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1992 Environmental Summer Science Camp Program Evaluation

The International Environmental Institute of Westinghouse Hanford Company

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Approved for Public Release

EXECUTIVE SUMMARY

1992 ENVIRONMENTAL SUMMER SCIENCE CAMP PROGRAM EVALUATION

The 1992 Westinghouse Hanford Company/U.S. Department of Energy Environmental Summer Science Camp proved to be an exciting experience for everyone involved. The objective of the "camp" was to motivate sixth and seventh graders to pursue studies in math, science, and the environment. This objective was accomplished through hands-on fun activities while studying the present and future challenges facing our environment. The camp was funded through Technical Task Plan, 424203, from the U.S. Department of Energy-Headquarters, Office of Environmental Restoration and Waste Management, Technology Development, to Westinghouse Hanford Company's International Environmental Institute, Education and Internship Performance Group.

The camp consisted of two one-week sessions. The sessions were held at the Columbia Basin College campus in Pasco, Washington, during the weeks of July 13 through 17 and July 20 through 24, 1992. A total of 350 students attended the camp from the Tri-City area (the cities of Richland, Kennewick, and Pasco) and the outlying school districts of North Franklin, Kiona-Benton, and Columbia in Washington State.

The goal of registering at least 50 percent of the campers from the under-represented populations of minorities and females was exceeded. An excellent response from these segments brought the camp to resemble the work-force demographics of the year 2000.

A representative from the Washington State Department of Ecology joined teams of engineers and scientists from Westinghouse Hanford Company and kindergarten- through community-college-level teachers to collaborate and share ideas, energy, and expertise. The result was an action-packed study tangibly relevant to the curious 11- and 12-year-old students.

Throughout the two weeks, the Westinghouse Hanford Company scientists and engineers took advantage of opportunities to share skills and knowledge applied in their work. These professionals were an inspiration for the students, teachers, and assistants, and provided excellent role models for students beginning to think about future careers.

Parents were invited to visit on Friday afternoons and participated in various games and lab studies. They also heard the students highlight the week's activities.

Students, teachers, and parents overwhelmingly agreed it was well worth the effort by everyone involved and wanted to know, "How soon can we do it again?"

Immediate survey results indicated that students' attitudes and knowledge of the environment were increased after the camp sessions, particularly in the awareness of job opportunities in environmental areas and demonstrated the students' enthusiasm for the camp. More than half (52 percent) of the participants gave the camp the highest rating possible and nearly three out of four said they were willing to attend future camps. The camp was deemed a success in that several of the goals established prior to the camp were

achieved. One of these included impacting the way teachers thought about and taught science in comparison to their traditional classroom (i.e., lecturing decreased dramatically during the camp). More extensive results of the survey are included in the appendices of this text.

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ACRONYMS

CBC	Columbia Basin College
DOE	U.S. Department of Energy
DOE-HQ	U.S. Department of Energy-Headquarters
EM	Office of Environmental Restoration and Waste Management
IEI	International Environmental Institute
TRIDEC	Tri-City Industrial Development Council
TTP	technical task plan
WHC	Westinghouse Hanford Company
WSU	Washington State University

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1992 ENVIRONMENTAL SUMMER SCIENCE CAMP PROGRAM EVALUATION

1.0 INTRODUCTION

Westinghouse Hanford Company's (WHC) International Environmental Institute (IEI) serves as a central resource for furthering technological and programmatic objectives of the U.S. Department of Energy (DOE)-Environmental Restoration and Waste Management's (EM) Office of Technology Development and the Hanford Site by integrating national environmental education programs with DOE needs and concerns, and hands-on experience.

In 1992, the IEI became the WHC manager of education outreach and programs to encourage the students who will be entering the workforce in and around the year 2000 to seek careers in math, science, and the environment. To this end, the Environmental Summer Science Camp philosophy of hands-on science to engage the minds of young students was developed as a result of the success that WHC had experienced with two previous out-reach programs. These two programs, Summer Energy (1977-1990) and Saturday Science (1991), sponsored by the Hanford Science Center, had been implemented with much success and sought to use role models and engaging activities to capture students' interest and commitment to science, math, and the environment. One of the young women participating in the Summer Energy program pursued her interest generated by the program and, in 1992, became a semi-finalist for the Westinghouse Electric Company national "Science Talent Search" competition.

The partnerships among community agencies and educational organizations created the opportunity for leveraging additional resources in the design and implementation of this "camp." Columbia Basin College (CBC) played a significant role in the success of the camp. The college's Pasco, Washington, campus was selected as the site of the camp because it offers a hazardous materials program, and because it is the local community college that can be the first step that many students take in their pursuit of higher education. The six local school districts also participated in planning the camp. They were instrumental in the recruitment of teachers and students for the camp. The Washington State Department of Ecology lent its support and expertise by helping to design the curriculum, as well as by providing a teacher for the camp from its local office.

The DOE provided funding for the camp coordinator's, teachers', and teaching assistants' salaries; and materials for the camp. CBC provided the laboratories and equipment needed for analysis activities, which were conducted. WHC provided the publicity, administrative, scientific, and support personnel for the program. This document evaluates the program and suggests changes for the future.

2.0 PROGRAM GOALS

Public Law 101-510 authorizes DOE facilities to establish programs in science and math. This became a focal point for this camp undertaken by the IEI. The goal for this camp was reviewed and revised by a core team of representatives from CBC, Washington State University (WSU)-Tri-Cities, and the six surrounding school districts. The initial goal established in Technical Task Plan (TTP) 424203 stated that the students would learn more about the present and future challenges to the environment. This initial goal was expanded to include the following student awarenesses:

1. Realize that science is fun and accessible
2. Learn that the study of the environment is science
3. Understand environmental studies apply to the individual as well as to larger groups in society
4. Realize that the Hanford Site is one of the nation's largest environmental sites, undergoing environmental clean-up and restoration
5. Know how our physical, emotional, and economic lives are dependent upon the environment
6. Recognize how our actions affect our environment
7. Understand how to take appropriate action on behalf of the welfare of the environment
8. Learn how computers are used to solve environmental problems
9. Become more familiar with career opportunities in environmental areas.

These outcomes were to be achieved by having the teachers work collaboratively on teams with professionals from the scientific community to design, develop, and deliver the curricula that would involve the students in cooperative learning activities and engage them in hands-on/minds-on science.

A secondary goal of the camp was to positively influence how science is taught in local school districts; the concept being that a more creative, innovative approach in the classroom by the teachers will influence a larger student population to enter into math and science fields.

3.0 GENERAL BACKGROUND ON SITE

The Pasco campus of CBC was selected as the site of the camp for several reasons. The primary reason is that CBC is centrally located in the Tri-City

Photograph 1. Soil Plot Survey.

Photograph 2. Finger Print Laboratory Investigation.

Technology program offered at the college. As such, CBC has an excellent science facility and equipment, which it offered to make available at no charge to the camp. The equipment helped students to see how a real science laboratory looks and works.

In addition, CBC has accessible, undisturbed land around its campus, which was planned to be used as an outdoor laboratory.

Because at least 50 percent of the population targeted for the camp participation would come from underrepresented populations, it was thought that if these students had a good experience at the camp on the college campus they would be more encouraged to look to the college as a possibility for their future education. Because CBC is a community college, the tuition costs are much less than those of four year institutions and therefore more affordable for many of these students.

There was concurrence in the idea that if these students experienced success on the college campus at the middle school age, that this experience would positively impact their decision to include college in their future career plans.

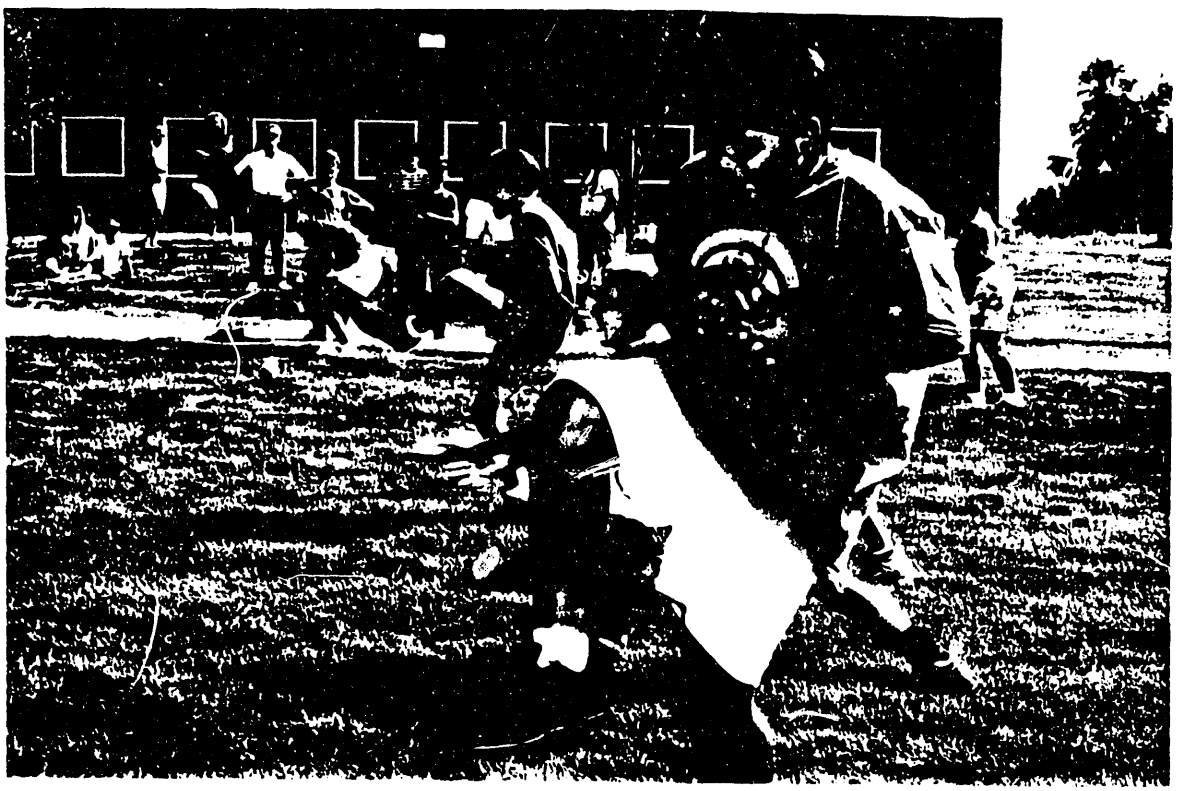
4.0 PROGRAM ACTIVITIES

Several action-packed, fun activities were designed for the camp. In a week-long plot study, student/teacher teams examined a specific 15-m^2 plot of land to determine the relationships of soil, vegetation, weather, and human/animal intervention (Photograph 1). The students compiled their findings in a daily scientific journal while comparing their studies to that of the studies completed on the Hanford Site. Activities included conducting a microscopic study of soil and plant samples, performing chemical analysis of soil, making weather instruments and recording daily weather data, determining the amount of food energy available, inferring the ecology of the plot, identifying existing and potential environmental concerns, and suggesting possible resolutions to those concerns.

