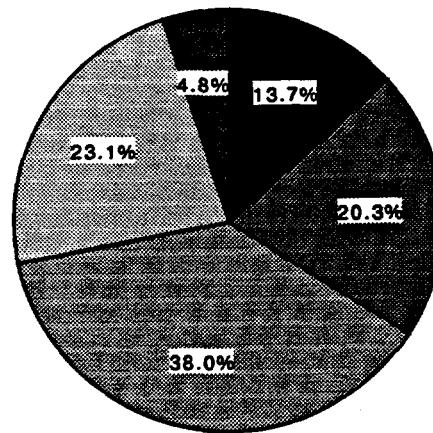
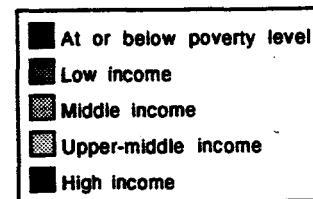


Figure 8. Socio-economic Composition of the Participants' Schools

### Attitudes Assessment

The technocentric and ecocentric parameters of the 1994 participants were assessed in the same manner as described for the year one participants (Marek et al., 1994). Participants' scores ranged from technocentric to ecocentric with the majority of scores in the moderate ranges (Table 2). Table 3 shows participants' mean scores as well as the range of scores on both the pre- and post-institute segment of the attitudinal measure of environmental position. There was very little change between pre- and post-institute scores with means remaining in the moderate ecocentric environmental position.

Tables 4-6 present the participants' frequency of responses to the twenty-six item section of the questionnaire measuring attitudes toward energy and related issues in politics, economics, and the environment. No significant change from pre- to post-institute scores was observed for any of the statements. However, the largest change came in statements "f" and "g" of Table 4. Pre-institute scores reflected an overall disagreement with the statements that the federal government and industry are genuinely trying to solve our energy problems. As a result of the institute, the post-institute scores reflected a positive shift in their general attitudes that the federal government and industry are genuinely trying to solve our energy problems.

Table 2. Frequency and Percent of the Environmental Position of Participants

|                          | Pre-institute             |                         | Post-institute            |                         |
|--------------------------|---------------------------|-------------------------|---------------------------|-------------------------|
|                          | frequency of participants | percent of participants | frequency of participants | percent of participants |
| strongly ecocentric      | 15                        | 28.8                    | 11                        | 21.2                    |
| moderately ecocentric    | 26                        | 50.0                    | 31                        | 59.6                    |
| moderately technocentric | 10                        | 19.2                    | 10                        | 19.2                    |
| strongly technocentric   | 1                         | 1.9                     | 0                         | 0                       |

Table 3. Range and Mean for Pre- and Post-institute Scores Measuring Environmental Position

|                | Minimum score | Maximum score | Mean score      |
|----------------|---------------|---------------|-----------------|
| Pre-institute  | 49            | 93            | 62.8 (SD = 8.5) |
| Post-institute | 44            | 79            | 61.7 (SD = 7.4) |

Table 4. Frequency of Responses by Participants on Attitudes Toward Energy

|  | Pre-institute        |                    |                 |                   | Post-institute       |                    |                 |                   |
|--|----------------------|--------------------|-----------------|-------------------|----------------------|--------------------|-----------------|-------------------|
|  | Strongly<br>Disagree | Mildly<br>Disagree | Mildly<br>Agree | Strongly<br>Agree | Strongly<br>Disagree | Mildly<br>Disagree | Mildly<br>Agree | Strongly<br>Agree |
| a) The people in my region have no serious energy problems.  | 25                   | 18                 | 6               | 2                 | 30                   | 15                 | 5               | 2                 |
| b) America should develop energy independence even if it means that energy will cost more.                 | 2                    | 12                 | 24              | 14                | 1                    | 2                  | 21              | 28                |
| c) The average citizen cannot have any influence in what the government does about energy problems.        | 0                    | 4                  | 10              | 38                | 1                    | 1                  | 6               | 44                |
| d) The average citizen cannot have any influence in what manufacturing companies do about energy problems. | 1                    | 3                  | 14              | 33                | 1                    | 1                  | 13              | 37                |
| e) The average citizen cannot have any influence in what oil companies do about energy problems.           | 1                    | 3                  | 16              | 32                | 2                    | 0                  | 12              | 37                |
| f) The federal government is genuinely trying to solve our energy problems.                                | 10                   | 22                 | 18              | 2                 | 6                    | 9                  | 30              | 7                 |
| g) Industry is genuinely trying to solve our energy problems.  | 14                   | 23                 | 14              | 1                 | 3                    | 16                 | 30              | 3                 |
| h) Consumers are genuinely trying to solve our energy problems.  | 12                   | 27                 | 13              | 0                 | 11                   | 19                 | 21              | 1                 |

**Table 5. Attitudes of Participants Toward Potential Health and Safety Problems Associated with Various Energy Sources**

**Pre-institute**

|  | Pre-institute     |                    |             |                       | Post-institute    |                    |             |                       |
|--|-------------------|--------------------|-------------|-----------------------|-------------------|--------------------|-------------|-----------------------|
|  | Extremely Serious | Moderately Serious | Not Serious | No Potential Problems | Extremely Serious | Moderately Serious | Not Serious | No Potential Problems |
| Coal mining  | 27                | 22                 | 3           | 0                     | 18                | 30                 | 4           | 0                     |
| Offshore drilling and the Alaskan oil pipeline         | 14                | 28                 | 10          | 0                     | 6                 | 30                 | 16          | 0                     |
| Coal powered generators                                | 17                | 30                 | 5           | 0                     | 9                 | 35                 | 8           | 0                     |
| Importing or shipping foreign oil to the United States | 5                 | 32                 | 15          | 0                     | 9                 | 24                 | 17          | 1                     |
| Nuclear powered generators                             | 22                | 20                 | 10          | 0                     | 18                | 24                 | 10          | 0                     |
| Solar power  | 0                 | 1                  | 18          | 33                    | 1                 | 1                  | 15          | 35                    |
| Wind powered generators                                | 0                 | 1                  | 13          | 38                    | 1                 | 2                  | 11          | 38                    |
| Conversion of biomass to usable energy                 | 0                 | 6                  | 31          | 15                    | 1                 | 8                  | 29          | 14                    |
| Use of natural gas                                     | 1                 | 28                 | 19          | 4                     | 1                 | 17                 | 33          | 1                     |

Table 6. Attitudes of Participants Toward Potential Environmental and Pollution Problems Associated with Various Energy Sources

|  | Pre-institute     |                    |             | Post-institute        |                   |                    |             |                       |
|--|-------------------|--------------------|-------------|-----------------------|-------------------|--------------------|-------------|-----------------------|
|  | Extremely Serious | Moderately Serious | Not Serious | No Potential Problems | Extremely Serious | Moderately Serious | Not Serious | No Potential Problems |
| Coal mining  | 27                | 23                 | 2           | 0                     | 23                | 27                 | 2           | 0                     |
| Offshore drilling and the Alaskan oil pipeline         | 25                | 23                 | 4           | 0                     | 14                | 34                 | 4           | 0                     |
| Coal powered generators                                | 24                | 26                 | 2           | 0                     | 20                | 29                 | 3           | 0                     |
| Importing or shipping foreign oil to the United States | 13                | 29                 | 10          | 0                     | 10                | 38                 | 4           | 0                     |
| Nuclear powered generators                             | 28                | 16                 | 7           | 1                     | 19                | 23                 | 10          | 0                     |
| Solar power  | 0                 | 1                  | 17          | 34                    | 0                 | 1                  | 22          | 29                    |
| Wind powered generators                                | 0                 | 1                  | 16          | 35                    | 0                 | 1                  | 20          | 31                    |
| Conversion of biomass to usable energy                 | 1                 | 9                  | 30          | 12                    | 0                 | 11                 | 28          | 13                    |
| Use of natural gas                                     | 1                 | 24                 | 21          | 6                     | 1                 | 18                 | 30          | 3                     |

## Cognitive Assessment

The knowledge assessment instrument consisted of one open-ended question designed to measure participants' meaningful understandings of energy and its interrelationships with policy choices and the environment. This measure was administered pre- and post-institute to determine if any changes in participants' understandings of these issues occurred during the course of the institute. Responses were analyzed and separated into the following four categories based on a hierarchy of cognitive domain which ranges from simple recall of facts to the evaluation and creation of new concepts.

**KNOWLEDGE/COMPREHENSION:** Responses may have included isolated facts or definitions as well as a basic description of the relationships between things.

**APPLICATION/ANALYSIS:** Responses may have included the application of ideas to their own situations or examining and describing each part of the question.

**SYNTHESIS/EVALUATION:** Responses may have included original thoughts, judgments or opinions.

In pretests, participants tended to give vague, incomplete examples in their explanations. In the post-test, most participants responded in a thorough and thoughtful manner, citing experiences and knowledge gained through the institute. Examples of typical pre-institute and post-institute explanations are cited below.

Pre-institute explanation: "I understand that policy choices directly affect the way energy sources are used and developed. Development and use of energy also directly affects the environment. Energy and the environment are both at critical stages as we approach the next century. Clean energy must be a goal and preserving our environment must also be a goal. Conservation of energy sources must also be addressed."

Post-institute explanation: "There is certainly a trade off between energy and environment just as economic growth and environmental concerns represent the same trade off. The type of energy we use will determine to some degree our environment however other countries such as China can negate whatever we do as a country. Our dependence on foreign oil makes it absolutely imperative that we keep a strong defense. I am concerned that many people even here at the institute totally

disregarded military and economic growth questions about energy. I am convinced that we do need to do everything possible to increase our energy efficiency and I agree with Senator Boren that we do not need to lose our oil potential. While I'm in favor of support for renewables and research and technology, I am also a realist. Why waste the fossil fuel we have when we are still far too dependent on foreign oil? It would be far cheaper to support oil and natural gas than to pay for more expensive clean coal technology. Policy choices are extremely difficult and a lot of knowledge about energy and environment is lacking in the general populace. These policy choices now will determine many things for us as a nation in the future."

The statements above demonstrate that the institute enhanced the participants' knowledge base. The majority of teachers responded in a manner as described above, and demonstrated they had gained a better understanding of the interrelationships between energy, environment and policy choices.

### Session Evaluation

Throughout the institute, participants were asked to rate the quality of each of the forty sessions from "excellent" to "poor" and to rate the relevance of each session from "extremely" relevant to "not at all" relevant. These data are provided in Table 7.

Along with these ratings, participants were invited to make comments concerning each of the sessions they attended throughout the two-week institute. The comments from each session were distilled and summarized as briefly as possible without losing the original proportion of positive and negative comments as well as the main idea(s) of the statements (Table 8).

The evaluation data from Tables 7 and 8 must be analyzed concurrently. It is inappropriate and misleading to interpret a session evaluation solely from the data provided by only one table. Interpretation of the two tables together is important because some participants did not write any comments yet indicated a rating or relevance, whereas in some cases the opposite was true; a comment was written but no rating or relevance was provided. These discrepancies also explain why the total number of participants responding varies widely across the sessions.

Table 7. Participant Ratings of each Session of the Institute

| KEY FOR RATING                        |           |              |           |           |                                       |    |    |    |    | KEY FOR RELEVANCE        |    |    |    |    |           |    |    |    |    |
|---------------------------------------|-----------|--------------|-----------|-----------|---------------------------------------|----|----|----|----|--------------------------|----|----|----|----|-----------|----|----|----|----|
| N = number of participants responding |           |              |           |           | N = number of participants responding |    |    |    |    | ET = extremely           |    |    |    |    | VE = very |    |    |    |    |
| EX                                    | EX        | GD           | AV        | FR        | PR                                    | PR | N  | ET | VE | MD                       | SW | NA | MD | SW | NA        | MD | SW | NA |    |
| EX = excellent                        | GD = good | AV = average | FR = fair | PR = poor |                                       |    |    |    |    |                          |    |    |    |    |           |    |    |    |    |
| EX = excellent                        | GD = good | AV = average | FR = fair | PR = poor |                                       |    |    |    |    |                          |    |    |    |    |           |    |    |    |    |
| RATING OF SESSION                     |           |              |           |           |                                       |    |    |    |    | RELEVANCE OF SESSION     |    |    |    |    |           |    |    |    |    |
| UNIVERSITY OF OKLAHOMA WEEK           |           |              |           |           | N                                     |    |    |    |    | N                        |    |    |    |    | N         |    |    |    |    |
| July 12, 1994                         |           |              |           |           | EX                                    | GD | AV | FR | PR | ET                       | VE | MD | SW | NA | ET        | VE | MD | SW | NA |
| PURPOSE OF INTERACTIONS BETWEEN       |           |              |           |           |                                       |    |    |    |    | SCIENCE & SOCIAL STUDIES |    |    |    |    |           |    |    |    |    |
| 50                                    |           |              |           |           | 18                                    | 21 | 8  | 2  | 1  | 50                       |    |    |    |    | 17        | 22 | 9  | 2  | 0  |
| "OIL" JEANNEE YERMAKOFF, AMOCO        |           |              |           |           | 52                                    | 5  | 25 | 19 | 2  | 51                       |    |    |    |    | 10        | 21 | 16 | 4  | 0  |
| "RENEWABLES" ROBERT STOKES, NREL      |           |              |           |           | 52                                    | 25 | 25 | 2  | 0  | 51                       |    |    |    |    | 28        | 20 | 3  | 0  | 0  |
| "COAL" ROSEMARY WILSON, CED           |           |              |           |           | 51                                    | 4  | 17 | 15 | 8  | 50                       |    |    |    |    | 12        | 23 | 9  | 6  | 0  |
| "NUCLEAR" PAUL SKIERKOWSKI, OU        |           |              |           |           | 52                                    | 29 | 14 | 2  | 6  | 52                       |    |    |    |    | 23        | 17 | 5  | 5  | 2  |
| CANDLE BURNING MODEL FOR CURRICULUM   |           |              |           |           |                                       |    |    |    |    | 50                       |    |    |    |    |           |    |    |    |    |
| July 13, 1994                         |           |              |           |           | 25                                    |    |    |    |    | 4                        |    |    |    |    | 1         |    |    |    |    |
| ENERGY CENTER LABORATORIES, OU        |           |              |           |           | 49                                    | 30 | 18 | 1  | 0  | 0                        |    |    |    |    | 48        | 29 | 13 | 6  | 0  |
| CURRICULUM IMPLEMENTATION             |           |              |           |           |                                       |    |    |    |    | 47                       |    |    |    |    |           |    |    |    |    |
| C-SPAN SEMINAR                        |           |              |           |           | 25                                    | 8  | 15 | 2  | 0  | 0                        |    |    |    |    | 24        | 10 | 9  | 3  | 2  |
| July 14, 1994                         |           |              |           |           | 50                                    |    |    |    |    | 16                       |    |    |    |    | 25        | 17 | 7  | 1  | 0  |
| TOTAL PETROLEUM REFINERY              |           |              |           |           |                                       |    |    |    |    | 50                       |    |    |    |    |           |    |    |    |    |
| BIZZELL LIBRARY, HISTORY OF SCIENCE   |           |              |           |           | 51                                    | 46 | 4  | 0  | 1  | 0                        |    |    |    |    | 50        | 32 | 4  | 10 | 3  |

Table 7. cont.

| OU WEEK  | COURSE | RATING OF SESSION |    |    |    |    |    | RELEVANCE OF SESSION |    |    |    |    |    |
|--|--------|-------------------|----|----|----|----|----|----------------------|----|----|----|----|----|
|  |        | N                 | EX | GD | AV | FR | PR | N                    | ET | VE | MD | SW | NA |
| July 14, 1994  | cont.  |                   |    |    |    |    |    |                      |    |    |    |    |    |
| C-SPAN SEMINAR   |        | 15                | 10 | 5  | 0  | 0  | 0  | 15                   | 8  | 5  | 2  | 0  | 0  |
| ALTERNATE ENERGY POWERED VEHICLES                                      |        | 36                | 26 | 8  | 2  | 0  | 0  | 36                   | 25 | 7  | 4  | 0  | 0  |
| "PLANNING YOUR CURRICULUM PROJECT"                                     |        | 44                | 22 | 15 | 2  | 3  | 2  | 44                   | 25 | 12 | 4  | 2  | 1  |
| July 15, 1994  |        |                   |    |    |    |    |    |                      |    |    |    |    |    |
| "ENERGY EFFICIENT ARCHITECTURE"  |        | 50                | 7  | 21 | 14 | 7  | 1  | 49                   | 15 | 21 | 8  | 5  | 0  |
| WILLIAM BAUMAN, OU   |        |                   |    |    |    |    |    |                      |    |    |    |    |    |
| "GLOBALIZATION OF OIL & GAS INDUSTRY"                                  |        | 47                | 18 | 16 | 9  | 4  | 0  | 48                   | 17 | 20 | 8  | 2  | 1  |
| RON EVANS, OU  |        |                   |    |    |    |    |    |                      |    |    |    |    |    |
| "WIND POWER" KARL BERGEY,  |        | 50                | 36 | 13 | 1  | 0  | 0  | 49                   | 36 | 10 | 3  | 0  | 0  |
| BERGEY WIND POWER  |        |                   |    |    |    |    |    |                      |    |    |    |    |    |
| "WHO CARES ABOUT ENERGY?"  |        | 48                | 7  | 19 | 15 | 6  | 1  | 48                   | 15 | 16 | 15 | 1  | 1  |
| JOCK CAMPBELL, OU  |        |                   |    |    |    |    |    |                      |    |    |    |    |    |
| KIRKPATRICK CENTER   |        | 45                | 17 | 19 | 6  | 3  | 0  | 45                   | 16 | 10 | 15 | 4  | 0  |
| WASHINGTON D. C. WEEK  |        |                   |    |    |    |    |    |                      |    |    |    |    |    |
| July 17, 1994  |        |                   |    |    |    |    |    |                      |    |    |    |    |    |
| OPTIONAL TOURS   |        | 33                | 25 | 7  | 0  | 1  | 0  | 37                   | 17 | 9  | 9  | 2  | 0  |
| US HOLOCAUST MEMORIAL MUSEUM   |        | 43                | 38 | 4  | 1  | 0  | 0  | 42                   | 23 | 9  | 4  | 4  | 2  |
| MICHAEL TOTTEN, CENTER FOR RENEWABLE ENERGY AND SUSTAINABLE TECHNOLOGY |        | 50                | 30 | 18 | 2  | 0  | 0  | 48                   | 34 | 12 | 2  | 0  | 0  |

Table 7. cont.

|   |  | RATING OF SESSION |    |    |    |    |    |    |    |    |    | RELEVANCE OF SESSION |    |  |  |  |
|---|--|-------------------|----|----|----|----|----|----|----|----|----|----------------------|----|--|--|--|
| WASHINGTON D. C. WEEK cont.   |  | N                 | EX | GD | AV | FR | PR | N  | ET | VE | MD | SW                   | NA |  |  |  |
| July 18, 1994   |  | 50                | 29 | 19 | 2  | 0  | 0  | 50 | 29 | 13 | 6  | 2                    | 0  |  |  |  |
| "INFLUENCING THE PROCESS" BOB BATES CORP. SEC., MOBIL CORP.   |  | 50                | 42 | 8  | 0  | 0  | 0  | 50 | 39 | 10 | 1  | 0                    | 0  |  |  |  |
| "INFLUENCING THE PROCESS" SCOTT SKLAR SOLAR ENERGY INDUSTRY ASSOCIATION                               |  | 50                | 24 | 23 | 2  | 1  | 0  | 50 | 27 | 18 | 4  | 1                    | 0  |  |  |  |
| "INFLUENCING THE PROCESS" SCOTT PETERS, MGR. PUBLIC RELATIONS US COUN. FOR ENERGY AWARENESS           |  | 51                | 44 | 6  | 1  | 0  | 0  | 51 | 39 | 10 | 2  | 0                    | 0  |  |  |  |
| RONALD TAYLOR, WHITE HOUSE CORRESPONDENT WASHINGTON TIMES   |  | 10                | 1  | 3  | 3  | 1  | 2  | 10 | 3  | 2  | 3  | 1                    | 1  |  |  |  |
| NATIONAL RESOURCES DEFENSE COUNCIL  |  | 11                | 9  | 2  | 0  | 0  | 0  | 11 | 10 | 1  | 0  | 0                    | 0  |  |  |  |
| PUBLIC INTEREST RESEARCH GROUP  |  | 13                | 11 | 1  | 1  | 0  | 0  | 13 | 13 | 0  | 0  | 0                    | 0  |  |  |  |
| FRIENDS OF THE EARTH  |  | 12                | 2  | 4  | 2  | 3  | 1  | 12 | 4  | 3  | 5  | 0                    | 0  |  |  |  |
| INSTITUTE FOR ENERGY CONSERVATION   |  | 40                | 22 | 13 | 5  | 0  | 0  | 38 | 24 | 10 | 4  | 0                    | 0  |  |  |  |
| "PLANNING YOUR CURRICULUM PROJECT"  |  | 50                | 23 | 17 | 10 | 1  | 0  | 50 | 20 | 15 | 13 | 2                    | 0  |  |  |  |
| July 19, 1994   |  |                   |    |    |    |    |    |    |    |    |    |                      |    |  |  |  |
| "VIEW OF THE EXECUTIVE BRANCH" LINDA BREGGIN, WHITE HOUSE OFFICE ON ENVIRONMENTAL POLICIES            |  | 51                | 23 | 17 | 10 | 1  | 0  | 50 | 21 | 12 | 18 | 1                    | 0  |  |  |  |
| "VIEW OF THE EXECUTIVE BRANCH" RICHARD CHAPPELL, GLOBAL LEARNING AND OBSERVATIONS TO BENEFIT ENVIRON. |  | 50                | 40 | 8  | 2  | 0  | 0  | 50 | 33 | 11 | 6  | 0                    | 0  |  |  |  |
| LAFAYETTE PARK STUDY  |  | 46                | 4  | 19 | 15 | 5  | 3  | 45 | 4  | 10 | 11 | 10                   | 10 |  |  |  |
| SEMINAR, DAVID BOREN & DANIEL ABBASI  |  | 32                | 13 | 12 | 6  | 1  | 0  | 31 | 12 | 11 | 7  | 1                    | 0  |  |  |  |

Table 7. cont.

|                                      |       | RATING OF SESSION |    |    |    |    |    | RELEVANCE OF SESSION |    |    |    |    |    |
|--------------------------------------|-------|-------------------|----|----|----|----|----|----------------------|----|----|----|----|----|
|                                      |       | N                 | EX | GD | AV | FR | PR | N                    | ET | VE | MD | SW | NA |
| <b>WASHINGTON D. C. WEEK cont.</b>   |       |                   |    |    |    |    |    |                      |    |    |    |    |    |
| July 19, 1994                        | cont. |                   |    |    |    |    |    |                      |    |    |    |    |    |
| C-SPAN SEMINAR, KEN MURPHY           |       |                   |    |    |    |    |    |                      |    |    |    |    |    |
| ENVIRON. AND ENERGY STUDY INSTITUTE  |       |                   |    |    |    |    |    |                      |    |    |    |    |    |
| ED KRAPLES, ENERGY SECURITY ANALYSIS | 10    | 4                 | 5  | 0  | 1  | 0  |    | 10                   | 4  | 5  | 0  | 1  | 0  |
| "PLANNING YOUR CURRICULUM PROJECT"   | 45    | 19                | 19 | 5  | 1  | 1  |    | 45                   | 22 | 16 | 5  | 1  | 1  |
| July 20, 1994                        |       |                   |    |    |    |    |    |                      |    |    |    |    |    |
| "EXAMINING THE LEGISLATIVE PROCESS"  | 43    | 23                | 15 | 4  | 0  | 1  |    | 43                   | 23 | 11 | 8  | 1  | 0  |
| LAURA HUDSON, LEGISLATIVE DIRECTOR   |       |                   |    |    |    |    |    |                      |    |    |    |    |    |
| FOR SENATOR J. BENNETT JOHNSTON      | 46    | 33                | 13 | 0  | 0  | 0  |    | 46                   | 34 | 11 | 1  | 0  | 0  |
| SENATORS NICKLES AND SLITER          | 31    | 14                | 10 | 5  | 0  | 2  |    | 30                   | 15 | 10 | 3  | 1  | 1  |
| "DEFINING NATIONAL ENERGY STRATEGY"  | 49    | 41                | 7  | 1  | 0  | 0  |    | 49                   | 42 | 5  | 2  | 0  | 0  |
| July 21, 1994                        |       |                   |    |    |    |    |    |                      |    |    |    |    |    |
| CURRICULUM PRESENTATIONS             | 47    | 27                | 15 | 3  | 1  | 1  |    | 45                   | 33 | 6  | 6  | 0  | 0  |

Table 8. Summary of Session Evaluation Comments from Participants

**Session Evaluation Comments**

**"Purpose of and Interactions between Science and Social Studies"**

Of the thirty-eight participants that responded with written comments, many described the session as enlightening, stimulating discussion, and a good way to start the conference. Some participants enjoyed the interactive aspect of the session and felt it served to break down barriers between disciplines and modeled solid teaching teaching skills. Other comments included, informative, stimulated thinking, opened our eyes, involved brainstorming, included remarks that were on target, and helped coordinate collective thinking.

The few negative comments included, most people were already aware of conflicts between philosophy and goals of science and social studies, stereotypes were reinforced, timing elements of the session could be better, and the pie diagram activity could be eliminated. One participant remarked the activity polarized and confused people.

**"Oil", Jeanne Yermakoff, Amoco Corporation**

Of the thirty-six participants that responded with written comments, most responses were positive. Comments included, appreciated the informative content, useful for comparative views, quality presentation, increased my awareness of big business and environmental concerns, very knowledgeable, excellent on questions, good presentation, well prepared, enthusiastic, and open and straightforward about sources of information and limits of data. Negative comments included, too much public relations, dry corporate viewpoint, speaks too fast and too low, speaker was not lively, did not need to read transparencies, and presentation average at best.

**"Renewables", Robert Stokes, National Renewable Energy Laboratory**

Of the thirty-five participants that responded with written comments, all responses except one were positive. Comments included, well presented, well developed arguments, knew his stuff, very interesting, material extremely interesting and useful, solid presentation, worthy of a longer session, excellent speaker, great presentation, and connected with concepts of energy, environment and policy well. One participant felt as though the instructional delivery needed to be varied.

**"Coal", Rosemary Wilson, Center for Energy and Economic Development**

Of the forty-four participants that responded with written comments, most responses were negative. Positive comments included, good factual base, informative, clear and direct, great facts for class, well prepared, and knowledgeable.

Most negative comments centered around her presentation style which was described as, boring, monotone, dry, no interaction, poor presentation skills, and too quiet and took no questions. Other comments included, information duplicated in packet, and very weak arguments.

**"Nuclear", Paul Skierkowski, The University of Oklahoma**

Of the forty-two participants that responded with written comments, responses were about evenly divided between positive and negative. Positive comments included, good, knows his stuff, dynamic, convincing, persuasive, touched on all aspects of energy, environment and policy, entertaining, effective, great presenter, lively lecture, and humorous.

Most negative responses, eleven, centered on the idea that Dr. Skierkowski directed his talk toward low level harmless wastes rather than high level wastes associated with nuclear power. Other comments included, confused entire session, one-sided, defensive, evasive, no support data, could not glean convincing information, good only for non-science people, poor content, left unanswered questions, and condescending.

**"Candle Burning: Model for Curriculum Project"**

Of the thirty-nine participants that responded with written comments, most provided positive responses toward the workshop. Comments included, very effective, good concept, good example of process learning, excellent example of inquiry, debriefing at end was excellent, modeling done well, excellent activity, good illustration of why these activities are effective, it made me think and got the group motivated, and allowed me to see how important student-centered activities are.

Most negative comments noted that the discussion went too long. Other comments included, bogged down, conclusion somewhat confusing, and our theme was energy - find an energy example rather than pressure differential.

**Energy Center Laboratories, The University of Oklahoma**

Of the thirty-seven participants that responded with written comments, most were very positive about their experiences in the laboratories. The most frequently mentioned comments included, professors enthusiastic and knowledgeable about their subject areas, informative, excellent, interesting, provided us with hands-on experience, important, fun, great learning opportunity, and impressed with all presenters in their patience and feeling that none of our questions were stupid. Other comments included

outstanding, well worth the time, enlightening, something we can use in school, fascinating, and one of the most valuable activities to date.

The most frequently mentioned negative comments included, too technical and complicated, and too much math at some. Other comments included, provide us a history of this center and what is being done here, not much applicability as the materials are not easily available, not enough time in labs, would have been helpful to know a little more about oil and gas exploration and recovery before attending labs, would have been more interesting with more hands-on, and given the decreasing oil reserves it would have been better to have concentrated on renewable resources.

#### Workshop: Planning Your Curriculum Project

Of the thirty-one participants that responded with written comments, nearly all were very positive. The most frequent positive comment referred to how enthusiastic the teachers were when presenting their projects. Other comments included, workshops were excellent thought provokers, inspirational, having past participants at the institute lowers the level of anxiety and at the same time establishes a standard of performance, very interesting, great, impressed with the caliber of work and the dedication displayed, helped me understand where to begin and helped me pull together some of my ideas, professional, and good models for the program. The few negative comments included, should split up school teams to get the most use of information, would have liked to have tried a short interactive example, wish to have seen them both, and too much information which involved decisions packed into a short time.

#### C-SPAN: Defining America's Energy Needs

Of the ten participants that responded with written comments, only a few were positive about the experience. These comments included, good idea, interesting, and great experience being in the TV studio - it put the "pressure" on us and that is what made the situation beneficial.

Two of the negative comments appeared more than once in the evaluation and they included, not enough time to ask questions, and speakers did not provide any new information and failed to answer most of the questions asked of them. Other comments included, panels do not work as well as speakers - use only one or two guests, would suggest process be explained earlier so we could be given more time to come up with our questions and discuss them between our group members, each participant should have the opportunity to ask at least one question, plan a warm-up activity, and make this a voluntary activity.

#### C-SPAN: Fossil Fuels

Of the eight participants that responded with written comments, positive and negative comments were about equal in number. Positive comments included, great fun, interesting, excellent opportunity, enjoyed it and gathered additional information - more than expected, enjoy the opportunity to hear and participate in a more interactive session, and good to have an opportunity to ask questions of professional spokesperson. Negative comments included, repeated information, we really needed to interact with them more, no opportunity to brainstorm questions on the topic, topic titles were vague, could have discussed what the taping would be like a bit more, and most of us felt unprepared.

#### Total Petroleum Refinery Tour

Of the thirty-two participants that responded with written comments, most were very positive. The most frequently mentioned comments included, very informative, Total staff easy to talk to and anxious to answer questions, fascinating, great experience, and interesting. Other comments included, enhanced my awareness of how much bulk of work and money get spent on preparing/supplying our energy needs, excellent, a high point, great opportunity for gaining first hand knowledge, well organized, very good and personalized, the tour solidified why we are attending this conference - showed how the natural resource of crude oil is such a vital role in our lives, first and probably only opportunity to see an oil refinery, and a tour that cemented together the knowledge I learned in Oklahoma.

The only negative comment repeated a few times was the difficulty in hearing many of the descriptions of units due to high noise levels. Other comments included, providing a basic distillation lab to explain the process would help, do not feel this is really significant enough to utilize a morning - I feel a one hour video with explanation would suffice, tape "Total on Total" not very helpful, some prereading should be given on the nature of petroleum and a brief refining summary, much information was repetitive, long bus ride to get there, was not much we could really "see," and need to show in some kind of visual what actually happens in the tubes and pipes.

#### Bizzell Library History of Science Collection

Of the forty-two participants that responded with written comments, the majority were overwhelmingly positive for both the curator and the collection. Adjectives describing the curator included, spectacular, enthusiastic, knowledgeable, fantastic, engaged, inspiring, excellent, and energetic. Comments concerning the overall activity included, simply overwhelming, extend the time there, fun to see, could have spent all day there, impressive, very exciting, a dream visit, wonderful, one of my favorite activities, this place creates such an excitement for learning, one of the memorable activities of a life, extremely impressive, and historical perspective to our study of technology was greatly appreciated by both science and social studies teachers. The few negative comments included, not relevant to seminar, being out of state it is not very useful to me, and of little help in teaching.

### C-SPAN: Exploring Alternative Energy Sources

Of the ten participants that responded with written comments, most were positive. Comments included, interesting experience, time well spent, enjoyed the interaction between the experts and us, very knowledgeable and interactive, excellent presentation, and fun and informing. Negative comments included, a less structured format would have been more productive and probably more interesting for an audience, would have helped to have of idea of what exactly was to be covered and what the format would be, not good for gathering information, and need more time to consider questions to be asked.

### Alternate Energy Powered Vehicles

Of the twenty-seven participants that responded with written comments, the majority had very positive responses concerning this demonstration. Comments included, excellent hands-on demonstrations, presenters were informative and enthusiastic about their vehicles, enjoyed this demonstration immensely, very knowledgeable people, very interesting, very good use of time, presenters were practical and dynamic, nice to see first hand what some of these technologies involved, great, and it was great to see what is being done in this area and to talk to the people doing it. The few negative comments included, wish they had handouts which provided more information, too much time for this, and would have liked to talk about these in the classroom first to get base knowledge and then gotten to see them in action.

### Workshop: Planning Your Curriculum Project

Of the thirty participants that responded with written comments, most were very positive. Comments included, enjoyed brainstorming, appreciated the time, got a good start, the mentor groups were wonderful, valuable time, nice to see and hear some of actual participants give us relative concerns as well as advice as how to implement these ideas, conversations with last year's presenters were very beneficial, good time to do it, and appreciated the opportunity to talk with the mentors. The few negative comments included, we were too tired to focus on the project, use another location and add more structure, and people were tired.

### "Energy Efficient Architecture", William Bauman

Of the twenty-six participants that responded with written comments, less than half contained positive responses. These comments included, interesting information - list of resource information is very good, interesting facts and figures and he is clearly involved in his field, material he gave us was excellent, good topic, enjoyed the presentation very much, very knowledgeable, and information presented was relevant.

Most negative comments centered around the presentation style of Dr. Bauman and not the information given or importance of the topic. Comments included, of little help, very dry, dull to listen to, poorly presented, a bit slow, little new information, content was lost in his presentation, presentation was halting and weak, more time should be spent on how to make the home more energy efficient by including the methods and payback time for the various technologies, give us some solid information not a general "lecture" or nothing, and could have been informative but did not meet "goal" of title.

### "Globalization of Oil & Gas Industry", Ron Evans, The University of Oklahoma

Of the thirty-one participants that responded with written comments, the split was very even between positive and negative responses. Positive comments included, informative, great, a bona fide expert, very good speaker, should have a larger role in the institute, good place in the institute for the global perspective, very relevant, liked his relaxed approach, open to questions and patient with answers, very interesting and credible resource, very important to this program, and well presented.

Most of the negative comments dealt with the idea that Dr. Evans used outdated statistics and information. Other responses repeated more than once by participants included, mostly a repeat from what we heard from him earlier, too basic/critical, came across as very biased toward oil, gas and coal, and did not seem open to alternative energy sources. Other comments included, did not talk to the issue and used statistics in a selective manner designed to support current oil policy.

### "Wind Power", Karl Bergey, Bergey Wind Power

Of the twenty-eight participants that responded with written comments, nearly all were very positive. Comments included, his information was great and his perspective important, first good spokesperson for renewables, presented good support visuals, great speaker, fair to other industries by saying wind power was not always the solution, responded well to questions, good historical perspective as well as a sense of the future, enlightening, tops in his field, one of the best, well informed presenter and well presented and perhaps the most applicable of the lectures. The few negative comments included, needed written information, very difficult to hear, and sounded too much like a company sales pitch.

### "Who Cares About Energy", Jock Campbell, The University of Oklahoma

Of the thirty-four participants that responded with written comments, negative responses easily outnumbered the positive. Positive comments included, good overview, handouts helpful, amazing statistics data on energy, excellent handout, and information was relevant and needed.

Of the negative comments, ten participants noted that his material was outdated. Other frequently cited items included, wa-

too much talk and too many slides, repetitious, and he gave us a packet of information and then proceeded to tell us what he had just handed us. Other comments included, very boring, too slow, not a captivating speaker, too many statistics, and presentation was so dated that it contradicted materials presented by other speakers.

#### Kirkpatrick Center, Oklahoma City, Oklahoma

Of the twenty-six participants that responded with written comments, the numbers of positive and negative responses were almost evenly split. Positive comments included, fun, very enjoyable and a good change of pace, good experience, very interesting, not just energy but a great place overall, interesting and fascinating place to be, great idea, great timing, and gave me a lot of ideas to bring back to the classroom. Negative comments included, not related to energy institute, would have liked an option here, science program was third grade - not really relevant, could have spent time more productively, and planned program was insulting.

#### Optional Program: Mount Vernon/Smithsonian National Museum of American History or Lincoln and Vietnam Veterans Memorials/Smithsonian National Museum of American History

Of the twenty-nine participants that responded with written comments, most were very positive. Comments included, fantastic, interesting, the opportunity to see what we wanted to was good because some teachers were seeing DC for the first time, a welcome break from travel and class work, saw things that get social studies teachers fired up, opportunity to experience history, everyone needs a chance to explore, great day, fun, a wonderful way to become involved with DC and each other, excellent, and thanks for allowing the time to visit some of the resources available. The few negative comments included, please schedule "free" time for church services, more free time would have been nice, and not relevant.

#### Tour: U.S. Holocaust Museum

Of the twenty-nine participants that responded with written comments, most were positive. Comments included, computer resource center was especially excellent, keep it, good, powerful, really enjoyed the experience, enlightening, thanks for the chance to see this museum, emotional and educational, and one of the highlights of the week. The few negative comments included, not relevant to our topic, did not care for the crowded exhibits and was unable to get to where I could see many things, and would like more time - less crowded.