In other activities, students experimented with dissecting owl pellets and testing the pH of various substances they were familiar with. Matching fingerprints stimulated a comparison of scientific and detective investigations (Photograph 2). Digging chocolate chips out of a cookie was compared to mining. Games, one of which included a water balloon toss (Photograph 3), provided a means for the students to act out challenges facing their environment.

In addition to hands-on experiences, various team activities modeled to the students the value of cooperation and collaboration in a work or play situation, which also reflected on the "teamwork" required here at the Hanford

Photograph 3. Water Balloon Toss.



Photograph 4. Avian Presentation

Site. In sharing their expertise and experience in environmental study, several guest speakers challenged the audience to be informed caretakers of the environment; among these were the following:

- Taffy Mercer, a local falconer, captivated one and all with her "Birds of Prey" presentation, which included a live owl and hawk (Photograph 4)
- Joe Nevius and Jim Weber, members from the Tri-City Astronomy Club, highlighted the history of the sun dial and led the students in making simple solar clocks.
- Russell Jim, a Yakima Native American, discussed the Native American perspective on environmental preservation.
- Stu Seibel, a local meteorologist, enlightened the group about the makings of the weather.
- Joe Estey, an environmental manager, challenged the students to develop solutions to hazardous waste by demonstrating a waste problem simulation using vegetable oil.

Throughout the two weeks, the Westinghouse Hanford Company scientists and engineers took advantage of opportunities to share skills and knowledge applied in their work. These professionals were an inspiration for the students, teachers, and assistants, and provided excellent role models for students beginning to think about future careers.

5.0 INSTITUTIONAL PARTNERSHIPS

The Environmental Summer Science Camp was a result of several successful partnerships. One of the most significant partnerships was with CBC. The college offered its campus, science laboratories, and equipment for the use of the students and teachers. CBC also provided significant assistance to the camp by serving as the registrar for the students. A small office was set up for the camp coordinator and teachers where supplies were received and dispersed. CBC provided last minute support to the camp by engaging in a contract with WHC to pay the teachers and purchase the majority of supplies and materials needed for the camp that WHC was not allowed to purchase because of the nature of the contract with DOE.

The IEI provided the administrative and clerical support for the camp. The IEI also arranged for WHC employees to team with the teachers to plan, design, and implement the camp.

Funding from the DOE was used to pay the salaries of teachers, teacher assistants, and camp directors, along with the materials for the camp, a percentage of the cost of the T-shirts given to the students, tuition waivers for those students who were receiving free and reduced lunches at school, and costs of public transit for the students.

Each of the school districts (i.e., Pasco, Kennewick, Richland, Prosser, North Franklin, Finley, Kiona-Benton, Columbia and Yakima Native American) were instrumental in recruiting teachers and students for the camp (Table 1). Teachers recommended students (i.e., primarily minority students) based upon students' need and interest. Two of the school districts provided bus transportation to and from the camp with their district buses.

Table 1. Summer Science Camp Participants By District.

District	Number of Students	% of Total	Session 1	Session 2
Kennewick	1,022	36	81	92
Pasco	635	22	53	57
Richland	597	20	47	54
Prosser	165	6	13	16
North Franklin	140	5	11	14
Kiona-Benton City	102	4	20	0
Finley	100	4	8	10
Columbia	72	3	7	7
Yakima Native American			10	0
Total	2,833	100	250	250

High-school-aged teacher assistants also were hired from MESA (Math, Engineering, Science Achievement) and Upward Bound (a joint program between area high schools and CBC) organizations. These assistants served as minority role models for the younger students as well as providing support to the teachers.

Among the partners involved in the initial planning for the camp, was the Tri-City Industrial Development Council (TRIDEC). TRIDEC was originally to obtain the refreshments for the campers through corporate donation. Because there were only a few students from the Yakima area where many of the food processors are located this effort was not successful. TRIDEC also located additional environmental companies to provide technical assistance to the teachers.

WSU-Tri-Cities was another partner who provided expertise with teacher training for the camp. A WSU-Tri-Cities science educator also provided general direction in the planning phase.

6.0 PLANNING

Upon receiving approval from the DOE to fund the TTP for the Environmental Summer Science Camp, representatives from the Tri-Cities regional school districts, TRIDEC, WSU-Tri-Cities, CBC, and WHC established a core planning committee. Within four months the committee identified the following:

- Summer Science Camp learning objectives
- Targeted population
- Camp dates and location
- Administrative and teaching staff job descriptions.

Thereafter, committee members disseminated information to the public to recruit teachers and students for camp.

7.0 CHALLENGES TO THE PROGRAM

There were two major challenges to the camp. The first being the lack of a precedence for the camp. Neither students or parents were aware of the type of camp this was or had any previous knowledge of what the camp could do for kids. Also the turnaround time between the announcement of the camp and the registration for the first camp was limited. (Registration for the second camp went very well as the students and parents had heard about the success of the first camp.)

The first day of the second camp brought an unanticipated amount of students to the campus to register. Because of the large turnout, the class rosters had to be reorganized.

However, the biggest challenge to the camp occurred when it came time to purchase the materials and pay the teachers salaries. The contract between U.S. Department of Energy, Richland Operations Office, and WHC does not allow materials to be purchased for use in educational activities. This was resolved for this camp only when DOE allowed WHC to contract with CBC to purchase materials and pay salaries. Here again, time became a concern as the planning office was not informed of these roadblocks until two weeks before the start of the first camp session. This put a great deal of pressure upon CBC to deliver the supplies and materials in time for the camp.

There also was a delay in the production of the video of the camp because authorization was delayed at U.S. Department of Energy/Headquarters (DOE/HQ). WHC was unable to meet a timeline on the TTP because of this delay.

8.0 FUNDING AND BUDGET

The original funds for the camp came from DOE as the result of a TTP offered by the EM. CBC's in-kind donation was in the form of equipment use, as well as insurance for the campers and use of its facilities, WHC contributed employees' time to help teach during the camp and provided secretarial and administrative support. Because of the necessity to turn to CBC to purchase the materials and pay the salaries of the teachers, it was estimated that the camp budget would be overrun by about $25,000.

Additional funds were made available to the camp from an under-run in other TTPs. This was authorized by DOE/HQ. The final cost was much less than what had been projected, and as a result the TTP was greatly underrun for the camp. Table 2 summarizes the expenditures of the budget for the camp.

Table 2. Camp Budget.

Teaching Salaries	(18 K-14 Teachers @$20/hour) (20 High School Students @$10/hour) Camp Coordinator	$20,800 10,480 2,569 3,994
	Total Staff Costs	$37,843
Purchased Services: Taffy Mercer (avian presentation)		150
Travel (students):	(Ben Franklin Transit and school district busses)	535
Food:		1,269
Supplies and Materials		10,539
T-shirts/Fanny Packs	(Money expended equal to total dollars received from tuition)	4,700
Video/Graphics		30,200
Adders		2,580
Administrative Charges		7,273
	Total	$95,089

9.0 CAMP DEMOGRAPHICS

The initial plans of the coordinating committee were to target only students identified by teachers as potential candidates for the camp. These students were to have been minority and females students. After working with the schools to identify these students it became apparent that we would not be able to meet the targeted number of students through this means.

The camp registration was then opened to all students in Benton-Franklin Counties. Pasco School District, located in Franklin County, has more than 50 percent minorities in its student population. This district was targeted as the area most likely to identify the "sought after student mix." Other schools in the Yakima Valley, just to the west of Benton County, also have a high enrollment of minority students. Registration notices were sent to the school districts in that area as well.

To encourage minority students to enroll in the camp, brochures in both English and Spanish defining the camp were sent to all schools, libraries and community centers in the area. All students recognized by the Hispanic Academic Achievement Program were sent a personalized letter of invitation to join in the camp. The results of this intentional recruiting was excellent (Figures 1 and 2). Thirty-eight percent of the campers were minority students. Forty-seven percent of the students were females.

10.0 TEACHER DEMOGRAPHICS

The teaching staff included 5 WHC scientists and engineers; 1 U.S. Department of Ecology environmental ecologist, 4 CBC math and science instructors, 14 K-12 classroom teachers, and 20 student assistants selected from the Upward Bound program at CBC and high school students from the MESA program (Table 3).

The five WHC employees were all employed in environmental fields at the Hanford Site. Of the 18 K-14 teachers, seven were minorities. A higher percentage of minorities was represented among the high school students who served as teaching assistants; seventeen students represented minority populations. The subjects taught by the teachers during the regular school year were varied; nine taught science (i.e., general science, life science, biology, earth science, and chemistry); seven taught the full spectrum of classes in a self-contained elementary classroom, and two came from language arts and reading subject areas.

The teachers brought expertise and enthusiasm to the planning sessions as well as the actual camp activities. A science education professor from WSU-Tri-Cities and a Richland High School science teacher engineered the training for the teachers, WHC employees, and teaching assistants. The training as well as the camp was coordinated directly under the leadership of Liz Swinea, Kennewick Community Schools Coordinator.

Figure 1. Ethnic Demographics.