#### Michael Totten, Center for Renewable Energy and Sustainable Technology

Of the twenty-nine participants that responded with written comments, most were positive and mentioned the advanced technology used in his presentation. Comments included, one of the better speakers, set a good tone for the week, great and we will finally get some computer materials, information very good, informative and motivating, stimulating and thought provoking presentation, interesting and exciting speaker, fascinating to listen to a speaker who was using advanced technology in his field, and first speaker that provided us with items we can take back to the classroom. Negative comments included, wish he would have stayed more on energy and politics, presentation was rapid, felt like he started in the middle - I got lost, would have liked more discussion, too slick for me, did not think he was a good keynote speaker, and thought he was more involved in showing the "toys" rather than telling us what the Center is about.

#### "Influencing the Process", Bob Bates, Corporate Secretary, Mobil Corporation

Of the twenty-five participants that responded with written comments, most were very positive. Comments included, good job, good example of a lobbyist, very candid and articulate, had a good response and insight about the lobbying process, very direct and honest about the role and purposes of lobbying, the role of the PAC/lobby has become very clear, excellent speaker and willing to respond to questions, informative, good view of corporate America, good comments and discussion, has done his homework and knows what he is talking about, great speaker - get him back, and said how it really is and how it works to influence policy. Negative comments included, did not give us much specific information on Mobil, seemed to travel around the topic, did not say what Mobil was doing in environmental enhancement, should have had at least one additional hour, seemed to wander away from the topic, and opening comments to general.

#### "Influencing the Process", Scott Sklar, Solar Energy Industry Association

Of the twenty-one participants that responded with written comments, the responses were overwhelmingly positive. Several participants described him as a man with strong beliefs who actually practices and uses the items he presents. Other comments included, great speaker - get him back, informative, excited about his field and trying to change Congressional minds, specific yet not overwhelming in citing statistics and at the same time approached the energy question from a common sense approach, energetic and he got straight to the point, knowledgeable, enthusiastic as well as realistic about the future energy needs of the U.S. and the development of policy, open and interesting, sharp, and articulate. The only negative comment was that a wait and see policy does not seem to reflect much concern for the monumental problems we face.

### "Influencing the Process", Scott Peters, Manager of Public Relations, US Council for Energy Awareness

Of the twenty participants that responded with written comments, most were positive. Comments included, good job, good example of a lobbyist, great, good spokesperson for the nuclear perspective, articulate, responded well to questions, presented the most candid version of nuclear energy, very willing to answer questions straightforwardly, and informative. The few negative comments included, disappointed at the vagueness of his responses regarding nuclear wastes, spoke little about influencing and more about promoting a technology, and he was too general and tended to ramble from the focus.

### Ronald Taylor, White House Correspondent, Washington Times

Of the thirty-one participants that responded with written comments, nearly all were overwhelmingly positive. Comments included, frank, honest, humorous, knowledgeable, very well done, articulate, excellent presenter, extremely enjoyable, very effective, viewpoint of media is a significant component in the study of policy choices, good answers to questions, interesting perspective, sensible and straightforward, fantastic, dynamic speaker, entertaining, and spectacular presentation in such a short time. The few negative comments included, not a lot there for me, get someone from The Post, and not really helpful.

### Advocacy Group: Daniel Lashof, National Resources Defense Council

Of the six participants that responded with written comments, half were positive and half were negative. Positive comments included, materials we got were good, he was good, nice to see how they work, and good information. Half of the negative comments centered on the room being too hot which made it hard to stay focused on the presenter. Other comments included, speaker monotone, and seemed ill at ease with speaking.

### Advocacy Group: Anna Aurilio, Public Interest Research Group

Of the nine participants that responded with written comments, all were positive. Comments included, speaker really knows her stuff, impressive person and organization, great input from yet another perspective, Ms. Aurilio was inspiring, great zeal, clearly enthusiastic about her role in energy, environment and policy, and she was extremely well versed and presented a good deal of information that I could use in my lessons on energy.

### Advocacy Group: Dawn Erlandson, Tax Policy Project, Friends of the Earth

Of the ten participants that responded with written comments, all were very positive. Comments included, I was prepared not to enjoy this but I was wrong, Dawn provided a lot of insight into difficulties in influencing the political process, well informed, dynamic and motivated, her knowledge and ability to pass this information on is astounding, Erlandson was informative and very ready to answer our questions, knowledgeable and honest, and very spirited interchange of ideas of the entire group.

### Advocacy Group: Russell Sturm, International Institute for Energy Conservation

Of the eleven participants that responded with written comments, most were negative responses. The two positive comments included, knew a lot, and useful for the entire group - contained specific examples of technology being applied to architecture. Five of the negative comments centered on the idea that the participants should have spent more time examining the energy efficient technology found in the offices there. The two other negative comments, which were both repeated at least twice, included, talked too much, and felt he was not prepared.

### Workshop: "Planning Your Curriculum Project"

Of the twenty-three participants that responded with written comments, most were very positive. Comments included, needed the time to digest some of the information into our curriculum, opportunity to work was good for our team, sessions were helpful just for the time, we changed our project halfway through the institute so we needed this time to do our project, I applaud your focus on adult learners, and returning participants were very good and very helpful. The few negative comments included, would help if computers were available, and as experienced teachers who have incorporated the discovery method and cooperative learning throughout our curriculum we did not find it necessary to use all of the allotted time to construct our curriculum project.

### Seminar: "View of the Executive Branch", Linda Breggin, White House Office on Environmental Policy

Of the twenty-five participants that responded with written comments, there was an even split between positive and negative responses. Positive comments included, great presentation, I fully intend to take advantage of the offer to interact/communicate with Ms. Breggin's office, content was informative, she was extremely sharp, had good information, very professional, good overview and good presentation and insights as to how the Executive Branch fits into the process.

The most frequent negative responses revolve around Ms. Breggin speaking too fast and the session being too short to ask questions. Other comments included, did not hear too much information, talked way too much and responded in an inappropriate and condescending manner, someone else would have been better, the purpose and implementation of this project was not well presented and repeated the same messages we already heard.

**Seminar: "View from the Executive Branch". Richard Chappell, Global Learning and Observations to Benefit the Environment**

Of the twenty-eight participants that responded with written comments, there were slightly more positive comments than negative. Positive comments included, excellent program, important for teachers to know about, insight into GLOBE interesting, message was vital, interesting project, good presentation, excellent information, I must become part of the GLOBE project with my kids, and was to the point and good at answering questions.

Negative comments mostly centered around his presentation style with descriptions such as, too quiet, boring, weak delivery, and presentation was slow moving. Other comments included, communicator mumbled and did not keep good eye contact, answers to questions were too smug, and he was very unenthusiastic and his telling us about the effectiveness of teaching was too simplistic for a room of experienced teachers.

**Seminar: C-SPAN, Susan Tierney, Department of Energy**

Of the twenty-nine participants that responded with written comments, nearly all responses were very positive. Comments included, pleasant and informative speaker, very knowledgeable, she was terrific, impressed with her knowledge and way of presentation, good choice, great job, very sharp, raised and renewed my faith in government, she was well informed and delightful, Ms. Tierney relayed valuable information in a nontechnical manner that could be very useful, good information, articulate and personable, focused, intelligent, and humorous. The few negative comments included, at times seemed overly wordy, got the distinct impression that all answers were from a political agenda, and I wander about the relevance.

**Visit: Lafayette Park Study**

Of the twenty-seven participants that responded with written comments, most were negative. The positive comments included, nice visit, Conception is a great example of freedom of expression, nice break, fun, and demonstrates a tremendous conviction to a cause. The negative comments included, too hot, this can be skipped next year, not sure there was a purpose except to see the White House, too rushed, should have been optional, ten minutes would have been enough time, free time would have been better, not really a study just a stroll in the park, and a time filler (waster).

**Seminar: Senator David Boren and EPA person Daniel Abbasi**

Of the thirty participants that responded with written comments, most were very positive - especially towards David Boren. Positive comments included, excellent, uplifting to our morale as educators, both good choices, good view of political side of policy formation, articulate and interesting, and Boren was great.

Most negative comments were directed toward Daniel Abbasi and included the observations that he was rushed and simply read a prepared speech. Other comments included, too tired to really appreciate information at this point, repetitious, and tell your speakers to set aside more time for questions.

**C-SPAN: Ken Murphy, Environmental and Energy Study Institute and Ken Kraples, Energy Security Analysis**

Of the nine participants that responded with written comments, there was an even mix of positive and negative responses. Positive comments included, very interesting, panel was well prepared, excellent, very knowledgeable people, and gave good answers to questions. Negative comments included, became repetitious and lost momentum when each member responded to each question, more wait time would have been appreciated, not enough time to ask questions, we need more background information on their organizations in order to be prepared, and too scripted.

**Workshop: "Planning Your Curriculum Project"**

Of the twenty-four participants that responded with written comments, most were very positive. Comments included, very helpful, you undoubtedly picked the optimum four people to help, good working session, anytime we can work with "old-timers" and each other is very beneficial, great closure on task, appreciated this time to process some of our information, needed the time to work together, useful information on how presentations are to be made, and people were sharing more at this point and ready to prepare for presentation. Negative comments included, needs more structure, too tired to accomplish much and we had covered most of the points already, and a "mandatory" session may not be as crucial as having a briefing before dinner and a location where the past participants will be for an hour of assistance.

**Workshop: "Examining the Legislative Process" "View from Congress"**

Of the thirty participants that responded with written comments, most were very positive about the experience. Comments included, informative yet not too complex, a wealth of fascinating information on the political process, very informative, good question and answer session, liked the division into beginner group and "have done" group, great to examine legislative physical environment, and god opportunity. Negative comments included, could have been expanded somewhat, we just seemed to wander around and do very little, too short, and seemed to go slow.

Panel Discussion: Laura Hudson, Legislative Director for Senator J. Bennett Johnston

Of the twenty-two participants that responded with written comments, almost every response was very positive. Comments included, came across as a realist and no-nonsense person, encouraged me all the more to want to be a facilitator in the educative process, bring her back and schedule a little more time for her, among the best speakers we have had, well worth the time, sharp lady, very informative, materials provided were valuable, recommend her strongly for next year, great job, and really showed the importance and role of assistants. The couple of negative comments included, needed to speak more, and needed more time.

Congressional Seminar: Sliter or Nickles

Of the eighteen participants that responded with written comments, there was only one negative response about the session with Senator Sliter and only one positive response about the session with Senator Nickles. Comments concerning Senator Sliter's session included, encouraging to hear from these people who seem to still have their ears to the ground and can make solid common sense recommendations on environmental issues, he was good and would like for him to have more time, please bring back, very good, extremely helpful, materials given were excellent, and well done. The only negative comment was that he did not answer questions - only restated the question.

The only positive comment about the session with Senator Nickles was that it was very informative and enlightening. The negative comments included, interesting to hear a narrow minded politician and his point of view, lacked the knowledge of specifics when responding to many questions, glad Senator Nickles is not from my state - he was so ill-informed that he could have no intelligent impact on the important question of energy and the environment, boring, said a lot about a little, I apologize of the stupidity of Senator Nickles - a good contrast to Boren, and glib but not too well informed.

"Defining National Energy Strategy"

Of the thirty-nine participants that responded with written comments, all but one of the responses was positive. Comments included, great, excellent activity and great way to incorporate much of what we learned and to interact one last time, great student activity, good closure activity to illustrate difficulties with determining energy policy, great thought provoking process, excellent simulation, interesting, wonderful activity, really had fun and it was a great activity since we had information on all these things, and good conclusion. The only negative comment was, it was hard to do activity when we were tired and noisy.

Curriculum Presentations

Of the thirty-seven participants that responded with written comments, the responses were overwhelmingly positive. Comments included, helpful idea generator, I gained many new ideas from others, interesting and informative, great closure to institute experience, stimulating, extremely effective, great way to share ideas before going our own ways, excellent, and provided the opportunity to see and hear the wide range of curriculum projects developing from the institute.

Most negative comments involved the lack of sticking to time constraints of a few minutes per group, and no question/answer period. Other comments included, was a bit rushed, and too much detail.

Any Additional Evaluative Comments You Would Like To Make Concerning Any Activities Of The Institute

Of the forty-five participants that responded with written comments, many mentioned the quality staff, excellent organization, good food and accommodations, and the professional treatment they were afforded. Other comments mentioned frequently included recycle and do not use so much plastic and Styrofoam at OU, turn up the thermostats at the Energy Center, be more specific about clothing requirements, and need to hear more from the environmental point of view. Other comments or suggestions included, ask for e-mail addresses of each participant, best institute I have ever attended, cannot wait to get back to share this information with my class, and the most appreciated part of the institute was the wonderful presenters - from professors to guest speakers to staff members.

### Institute Evaluation

At the close of the institute, participants were asked for their opinions concerning general aspects of the institute, such as those dealing with organization and administration or ease of integrating institute information into their classrooms. They could indicate an opinion from "strongly disagree" to "strongly agree." They were also asked their opinions concerning the logistics of the institute such as travel, food, and lodging accommodations. They could indicate an opinion ranging from "excellent" to "poor." These data are provided in Table 9.

Along with these ratings, participants were invited to make comments concerning logistics, organization and administration, and strengths and weaknesses of the institute. The comments from each question were distilled and summarized as briefly as possible without losing the original proportion of positive and negative comments as well as the main idea(s) of the statements. See Table 10.

The evaluation data from Tables 9 and 10 must be analyzed concurrently. It is inappropriate and misleading to interpret a session evaluation solely from the data provided by only one table. Interpretation of the two tables together is important because some participants did not write any comments yet indicated an opinion, whereas in some cases the opposite was true; a comment was written but no opinion rating was provided. These discrepancies also explain why the total number of participants responding varies widely across the sessions.

Table 9. Ratings Summary of General and Programmatic Areas of the Institute

**Part I: General**

|   | Strongly<br>Disagree | Neutral | Strongly<br>Agree |       |
|---|----------------------|---------|-------------------|-------|
| 1. I had the opportunity to actively participate during the institute.  | 1                    | 0       | 0                 | 5 46  |
| 2. The institute provided the opportunity to work and discuss with other participants.  | 1                    | 0       | 1                 | 3 47  |
| 3. I feel that the Energy, Environment and Policy Choices curricula will require extra planning time in order to effectively use it in teaching.  | 1                    | 3       | 2                 | 8 38  |
| 4. I am not comfortable with using the Energy, Environment and Policy Choices curricula in my classroom.  | 41                   | 9       | 0                 | 0 1   |
| 5. Development of the Energy, Environment and Policy curricula was difficult.   | 18                   | 16      | 8                 | 9 1   |
| 6. As a result of the Energy, Environment and Policy Choices Institute I feel more knowledgeable about energy and the environment.  | 2                    | 3       | 1                 | 6 40  |
| 7. I feel that the information obtained during this institute will be easy to implement and interpret in my classroom.  | 0                    | 3       | 5                 | 22 22 |
| 8. I will implement Energy, Environment and Policy Choices institute curricula in my classes during the coming year.  | 0                    | 1       | 2                 | 7 42  |
| 9. My students' understanding of policy choices related to energy and the environment will be greatly enhanced through the use of information I have gained by participating in this institute. | 1                    | 0       | 2                 | 13 36 |
| 10. As a result of this institute, I am able to integrate topics on Energy, Environment and Policy Choices in my teaching.  | 1                    | 0       | 3                 | 11 37 |

Table 9. cont.

**Part II: Programmatic**

11. What is your opinion of the air travel arrangements (home state to Oklahoma to Washington, D.C. to home state made for you during this institute)?

| excellent | good | average | fair | poor |
|-----------|------|---------|------|------|
| 33        | 14   | 3       | 0    | 0    |

12. What is your opinion of the ground travel arrangements for the institute?

| excellent | good | average | fair | poor |
|-----------|------|---------|------|------|
| 37        | 12   | 3       | 0    | 0    |

13. What is your opinion of the hotel accommodations during this institute?

| excellent | good | average | fair | poor |
|-----------|------|---------|------|------|
| 39        | 10   | 2       | 0    | 1    |

14. What is your opinion of the meals provided for you during the institute?

| excellent | good | average | fair | poor |
|-----------|------|---------|------|------|
| 47        | 4    | 1       | 0    | 0    |

15. What is your opinion of the required reading material for the institute?

| excellent | good | average | fair | poor |
|-----------|------|---------|------|------|
| 16        | 20   | 12      | 4    | 0    |

16. What is your opinion of the organization and administration of institute activities and events?

| excellent | good | average | fair | poor |
|-----------|------|---------|------|------|
| 49        | 3    | 0       | 0    | 0    |

17. In general, how do you feel about the Energy, Environment and Policy Choices summer institute?

Overall, I feel it was:

| excellent | good | average | fair | poor |
|-----------|------|---------|------|------|
| 50        | 2    | 0       | 0    | 0    |

Table 10. Summary of Institute Evaluation Statements

**Institute Evaluation Summary (Programmatic Section)**

**What was your opinion of the air travel arrangements?**

Of the thirty-seven participants that responded with written comments, the majority were very positive, indicating they had no problems, the arrangements were fine, flights were direct and at convenient times, and staff went beyond the call of duty by letting so many people make special arrangements. Other positive comments included, excellent, outstanding, thank you for being considerate and thoughtful, and you all shone through and came to my rescue after a canceled flight.

The most frequent negative comment was that flights could have been more direct. Other comments included, hours might have been more convenient if we had used another airline, no frequent flier miles, too much of a time delay waiting to head home so had to make my own arrangements at my own expense, prefer United, luggage transfer a problem, flight delays were a problem, and need arrangements for individuals wanting to drive to Norman.

**What was your opinion of the ground travel arrangements for the institute?**

Of the thirty-six participants that responded with written comments, many described the drivers as pleasant, friendly, willing to help, courteous, safe, and excellent. Other frequently mentioned comments about ground transportation included, on time and smooth, OU trolleys fun, and everything was great. Other comments included, no problems, right on the money, efficient use of time, buses were excellent, very good, nice not to ride on school buses, and very adequate.

The most frequently mentioned negative comment centered around the lack of air conditioning in DC buses. Other comments included, should travel in DC by Metro, Sheraton shuttle terrible, and buses in OK uncomfortable.

**What is your opinion of the hotel accommodations during this institute?**

Of the forty participants that responded with written comments, most clearly recognized differences between the Residence Inn in Norman and the Sheraton National in DC. The Residence Inn was frequently described as excellent, great, outstanding, and superior to DC arrangements. Additionally, it was described as extremely wonderful, room accommodations and service very good, never stayed in such a nice hotel, fantastic, splendid, unbelievable, felt like queens, the privacy it afforded us and the comfort made it easier for us to be away from home and to focus our attention more fully on the issues, and Residence Inn would get my business again. The only negative comment concerned a lack of workout space at the Residence Inn and was mentioned by one participant.

The Sheraton National was described by several participants as very good, good, and average to fair. Other positive comments included, no complaints, comfortable and clean rooms, great, wonderful, super accommodations, rooms could not have been better, and fine. Several complaints about the Sheraton National were mentioned more than once. These included, prefer a location within walking distance to the Metro, no area to walk safely, not very walkable anywhere, inability to make local phone calls without expense, and exercise facilities poorly equipped. Other comments included, generally poor service, rooms were smelly and too cold, billed for service not used, conference rooms cold, less space per room than in Norman, shuttle bus was ridiculously slow, and limited service.