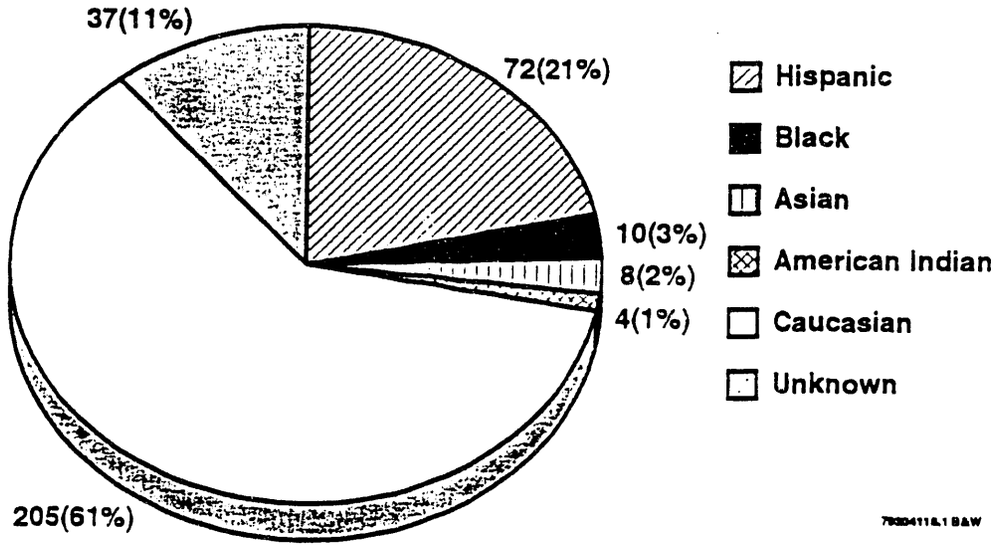


Figure 2. Gender Demographics.

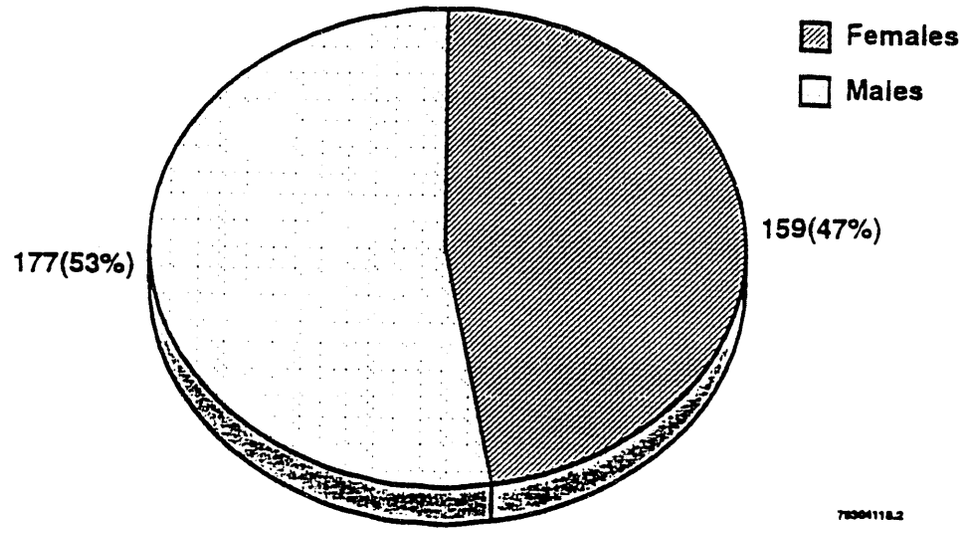


Table 3. Summer Science Camp Teaching Staff Demographics.

	Caucasian	Black	Hispanic	Native American	Total
Instructors					
Females	8	1	2	0	11
Males	9	2	1	1	13
Total	17	3	3	1	24
Student Assistants					
Females	3	2	8	0	13
Males	0	0	7	0	7
Total	3	2	15	0	20

11.0 ASSESSMENT

To best measure whether the objectives of the Science Camp (i.e., to change student's behavior and attitudes toward math, science and the environment) two separate survey were conducted. The initial survey was given to teachers, teaching assistants, students, and parents immediately after the camp was held.

To measure the long-term impact of students' attendance at the camp a follow-up survey was conducted in May 1993. The surveys directed the students' teachers and principals to provide data which related to students' grades, attitude toward science, and interest in the study of the environment. The instructions to the teachers were to compare the students' grades at the end of the 1992 spring quarter with those at the end of the 1992 fall quarter in 1992 and compare them to determine if the camp had an impact on the students' academic performance. Other questions were answered by teachers' observation of students' behavior in the classroom. In assessing the students' grades before and after the camp the data collected was factual and limited the potential of social bias from the teachers. An additional survey was taken of the teachers who participated in the camp to determine if their participation had impacted their teaching methodology in the classroom.

The results from both surveys were, generally speaking, favorable. Students' behavior did change positively toward science and the study of the environment and teachers did effect some change in their classrooms as a result of their participation in the camp (Figures 3 and 4). Based upon the surveys, it is the recommendation of the IEI that this camp be continued through the support of DOE and other environmental companies in the Tri-City/ Hanford Site area. The long-term goal for sponsoring other camps is for this program to become the Environmental Summer Science Camp for the nation given

Figure 3. Before Camp Subject Survey.

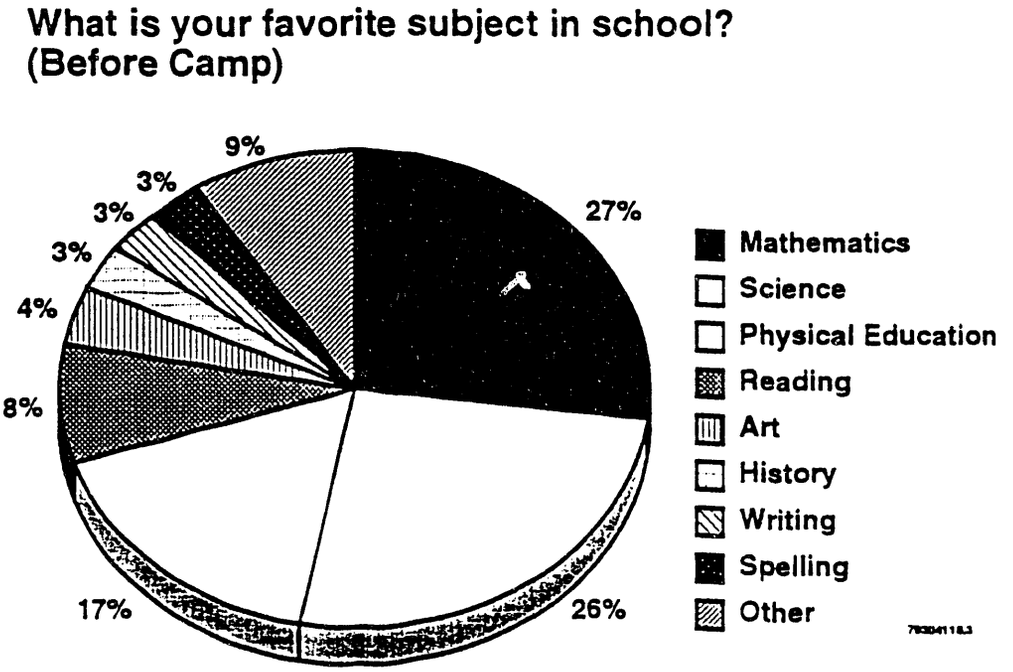
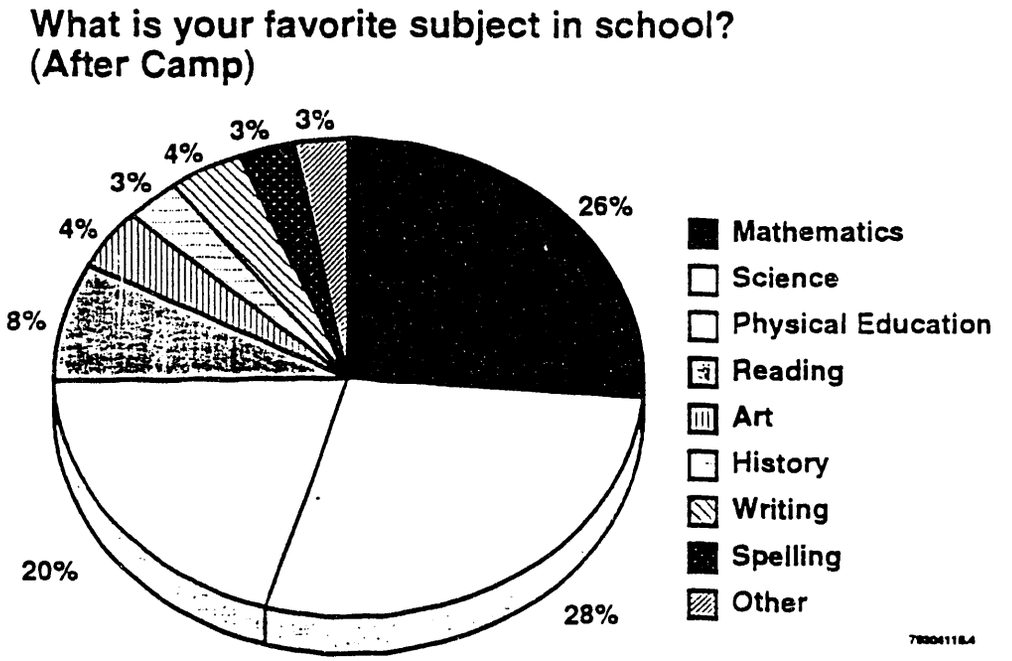


Figure 4. After Camp Subject Survey.



the mission at the Hanford Site. This program, in essence, would become what the NASA Space Camp Program has become for the National Aeronautics and Space Administration.

12.0 FUTURE PLANNING

In planning for future summer science camps several realizations were made. The planning for the camp should be started at least five months prior to the first session to allow sufficient time to recruit teachers and involve them in training, recruit potential students, order materials, and develop curriculum.

Funding for the camp from other sources to supplement and eventually lessen the dependency on the DOE. Other sources could include environmental engineering firms in the Tri-City area, environmental firms who are sub-contractors to the Hanford Site, the Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Agriculture.

Students attending the camp should be encouraged into other WHC programs and eventually into the student work study programs available to high school students to serve as role models for potential camp participants.

APPENDIX A

PUBLICITY/CORRESPONDENCE

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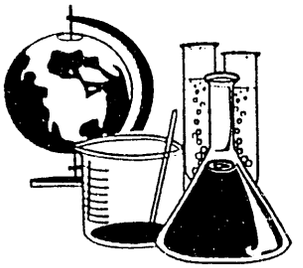
"CAMPAMENTO DE CIENCIAS DE VERANO"

Este campamento es una oportunidad única para estudiantes del sexto grado (a partir de 9/92) para aprender más acerca de los desafíos presentes y futuros a que se encaran en el medio ambiente a través de una semana de sesión de clases por la tarde (1:00-4:00) que se llevarán a cabo en el Colegio de Columbia Basin (CBC) del 13 al 17 de julio, y del 20 al 24 de julio. El personal de instrucción de este campamento está representado por un conjunto de tres, un maestro del sistema de K-12, un ingeniero o científico ambiental de la compañía de Westinghouse Hanford, y un miembro de la facultad de ciencias o del personal de computación del Colegio de Columbia Basin.