**What is your opinion of the meals provided for you during the institute?**

Of the forty-six participants that responded with written comments, many described the meals as outstanding, too much food good variety, and great meals. Other positive comments included, kept us well fed, all were pretty good, thanks for the "light" fare fruits, excellent, never have so few eaten so much, very good, fantastic, no complaints, exceptional, barbecue was fantastic, crab dinner was great, "America" was outstanding, and my increase in weight is my testimony.

Some felt there were too many meals with chicken and that too much food was provided at the Union Station lunch in DC. Other suggestions and negative comments included, lunches could be small sandwich bar, make one big meal and the others smaller waste of paper and plastic not a good model, fish meal in DC not a good choice, we had some choices but were not aware that other meals would be chicken and chose chicken then regretted it later, ran out of ribs, and why sign up for meals - some were not available.

**What is your opinion of the required reading material for the institute?**

Of the thirty-six participants that responded with written comments, negative statements or suggestions for improvement outnumbered positive statements. Positive statements included, needed for implementation, informative, enough material to obtain pertinent information, thanks for sending materials in advance, very helpful, information was informative, factual and easy to read, the last section which provided an overview of energy was the best read and most applicable, just about the right amount, needed to give everyone a common point of reference, good selection - prereadings were appropriate and not unnecessarily overwhelming, any prior information is always helpful, and good background.

Negative comments were numerous and included, somewhat dry reading, could have been more on energy - maybe one on each source, been exposed to this material many times before, never discussed - I will need to read it again, not very much, summarize a bit more, more should be included about production and extraction of fossil fuels, but try to refer to it, a bit too didactic, and idealistic beyond application in most cases. Other comments included, could have included materials which explore issues of energy in terms of values, beliefs, etc., did not think I learned much relating to the institute by having read the booklet, social studies and science background could have been shortened - they reminded me of an Ed 101 course, more background information on energy sources, not challenging, somewhat obvious information, higher level - more meat, require The Prize for background, I thought the reading material was unnecessary, some of the material goals of energy and environment could be included as well as a few briefing papers instead of articles, and pretty basic stuff.

**What is your opinion of the organization and administration of institute activities and events?**

Of the thirty-seven participants that responded with written comments, nearly every statement was very positive. Comments included, organization was fantastic, we were treated as fellow professionals and not subjects to be dealt with, great job by all, unbelievable, the most organized and beneficial program I have ever attended, always professional, and all of our needs were anticipated and satisfied. Other comments included, appreciate efforts of the staff to get to know each participant, great job by great staffs at both OU and Close Up, outstanding, showed lots of effort in planning and in willingness to accommodate individual as well as group needs, absolutely amazed at the efficient organized manner in which every detail was handled, you are the most professional and caring people I have met in education, and very much on time and non threatening. The four negative comments included, could have worked us a little harder, could have used more science, fewer speakers - more interaction, and rooms were too cold.

**In general, how do you feel about the Energy, Environment and Policy Choices summer institute?**

Of the thirty-three participants that responded with written comments, nearly every response was positive. Comments included, one of the best I have ever attended, excellent, it was way beyond my expectations, the organizers at OU and Close Up did an excellent job of getting a mix of speakers and activities, awesome, the best institute in my 28 years of teaching, I have been energized and informed and motivated by the people I have met and the activities I have participated in, incredible experience, best educational opportunity I have been involved in, and I have gained new insight and awareness of myself as a consumer and a teacher. The only two negative comments included, more intensive level of information needed in some instances, and some speakers needed more current data and biomass not well covered.

**What were the weaknesses of the Energy, Environment and Policy Choices institute?**

Of the forty-four participants that responded with written comments, the most frequently mentioned weakness was the lack of an appropriate number of environmental seminars to balance out with the energy and policy seminars. Other frequently mentioned items included the need to recycle and turn up the thermostats in the Energy Center to save energy, more dynamic speakers as well as ethnically diverse speakers, and provide more time to talk with the presenters. Other comments included, more preparation for C-SPAN, not enough depth in science or social studies issues, lack of free time, fast pace of the institute, most panels were lectures or presentations rather than hands-on activities, need overview of energy field, and need point/counterpoint discussions between energy areas.

**What were the strengths of the Energy, Environment and Policy Choices Institute?**

Of the fifty-three participants that responded with written comments, nearly all contained some reference to the high quality of the staff, professional speakers and panelists, and the excellent organization of the institute. Other comments mentioned repeatedly included, good overall view of the issues, on-site experiences, being respected and treated as professionals, strong selection process for participants, lots of information and ideas for implementation, and meeting and sharing ideas with fellow teachers with diverse backgrounds.

## Conclusions and Reference

Analyses of the questionnaires and written essays completed by the fifty-seven participants indicated an overwhelming satisfaction with the logistical arrangements, organization, administration, and personnel associated with the institute. Participants' pre- and post-institute attitude measures and comments indicated that more positive opinions toward energy and related issues in politics, economics, and the environment were attained as a result of the institute. In addition, cognitive assessments indicated that participants gained more meaningful understandings of energy, economics, politics, and the environment and demonstrated this by directly citing examples and experiences gained during the institute.

On the Institute Evaluation form, participants were asked how they felt about the institute. The following statements are representative of the comments echoed by the participants of the 1994 summer institute, "Energy, Environment and Policy Choices."

"One of the best I have ever attended. Like it was said at our banquet - it's nice to be treated like professionals."

"It was way beyond my expectations (and I thought it would be good)."

"The best institute in my 28 years of teaching."

"Not to be redundant, but this was an outstanding institute. I have been energized, informed and motivated by the people I've met and the activities I've participated in."

"Outstanding effort - I'm tired but will have positive reflections on the quality of the program, leadership, and the participants."

"A super opportunity - every teacher in the world needs this opportunity."

"Best educational opportunity I have been involved in."

"I have gained new insight and awareness of myself as a consumer and a teacher."

"I feel the institute far exceeded my expectations. The materials and presentations were well organized, with great attention paid to the needs of the classroom teacher. Unfortunately, this is a rarity in our profession. It has reawakened my enthusiasm and I am once again eager to return to my students."

## **Reference**

Marek, E.A., Cavallo, A.M.L., & Gerber, B.L. 1994. "Energy, Environment and Policy Choices: Summer Institutes for Science and Social Studies Educators - An Evaluation of Year One." Report funded by U.S. Department of Energy. University of Oklahoma Printing Services.

## **Instrumentation**

**Background Information Questionnaire**

**Attitude Questionnaire**

**Cognitive Assessment Form**

**Session Evaluation Form**

**Institute Evaluation Form**

Copies of all evaluation instruments used in this project can be found in the year one report.

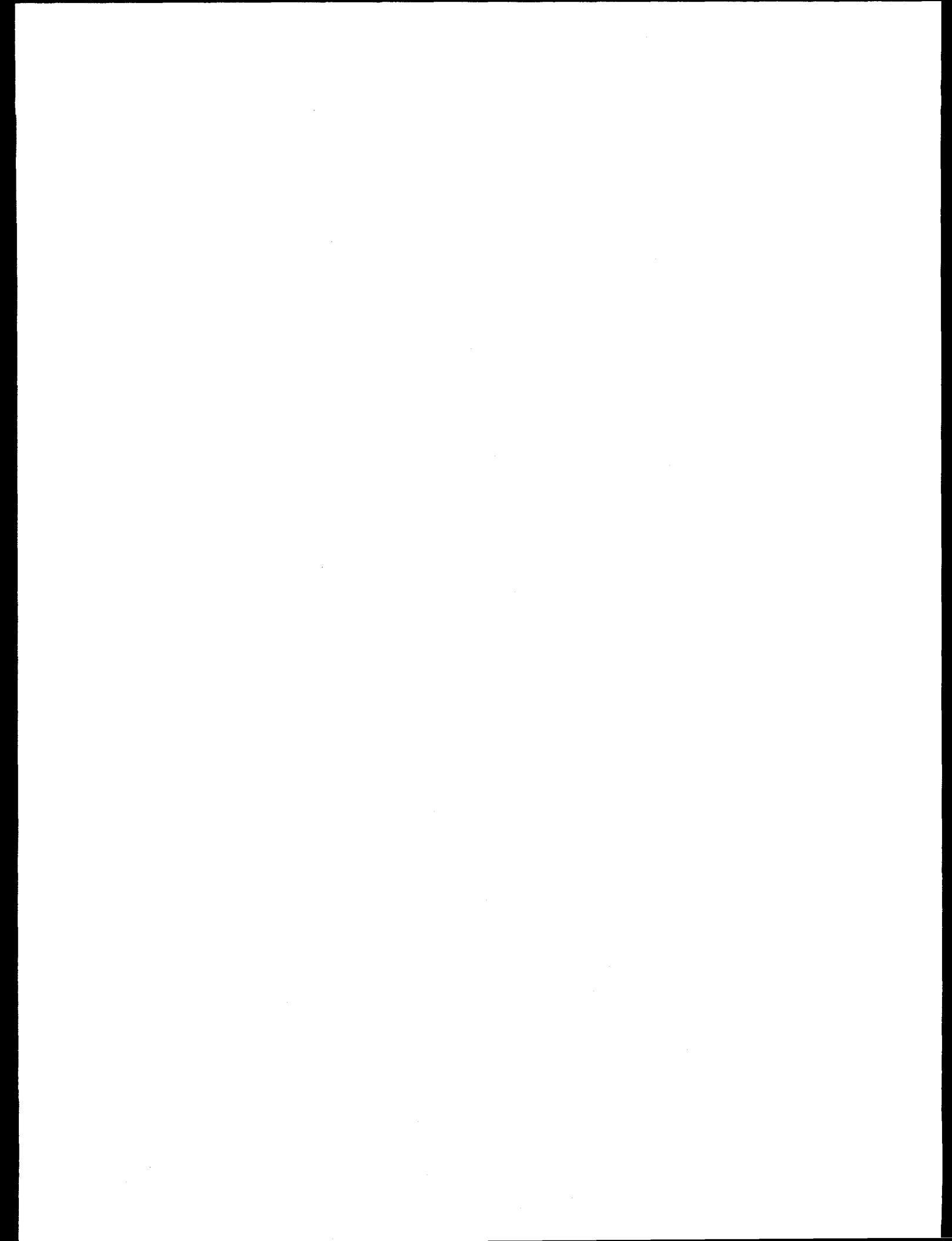
**ENERGY, ENVIRONMENT, AND POLICY CHOICES:  
SUMMER INSTITUTES FOR SCIENCE  
AND SOCIAL STUDIES EDUCATORS**

**An Evaluation of Year Three**

**The University of Oklahoma  
Close Up Foundation  
U.S. Department of Energy**

**U.S. Department of Energy Contract No. DE-FG02-92ER75744**

**1996**



This report is an evaluation of year three of a three year program titled, "Energy, Environment, and Policy Choices: Summer Institutes for Science and Social Studies Educators." The program is sponsored by a grant from the United States Department of Energy and is administered through the Center for Energy Education (CEE). The CEE is a partnership which includes personnel at the University of Oklahoma in Norman, Oklahoma and the Close Up Foundation which is located in Washington D.C. This evaluation report was compiled by Edmund A. Marek, Project Director and Brian L. Gerber, Research Assistant. Special acknowledgement is extended to Ann M. L. Cavallo for her contributions during the preparation of the evaluation design and instrumentation and the first two years of data gathering and analysis.

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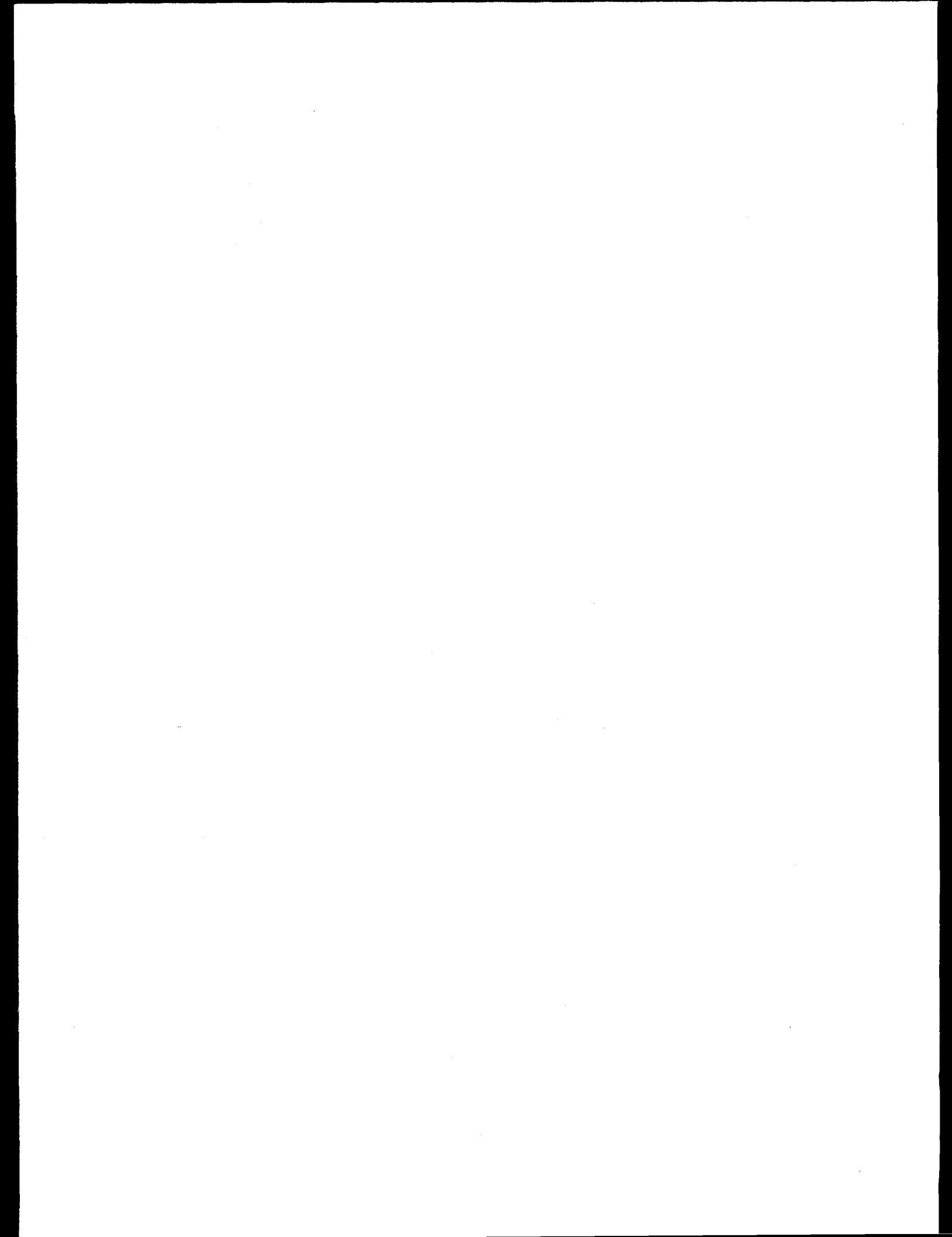
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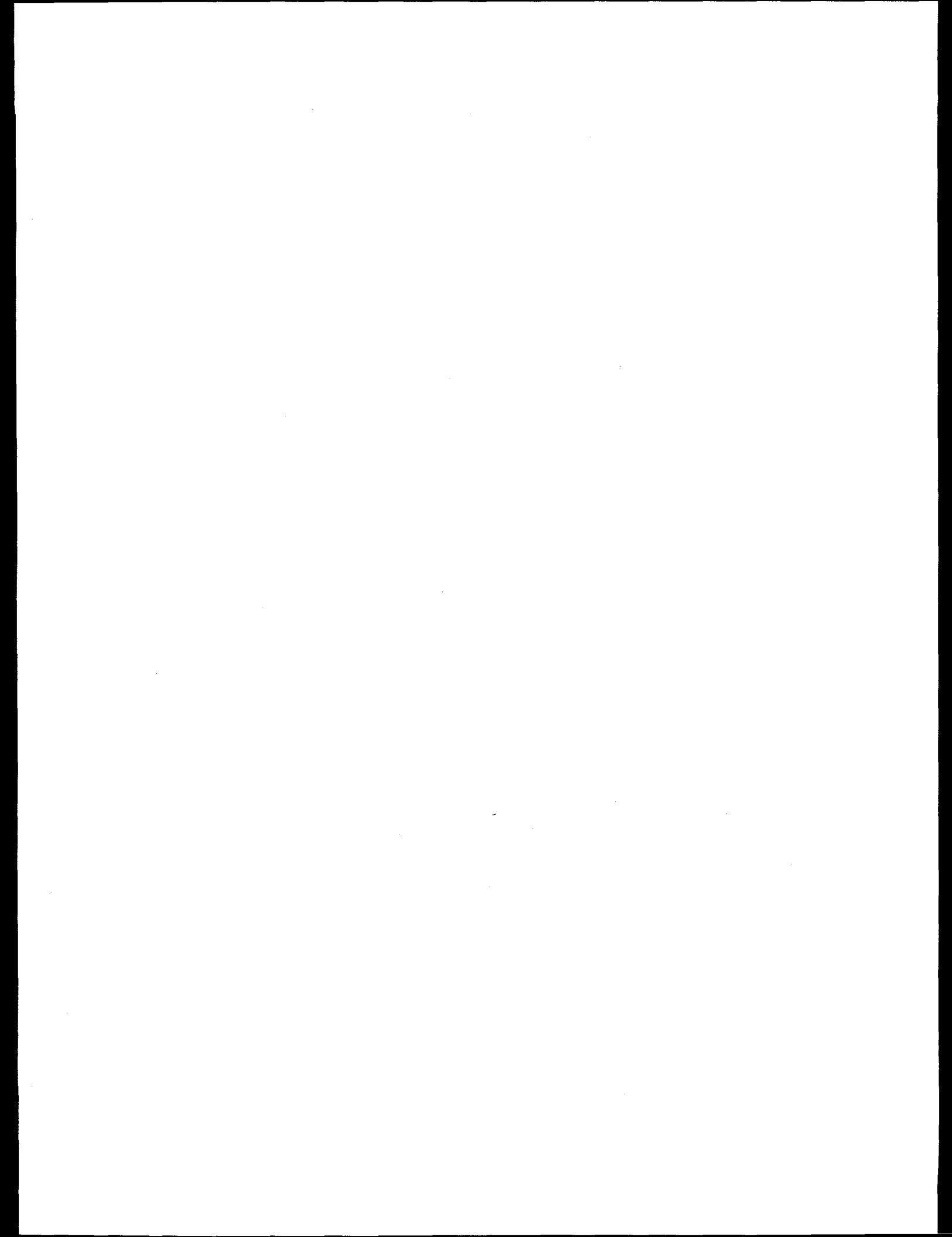
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## **Introduction**

This is the third in a series of three evaluation reports (1994 - 1996) which were produced annually as a result of "Energy, Environment and Policy Choices: Summer Institutes for Science and Social Studies Educators." During the summer of 1995 personnel from the University of Oklahoma in partnership with personnel from the Close Up Foundation conducted an intensive two-week program for educators from across the country.

The program's participants consisted of forty-nine secondary school teachers and curriculum specialists who were carefully chosen from sixteen states, Yap and Puerto Rico. Additionally, two experienced teams of teachers were also invited to attend the 1995 institute to model the curricula they had developed as a result of their involvement in the 1994 institute. This report summarizes the year three results of the comprehensive evaluation of this project.