Esta autorización no cubre una cirugía mayor a menos que la opinión de otros dos médicos o dentistas, confirmando la necesidad para tal cirugía, sea obtenida antes de que se lleve acabo la cirugía.

Hechos concernientes a la historia médica del niño(a), incluyendo alergias, medicaciones que está tomando y cualquier impedimento físico o incapacidad mayor de las cuales necesita estar consiente nuestro personal o el doctor/dentista:

_____

_____

Firma del Padre/Tutor Fecha

RECHAZO DE CONSENTIMIENTO PARA LA AUTORIZACION EN EMERGENCIAS MEDICAS

Yo no doy mi consentimiento para que se le dé tratamiento a mi hijo(a) en una emergencia médica. En el caso de que ocurra una enfermedad o un accidente que requiera de atención médica, es mi deseo que las autoridades no tomen ninguna acción o que:

_____

_____

Firma del Padre/Tutor Fecha

Maestros: Por favor, devuelvan este formulario antes del 1° de junio, 1992 a: Donna Campbell, CBC,
2600 N. 20th, Pasco, WA 99301;
Richland, WA 99352

FORMULARIO DE EXONERACION

En beneficio de los padres, tutores, yo estoy de acuerdo de que yo no haré responsable a la compañía de Westinghouse Hanford, al Departamento de Energía de Estados Unidos al Colegio de Columbia Basin, ni sus agentes o empleados por ningún accidente o heridas que resulten a causa de la participación de mi hijo(a) durante el período de tiempo descrito en esta inscripción.

FIRMA _____

FECHA _____

FORMULARIO DE INSCRIPCION PARA EL ESTUDIANTE

Instrucciones: *No se atrase. Las solicitudes son procesadas conforme vayan llegando. Inscríbase lo antes posible para asegurarse de que su hijo(a) alcance lugar. Envíe su inscripción de $20.00 y llene el formulario de abajo y devuélvaselo a su maestro. La confirmación de la inscripción de su hijo(a) será enviada por correo antes del comienzo de la clase. Si cancela su inscripción, lo tiene que hacer por lo menos una semana antes del primer día del campamento.*

NOMBRE DEL ESTUDIANTE _____
Apellido Nombre Inicial Apodo

NOMBRE DEL PADRE/TUTOR _____
Apellido Nombre Inicial

DOMICILIO

_____
Calle Ciudad Estado Código Postal

TELEFONO DE CASA _____

TELEFONO DE TRABAJO _____

INSCRIPCION PARA (Seleccione una)
_____ SESION 1 13-17/7/92 _____ SESION 2 20-24/7/92

GRADO DEL ESTUDIANTE (entrando en septiembre, 1992) _____

ESCUELA _____
Escuela Distrito

NOMBRE DEL MAESTRO DEL AÑO 1991-92 _____

EDAD DEL ESTUDIANTE/FECHA DE NACIMIENTO
HOMBRE/MUJER _____

¡¡¡INFORMACION DE INSCRIPCION GRATUITA!!!

La donación que se recibió del Departamento de Energía nos permitirá ofrecer inscripción gratuita a un número limitado de estudiantes de familias de bajo ingreso económico. La información provista abajo nos ayudará a tomar nuestra decisión sobre estos premios. Sólo los estudiantes que reciben la ayuda de almuerzos gratuitos serán considerados.

Para que su hijo(a) sea considerado(a) para la inscripción gratuita, uds. deben de completar el formulario de abajo así como también la solicitud de campamento en el lado reverso. Asegúrense de que los maestro o director de sus hijos(as) firmen el formulario. Devuelvan el formulario al maestro(a) de su hijo(a) antes del 1° de junio, 1992, para ser considerado(a) par inscripción gratuita.
A uds. se les avisará si su hijo(a) es seleccionado(a) para recibir la inscripción gratuita.

INFORMACION DOMESTICA

El número total de los miembros de la familia durante 1992 serán

Información de ingreso

1. **¿Esta recibiendo su hijo(a) actualmente ayuda con los almuerzos en la escuela? SI _____ No _____**
2. **¿Qué cantidad? Marque uno:**
   entero _____ parcial _____

Certificación: Toda la información de arriba de este formulario es verdadera y completa, hasta la medida mayor de mi conocimiento. Yo doy mi consentimiento para compartir información sobre mi familia a grupos fuera de la compañía de Westinghouse Hanford para ayudar a seleccionar los ganadores de becas.

FIRMA _____ **FECHA** _____
PADRE/TUTOR

8. **DECLARACION**
   Yo estoy de acuerdo Este estudiante recibe ayuda para almuerzo en la escuela y lo(a) recomiendo para la inscripción gratuita.

FIRMA _____
Maestro o Director Teléfono

79205100 2

TALLA DE CAMISA DEL ESTUDIANTE:
NIÑO: S M L ADULTO: S M L (Circule Uno)

NECESIDADES ESPECIALES DEL ESTUDIANTE:
(POR FAVOR EXPLIQUE LAS RESTRICCIONES, SI ESTAS APLICAN)

DIETA: _____

MEDICINA: _____

RELIGION: _____

MOBILIDAD/ACTIVIDAD:

YO ME HARE CARGO DE LA TRANSPORTACION DE MI HIJO PARA ASISTIR AL CAMPAMENTO ESCOLAR
_____SI_____No

FORMULARIO PARA LOS PADRES DE AUTORIZACION EN EMERGENCIAS MEDICAS

PROPOSITO: *PARA HACER POSIBLE QUE EL PADRE/TUTOR AUTORICE TRATAMIENTO PARA SU HIJO(A) SI SE ENFERMA O SE HIERE EN EL CAMPAMENTO DE CIENCIAS DE VERANO CUANDO EL PADRE/TUTOR NO PUEDA SER LOCALIZADO.*

En el caso de que se hagan hecho esfuerzos razonables para localizarme al _____ (numero de teléfono) y éstos han fallado, yo doy aquí mi consentimiento para:

1. La administración de cualquier tratamiento que sea necesario segun _____ (doctor/dentista) o, que en el caso de que el doctor preferido que la ha sido designado no esté disponible, por otro doctor o dentista.

2. La transferencia del niño(a) a _____(hospital) o a cualquier otro hospital razonablemente accesible.

La Compañía Westinghouse Hanford
y el
Departamento de Energía de E.U.
Les invita a el
Campamento de Ciencias de Verano 1992
en
El Colegio Columbia Basin (C.B.C.) Pasco, Washington

Brochure for Spanish-speaking Students.

TO: Hispanic Academic Achievement Program Award Recipients

FROM: Westinghouse Hanford Company/US Department of Energy

RE: Environmental Summer Science Camp

DATE: June 22, 1992

Greetings!

The Westinghouse Hanford Company congratulates you on your academic achievement this year. You are models of excellence for your peers. You are to be commended on your performance!

We are planning a summer science camp at Columbia Basin College with students like you in mind. It will be an **ACTION-PACKED** week of **ACTIVITY** and **FUN** related to environmental science. We invite you to attend.

You have a choice of two weeks - July 13th to 17th, or July 20th to 25th - from 1:00 to 4:00 p.m. Transit passes will be provided for your convenience. The cost for camp is $20.00. However, scholarships are available, so don't let that prevent you from signing up.

We hope you'll sign up right away. It's first come first served, so send your registration in today! The deadline for registration is July 6th. (Checks should be made payable to CBC, please.)

We're looking forward to a great week with you!

If you have any questions, call Liz at 736-2666.

Invitation to Hispanic Academic Achievement Award Recipients.

Applicant's Name
Address
May 26, 1992

Dear :

Thank you for expressing interest in the Environmental Summer Science Camp. You have been selected as an instructor. You will be working with a team consisting of one Westinghouse scientist/engineer, one CBC instructor, one K-12 teacher (you!), and two student assistants with 25 students. All that expertise and energy will be dynamic. It will be exciting!!

As you know, the two summer camps are scheduled for July 13-17, and July 20-24 from 1-4pm at CBC. Inservice training will happen Saturday, May 30th, and Saturday, June 13th at the CBC Science Building Room , from 8:30am to 4:30pm. A general program description and the agenda for the first inservice are enclosed.

I look forward to working with you. Please call if you have any questions.

Sincerely,

Liz Swinea
Program Coordinator
736-2666

Teacher Acceptance Letter.

TEACHER BULLETIN
WEEK 1 SCIENCE CAMP
July 15, 1992

Science camp is going great -- thanks to you folks. Despite the rough start on Monday, last minute room changes, and several key supplies not being available, you have worked wonders. Thanks a million!

PARENT VOLUNTEER: Did you know that we have a parent volunteer? Jan Dickenson (Billy's mother) is disseminating the treats and ice daily. She also organized our temporary office of supplies. She's helping me with other office work. Please let her know her service is appreciated. Our hats are off to you, Jan!

CBC SECRETARY: Lupe has gone out of her way to accommodate our needs this week. I understand she'll be on vacation next week. Please express appreciation to her, too. Thanks, Lupe!

SURVEYS, TESTS, LESSON PLANS: If you have not already, done so, please hand in your Westinghouse surveys. I'll collect your pre and post tests on Friday. I will also need you lesson plans for my final report. I appreciate the time and energy you have given to doing them.

BUS SCHEDULE: Thanks for getting kids to the bus on time. I understand it leaves the CBC stop at 4:05. Some students need to be there at 3:55 to catch a bus to Richland. Thanks for cooperating in dismissing students in a timely manner.

GRAND FINALE: Parents are invited to attend the closing "grand finale" on Friday. What happens during that segment is up to each group. Ice cream will be served to everyone. Notes need to go home with kids today. I'll ask for a prospective count on number of parents coming tomorrow.

SUPPLIES: Please let me know what supplies you need for next week -- that is, supplies that need to be replenished (or initially provided, as the case may be). I'll do my best to locate and purchase what is needed.

DAILY TREATS: Are they satisfactory? Suggestions for next week?