## Year Three Evaluation Plan

The evaluation plan for year three of the project (Figure 1) was nearly identical to that of year one and year two. A complete description of the evaluation instruments as well as copies of all instrumentation can be found in the Appendices of the year one report (Marek et al., 1994).

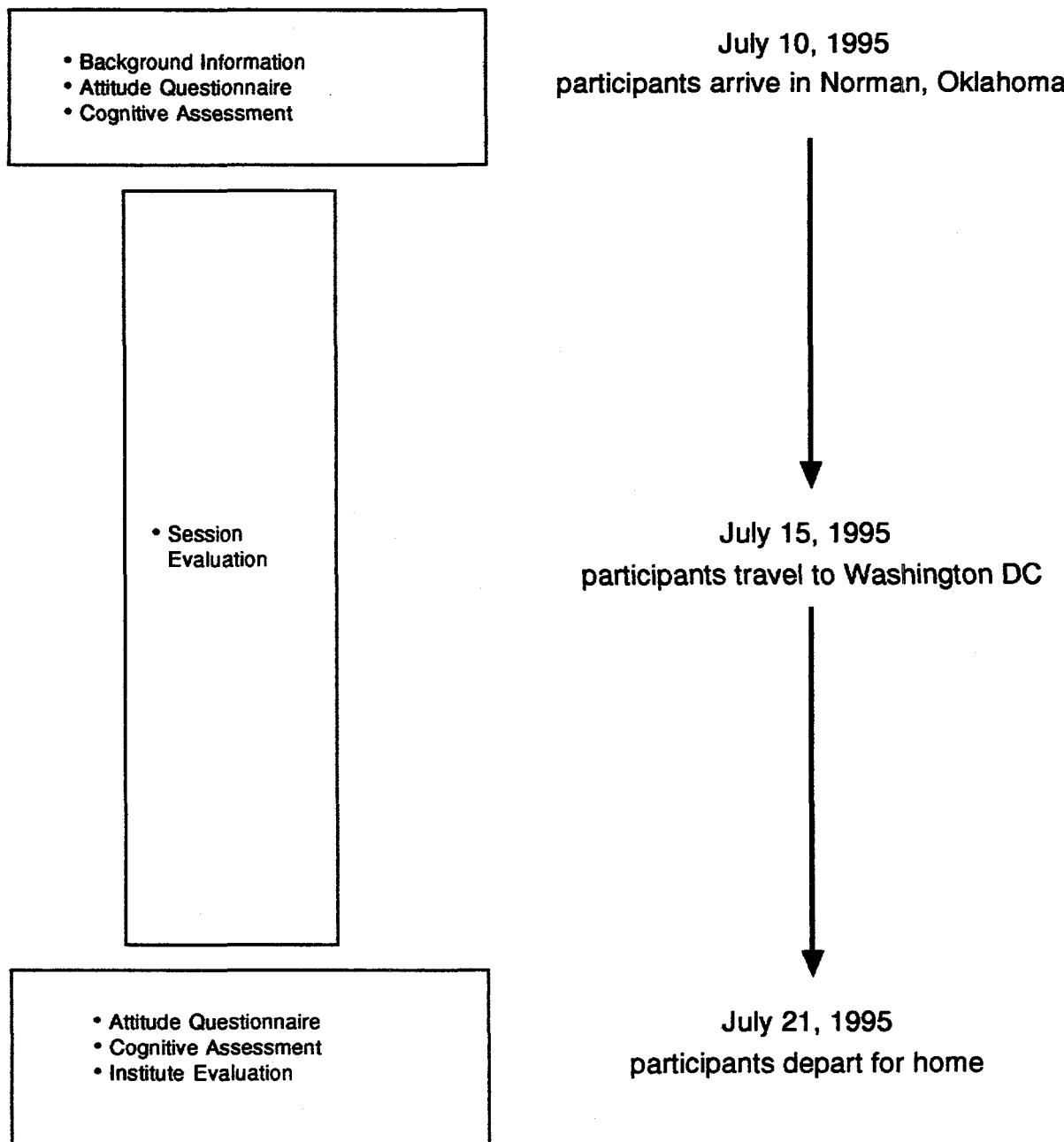


Figure 1. 1995 Energy, Environment and Policy Choices Evaluation Plan

## Results

### Background Information

Forty-nine individuals were selected to attend the 1995 institute. In addition to these participants (Table 1), two teams of exemplary participants from the 1994 institute were invited to return and mentor the new participants in curriculum development techniques. Three of the four mentors invited were able to attend the 1995 institute. Two of the new participants were curriculum development specialists and were associated with the University of Oklahoma, therefore, many questions on the Background Information Questionnaire were not applicable. Because of this, none of the data provided by these two participants or the returning mentors are included in the figures or narrative of this section.

Of the forty-seven persons for which data are reported, twenty-three were from the natural sciences, twenty-one from the social sciences, two persons taught in both the natural sciences and the social sciences, and one person taught primarily language arts. Most of the participants were female (Figure 2), Caucasian (Figure 3), and came from suburban or small city schools (Figure 4). Most participants had earned master's degrees (Figure 5) and represented a relatively even distribution of years of teaching experience (Figure 6).

As reported by the participants (Figure 7), the combined ethnic composition of the schools in which they currently teach consists predominately of Caucasians (56%) with African Americans making up the next largest category (22%). The combined socio-economic composition of the schools in which the participants teach (Figure 8) consists primarily of middle income families (37%). Participants reported more low income families (27%) than upper-middle income families (14%) and over three times as many families at or below poverty level (17%) as compared to those considered as high income families (5%).

Table 1. Origin of Participants by State

State      Number of Participants

|                   |   |
|-------------------|---|
| Alabama.....      | 2 |
| Arkansas.....     | 1 |
| Georgia.....      | 2 |
| Illinois.....     | 1 |
| Iowa.....         | 2 |
| Louisiana.....    | 4 |
| Michigan.....     | 2 |
| New Jersey.....   | 1 |
| New York.....     | 2 |
| North Dakota..... | 2 |
| Ohio.....         | 4 |
| Oklahoma.....     | 9 |
| Oregon.....       | 3 |
| Texas.....        | 2 |
| Utah.....         | 4 |
| Virginia.....     | 2 |
| Yap.....          | 1 |
| Puerto Rico.....  | 3 |

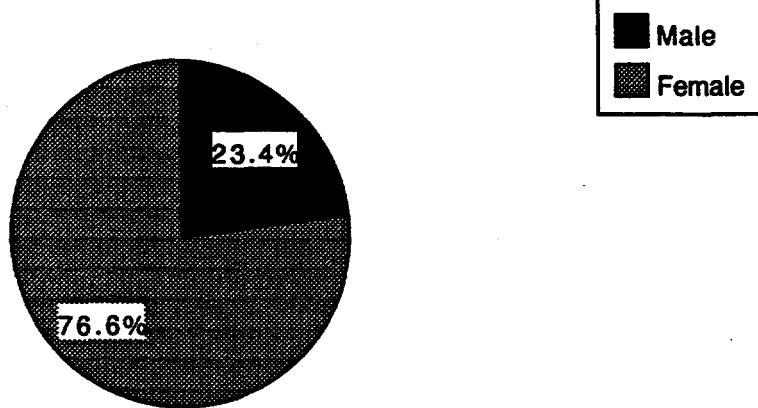


Figure 2. Gender of Participants

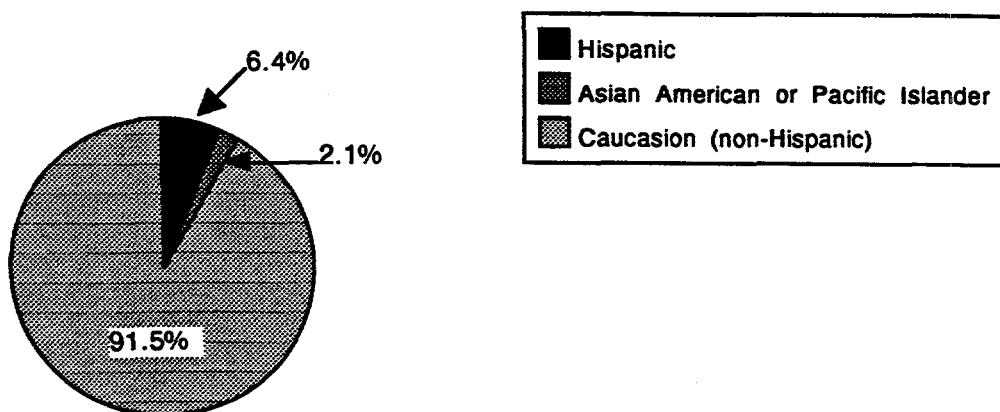


Figure 3. Ethnic Origin of Participants

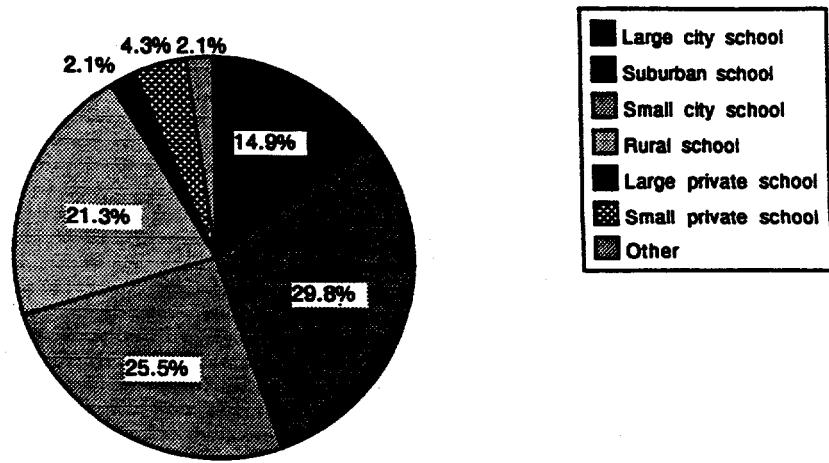


Figure 4. Types of Schools Where Participants Teach

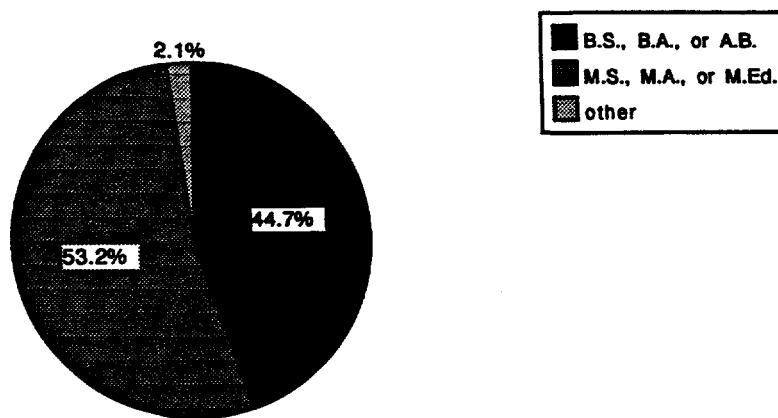


Figure 5. Highest Academic Degree Held by Participants

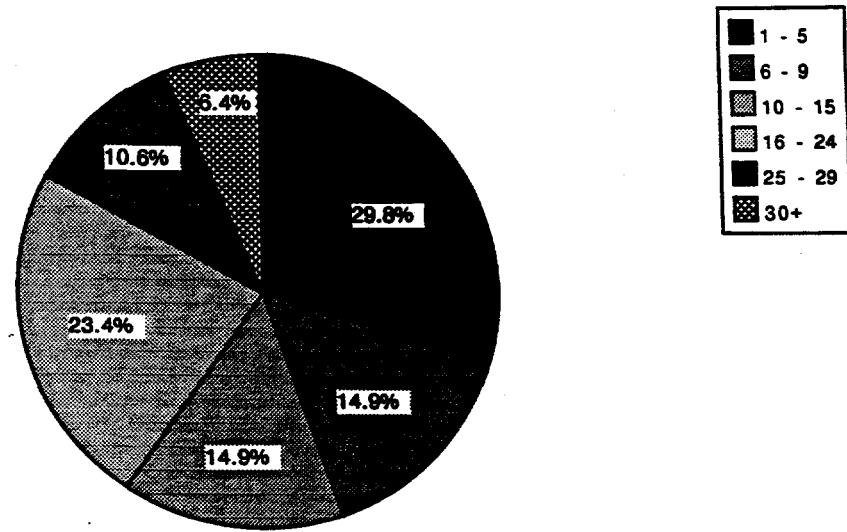


Figure 6. Years of Teaching Experience

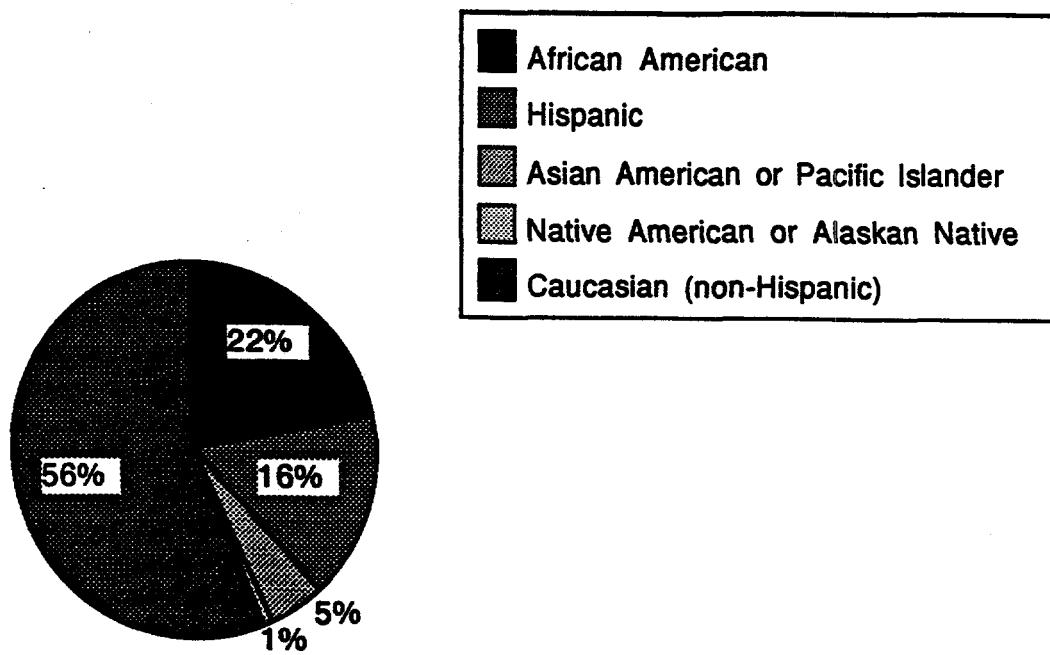


Figure 7. Ethnic Composition of Schools Where Participants Teach

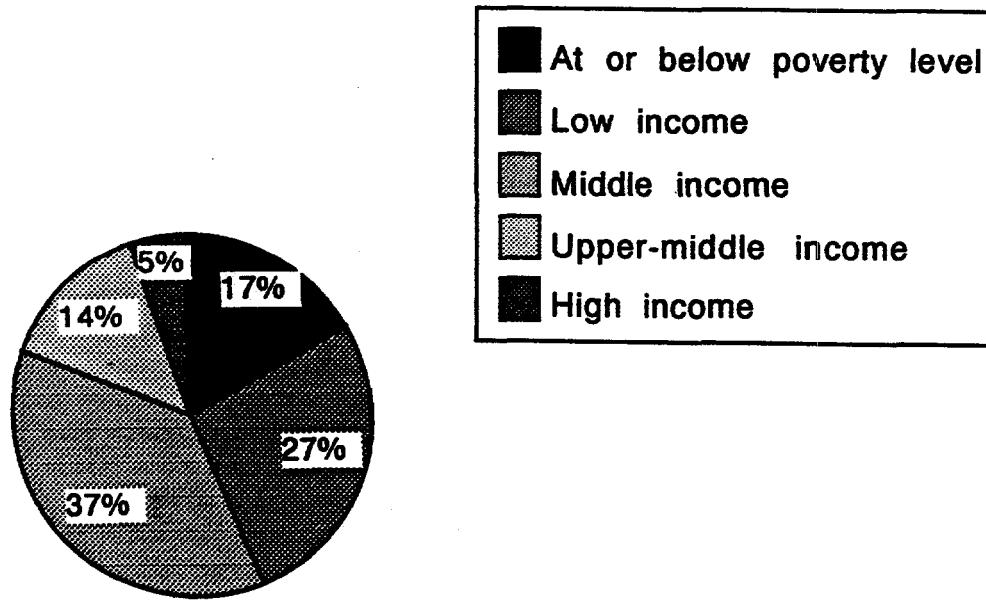


Figure 8. Socio-economic Composition of the Participants' Schools

### Attitudes Assessment

The technocentric and ecocentric parameters of the 1995 participants were assessed in the same manner as described for the year one participants (Marek et al., 1994). Participants' scores ranged from technocentric to ecocentric with the majority of scores in the moderate ranges. There was very little change between pre- and post-institute scores with means remaining in the moderate ecocentric environmental position.

Tables 2-4 present the participants' frequency of responses to the twenty-six item section of the questionnaire measuring attitudes toward energy and related issues in politics, economics, and the environment. No significant change from pre- to post-institute scores was observed for any of the statements. However, the largest change came in statements "f" and "g" of Table 2. Pre-institute scores reflected an overall disagreement with the statements that the federal government and industry are genuinely trying to solve our energy problems. As a result of the institute, the post-institute scores reflected a positive shift in their general attitudes that the federal government and industry are genuinely trying to solve our energy problems.

Table 2. Frequency of Responses by Participants on Attitudes Toward Energy

|  | Pre-institute     |                 |              |                | Post-institute    |                 |              |                |
|--|-------------------|-----------------|--------------|----------------|-------------------|-----------------|--------------|----------------|
|  | Strongly Disagree | Mildly Disagree | Mildly Agree | Strongly Agree | Strongly Disagree | Mildly Disagree | Mildly Agree | Strongly Agree |
| a) The people in my region have no serious energy problems.  | 26                | 16              | 4            | 1              | 25                | 13              | 8            | 0              |
| b) America should develop energy independence even if it means that energy will cost more.                 | 1                 | 14              | 22           | 10             | 1                 | 3               | 19           | 23             |
| c) The average citizen cannot have any influence in what the government does about energy problems.        | 31                | 15              | 0            | 1              | 39                | 7               | 0            | 0              |
| d) The average citizen cannot have any influence in what manufacturing companies do about energy problems. | 34                | 12              | 0            | 1              | 38                | 7               | 1            | 0              |
| e) The average citizen cannot have any influence in what oil companies do about energy problems.           | 34                | 12              | 0            | 1              | 38                | 7               | 1            | 0              |
| f) The federal government is genuinely trying to solve our energy problems.                                | 3                 | 25              | 18           | 1              | 3                 | 9               | 29           | 5              |
| g) Industry is genuinely trying to solve our energy problems.  | 11                | 17              | 19           | 0              | 4                 | 16              | 25           | 1              |
| h) Consumers are genuinely trying to solve our energy problems.  | 9                 | 27              | 11           | 0              | 7                 | 24              | 15           | 0              |

**Table 3. Attitudes of Participants Toward Potential Health and Safety Problems Associated with Various Energy Sources**

|  | Pre-institute     |                    |             |                       | Post-institute    |                    |             |                       |
|--|-------------------|--------------------|-------------|-----------------------|-------------------|--------------------|-------------|-----------------------|
|  | Extremely Serious | Moderately Serious | Not Serious | No Potential Problems | Extremely Serious | Moderately Serious | Not Serious | No Potential Problems |
| Coal mining  | 22                | 20                 | 5           | 0                     | 6                 | 30                 | 8           | 1                     |
| Offshore drilling and the Alaskan oil pipeline         | 13                | 23                 | 11          | 0                     | 9                 | 25                 | 9           | 2                     |
| Coal powered generators                                | 11                | 26                 | 10          | 0                     | 8                 | 23                 | 11          | 2                     |
| Importing or shipping foreign oil to the United States | 7                 | 26                 | 13          | 1                     | 12                | 17                 | 13          | 3                     |
| Nuclear powered generators                             | 18                | 24                 | 4           | 1                     | 13                | 22                 | 9           | 1                     |
| Solar power  | 0                 | 0                  | 19          | 28                    | 0                 | 0                  | 8           | 37                    |
| Wind powered generators                                | 0                 | 1                  | 20          | 26                    | 0                 | 0                  | 8           | 37                    |
| Conversion of biomass to usable energy                 | 0                 | 10                 | 26          | 11                    | 0                 | 12                 | 20          | 13                    |
| Use of natural gas                                     | 0                 | 24                 | 20          | 3                     | 0                 | 17                 | 22          | 6                     |

**Table 4. Attitudes of Participants Toward Potential Environmental and Pollution Problems Associated with Various Energy Sources**

|  | Pre-institute     |                    |             |                       | Post-institute    |                    |             |                       |
|--|-------------------|--------------------|-------------|-----------------------|-------------------|--------------------|-------------|-----------------------|
|  | Extremely Serious | Moderately Serious | Not Serious | No Potential Problems | Extremely Serious | Moderately Serious | Not Serious | No Potential Problems |
| Coal mining  | 18                | 25                 | 4           | 0                     | 13                | 26                 | 6           | 0                     |
| Offshore drilling and the Alaskan oil pipeline         | 25                | 21                 | 1           | 0                     | 19                | 24                 | 2           | 0                     |
| Coal powered generators                                | 14                | 30                 | 3           | 0                     | 10                | 27                 | 8           | 0                     |
| Importing or shipping foreign oil to the United States | 15                | 28                 | 2           | 0                     | 17                | 23                 | 5           | 0                     |
| Nuclear powered generators                             | 23                | 17                 | 6           | 1                     | 16                | 22                 | 6           | 1                     |
| Solar power  | 0                 | 0                  | 19          | 28                    | 0                 | 0                  | 7           | 38                    |
| Wind powered generators                                | 0                 | 1                  | 19          | 28                    | 0                 | 0                  | 8           | 37                    |
| Conversion of biomass to usable energy                 | 0                 | 8                  | 30          | 8                     | 0                 | 12                 | 18          | 15                    |
| Use of natural gas                                     | 1                 | 22                 | 23          | 2                     | 1                 | 16                 | 24          | 5                     |

## Cognitive Assessment

The knowledge assessment instrument consisted of one open-ended question designed to measure participants' meaningful understandings of energy and its interrelationships with policy choices and the environment. This measure was administered pre- and post-institute to determine if any changes in participants' understandings of these issues occurred during the course of the institute. Responses were analyzed and separated into the following four categories based on a hierarchy of cognitive domain which ranges from simple recall of facts to the evaluation and creation of new concepts.

**KNOWLEDGE/COMPREHENSION:** Responses may have included isolated facts or definitions as well as a basic description of the relationships between things.

**APPLICATION/ANALYSIS:** Responses may have included the application of ideas to their own situations or examining and describing each part of the question.

**SYNTHESIS/EVALUATION:** Responses may have included original thoughts, judgments or opinions.

In pretests, participants tended to give vague, incomplete examples in their explanations. In the post-test, most participants responded in a thorough and thoughtful manner, citing experiences and knowledge gained through the institute. Examples of typical pre-institute and post-institute explanations are cited below.

Pre-institute explanation: "Energy, the environment and policy choices are beyond a doubt interrelated at every turn. Our choices for energy usage directly affect the environment. The disposal of the waste products of the energy choices also affect the environment, usually in a negative way. The policy choices made by the government are affected by the companies that provide energy resources as well as those that care about the environment. Without the correct policy choices, the environment will be damaged beyond repair by our energy choices."

Post-institute explanation: "Energy is necessary in a society. It affects the natural, economic and political environment of every society. We must protect our natural environment to secure the future of the planet. We must evaluate the affects each energy source has on the environment. We need to consider the economic feasibility and application of each energy source. Once we understand the costs and

benefits of an energy source to the environment, then we need to develop policies that will foster responsible development, diversification and conservative use of our energy sources. Wars have been fought and will continue to be fought over energy resources if we do not change our current policies and practices. The future of our society, species, and planet depend on the choices we make today. Change will be slow but it must begin so we evolve as one energy era closes and another begins. The most important contribution I can make as a teacher is to foster the production of well-informed, concerned and responsible energy consumers for the future."

The statements above demonstrate that the institute enhanced the participants' knowledge base. The majority of teachers responded in a manner as described above, and demonstrated they had gained a better understanding of the interrelationships between energy, environment and policy choices.

#### Session Evaluation

Throughout the institute, participants were asked to rate the quality of each of the thirty-eight sessions from "excellent" to "poor" and to rate the relevance of each session from "extremely" relevant to "not at all" relevant. These data are provided in Table 5.

Along with these ratings, participants were invited to make comments concerning each of the sessions they attended throughout the two-week institute. The comments from each session were distilled and summarized as briefly as possible without losing the original proportion of positive and negative comments as well as the main idea(s) of the statements (Table 6).

The evaluation data from Tables 5 and 6 must be analyzed concurrently. It is inappropriate and misleading to interpret a session evaluation solely from the data provided by only one table. Interpretation of the two tables together is important because some participants did not write any comments yet indicated a rating or relevance, whereas in some cases the opposite was true; a comment was written but no rating or relevance was provided. These discrepancies also explain why the total number of participants responding varies widely across the sessions.

Table 5. Participant Ratings of Each Session of the Institute

|                                     |  | KEY FOR RATING                        |    |    |                |    |    | KEY FOR RELEVANCE                     |    |    |                 |    |    |
|-------------------------------------|--|---------------------------------------|----|----|----------------|----|----|---------------------------------------|----|----|-----------------|----|----|
|                                     |  | N = number of participants responding |    |    | ET = extremely |    |    | N = number of participants responding |    |    | ET = extremely  |    |    |
|                                     |  | EX = excellent                        |    |    | VE = very      |    |    | MD = moderately                       |    |    | VE = very       |    |    |
|                                     |  | GD = good                             |    |    | SW = somewhat  |    |    | AV = average                          |    |    | NA = not at all |    |    |
|                                     |  | FR = fair                             |    |    | PR = poor      |    |    | NA = not at all                       |    |    | NA = not at all |    |    |
|                                     |  | RATING OF SESSION                     |    |    |                |    |    | RELEVANCE OF SESSION                  |    |    |                 |    |    |
| UNIVERSITY OF OKLAHOMA WEEK         |  | N                                     | EX | GD | AV             | FR | PR | N                                     | ET | VE | MD              | SW | NA |
| July 11, 1995                       |  |                                       |    |    |                |    |    |                                       |    |    |                 |    |    |
| PURPOSE OF INTERACTIONS BETWEEN     |  |                                       |    |    |                |    |    |                                       |    |    |                 |    |    |
| SCIENCE & SOCIAL STUDIES            |  | 45                                    | 25 | 17 | 3              | 0  | 0  | 46                                    | 27 | 15 | 4               | 0  | 0  |
| "OIL" JOHN WARNER, AMOCO            |  | 46                                    | 29 | 14 | 3              | 0  | 0  | 46                                    | 26 | 15 | 5               | 0  | 0  |
| "RENEWABLES" GUS GERTSCH, OU        |  | 46                                    | 20 | 24 | 2              | 0  | 0  | 46                                    | 29 | 11 | 6               | 0  | 0  |
| "COAL" RANDY EMINGER, CEED          |  | 46                                    | 20 | 17 | 9              | 0  | 0  | 45                                    | 24 | 16 | 5               | 0  | 0  |
| "NUCLEAR" PETE KELLER, OU           |  | 46                                    | 6  | 11 | 20             | 7  | 2  | 45                                    | 20 | 11 | 10              | 4  | 0  |
| MODELS FOR CURRICULUM PROJECT       |  | 44                                    | 27 | 14 | 2              | 1  | 0  | 44                                    | 28 | 12 | 1               | 3  | 0  |
| July 12, 1995                       |  |                                       |    |    |                |    |    |                                       |    |    |                 |    |    |
| ENERGY CENTER LABORATORIES, OU      |  | 45                                    | 23 | 20 | 0              | 1  | 1  | 45                                    | 22 | 12 | 8               | 2  | 1  |
| CURRICULUM IMPLEMENTATION           |  | 46                                    | 31 | 12 | 3              | 0  | 0  | 45                                    | 31 | 10 | 3               | 1  | 0  |
| July 13, 1995                       |  |                                       |    |    |                |    |    |                                       |    |    |                 |    |    |
| TOTAL PETROLEUM REFINERY            |  | 46                                    | 26 | 18 | 1              | 1  | 0  | 45                                    | 25 | 11 | 9               | 0  | 0  |
| BIZZELL LIBRARY, HISTORY OF SCIENCE |  | 46                                    | 46 | 0  | 0              | 0  | 0  | 46                                    | 39 | 3  | 4               | 0  | 0  |

Table 5. cont.

| OU WEEK   | cont. | RATING OF SESSION |    |    |    |    |    | RELEVANCE OF SESSION |    |    |    |    |    |
|---|-------|-------------------|----|----|----|----|----|----------------------|----|----|----|----|----|
|   |       | N                 | EX | GD | AV | FR | PR | N                    | ET | VE | MD | SW | NA |
| July 13, 1995   |       |                   |    |    |    |    |    |                      |    |    |    |    |    |
| ALTERNATE ENERGY POWERED VEHICLES   | 46    | 35                | 11 | 0  | 0  | 0  | 0  | 46                   | 37 | 8  | 1  | 0  | 0  |
| "PLANNING YOUR CURRICULUM PROJECT"  | 38    | 22                | 10 | 5  | 1  | 0  | 0  | 38                   | 25 | 7  | 5  | 1  | 0  |
| July 14, 1995   |       |                   |    |    |    |    |    |                      |    |    |    |    |    |
| "ENERGY ALTERNATIVE ARCHITECTURE"   |       |                   |    |    |    |    |    |                      |    |    |    |    |    |
| JOHN ROBISON, OU  | 45    | 16                | 22 | 5  | 2  | 0  | 0  | 44                   | 24 | 11 | 6  | 3  | 0  |
| "GLOBALIZATION OF OIL & GAS INDUSTRY"                                     |       |                   |    |    |    |    |    |                      |    |    |    |    |    |
| RON EVANS, OU   | 42    | 21                | 19 | 1  | 1  | 0  | 0  | 42                   | 26 | 13 | 2  | 1  | 0  |
| "WIND POWER" KARL BERGEY,<br>BERGEY WND POWER                             | 44    | 30                | 9  | 5  | 0  | 0  | 0  | 44                   | 28 | 13 | 3  | 0  | 0  |
| "WHATEVER HAPPENED TO THE ENERGY CRISIS?"                                 |       |                   |    |    |    |    |    |                      |    |    |    |    |    |
| CHARLES MANKIN, OU  | 44    | 32                | 9  | 2  | 1  | 0  | 0  | 44                   | 33 | 10 | 1  | 0  | 0  |
| KIRKPATRICK CENTER  | 43    | 23                | 15 | 4  | 1  | 0  | 0  | 44                   | 19 | 10 | 11 | 4  | 0  |
| WASHINGTON D. C. WEEK   |       |                   |    |    |    |    |    |                      |    |    |    |    |    |
| July 16, 1995   |       |                   |    |    |    |    |    |                      |    |    |    |    |    |
| OPTIONAL TOURS  | 0     | 0                 | 0  | 0  | 0  | 0  | 0  | 0                    | 0  | 0  | 0  | 0  | 0  |
| US HOLOCAUST MEMORIAL MUSEUM  | 43    | 42                | 1  | 0  | 0  | 0  | 0  | 41                   | 29 | 2  | 2  | 3  | 5  |
| MICHAEL TOTTEN, CENTER FOR RENEWABLE<br>ENERGY AND SUSTAINABLE TECHNOLOGY | 45    | 29                | 12 | 3  | 0  | 1  | 1  | 45                   | 30 | 8  | 3  | 3  | 1  |

Table 5. cont.

|   |              | RATING OF SESSION |             |             |             |             |    | RELEVANCE OF SESSION |             |             |             |             |    |
|---|--------------|-------------------|-------------|-------------|-------------|-------------|----|----------------------|-------------|-------------|-------------|-------------|----|
|   |              | N                 | EX          | GD          | AV          | FR          | PR | N                    | ET          | VE          | MD          | SW          | NA |
| <b>WASHINGTON D. C. WEEK</b> cont.  |              |                   |             |             |             |             |    |                      |             |             |             |             |    |
| <b>July 17, 1995</b>  |              |                   |             |             |             |             |    |                      |             |             |             |             |    |
| "INFLUENCING THE PROCESS" JIM GREEN<br>MOBIL CORP.  | 46           | 20                | 19          | 6           | 1           | 0           |    | 46                   | 27          | 12          | 6           | 1           | 0  |
| "INFLUENCING THE PROCESS" SCOTT SKLAR<br>SOLAR ENERGY INDUSTRY ASSOCIATION                        | 46           | 34                | 10          | 2           | 0           | 0           |    | 46                   | 35          | 8           | 3           | 0           | 0  |
| "INFLUENCING THE PROCESS"<br>SCOTT PETERS, MEDIA SERVICES MANAGER<br>NUCLEAR ENERGY INSTITUTE     | 45           | 20                | 18          | 6           | 1           | 0           |    | 45                   | 29          | 10          | 5           | 1           | 0  |
| GARY LEE, NATIONAL STAFF REPORTER<br>WASHINGTON POST  | 46           | 27                | 18          | 0           | 1           | 0           |    | 46                   | 30          | 12          | 4           | 0           | 0  |
| NATIONAL RESOURCES DEFENSE COUNCIL<br>PUBLIC INTEREST RESEARCH GROUP                              | 10           | 6                 | 1           | 2           | 1           | 0           |    | 5                    | 2           | 1           | 1           | 1           | 0  |
| 5<br>FRIENDS OF THE EARTH<br>NATIONAL WILDLIFE FEDERATION   | 5<br>11<br>9 | 1<br>9<br>9       | 2<br>2<br>0 | 2<br>0<br>0 | 0<br>0<br>0 | 0<br>0<br>0 |    | 11<br>11<br>9        | 5<br>2<br>9 | 0<br>0<br>0 | 0<br>0<br>0 | 1<br>0<br>0 | 0  |
| "PLANNING YOUR CURRICULUM PROJECT"  | 45           | 20                | 20          | 3           | 2           | 0           |    | 45                   | 30          | 10          | 4           | 1           | 0  |
| July 18, 1995   |              |                   |             |             |             |             |    |                      |             |             |             |             |    |
| "VIEW OF THE EXECUTIVE BRANCH"<br>SHELLEY FIDLER, WHITE HOUSE<br>COUNCIL ON ENVIRONMENTAL QUALITY | 46           | 39                | 5           | 1           | 0           | 1           |    | 46                   | 38          | 6           | 2           | 0           | 0  |
| C-SPAN SEMINAR, FRED HANSON<br>ENVIRONMENTAL PROTECTION AGENCY                                    | 45           | 21                | 16          | 6           | 1           | 1           |    | 45                   | 25          | 13          | 4           | 2           | 1  |
| C-SPAN SEMINAR, FRED SMITH<br>COMPETITIVE ENTERPRISE INSTITUTE                                    | 41           | 15                | 16          | 6           | 3           | 1           |    | 41                   | 19          | 14          | 5           | 3           | 0  |
| "VIEW FORM THE DOE"   | 32           | 13                | 12          | 6           | 1           | 0           |    | 31                   | 12          | 11          | 7           | 1           | 0  |
| PATRICIA FRY GODLEY, ASST. SECRETARY<br>FOR FOSSIL FUEL, DEPT. OF ENERGY                          | 43           | 34                | 8           | 1           | 0           | 0           |    | 43                   | 37          | 5           | 1           | 0           | 0  |

Table 5. cont.

|                                       |    | RATING OF SESSION |    |    |    |    |    | RELEVANCE OF SESSION |    |    |    |    |    |
|---------------------------------------|----|-------------------|----|----|----|----|----|----------------------|----|----|----|----|----|
|                                       |    | N                 | EX | GD | AV | FR | PR | N                    | ET | VE | MD | SW | NA |
| <b>WASHINGTON D. C. WEEK cont.</b>    |    |                   |    |    |    |    |    |                      |    |    |    |    |    |
| <b>July 19, 1995</b>                  |    |                   |    |    |    |    |    |                      |    |    |    |    |    |
| J. THOMAS SLITER, MINORITY STAFF DIR. |    |                   |    |    |    |    |    |                      |    |    |    |    |    |
| COMMITTEE ON ENVIRONMENTAL AND        |    |                   |    |    |    |    |    |                      |    |    |    |    |    |
| PUBLIC WORKS                          | 44 | 32                | 10 | 1  | 1  | 0  |    | 44                   | 34 | 6  | 4  | 0  | 0  |
| Laura Hudson, Legislative Director    |    |                   |    |    |    |    |    |                      |    |    |    |    |    |
| FOR SENATOR J. BENNETT JOHNSTON       | 44 | 35                | 9  | 0  | 0  | 0  |    | 44                   | 37 | 5  | 2  | 0  | 0  |
| SENATE VISIT                          | 22 | 20                | 1  | 1  | 0  | 0  |    | 22                   | 21 | 1  | 0  | 0  | 0  |
| "DEFINING NATIONAL ENERGY STRATEGY"   | 41 | 35                | 6  | 0  | 0  | 0  |    | 41                   | 34 | 7  | 0  | 0  | 0  |
| <b>July 20, 1995</b>                  |    |                   |    |    |    |    |    |                      |    |    |    |    |    |
| "PLANNING YOUR CURRICULUM PROJECT"    | 43 | 27                | 12 | 3  | 1  | 0  |    | 44                   | 32 | 8  | 3  | 1  | 0  |
| "PRESENTATION PREPARATION"            | 41 | 29                | 9  | 3  | 0  | 0  |    | 42                   | 35 | 4  | 3  | 0  | 0  |
| "PRESENTING YOUR CURRICULUM PROJECT"  | 43 | 31                | 10 | 2  | 0  | 0  |    | 43                   | 35 | 7  | 1  | 0  | 0  |

Table 6. Summary of Session Evaluation Comments from Participants

**Session Evaluation Comments**

**"Purpose of and Interactions between Science and Social Studies"**

Of the thirty-six participants that responded with written comments, nearly all were very positive. Many participants felt that it was a good activity to relate interdisciplinary aspects of science and social studies, it was a good beginning and ice breaker, and that having social studies teachers define science and science teachers define social studies was a great idea. Other comments included, goals of workshop clearly stated, thought provoking, great, motivational, informative and fun, helped focus me on the the next 10 days, and wonderful introduction to the institute. Three participants commented that more lengthy discussions were needed.