STUDENT ASSISTANTS: Your team leaders are bragging about you! Thanks for your leadership and initiative. You are making a positive difference. Please be visible at the bus stop at 4:00 and before and after camp (in front of the math/science building) to help supervise kids. Parents have been told that you will be there for kids from 12:40 to 1:00 and 4:00 to 4:20. Thanks!

"The basic energy of people comes from creative capabilities, from their ideas, and from their trust in one another." -- Anonymous

Keep on keeping on!

Tri-City Herald Article (July 1, 1992).

Special to the Herald

Assembling material for the first Environmental Summer Science Camp are, from left, Sylvia Rivera from Robert Frost Elementary in Pasco, Susan Schultz of Westinghouse Hanford, Brian Monk of Edison Elementary in Kennewick and Liz Swinea from the Kennewick Community School program.

Summer science camp to open

The Tri-Cities' first Environmental Summer Science Camp will offer children in Benton and Franklin counties a chance to learn about the environment and have fun doing it.

The camp will give sixth- and seventh-grade students a "hands-on study of the environment," said Gwen Leth, education specialist with the Education and Performance Group at Westinghouse Hanford Co.

The program includes taking soil and water samples, talking with Indians about their view of the environment, and visiting with a falconer who will bring a live owl and hawk.

Westinghouse scientists and engineers will join Tri-City teachers and Columbia Basin College faculty members to teach the summer program. The camp is sponsored by Westinghouse and is funded through the U.S. Department of Energy. The Department of Ecology also will participate in the program, Leth said.

Two sessions wiii be offered, one from July 13-17 and the other from July 20-24. They will be held from 1 to 4 p.m. at CBC. The cost is $20, but students who have been on free or reduced lunch programs are eligible for camp scholarships.

Those interested must register by July 8. There are 250 spaces available in each session, and applicants will be accepted on a first come, first served basis.

Applications are available at the CBC bookstore, the Hanford Science Center in Richland or by calling Liz Swinea at 736-2666.

Tri-City Herald Article (July 21, 1992).

Science camp attracts Tri-City youngsters

By FAY TOLLEY
Herald staff writer

Melanie Coffey figures one good school course deserves another.

And so the St. Joseph's School sixth-grader signed up for a repeat of the science camp being offered to area sixth- and seventh-graders at Columbia Basin College this week.

"It was so much fun, and I learned lots," the Kennewick youth said.

On Monday, the daughter of Sheila and Michael Coffey joined about 100 youngsters to hear falconer Taffy Mercer explain how birds must adapt to survive.

On opposite sides of the room perched "Windy," a red-tailed hawk, and "Trilby," a nearly blind barn owl.

Melanie, 11, already knew about the birds by the time she had finished her first round of weeklong classes July 17.

In other rooms at the Pasco campus, another 200 middle school students were studying soil and humidity, animals, vegetation, astronomy and meteorology.

They are enrolled in the area's first Environmental Summer Science Camp sponsored by the Education and Internship Performance Group of Westinghouse's International Environmental Institute.

It is funded by a grant from the Department of Energy and taught by area teachers and Westinghouse Hanford engineers and scientists.

Mercer is director of the Falconhurst Raptor Rehabilitation and Environmental Education Center in Kennewick. Melanie was among the 300 students who attended the identical course last week.

Herald/Dorothy Adcock

A barn owl nips at Tabby Mercer's finger during an environmental science camp at Columbia Basin College. Melanie Coffey, 11, a student at St. Joseph's Catholic School in Kennewick, laughs with Mercer, who is director of Falconhurst Raptor Rehabilitation in Finley.

But there was no boredom in the day's repetition, she said. Perhaps someday she might be one of the scientists who is qualified to talk about birds, she said with a shy grin and a shrug.

She learned that while "Trilby" had only hatched a few months ago, the bird is severely handicapped by cataracts after being fed raw hamburger by unknowing captors.

The owl's soft, rounded feathers allow her to fly silently and undetected during a nightly search for food, Mercer said.

But "Windy's stiff, pointed wings can howl in flight because hawks are naturally equipped for speed in their daytime prowls", Mercer said.

With a little poking around, the students learned about Trilby's previous day's meals by examining an owl pellet. After Trilby downed food into its gizzard in a single gulp, including bones and fur, she regurgitates the unwanted leftovers in tidy pellets.

"This is cool," Tommy Lafontaine, 12, said quietly as the class neared its end. "It's neat to see the difference between the birds. I'm here because I want to learn about the environment."

The son of Michelle Lafontaine attends Desert Hills Middle School in Kennewick.

Westinghouse Hanford Company P.O. Box 1970 Richland, WA 99352	**APPLICATION FOR PERMISSION TO USE YOUR COPYRIGHTED MATERIAL**

To: Attn: Ken Robertson, Managing Editor
Tri-City Herald
107 N Cascade
Kennewick WA 99336

Date: 7/19/93

Permission is requested to reproduce the following copyrighted material from:

The Tri-City Herald,

Selections from text (specify by date of issue, page, paragraph, or illustration; if desired, attach a copy of the material in question):

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"Science camp attracts Tri-City youngsters," (21 July 1992)

Title of work or project in which this material will be included:

1992 Environmental Summer Science Camp Program Evaluation, DOE/RL-93-59

Estimated publication date: July 1993 **Author:** U.S. Department of Energy

Publisher (if applicable): U.S. Department of Energy

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A self-addressed stamped envelope is enclosed for your reply.

Name: F. Grey **MSIN:** A2-24 **Date:** July 19, 1993

Signature: F Grey / BCSR **Westinghouse Hanford Company**

Credit line (if required):

Courtesy Tri-City Herald

Application approved by:

Name: Ken Robertson **Date:** 7/23/93

Company Name: Tri-City Herald **Signatory's Position:** managing editor

Signature: Ken Robertson **(on behalf of)**

APPENDIX B

FORMS/APPLICATIONS

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WESTINGHOUSE HANFORD/U.S. DEPARTMENT OF ENERGY

ENIRONMENTAL SUMMER SCIENCE CAMP

TEACHER APPLICATION

Name _____

Address _____

City _____ State _____ Zip _____ Phone _____

School _____ District _____

Address _____

City _____ State _____ Zip _____ Phone _____

COURSES YOU ARE CURRENTLY TEACHING

Name of Course | No. of Sections | Grade | No. of Years Ta ght

_____

_____

Number of Years Teaching _____ Are You Certified? Yes _____ No _____

Other Schools Where You Have Taught | Courses | Grades

_____

_____

EDUCATION

University(ies) _____

City/State _____

Year(s) Degree(s)Received _____

Degree(s) _____

Major(s) _____ Minor(s) _____

THE PERCENTAGE OF STUDENTS AT YOUR SCHOOL IN EACH ETHNIC GROUP

(This information is optional, but important to complete a federal report. All information will be kept strictly confidential)

1. Black/African _____ %
2. Hispanic/Latino _____ %
3. White/Caucasian _____ %
4. Laotian/Vietnamese/Cambodian _____ %
5. Other Asian/Pacific Islander _____ %
6. American Indian/Alaskan native _____ %

ETHNIC MINORITY COMPOSITION OF YOUR CURRENT CLASSES

Less Than 25% _____ 26-50% _____ 51-75% _____ More Than 76% _____

Are You Bilingual? Yes _____ No _____ What Languages? _____

Please list workshops, summer institutes/seminars or programs in which you have participated. Indicate year, length of program, the role you had in the event, and the ages of students impacted.

Indicate professional organizations to which you belong and awards or honors you have received.

Describe your present style of teaching, including the extent to which you use experiments, demonstrations, hands-on activities, etc.

Briefly describe experiences or resources that will help you share with other teachers and contribute to the workshop.

What would you like to gain from working with professional scientists and engineers?

I commit to be available for inservice May 16 and May 30 (8:30 am - 4:30 pm), and both sessions of summer camp July 13-17 and July 20-25 (12:30 pm - 4:30 pm.

Applicant Signature: _____

APPLICATION DEADLINE: MONDAY, MAY 11, 1992
Return completed form to:

Gwen Leth, Education Specialist
Westinghouse Hanford Company
Educational and Internship Performance
P.O. Box 1970, Mail Stop H3-24
Richland, WA 99352-1970

Questions? Call Gwen Leth 376-5252

WESTINGHOUSE HANFORD/U.S. DEPARTMENT OF ENERGY

ENVIRONMENTAL SUMMER SCIENCE CAMP TEACHER RECOMMENDATION FORM

JULY 13-17 and 20-24, 1992

COLUMBIA BASIN COLLEGE CAMPUS

NAME OF APPLICANT_____ SCHOOL_____

SCHOOL DISTRICT_____

1. How long have you known this applicant? Years_____ Months_____

2. Please rate this teacher as realistically as you can in the areas listed.

	Excellent	Good	Average	Below Average
Ability to relate to 10-11 year olds				
Interest in science and/or the environment				
Knowledge of science and/or the environment				
Experience in teaching science				
Ability to work together as a team member in developing and teaching curriculum				
Resourcefulness				
Classroom Management				
Character				
Uses a variety of teaching techniques in his/her classroom teaching				

3. Does the applicant have other qualities which would enhance the success of the camp?

4. What are the first few words that come to mind to describe this teacher's classroom teaching style?

Without reservation, I recommend this teacher to participate as an instructor for the Environmental Summer Science Camp.

_____ _____

Signature of Principal Date

Return completed recommendation form by May 11, 1992, to Gwen Leth, Westinghouse Hanford Co., P.O. Box 1970, Mail Stop H3-24, Richland, WA 99352. Questions? Please call Gwen Leth, 376-5252.

WESTINGHOUSE HANFORD/U.S. DEPARTMENT OF ENERGY
ENVIRONMENTAL SUMMER SCIENCE CAMP
STUDENT ASSISTANT APPLICATION

Name _____

Address _____

City _____ State _____ Zip _____ Phone _____

What are your future goals?

Plans for college or other post-high school education or training?

Please list any awards or honors you have received.

List any school clubs, service organizations, student government, athletic teams, MESA, Upward Bound, etc in which you participate. Include any offices that you hold or have held.

List non-school activities (employment, church community, etc.)

List your special interests, hobbies, talents.

On the back of this application please describe yourself. Your statement should include why you are interested in science, your strengths, attitudes and/or skills explaining how you could contribute.

I commit to availability for both sessions of the summer camp; July 13-17 and July 20-25, 12:30-4:30 p.m.

_____

Student Applicant Signature

APPLICATION DEADLINE: MONDAY, June 8, 1992
Return completed form to:

Gwen Leth, Education Specialist
Westinghouse Hanford Company
Educational and Internship Performance
P. O. Box 1970, Mail Stop H3-24
Richland, WA 99352-1970

Questions? Call Gwen Leth, 376-5252

WESTINGHOUSE HANFORD/U.S. DEPARTMENT OF ENERGY

ENVIRONMENTAL SUMMER SCIENCE CAMP STUDENT ASSISTANT RECOMMENDATION FORM

July 13-17 and 20-24, 1992

COLUMBIA BASIN COLLEGE CAMPUS

NAME OF STUDENT APPLICANT_____ SCHOOL_____

1. How long have you known this applicant? Years_____ Months_____

2. Please rate this student as realistically as you can in the areas listed.

	Excellent	Good	Average	Below Average
Ability to relate to 10-11 year olds				
Ability to work with and accept direction from teachers and professional engineers and scientists.				
Knowledge of science and/or environment				
Interest in learning about science and the environment				
Dependability				
Honesty				
Work Habits				
Influence and leadership				
Personality (in general)				
Potential				
Maturity				
Achievement				

3. Please describe the student's most impressive accomplishment (e.g. memorable project done in your class, creative endeavor within the school or community).

4. Describe student's major strengths and weaknesses.

Without reservation, I recommend this student to participate as an assistant for the Environmental Summer Science Camp.

Teachers Signature _____ Date _____

RETURN THE COMPLETED RECOMMENDATION FORM BY MAY 15, 1992, to Gwen Leth, Westinghouse Hanford Co., P.O. Box 1970, Mail Stop H3-24, Richland, WA 99352. Questions? Please call Gwen Leth, 376-5252

STUDENTS RECOMMENDED TO
ATTEND ENVIRONMENTAL SUMMER SCIENCE CAMP
JULY 13-17, 1992 (A) Session
JULY 20-24, 1992 (B) Session

PLEASE NOTE: According to the grant from the U.S. Department of Energy, fifty percent of the students attending the camp must come from under-represented populations with an emphasis on minorities and women. Students must be entering the 6th grade in September 1992, and have demonstrated an interest in math or science.

TEACHER'S NAME_____

SCHOOL_____ Phone:_____

DISTRICT_____

NAME OF STUDENTS	SESSION	GRADE LEVEL	ELIGIBLE FOR SCHOLARSHIP?	TRANSPORTATION NEED?

I have talked with the above students regarding their interest in attending the Environmental Science Camp. Each of these students would like to receive additional information regarding the camp.

_____ _____
Teacher's Signature Date

APPENDIX C

CAMP SCHEDULE

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APPENDIX C
CAMP SCHEDULE

ENVIRONMENTAL SCIENCE CAMP

JULY 13 - 17 AND JULY 20 - 24

Pete Frankovic - Mary Pat Long - Ken Peterson

MONDAY

1:00 - 1:40

1. Welcoming Address - George Cox
2. Team Building - Choose a name for the group; brainstorm (nature theme) Room 153
3. PRE TEST

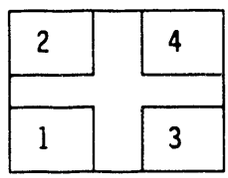
1:40 - 2:20

PLOT STUDY: Outside

1. Measure and layout the 15 M x 15 M plot
2. Make observations (general)

— half of class at a time - then flip

3. Make an animal survey --> See chart
   - . actual animals
   - . tracks
   - . what else - bones, casings, feathers



{X - put out insect trap cans — XX [DO at 2:40 - 3:00]}

[Enter data into notebook] - Weather Data --> See chart

1. time
2. cloud cover
3. five temps
4. humidity
5. wind --> direction and force

MONDAY

MATERIALS

4 stakes	notebook	graph paper
100 M string	colored pencils	drawing paper 12 x 18
flagging	hand lens	rulers
5 thermometers	cans	16 tongue depressors

2:20 - 2:40

BREAK TIME

2:40 - 3:00

1. bury insect trap cans
2. color trail
3. materials - hand trowel, cans 3 per plot (12), color trail handout

3:00 - 3:40

SPEAKER: Taffy Mercer - The Library, Room 101

3:00 - 3:40

WRAP-UP: Room 153

TUESDAY

1:00 - 1:20

TEAM BUILDING: Room 153
- Sit in a circle
- Roll Call

1:20 - 2:00

PLOT STUDY: Outside

1. make general observations
2. weather data
3. shrub survey
   - by species
   - location
   - height
4. check bug collection

MATERIALS

- notebook
- thermometers
- yard sticks
- rulers
- fingernail polish

2:00 - 2:20

BREAK TIME

2:20 - 3:00

DESIGN A BUTTERFLY: Room 151

1. talk about survival and
2. choose a spot
3. choose a pattern
4. design a color pattern
5. cut out and mount in your environment

MATERIALS

- scissors
- handouts - butterfly patterns
- colored pencils
- tape
- pipe cleaners
- wire cutters - me
- Butterfly book - reference (see library)

* students may do more than one

6. discuss coloration, mimicry (monarch and viceroy), survival, life span, predators

3:00 - 3:40

HIDING BUTTERFLIES AND LOCATING THEM

1. hide the butterflies by groups (of 3 or 4)
   - make group identification on back of each butterfly
2. everyone goes out on the butterfly search

TUESDAY

RULES:

1. you cannot find any from your group
2. collect your collection and put in your notebook
3. which group found the most - predators survive?
4. each group then goes back to collect any not found - the group with the most not found WINS!

3:40 - 4:00

WRAP-UP

WEDNESDAY

1:00 - 1:20

TEAM BUILDING: Room 153

1. roll call
2. activity --> human graph

1:20 - 2:00

HOOKS & LADDERS: Outside --> groups E & F
Salmon Life Cycle Game

1. give students some background information
2. handouts on salmon life cycle (see aquatics pack)

2:00 - 3:00

SPEAKER - AMERICAN INDIAN

3:00 - 3:40

PLOT STUDY: Outside

1. make general observations
2. weather observations
3. check bug collection/mark #2
4. finish shrub survey (if not done)

MATERIALS

- notebook
- thermometers
- yard sticks
- rulers
- fingernail polish

3:40 - 4:00

WRAP-UP: Room 153

1. general observations
2. give time for journal notes, sharing, art

THURSDAY

1:00 - 1:20

TEAM BUILDING: Room 153

1. roll call
2. activity --> human graph/color trail

1:20 - 1:40

DEADLY WATERS

1. discuss pollution and things that get into our water supply
2. graph dots

MATERIALS

- graph paper
- colored dots
- glue - rubber cement
- art paper 12 x 18
- colored pencils
- handout

1:40 - 2:00

DEADLY WATERS - Art

1. study graph and handout to determine what your environment would look like
2. draw and color your environment
3. on the back, describe your environment

2:00 - 2:40

PLOT STUDY

1. general observations
2. weather observations
3. sketching the plot
4. check bug collection and mark #3
5. soil survey
   . core sample
   . water and jar

MATERIALS

- notebook
- thermometers
- yard sticks
- rulers
- fingernail polish
- jars and water
- straws

2:40 - 3:00

BREAK TIME

THURSDAY

3:00 - 3:40

SPEAKERS - Astronomy

3:40 - 4:00

WRAP-UP

FRIDAY

1:00 - 1:20

TEAM BUILDING: Room 153

1:20 - 1:40

OWL PELLETS

1. dissect owl pellets
2. glue bones to index card
3. give owl info while working

MATERIALS

- owl pellets
- paper clips
- 5 x 8 index cards
- glue
- ziplock bags
- mouse skeleton sheets

1:40 - 2:00

1. continue with owl pellets
2. identify how many mice the owl ate

2:00 - 2:20

BREAK TIME

2:20 - 2:50

JOURNAL SHARING, POETRY, SHORT STORY WRITING

1. dianante (diamond poem)

```
          noun
      adj     adj
 part     part     part
noun   noun   noun   noun
 part     part     part
    adj       adj
          noun
```

- acrostic poems

```
E     W     N
C     I     A
O     L     T
L     D     U
O     L     R
G     I     E
Y     F
      E
```

2. word webs

- use environmental words

water

FRIDAY

2:50 - 3:00

POST TEST

3:00 - 4:00

GRAND FINALE

TEAM BUILDING

MONDAY
- group line ups — Name tags
- first names, birthdays
- tennis ball timings
- choose a group name
- ice breaker with wildlife chart

TUESDAY
- circle sitting on each others lap
- journal writing and sharing

WEDNESDAY
- human graphs
  - shoes
  - shirts
  - eye color
  - foods
  - movies
- journal writing

THURSDAY
- color trail - outside activity
- journal writing

FRIDAY
- sit back to back
  - list sights
  - list sounds
  - picture

APPENDIX D

LESSON PLAN/ACTIVITY SHEETS

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D.1.0 ENVIRONMENTAL SUMMER CAMP LESSON PLAN

Group B: Mary Moore
Joe Estey

Monday Plot Study

Purpose: To instruct the student in the balance and value of each segment of the local ecosystem through hands on research and evaluation including surveillance of plant and biological life, food cycles, botanical categorizations, etc.

Activity: Collect samples of soil for PH, moisture content and mineral analysis. Identify and log all plant and biological life. Set scorpion and bug traps to support the study of animal life.

Tuesday Science Lab

Purpose: To discuss hazardous materials and wastes and their effect on the environment by performing simple elementary lab experiments on common household products. Use hands on field sampling of specially prepared solutions (vinegar, baking soda, salad oils) to demonstrate how science is helping to clean up the environment when unknown or abandoned containers are discovered in a field, landfill, or backyard.

Activity: Perform field sampling using coliwasa and grain samplers in the Group B plot area: Containers of unknown materials will be placed in the area for the kids to hunt down and investigate. The material will be sampled, along with the environmental media (soil) in the immediate area in order to determine if environmental damage has occurred. Household hazardous materials will be listed and discussed with product substitutes described to the students. Simple lab experiments, such as pH paper testing or acidity color testing with red cabbage juice will be done.

Wednesday "World in Jeopardy" Game

Purpose: Using a modern day TV show format, the students will learn valuable information about the environment, industry, and themselves.

Activity: Students will be divided up into various teams surrounding a large Game Board, similar to the Jeopardy TV show board. Various questions will be asked about recycling, source reduction, pollution, and the

ecosystem. A "Truth or Dare" option will be given to the students so that if they are unable to answer the question, they can choose a "dare" in order to gain points.