**"Oil." John Warner, Amoco Corporation**

Of the thirty-two participants that responded with written comments, most responses were positive. The most frequent comments included, good information, handouts very helpful, well prepared, very interesting, a good lobbyist for the oil industry, and excellent speaker and presentation. Other remarks included, good explanation of exploration and production, a lot of usable information, not afraid to point out his bias, outstanding, very interesting, good discussion, and great enthusiasm.

Two participants commented that he needed more time. One participant felt that the print in the handouts should have been larger while another stated that too much detail was provided in a short period of time.

**"Renewables." Gus Gertsch, University of Oklahoma**

Of the thirty-two participants that responded with written comments, most were very positive. Those comments mentioned several times included, interesting and informative, very knowledgeable person, and good information. Other comments included, good structure and categorization, provided useful predictions, appreciated his ideas and directness, excellent, first hand experience stories were very interesting, very relevant, impressive, very valuable, helpful to hear the possibilities for alternative energy sources, excellent explanations, great overview, and information easily transferable to the classroom.

Only two negative comments were found more than once. These included, needs hand outs and not very well organized. Other comments included, low key, types of renewables should have been covered in more detail, didn't cover biomass, and wanted more on the science of renewables and not just skimming the surface.

**"Coal." Randy Eminger, Center for Energy and Economic Development**

Of the thirty-three participants that responded with written comments, slightly more than half were positive. These comments included, good information, helpful presentation, good overheads, very clear, especially liked positives and negatives of mineral extraction, will use this to help my students, made it clear, good statistics and graphics, and well organized and developed. The many negative comments included, very biased, went very quickly over data, need handouts of slides prior to speech, needed a better explanation of how coal is mined and problems involved, graphics were hard to read, felt I was being lobbied and not informed, and too fast and general.

**"Nuclear." Pete Keller, The University of Oklahoma**

Of the thirty-seven participants that responded with written comments, most were negative. The few positive comments included, good presentation, good use of common materials, interesting, made something hard easy to understand, and took the paranoia out of it.

The most frequent negative comments included, disorganized and not prepared, not enthusiastic, too laid back, and disappointing. Other comments included, need more discussion, more information should be provided, speaker did little to defend the use of nuclear energy against common misconceptions, too brief and too terminal, poor delivery of information, very low key, not clear and concise, needed to go into more depth, didn't elaborate the topic very well, and important topic but the speaker brushed over it without a lot of explanation.

### **"Cookie Mining" and "Insulation Simulation" - Model for Curriculum Project**

Of the forty-one participants that responded with written comments, most provided positive responses toward the workshop. The most frequent positive responses included, can be easily modified and adapted to meet several teaching objectives, hands-on activities always helpful, great activity, excellent examples of co-curricular units, and great modeling. Other comments included, wonderful project, made you think and process information, well thought out activities, very usable idea, will use this in my classroom, helpful and practical, and good critical thinking and decision making skills.

The fourteen negative comments centered around three main points. These points included, need more time to complete both projects and for debriefing, the activities lack the explanation necessary to effectively use them in the classroom, and the activities really left out the social studies people.

### **Energy Center Laboratories, The University of Oklahoma**

Of the forty-two participants that responded with written comments, most were very positive about their experiences in the laboratories. The most frequent positive comments included, very interesting, informative, impressed by the enthusiasm of each presenter, excellent, the labs were fascinating, and enjoyed them all. Other comments included, an insight into research, excellent, information was important to see and know, much of the things the speakers said yesterday became relevant today, learned a great deal of new information, very challenging but wonderful, terrific, fun, fabulous, very good and clearly presented, good to see the real world of the laboratory, awesome, and will leave with a renewed interest in helping my students understand how energy problems are being approached.

Most of the negative comments centered around how difficult the information was to assimilate because of its technical nature and because of distractions such as high noise levels in some of the labs. Other comments included, too much time spent on these sessions - especially for social studies teachers, only a limited amount of this information could be transferred back to the classroom, speed with which information was delivered was not conducive to retention, too technical for the history participants, need more time at each station, too advanced for high school, a little to oil based, and should involve more hands-on.

### **"Curriculum Implementation," Sausen/Rosch, Herrick**

Of the thirty-seven participants that responded with written comments, nearly all were very positive. Remarks included, good to hear from the experts, this was an asset, both were good in showing diversity of projects, excellent at answering questions, well prepared, helped me organize my ideas, gave me lots of ideas, superb, very helpful to see a model explained, both presentations were very interesting, great to know what others had done with the information they picked up by participating last year, put thoughts and ideas into my mind as how to approach developing curriculum, exactly what was needed to focus our thoughts, am more confident now that I understand what we are to do, well done and informative, helped clarify misconceptions, very good and very relevant. The few negative comments included, Herrick was too advanced, examples of student work and content would have been helpful, too much time allotted for this, both activities seemed to concentrate on writing papers, not enough specifics on project material or how they developed project.

### **Total Petroleum Refinery Tour**

Of the forty-four participants that responded with written comments, most were very positive. The most frequently mentioned comments included, interesting, video was excellent, really learned much about oil refining and safety and environmental concerns, and wonderful field trip. Other remarks included, learned a lot about the process and cost of the oil refinement and its effect in the environment, very accommodating staff, once in a lifetime chance to see that portion of the energy process, informative, began to understand the vastness of bringing oil to a refinery and then processing.

The most frequent negative comment, mentioned fifteen times, was that more time was needed on the tour as they felt rushed from one place to another. Other remarks included, not enough information was given, not enough time for questions, and all we saw were pipes.

### **Bizzell Library History of Science Collection**

Of the forty-two participants that responded with written comments, the majority were overwhelmingly positive for both the curator and the collection. Adjectives describing the curator, Dr. Marilyn Olgivie, included, terrific, radiates enthusiasm, great, perfect, very knowledgeable, marvelous, outstanding, and pure delight. Comments about the collection tour included, what an opportunity, special moment in my life, good explanations of resources, one of the highlights of the trip, it made my day, this was great, fantastic, wonderful, amazing, one of the high points of the week, spectacular, fabulous, awesome, a religious experience, the ultimate experience of my science life, incredible, and a special treat. The only comment that could be interpreted as being negative about the session was echoed by seven participants. The comment was that they needed more time in the collection.

### Alternate Energy Powered Vehicles

Of the thirty-four participants that responded with written comments, the majority had very positive responses concerning this demonstration. Comments included, super, great to finally see for myself the technology, liked the hands-on seeing and experiencing, very nice practical view of technology, lots of information with enthusiasm, great demonstrations, very interesting, loved riding in the electric car, interesting and informative, fabulous opportunity, presenters were friendly and informative, enjoyed very much and a good source of contact, wonderful to actually see it and have a personal experience, informal presentations allowed for a very easy Q &A session, and an electric car will be welcomed in my garage. The only negative comment, mentioned by three participants, involved not receiving written information on the cars.

### Workshop: Planning Your Curriculum Project

Of the thirty-six participants that responded with written comments, most were very positive. Comments included, very helpful, good interchange of ideas, a necessary part, very effective in fostering professional relationships, we needed this time, inspirational, we went from grandiose to specifics, ideas began to come together, good time to think about what you want to do and work with partner before getting back to the rushed school year, thanks for giving us down time to focus on the project, and this time is necessary. Negative comments were few but centered around the idea that simple instructions or guidelines or expectations would have made a big difference.

### "Energy Alternative Architecture." John Robison, University of Oklahoma

Of the thirty-one participants that responded with written comments, most were very positive. These comments included, very interesting, informative and provocative, provided excellent ideas of integrated projects with energy and art, good speaker and good information, loved seeing the examples of solar homes, liked seeing the different ways to save energy, very enlightening, exciting topic, and great.

Several participants mentioned the speaker's disorganization with the slides. Other comments included, dull speaker, would have liked handouts, and would have liked to seen more science on the architecture - how to refigure stress or problems caused by atypical loads.

### "Globalization of Oil & Gas Industry." Ron Evans, University of Oklahoma

Of the twenty-seven participants that responded with written comments, all but a few were extremely positive. Comments included, very interesting and usable data, information was very good, very informative presentation, good job of conveying the message although it was in conflict with the alternative energy people, great job, a tremendous resource, one of the best workshops, gave a lot of technical and statistical support, knows his stuff, really made me think, made me aware of how much we really depend on unstable countries for our energy, relevant, easy and clear, an excellent scope into the Washington aspect of the institute. The few negative comments included, a little dry, biased viewpoint, too preachy, and make handouts.

### "Wind Power." Karl Bergey, Bergey Wind Power

Of the thirty-two participants that responded with written comments, all but two of the remarks were extremely positive. Comments included, extremely clear and focused in his presentation, reading about a subject does not give you the same insight as does hearing about it from someone actually involved in its growth and innovation, interesting, gave me a different perspective on wind power, wonderful, that was a treat, presentation was effective and straightforward and able to hold one's attention because of his expertise, very glad to know he is here and available as a resource, greatly exceeded my expectations, excellent presentation, applicable and transferable, wish we could have field tripped over to see the turbines, excellent job of making things simple and easy to understand, and great to have the point of view of an expert in the field explain the logistics and potential benefits and problems with wind power. The only negative comments included, too many charts/graphs, and speaker was less than dynamic.

### "Whatever Happened to the Energy Crisis?." Charles Mankin, University of Oklahoma

Of the thirty participants that responded with written comments, all were very positive. Comments included, fascinating, good presentation, obviously an expert on the topic, great information, explained things so well, great job, interesting and informative, very realistic view of the nature of the problem, gave me new insight into bureaucracy, can use all of this in my classes, one of my favorites involving the speaker panel presentations, this information will play an important role in my class presentations, thought provoking, helpful handouts, extremely interesting and important presentation, answered all the questions very clearly, and perfect conclusion to the presentations.

### Kirkpatrick Center, Oklahoma City, Oklahoma

Of the thirty-five participants that responded with written comments, most were positive. Comments included, wonderful exhibits, experience was well worth the time, perfect way to end the week in OK, picked up information on everything, something for everyone, fun and interesting, superior facility, fantastic, impressive place, excellent source for hands-on science, air and space museum was phenomenal, and outstanding museum with diversity.

Of the negative comments, two were repeated several times. These included, the science demonstration was too elementary for this particular audience, and too much time was allocated for this activity. Other comments included, cut the visit by an hour and take us on a tour of OKC and Norman, difficult to know what to see or how it applies to the classroom, most large cities have one of these - I found it sort of boring, and why don't we visit an oil field or wind operated farm.

### Optional Program: Washington D.C.

Of the thirty-three participants that responded with written comments, most listed more than one place they were able to visit during this optional portion of the program. Places visited by the participants included, Georgetown neighborhood, National Archives, Enola Gay exhibit, The Wall, Washington Monument, Lincoln Memorial, White House, walked The Mall, architectural tour of Georgetown, American History Museum, Natural History Museum, Holocaust Museum, Ford's Theater, Arlington Cemetery, attended mass at St. Matthew's Cathedral, Air and Space Museum, Jefferson Memorial, National Gallery, Botanical Gardens, Supreme Court, lunch at Planet Hollywood, house where Lincoln died, JFK's grave, and Lee's mansion.

### Tour: U.S. Holocaust Museum

Of the thirty-seven participants that responded with written comments, nearly all comments were positive. Comments included, outstanding, the social and historical perspectives important, was truly an emotionally draining experience, personally and globally relevant, absolutely wonderful, could help develop critical thinking skills in students, an unbelievable totally moving experience that I will never forget, great, overwhelmed but very glad I went, wonderful educational opportunity, moving and very difficult to see but necessary, a definite part of the program that needs to be maintained, and the resources available to teachers made the visit to this museum more than worthwhile. The only negative comment was echoed by several participants and that involved the tour not being directly related to the institute goals and objectives.

### Michael Totten, Center for Renewable Energy and Sustainable Technology

Of the thirty-six participants that responded with written comments, about half were positive comments and half were negative comments. Positive remarks included, excellent, wonderful information, showed us some amazing possibilities of energy education and how to get it done, interesting and informative, appreciate the renewed hope that we can overcome some critical energy shortages by using new technologies, interactive program was very interesting, dynamic presentation, and relevant.

Most of the negative comments centered around three main points. These points included, spoke much too fast to follow or take notes, do not have CD-ROM technology in our classrooms so it does us no good, and sounded like simply a sales pitch. Other comments included, should have had copies of the CD with him, needs to give more precise information on renewable energy and sustainability, and too much of a sales job and too little discussion of policy issues.

### "Influencing the Process." Jim Green, Mobil Corporation

Of the twenty-three participants that responded with written comments, a little more than half provided positive comments. These remarks included, very friendly, good information, well presented and informative, gave a good defense of the lobby process, excellent representative of a large corporation, extremely relative, and good to hear a lobbyist of the petroleum industry present his views.

Nearly every negative comment centered around two ideas. These included, said very little that was new, and did not give much detail on what the lobbyists do. Other comments included, presentation of some facts was misleading, and put off by his apparent religious agenda.

### "Influencing the Process." Scott Sklar, Solar Energy Industry Association

Of the twenty-four participants that responded with written comments, all but one of the responses were positive. Comments included, very specific, dynamic, great information, had the poise and casualness that made him the smoothest of the presenters, excellent information about solar energy in several states and its economic benefits, super, interesting speaker, good discussion of opposing views, very good representation of this industry, living and thinking the way all of us should be moving to as we head into the next century, impressive, lots of good background and information, and really believes in what he is doing. The one negative comment mentioned that he did not clearly present the process.

**"Influencing the Process." Scott Peters, Nuclear Energy Institute**

Of the nineteen participants that responded with written comments, most were positive. Comments included, did a great job representing an underrepresented topic, good information on Yucca Mt., good information on storage and disposal problems, presented many interesting points, excellent presentation, good insight into issue, one of the most useful in demonstrating the special interest groups and how they affect government, and explained the disposal dilemma well. The few negative comments included, a little dry, get a better person, and expected a stronger presentation of a case from this energy source.

**Gary Lee, National Staff Reporter, Washington Post**

Of the thirty-four participants that responded with written comments, most were positive. Comments included, good choice, good at addressing the issues in DC today, interesting speaker, gave some important insight into the journalistic process, he was great, very informative, excellent presentation and location, that was very special, outstanding opportunity, wealth of knowledge, tremendous, and one of the most exciting things we've done so far.

Most negative comments dealt with the speaker's failure to make strong points during his presentation. Comments included, expected a more detailed description/analysis on the problems the reporters have to obtain information from the big corporations and the corresponding pressure, didn't feel reassured he will cover these issues strongly, wish this talk had a bit more meat to it, thought it would have been more informative, and he came across so middle of the road I'm not sure if that is him or not.

**Advocacy Group: Daniel Lashof, National Resources Defense Council**

Of the eight participants that responded with written comments, half were positive and half were negative. Positive comments included, very informative, honest statement of the problem, particularly interesting since this is not a large well known group, and good handouts and very informative. Negative comments included, didn't allow much interaction, spoke in monotone, expected him to be more fired up about the facts, and too much talking and not enough question answering.

**Advocacy Group: Anna Aurilio, Public Interest Research Group**

Of the eight participants that responded with written comments, all but one were positive. Comments included, great information and enthusiastic, very energetic, interesting to learn how ideas are more important to this advocacy group than the almighty dollar, got me fired up, wonderful, and showed I could actually make a difference in policy making. The one negative comment was that the presentation had a large focus on issues being fought in Oregon and being from that state, this participant did not hear anything new.

**Advocacy Group: Dawn Erlandson, Tax Policy Project, Friends of the Earth**

Of the eight participants that responded with written comments, all were very positive. Comments included, gave us good overall picture of how groups like hers operate, very candid about everything, articulate, bright, well prepared, knowledgeable, information she provided will help me make better curriculum decisions, and very well designed program with good participant interaction.

**Advocacy Group: Sidonie Chiapetta, National Wildlife Federation**

Of the ten participants that responded with written comments, all were positive. Comments included, a great presentation, wonderful view of mainstream environmental lobby with great educational resources, lots of information and handouts, very informative and it was so nice for her to have the woman who heads their education program talk to us, and great activity.

**Workshop: "Planning Your Curriculum Project"**

Of the thirty participants that responded with written comments, most were very positive. Comments included, welcome more sharing by teachers to teachers, time needed to work was great and the mentors were an asset, the structure and setting were helpful, mentors were excellent, we did most of our planning during this time, good to have time to integrate previously completed work with newly acquired knowledge, liked that we received more information about how we are to present ideas, it helped, we got a lot done, accomplished a great deal, and this was when we started to get things done.

The few negative comments centered around the idea that more direction on curriculum development was needed. These comments included, more nuts and bolts on interdisciplinary concepts might be useful, format for the curriculum could have been presented in a more concise and organized manner, and needed more guidelines and specificity.

Visit: Monument Study

Of the twenty-five participants that responded with written comments, all were very positive. Comments included, enjoyable and informative, great, excellent, the mood of the damp evening made the monuments all the more powerful, wonderful opportunity, beautiful, neat at night, very enjoyable, most enjoyable parts of the tour are the stories and background provided, night walking was special, emotional, inspiring, and moving experience no matter how many times one is fortunate enough to see them.

Seminar: "View of the Executive Branch." Shelley Fidler, White House Council on Environmental Quality

Of the thirty-three participants that responded with written comments, the great majority were overwhelmingly positive. Comments included, very informative, best speaker yet, gave great insight into how policies are actually implemented, a real motivator, very good explanation of the process of all persons important in protecting the environment, she was fantastic, what a breath of fresh air, she can really give confidence in staff personnel, a lot of good background information, she showed a lot of insight into working in Washington with her experience, she did a super job, very dynamic speaker, fantastic individual - I can understand why she worked on the Hill for 20 years and why she works for Clinton, so far the best of the lot, she explained the process very completely and frankly, very informative on the specific jobs and goals of the Council on Environmental Quality, and one of the best presentations of the conference. The only two negative comments included, very poor presentation, and expected more on the process and less on herself.

Seminar: C-SPAN, Fred Hanson, Deputy Administrator, Environmental Protection Agency

Of the thirty-eight participants that responded with written comments, nearly all responses were very positive. Comments included, very informative, his less abrasive manner created a feeling of trust and comfort, excellent point/counterpoint, tremendous opportunity, animated and interesting person, important because of the strong points and ideas brought out during the discussion, glad we still have people like Mr. Hanson involved in the actual process of the EPA, very valuable experience, and very energetic and full of current information. The few negative comments included, evasive on issues, and didn't answer the questions directly.

Seminar: C-SPAN, Fred Smith, President, Competitive Enterprise Institute

Of the twenty-three participants that responded with written comments, most were negative. The positive comments included, interesting, and good viewpoints brought up interaction.

The frequently mentioned negative comments included, he did not respond to questions, and he got carried away with responses thereby limiting the time. Other comments included, many of his comments seemed so far extreme they sounded absurd, too narrow minded, seems to be a good example of an educated person being part of the problem, feeling he wanted to sell his book, and self serving verbiage.

Seminar: "View from the Department of Energy." Patricia Fry Goodley, Assistant Secretary for Fossil Energy, U. S. Department of Energy

Of the thirty-three participants that responded with written comments, the majority were overwhelmingly positive. Comments included, very specific about her budget and its breakdown, she related very well and had lots of information, its great to know sincere and intelligent people are actually seeking a solution to the energy problems, very informative about what the DOE really does, the best speaker, excellent presentation, wonderful, a great perspective on a cabinet position and government bureaucracy, effective and knowledgeable, related exceptionally well with teachers, one of the best, and extremely intelligent and impressive. The few negative comments included, spent too much time praising teacher jobs and not much time discussing her job, and did not have enough handouts for everyone.

Panel Discussion: J. Thomas Sliter, Minority Staff Director, Committee on Environmental and Public Works

Of the twenty-one participants that responded with written comments, most were very positive. Comments included, wonderful presentation, his insights were invaluable, the view of a committee activity was extremely interesting, discussed importance of science and legislation, very conscious of the science process and how it can help the people, excellent speaker, very good presentation of the environmental political process, experienced, and good connection/discussion of the role of science in policy making. The few negative comments included, didn't seem aware that we were mostly interested in energy, feel like he had a lot of information to offer yet was not able to really get it across, and talked too much and was a little dry.

### **Workshop: "Planning Your Curriculum Project"**

Of the twenty-four participants that responded with written comments, most were very positive. Comments included, very helpful, you undoubtedly picked the optimum four people to help, good working session, anytime we can work with "old-timers" and each other is very beneficial, great closure on task, appreciated this time to process some of our information, needed the time to work together, useful information on how presentations are to be made, and people were sharing more at this point and ready to prepare for presentation. Negative comments included, needs more structure, too tired to accomplish much and we had covered most of the points already, and a "mandatory" session may not be as crucial as having a briefing before dinner and a location where the past participants will be for an hour of assistance.

### **Panel Discussion: Laura Hudson, Legislative Director for Senator J. Bennett Johnston (D-LA)**

Of the twenty-six participants that responded with written comments, almost every response was very positive. Comments included, greatly enjoyed hearing these folks talk about their jobs, very informative, moved and inspired by her talk, really reflected her enjoyment of job and explained her duties, presented a clear exposition about the effectiveness of good communication with our legislators, nice to hear someone who believes in the process, provided insight into the policy process, experienced, very good at expressing the political process in forming energy policy, presented the reality of her work, one of the best sessions, impressive, and impressed by the frank and open nature of her responses. The one negative remark mentioned that she was too oil/gas biased

### **Workshop: Walking Workshop of Capitol Hill**

Of the twenty-four participants that responded with written comments, most were very positive about the experience. Comments included, exciting to see a great and powerful government in action, impressive to be able to sit and observe our lawmaking body in action, excellent tie in, and great chance to see our state representatives. All eight negative comments reflected the importance of this activity. That is, all comments were that more time was needed for this workshop.

### **"Defining National Energy Strategy"**

Of the thirty-three participants that responded with written comments, all were positive. Nine of the comments included using this activity in their own classrooms. Other comments included, good example of interaction, great activity, good experience for me and my students, excellent exercise with a variety of situations to be evaluated in terms of energy and environmental problems, great activity to develop understanding of the give and take required in deciding our energy policies, especially valuable because of the mixed states represented, perfect place in the program for this activity, really great to talk to others on how they feel and try to cooperate to an end benefiting all, excellent interactive activity, and a great example of a culminating project.

### **Workshop: "Planning Your Curriculum Project"**

Of the thirty-four participants that responded with written comments, the majority were positive. Comments included, all the staff did excellent, great time for synthesis, nice to have the mentor resources, always good to have time to think about the project, gives time to reflect and develop curriculum, added to my comfort level and decreased my anxiety, time together needed, it was very valuable to set aside time for dialogue for us at various stages as additional information was presented, and needed this time. The three negative comments included, needed more direction, had much more time than needed, and pretty much a repeat of what was done earlier.

### **Workshop: "Presentation Preparation"**

Of the twenty-one participants that responded with written comments, the majority were positive. Comments included, our final idea for the project did not surface until this portion of the institute, great to have the time to actually work on our project, very much needed, and nice to have down time to polish project. Negative comments included, it would have been good to have known a day or so in advance what sort of material would have been available for us to use, and needed more specific directions.

**Workshop: "Presenting Your Curriculum Project"**

Of the thirty-five participants that responded with written comments, most were very positive. The most frequent positive comment was that they received many new ideas from their colleagues to take home with them. Other comments included, very interesting projects, very enjoyable, this was worth the earlier bloodletting, might be able to incorporate some of the others' ideas into our project, great culminating activity, increased participant comfort level, great new ideas, wonderful, stupendous, and a high point to hear other teachers.

The most frequent negative comment was that time limits per presentation need to be enforced. Other comments included, some people gave too much detail on things that were not relevant, recommend each group not spend so much time on background on their schools, two hours was too much time, and it would have been good to see all the other teachers' presentations.

**Any Additional Evaluative Comments You Would Like To Make Concerning Any Activities Of The Institute**

Of the forty-two participants that responded with written comments, most were very positive. A sample of the comments included, wonderful opportunity for me to meet other teachers and to learn a tremendous amount of information about an extremely important issue, the activities were planned and relevant, it has been a great experience and just can't offer much in the way of bettering the institute, wonderful experience, the activities planned helped me to better understand that where energy is concerned there are no quick fixes, institutes like this revitalize me, activities were great and really organized, speakers we had were very excellent, thank you for this opportunity, I feel so fortunate to be selected to participate in this unique activity, the cultural and social experience was as valuable to me as the professional and academic information we gained, honestly do not believe I would change any of the events/speakers/etc. we experienced the past two weeks, we had the best hosts from the OK staff to the Close Up staff, great care was taken to find excellent and informative speakers on both the energy issues and the policy issues, am bringing my students a wealth of valuable information and access to research materials, practical and informative, fantastic experience, experience achieved its goals, my expectations were far exceeded, this institute is one of the best I have attended over the past 15 years, and seeing and hearing first-hand information was superior to any other way of gaining information.

Negative comments were considered more as suggestions for improvement or as one participant put it, "fine tuning" an already excellent program. These comments included, would have enjoyed a tour of OKC and Norman, think it would be more helpful for the teachers to start the activity with a little introduction about curriculum framework, many sessions did not have enough time with the guest speakers, less food and shorter breaks between activities would allow us more free time or could be used to extend time for presenters, make it clearer in the workshop letter that tuition for credits is covered by the institute rather than the individual, bring students in to present their projects in conjunction with the mentors, believe the dress attire could be more specific in the preliminary letter, list of room assignments would be helpful in locating staff, OKC bomb site was an omission and a disappointment, felt that some seminars/lectures could have been done at different times so more could have been done on the Hill, and never expanded how energy affects and permeates our economy.

### Institute Evaluation

At the close of the institute, participants were asked for their opinions concerning general aspects of the institute, such as those dealing with organization and administration or ease of integrating institute information into their classrooms. They could indicate an opinion from "strongly disagree" to "strongly agree." They were also asked their opinions concerning the logistics of the institute such as travel, food, and lodging accommodations. They could indicate an opinion ranging from "excellent" to "poor." These data are provided in Table 7.

Along with these ratings, participants were invited to make comments concerning logistics, organization and administration, and strengths and weaknesses of the institute. The comments from each question were distilled and summarized as briefly as possible without losing the original proportion of positive and negative comments as well as the main idea(s) of the statements. See Table 8.

The evaluation data from Tables 7 and 8 must be analyzed concurrently. It is inappropriate and misleading to interpret a session evaluation solely from the data provided by only one table. Interpretation of the two tables together is important because some participants did not write any comments yet indicated an opinion, whereas in some cases the opposite was true; a comment was written but no opinion rating was provided. These discrepancies also explain why the total number of participants responding varies widely across the sessions.

Table 7. Ratings Summary of General and Programmatic Areas of the Institute

**Part I: General**

|   | Strongly Disagree | Neutral | Strongly Agree |       |
|---|-------------------|---------|----------------|-------|
| 1. I had the opportunity to actively participate during the institute.  | 0                 | 0       | 1              | 3 42  |
| 2. The institute provided the opportunity to work and discuss with other participants.  | 0                 | 0       | 0              | 5 41  |
| 3. I feel that the Energy, Environment and Policy Choices curricula will require extra planning time in order to effectively use it in teaching.  | 2                 | 1       | 3              | 15 25 |
| 4. I am not comfortable with using the Energy, Environment and Policy Choices curricula in my classroom.  | 41                | 2       | 1              | 0 2   |
| 5. Development of the Energy, Environment and Policy curricula was difficult.   | 22                | 11      | 8              | 4 1   |
| 6. As a result of the Energy, Environment and Policy Choices Institute I feel more knowledgeable about energy and the environment.  | 0                 | 0       | 0              | 6 40  |
| 7. I feel that the information obtained during this institute will be easy to implement and interpret in my classroom.  | 0                 | 0       | 2              | 15 29 |
| 8. I will implement Energy, Environment and Policy Choices institute curricula in my classes during the coming year.  | 0                 | 0       | 0              | 3 43  |
| 9. My students' understanding of policy choices related to energy and the environment will be greatly enhanced through the use of information I have gained by participating in this institute. | 0                 | 0       | 0              | 5 41  |
| 10. As a result of this institute, I am able to integrate topics on Energy, Environment and Policy Choices in my teaching.  | 0                 | 0       | 0              | 3 43  |

Table 7. cont.

**Part II: Programmatic**

11. What is your opinion of the air travel arrangements (home state to Oklahoma to Washington, D.C. to home state made for you during this institute)?

| excellent | good | average | fair | poor |
|-----------|------|---------|------|------|
| 30        | 11   | 3       | 0    | 1    |

12. What is your opinion of the ground travel arrangements for the institute?

| excellent | good | average | fair | poor |
|-----------|------|---------|------|------|
| 35        | 9    | 1       | 1    | 0    |

13. What is your opinion of the hotel accommodations during this institute?

| excellent | good | average | fair | poor |
|-----------|------|---------|------|------|
| 40        | 5    | 1       | 0    | 0    |

14. What is your opinion of the meals provided for you during the institute?

| excellent | good | average | fair | poor |
|-----------|------|---------|------|------|
| 42        | 4    | 0       | 0    | 0    |

15. What is your opinion of the required reading material for the institute?

| excellent | good | average | fair | poor |
|-----------|------|---------|------|------|
| 18        | 20   | 7       | 1    | 0    |

16. What is your opinion of the organization and administration of institute activities and events?

| excellent | good | average | fair | poor |
|-----------|------|---------|------|------|
| 42        | 4    | 0       | 0    | 0    |

17. In general, how do you feel about the Energy, Environment and Policy Choices summer institute?

Overall, I feel it was:

| excellent | good | average | fair | poor |
|-----------|------|---------|------|------|
| 44        | 2    | 0       | 0    | 0    |

**Table 8. Summary of Institute Evaluation Statements**

**Institute Evaluation Summary (Programmatic Section)**

**What was your opinion of the air travel arrangements?**

Of the thirty-nine participants that responded with written comments, the majority were very positive. Comments included, excellent, how can one complain when one has nothing to do other than show up at the airport, everything flowed rather smoothly, no problem, my personal arrangements were great, ideal route and convenient, when its free its hard to complain, arrangements were well timed, and comfortable and efficient. Negative comments included, would have been best to have the group travel together from OK to DC, disliked the smaller plane, ask people before putting them on a propeller plane, and direct flights would have been preferred.

**What was your opinion of the ground travel arrangements for the institute?**

Of the thirty-one participants that responded with written comments, most were very positive. Comments included, enjoyed not driving and the commentary of the tour guides in DC, excellent, bus drivers were polite and agreeable, great bus service, no problems, very convenient, drivers were friendly, buses and drivers were great, because of the excellent planning everything went smoothly and pleasantly, buses were always on time and drivers were very polite, and very impressed. The only negative comment, expressed by five participants, concerned the broken air conditioning on the bus ride back from the Total Petroleum Refinery Tour.

**What is your opinion of the hotel accommodations during this institute?**

Of the thirty-four participants that responded with written comments, most clearly recognized differences between the Residence Inn in Norman and the Latham in DC. The Residence Inn was frequently described as excellent and great. Additionally, it was described as superb, loved it, clean and spacious, very comfortable, and superior.

The Latham was described by participants as very comfortable, good, clean and spacious, and very comfortable. Several complaints about the Latham were mentioned. These included, should have had rooms ready upon arrival, switching of rooms was inconvenient, should be no charge on phone when using a calling card, would have liked a hotel closer to the Metro, did not live up to advance billing, smoke detector in room kept going off, telephone problem, staff at Latham was questionable, did not get important phone messages, my meal tickets turned up missing and several miscommunications occurred, rooms were too moist and too small, and breakfast service was slow.

**What is your opinion of the meals provided for you during the institute?**

Of the thirty-four participants that responded with written comments, nearly all were very positive. Comments included, enjoyed food like I never had in my life, stupendous, balanced meals, much better than I would have eaten at home, excellent, everything was great, absolutely gourmet, superb, wonderful variety, appreciate the detail, wonderful and diverse, and healthy food choices. The only two negative comments included, just too much food, and lunches might be lighter.

**What is your opinion of the required reading material for the institute?**

Of the twenty-nine participants that responded with written comments, most were positive. Comments included, helped lay the foundation for the topic we covered, will upgrade from good to excellent when I reread it upon returning home - didn't have the background for it to click in, very good and useful, good for both science and social studies, information regarding the science aspect of the institute gave me a much needed mind set, quite good, learned a lot, I was familiar with the science material but it proved invaluable to my partner and vice versa, much of it will be used somehow in my planning, excellent background, and kept at a minimum and not a burden. Negative comments included, too academic for my taste, more material providing background information on energy would have been great for social studies teachers, needed more energy specific information and synopsis before the institute, some of the articles were choppy and hard to understand, some of the science material may have been over social studies teachers' heads, more reading material for lab background is necessary, and was never discussed and was not original nor thought provoking.

**What is your opinion of the organization and administration of institute activities and events?**

Of the thirty-two participants that responded with written comments, nearly every statement was very positive. Comments included, perfect scheduling, team worked well together, every possible detail was covered and the activities conducted in a very professional way, could not improve it, everything ran smoothly, smooth and well organized, the ultimate, very accommodating to individuals who had any health problems, amazed at all the things we did considering the number of people, very well coordinated and implemented, time was well used, our needs and requirements were anticipated, the very best, and the pace was fast but I had the feeling of not wanting to miss anything. The few negative comments included, would like more activities like the energy policy activity, would have liked for us to end each day with a thought provoking question that would lead into the next day, felt some things were rushed, and curriculum development workshops might have had more structure.

**In general, how do you feel about the Energy, Environment and Policy Choices summer institute?**

Of the thirty participants that responded with written comments, every response was positive. Comments included, the best, thanks for making a difference, its been like a shot of adrenalin, feel very privileged to have attended, am much more confident that I can effectively teach energy related issues, best curricula experience of my young career, surpassed my highest expectations - absolutely outstanding at integrating the two disciplines and teaching/reinforcing the concepts, found myself anticipating each day with excitement and enthusiasm even though I was physically tired, best educational experience I have had in my 17 years of teaching, am too eager to go back to my place and adapt all the things I learned, this was excellent and it was a privilege to be a part of it, it was for me a once in a lifetime chance, and simply the best summer institute I have ever been on.

**What were the weaknesses of the Energy, Environment and Policy Choices institute?**

Of the forty-two participants that responded with written comments, the most frequently mentioned weaknesses were, too large a group of participants from OK, allow more time to visit/explore DC, and more time needed during some workshops. Other comments included, planning periods not used effectively, define the necessary attire more clearly, hectic schedule, need discussion time with whole group, need a way to mail home DC supplies, interchange groups periodically, too oil/gas biased, a bit too much drinking at various places, little more social studies in OK, too much information in such a short time, and a more specific format and clear descriptions of expectations of the project.

**What were the strengths of the Energy, Environment and Policy Choices institute?**

Of the fifty-three participants that responded with written comments, nearly all contained some reference to the high quality of the staff, professional speakers and panelists, and the excellent organization of the institute. Other comments included, information, teacher sharing, explanations on bus rides, diversity of participants, helpful staff, activities, quality of information provided, materials and handouts we can take back to our classrooms, notebook for organizational purposes was great, opportunity to see technology and production sites related to energy, opportunity to talk to legislators and ask questions about energy policies and the procedures used to implement them, the diversity of activities and the way you accept us, the unbelievable amount of experts and information we were exposed to, able to see the government in action and meet with the policy makers, being able to meet with my peers from all over the country to share and express ideas, and we have been treated so well.

## Conclusions and Reference

Analyses of the questionnaires and written essays completed by the forty-seven participants indicated an overwhelming satisfaction with the logistical arrangements, organization, administration, and personnel associated with the institute. Participants' pre- and post-institute attitude measures and comments indicated that more positive opinions toward energy and related issues in politics, economics, and the environment were attained as a result of the institute. In addition, cognitive assessments indicated that participants gained more meaningful understandings of energy, economics, politics, and the environment and demonstrated this by directly citing examples and experiences gained during the institute.

On the Institute Evaluation form, participants were asked how they felt about the institute. The following statements are representative of the comments echoed by the participants of the 1995 summer institute, "Energy, Environment and Policy Choices."

"It has been like a shot of adrenalin - I am excited about adding energy awareness to my curriculum."

"I feel very privileged to have attended. I am much more confident that I can effectively teach energy related issues."

"This institute is one of the best that I have attended over the past 15 years, and I have attended many."

"I found myself anticipating each day with excitement and enthusiasm even though I was physically tired."

"The best educational experience I have had in my 17 years of teaching."

"What an experience. I feel so fortunate to be selected to participate in this unique activity. The cultural and social experience was as valuable to me as the professional and academic information we gained."

**"The institute provided the opportunity to completely involve myself in a specific topic and focus on acquiring knowledge from the workplace and experts."**

**"Surpassed my highest expectations - absolutely outstanding at integrating the two disciplines and teaching/reinforcing the concepts."**

## **Reference**

**Marek, E.A., Cavallo, A.M.L., & Gerber, B.L. 1994. "Energy, Environment and Policy Choices: Summer Institutes for Science and Social Studies Educators - An Evaluation of Year One." Report funded by U.S. Department of Energy. University of Oklahoma Printing Services.**

## **Instrumentation**

**Background Information Questionnaire**

**Attitude Questionnaire**

**Cognitive Assessment Form**

**Session Evaluation Form**

**Institute Evaluation Form**

**Copies of all evaluation instruments used in this project can be found in the year one report.**