All Week: Recycling Drive

Purpose: To teach students the value of recycling.

Activity: Tote boards will be made up to track the collection of newspaper and aluminum cans. The winning student will be given a special prize at the end of the week long drive.

D.2.0 ECODRAMA

I. INTRODUCTION

The idea is to teach ecological ideas by acting out the ideas, i.e., multidimensional learning or learning with more than just books, pencils and papers. The concept is not confined to science or conservation, and may be adapted freely. There are no copyrights!

II. SUGGESTIONS

Generally there should be no talking. We desire action, not words. Keep it short and pointed - don't drag it out or make it too elaborate, though props are permissible. You do not have to do all the exercises, nor do you have to do them in any particular order. BE CREATIVE! Discussion should follow each exercise.

III. EXERCISES

A. Grouping - for want of a more clever term

All participants stand in a circle and are quietly assigned roles by the leader. There should be at least three groups (crows, bullfrogs, and mosquitoes, for example). Each participant acts out his/her role as best they can while moving to others acting out a similar role. When all have formed their group, each group demonstrates for the others who try to guess what they are. Sometimes an individual who has no group can be used as a "ringer" to confuse things.

B. Pairs

Same start as before except this time you assign two of each animal. The pairs must find their partners. Odd number of students may be assigned to another pair or may be used as ringers.

C. Group Animal

Two groups (or more) are each allowed to pick an animal (one organism). As a group, they act out the animal for the other group who in turn acts for them. Then the groups switch animals. Don't allow too much time to discuss...encourage action!

D. Concepts

Groups act out environmental or other science concepts (you are not limited to the topics listed below):

1. water cycle
2. growth
3. recycling
4. seasons

5. food chain
6. planets
7. constellations

E. Short Spontaneous Plays

Groups create short plays with or without dialogue. The plays can be topical or situational. Give them a situation and enjoy the results!

D.3.0 DEMONSTRATION ACTIVITIES
FINDING THE DEW POINT

FOR YOUR INFORMATION

Humidity has an effect on the rate at which water evaporates into the air. As well as evaporating, water vapor in the air also condenses (joins together) to form drops, and liquid water "appears" out of the air. One of the conditions that affects both evaporation and condensation is air temperature. If air (containing water vapor) is cooled, there will be a point reached at which the water vapor in the air begins to condense and for a liquid. This air temperature is called the dew point. In the following investigation, your class will discover the dew point of the classroom.

QUESTION

What is the dew point of the classroom?

TIME

30 minutes

MATERIALS

Thermometer	1 per team
Tin can (soup size)	1 per team
Ice	1 bag
Stirring rod	1 popsicle stick or straw per team
Paper towel	1 - 2 per team

PROCEDURE

(1) Remove the label from a soup size can. Add water that is at room temperature (or warmer) until the can is half full. Wipe dry the outside of the can with a paper towel. Place the thermometer in the can.

(2) Add a few small pieces of ice while stirring the mixture. Use a stirring rod, not the thermometer, to mix the ice and water.

(3) Other members of your team should carefully observe the outside of the can. After a minute or two, add another piece of ice, stir, and wait. Repeat this process until dew is observed on the outside of the can. At the first signs of moisture, or dew, read the thermometer. Record the water temperature in your notebook.

OTHER POSSIBILITIES

(1) Compare the results of your investigation with other teams in the room. Did you all use the same temperature of water when your started?

(2) Repeat and determine the dew point of the air outside. What could cause the difference in the date collected indoors and outdoors?

A FEW SUGGESTED QUESTIONS

1. What is cheat grass more abundant than other plants?

2. Why are there no trees?

3. Which insects (bees, grasshoppers, beetles, etc.) are the most common?

   a. Why do you think there are more of one kind than another?

4. Does the weather (climate) determine the kinds of living things present in this area?

5. Is the soil:

   a. acid base
   b. sand, clay or loam
   c. rich in humus (dead decayed stuff) or living matter
   d. is this good soil, or poor soil? Why?

6. Is water readily available? Why or why not?

7. Which animal (spiders, grasshoppers, snakes) is the best consumer of the others?

8. What color are the shrubs? Why is the color important to their survival?

9. Are there any differences in the plant leaf shape, color, twigs?

Other questions may be asked. The important idea at this stage of development is not necessarily right or wrong, but the encouragement of reasoning.

WEATHER DATA - FOR EACH DAY

DATE: _____

TIME: _____

OBSERVE:

1. Cloud cover: _____

2. Temperatures: _____

   a. 1M height air: _____

   b. On the ground (surface): _____

   c. Inside shrub: _____

   d. Inside a burrow: _____

   e. In the shade: _____

3. Humidity: _____

4. Wind:

   a. Direction: _____

   b. Force: _____

DEW WAH DITTY DITTY

Fill your can about two-thirds full of water.

Observe the starting temperature; record it in the table.

Add ice a little bit at a time. Stir the ice and water mixture slowly until the temperature stops dropping. Then add a little more ice and stir. Record the temperature in degrees celsius every minute in the table.

At some point, moisture will start to form on the outside of the can. Place a "D" in the prediction column by the minute you think dew will start to form (on the outside of the can).

Before you start, fill in the following sentence:

"I predict dew will form (on the outside of the can) at _____ degrees celsius."

PREDICTION	MINUTES	TEMPERATURE
	1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	

DEMO ONLY - USE FIRE TO HEAT H_2O

PRODUCTIVITY - How much food energy is there?

Grasses and other small plants

<----- Roots

Using scissors, cut all of the grasses and small plants off at ground level. Do this in 5, $1DM^2$ sites. Put cut plants in plastic bags and seal. Mark your bags with an identifying team name and location.

Plants are gone

Roots ----->

Take the bags back to the lab.

1. Weigh the bag.
2. Subtract the weight of the plastic bag.
3. Open your bag.
4. Place in an incubator on low heat (37.5^oC).
5. Leave in the incubator for two days.
6. Reweigh the bag.

The dry weight is the number of calories (~) energy in 1 dm^2.

1g dry weight = 1 calorie

From this, you can calculate the amount of energy in your plot available to all the consumers (eaters).

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APPENDIX E

SURVEY DATA

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APPENDIX E

SURVEY DATA

ENVIRONMENTAL SUMMER SCIENCE CAMP

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1. How did your participation in teaching for the ESSC affect your teaching in your classroom this school year 92-93?

a. very little impact	a. 2
b. some impact	b. 3
c. significant impact	c. 5

2. What part of your teaching practices were positively impacted due to your participation in the science camp?

a. increased hands-on science activities	a. 4
b. more time studying science	b. 0
c. more time on environmental topics	c. 5

* Note: One teacher did not teach science so this question did not pertain.

3. Was your understanding of the environmental topics increased because of the camp?

Yes _____	YES 10
No _____	NO 0

4. Did you incorporate information about Hanford into your curriculum relating to the environment? *

Yes _____	YES 8
No _____	NO 2

5. Did you use any of the activities developed for the camp in your classroom?

Some _____	SOME 4
Many _____	MANY 4

* Note: Two teachers were not teaching science subjects so the questions did not pertain.

6. Is your enthusiasm for environmental education as great now as it was during the camp?

Yes	_____	**YES 9**
No	_____	**NO 1**

7. Were your students more interested in science this year as a result of your interest generated by your participation in the camp?

Some	_____	**SOME 7**
No Change	_____	**NO CHANGE 2**
Increased Positively	_____	**INCREASED POSITIVELY 1**

8. Did you consider the camp experience to be an enjoyable one?

Yes	_____	**YES 10**
No	_____	**NO 0**

COMMENTS BY THOSE SURVEYED:

- Excellent! When is the next one?
- Wildly successful!
- Wish they were doing it again this year.
- Need this camp again.
- Disappointed not have this year. Neat camp!

ENVIRONMENTAL SUMMER SCIENCE CAMP
SURVEY OF STUDENT BEHAVIOR

The following observations identified changes in the behavior of 105 students (ranging from third to seventh grade), which came about as a result of their participation in the August, 1992 Environmental Summer Science Camp. Teachers and administrators responded to the May, 1993 survey after observing the changes in their students.

1. Student's grade in science improved from the Spring quarter of '92 to Fall quarter of '92?

Improved	Same	No Improvement	No Response
31% (33)	34% (36)	11% (11)	24% (25)

2. Student increased his/her selection of science related courses?

Increased	No Increase	No Response
41% (43)	20% (21)	39% (41)

3. Student demonstrated greater interest in science during the Fall quarter?

Yes	No	No Response
70% (73)	17% (18)	13% (14)

4. Student demonstrated interest in environmental topics during Fall quarter of '92?

Yes	No	No Response
69% (72)	20% (21)	11% (12)

Comments:
"wrote to editor of newspaper demanding better environmental treatment"
"our class went environmental crazy"
"more concerned about the earth and cleaning it up"
"did a report on endangered species by choice"
"initiates projects and involved in experiments"
"doing a project on Greenhouse effect, endangered species"
"knowledge about environmental topics"
"didn't initiate discussion, but added to science discussion"
"especially pollution and extinct animals"
"always participated in contests and discussions"
"very involved in experiments and class projects"
"involved in class projects and experiments"
"enjoyed science, participated in all experiments"
"very active participant in class activities"
"knows a lot about environmental issues"
"very interested in ocean pollution"
"went to KEPR, part in KEDS news, saving the planet"
"normal amount"
"neat kid, so artistic in explaining scientific material"

"interested science experiments, digging deeper into topics"
"willing to work in groups and share ideas"
"pollution and environmental effects"
"environmental subjects have not interested him"
"topics were not discussed until spring"
"was able to join in the talks"
"experiments and writing about pollution, Earth Day poster"
"recycling and environmental issues"
"excellent performance in animal/plant science study"
"know more about problems/environment, classes helpful"
"great interest in science in the classroom"
"more aware of things harmful to the environment"
"learned about environment and keeping things clean"
"fall quarter wasn't my best"
"was interested in environmental topics before '92"
"a good experience to work with environmental topics"

5. Student's attendance in school improved from Spring '92 to Fall '92?

Improved	Same	No Improvement	No Response
34% (35)	16% (17)	20% (21)	30% (32)

6. Student's interest in school seems to have improved from Spring '92 to Fall '92?

Improved	Same	No Improvement	No Response
47% (49)	6% (6)	16% (17)	31% (33)

Comments: "really enjoyed science camp"
"science classes are required"
"motivation/interest/performance is always high"
"shows a lot of interest in science"
"enrolled in karate, too"
"involved in outside science activity, but not in school"
"good attendance and interest in school"
"demonstrated a strong interest in science"

APPENDIX F

REPORT OF SURVEY RELATING TO THE SUMMER SCIENCE CAMP

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APPENDIX F
REPORT OF SURVEY RELATING TO THE SUMMER SCIENCE CAMP

Sponsored by the
Education and Internship Performance Group
of the
International Environmental Institute

Fall, 1992

TABLE OF CONTENTS
IEI Summer Science Camp

METHODOLOGY

IEI Summer Science Camp

A week-long summer science camp was held on two consecutive weeks in July. The first five-day session ran July 13-17, 1992; a repeat second session ran July 20-24. At the beginning of each session, students were asked to complete a short questionnaire about opinions and attitudes relating to the environment and to preference for classes in school.

On Friday, the last day of each session, a second questionnaire was administered. This asked questions identical to the Monday survey, plus questions related to their experiences in the summer camp.

Although both sessions were surveyed, limitations of time, money and manpower made expedient the analysis of only one of the two weeks during which data was gathered. It was desired to evaluate change that occurred in student attitudes during the camp. To do this, the same group had to be measured both before and after. The second session was chosen because the demographics of gender and race were added to the questionnaire in the second session.

Data from closed-ended questions was compiled and tabulated. Results appear in Appendix F-A. Data from open-ended questions were tabulated, categorized and appear in Appendix F-C.

PURPOSE, APPLICATIONS, AND OBJECTIVES

IEI Summer Science Camp

July 1, 1992

Purpose:

1) To obtain data and information from students to see if the Summer Science Camp (SSC) had a positive influence on interest, awareness, and knowledge of selected environmental sciences. Students' perceptions of the camp and knowledge and attitudes towards environmental subjects taught in the camp will be measured. One goal is to increase the likelihood that students will choose math and science courses for middle and high school electives.

2) To obtain data and information from SSC teachers to see if teaching the program has a positive influence on either technical knowledge or teaching methods (teaming, hands on, live demonstrations, pupil involvement versus lecture) as a result of working with Hanford engineers.

3) To obtain data and information from parents regarding their perceptions of their children's experiences at SSC. Also measure parents' exposure and attitudes toward science, toward environmental issues, and toward Hanford in order to better understand where the children may be coming from on these matters.

4) To obtain data and information from WHC/BCSR employees to see if the SSC teaching experience was time well spent personally and professionally. Also find out if and how they were able to relate camp activities to careers.

Applications:

A. Determine the value to DOE of continuing to fund the SSC.

B. If the SSC shows evidence of meaning and value and is deemed to be continued, improve methods, techniques, and materials that teachers use in the SSC.

C. Provide WHC data regarding continued participation in the program.

D. Identify presentations and materials which might continue to be provided to schools on environmental studies and sciences.

Objectives:

1. Measure interest, awareness, knowledge and attitudes towards environmental sciences both before and after the SSC in the areas of soils, birds and animals, environmental 3 R's (recycle, reuse, reduce), and career opportunities in environmental areas.

2. Determine what aspects of the SSC students liked best and what were the factors which contributed to these preferences.

3. Determine what aspects of the SSC students liked least and what were the factors which contributed to the dislike.

4. Measure teachers' typical past teaching methods with regard to the frequency of lecture compared with live demonstrations or hands-on student involvement in the learning process.

5. Measure teachers' attitudes towards using techniques which involve students after the SSC.

6. Measure teachers' perceptions of knowledge or new information gained through working with Hanford engineers and scientists.

7. Determine how parents perceived their children's experiences at SSC.

8. Measure parents' attitudes towards science in general, towards specific environmental issues including the 3 R's of environmental preservation, and towards Hanford.

9. Determine what students, teachers, and employees thought about the program and what might be done to improve it.

EXECUTIVE SUMMARY

IEI Summer Science Camp

Students came away from the Summer Science Camp with a somewhat increased interest in science, improved knowledge and attitudes towards the environment, and a somewhat increased propensity to recycle, reuse, and reduce in the interest of environmental conservation.

On most measures, there was improvement after the camp. However, in many instances, the improvement was a trend, and did not demonstrate statistical significance. It would be unreasonable to expect a 15-hour long summer camp to achieve a high level of statistical significance in changing attitudes and behavior. The fact it showed a positive trend suggests the activities were "on track."

There was evidence that the experience increased interest in science, although this increase was not statistically significant. As a group, participating students had a high interest in science at the outset. The interest increased somewhat, but the data suggest the camp was "preaching to the choir" in that the camp didn't increase interest in science so much as it attracted those whose interest was already high.

One measure which demonstrated statistical significance was the increased awareness of the fact that there are many jobs available related to the environment.

One significant different between teachers teaching in school and the same teaching in the Summer Science Camp is the amount of time spent lecturing. Teachers said they lectured significantly less in the camp than in school. This may account for some of the enthusiasm students had for the camp over school.

Another interesting point is that the teachers who participated in the SSC overwhelmingly felt that it is more important for a teacher to have a love in working with students more than an excellent grasp of the subject.

Both teachers and employees alike said they learned something new from the Camp experience. Both groups said they would like to participate in another Camp.

SUMMARY OF FINDINGS

IEI Summer Science Camp

1. Student preferences for science as a preferred class in school increased after the camp, compared with before. The increase was small, significant at the .16 level of confidence, short of the .05 level normally used for statistical significance. However, the preference for science increased a little after the camp compared with before.

2. Overwhelmingly, students recognized that the study of the environment is a science, both before (90%) and after (95%). The increase was not statistically significant. Speculation: the large percentage of students that associated environment with science may have been due, in part, to the activity being billed as "the **Environmental** Summer Science Camp."

   For comparative purposes, students were asked whether other topics, in addition to "environment," should be considered a science. There was a statistically significant increase in students who thought of agriculture as a science after, compared with before. This was the only topic which demonstrated statistical significance.

3. Students' awareness of what the environment is increased after the camp. The increase demonstrated statistical significance. Students were given a choice of seven items and were asked, "What is an example of the environment?" All the items related to the environment. The correct answer was "all of the above." Nine percent more correctly answered the question after the camp than before (72% to 81%). This is significant at the .05 level of confidence.

4. There was a statistically significant increase in the number of students who became aware that Hanford was the nation's largest environmental cleanup site. The 16-point jump (22%, before; 38% after) was significant beyond the .01 level of confidence.

5. Attitudes and knowledge of the environment were increased after the camp compared with before. All measures increased somewhat, but only the awareness of job opportunities in environmental areas demonstrated statistical significance (<.03 level of confidence) in improvement.

6. Purported behaviors regarding recycling, reducing and reusing were improved after the camp. It must be recognized that any such improvement may well reflect a bias of what is socially appropriate and what is not. The survey measured only what the students said they did, not what their actual behavior is. However, if awareness and attitudes toward recycling, reducing and reusing are improved, it seems reasonable over time to expect behavior to also improve.

7. Students overwhelmingly liked the camp. Over half (52%) gave the camp the highest rating possible, and 86% indicated they liked it at least a little. Nearly three out of four said they were willing to attend

another camp. Some 90% would recommend friends attend the camp, and over half (55%) of those responding would encourage friends to go.

8. The unit on birds was the most popular in the second session. The unit on soils was the least liked activity in terms of numbers, but a number of students favored it highly. Dissecting owl pellets interested many, although a few didn't like it.

9. Students favored hands-on activities that required their involvement. They found lectures boring, uninteresting. Students wanted the activities to be less like school, especially minimizing lectures.

10. Teachers said they lectured considerably less in the SSC than in the regular school classroom. This was quite statistically significant beyond the .001 level of confidence.

11. Both teachers (67%) and employees (97%) who participated in the camp said they gained new knowledge and information. All members of both groups who responded to the survey said they would either "definitely" want to participate in another SSC (80% for both teachers and employees) or would "probably" want to participate.

12. Four out of five teachers who responded to the survey said they believed it was more important for a teacher to have a love in working with students than for a teacher to have an excellent grasp of subject matter. Such a finding might be useful in the future in screening teachers as possible participants.

INSERT FOR THREE GRAPHS

1. Preferences for school subjects
2. Change regarding attitudes and knowledge of the environment
3. Change regarding purported behavior of recycling, reducing and reusing

APPENDIX F-A

SSC Student Survey B

July 20, 1992

Here are a few questions on which we would like your opinion. Your answers won't be graded. In fact, we don't even want you to put your name on the paper. Some questions ask about classes you might prefer. Other questions ask for your opinions. And still others ask what you think about certain things or what you do. Indicate your answer by circling the appropriate number. Please try to answer all the questions. And remember, you can't give a bad answer. We want to know what YOU think about each question.

Below is a list of six subjects often taught in schools. Please look at all six on the list. If you were required to take just one of the six, but were able to choose which one you want, what would you take? Please circle the number "1" next to the subject which is your first choice. Then if you were required to take just two subjects, what would be your second choice? Please circle the number "2" next to the subject. In the same way, please indicate your third, fourth, fifth and sixth choices by circling the appropriate number next to each choice.

Q1. History

1 -	First choice	14	8%
2 -	Second choice	21	12%
3 -	Third choice	30	16%
4 -	Fourth choice	38	21%
5 -	Fifth choice	38	21%
6 -	Sixth choice	41	22%
		182	

Q2. Reading

1 -	First choice	21	11%
2 -	Second choice	21	11%
3 -	Third choice	39	21%
4 -	Fourth choice	42	23%
5 -	Fifth choice	34	18%
6 -	Sixth choice	27	15%
		184	

Q3. Science

1 -	First choice	51	28%
2 -	Second choice	56	31%
3 -	Third choice	30	16%
4 -	Fourth choice	21	11%
5 -	Fifth choice	15	8%
6 -	Sixth choice	10	5%
		183	

Q4. Writing

1 -	First choice	11	6%
2 -	Second choice	26	14%
3 -	Third choice	43	19%
4 -	Fourth choice	33	18%
5 -	Fifth choice	40	22%
6 -	Sixth choice	36	20%
		180	

Q5. Arithmetic/Math

1 -	First choice	29	16%
2 -	Second choice	33	18%
3 -	Third choice	22	12%
4 -	Fourth choice	29	16%
5 -	Fifth choice	37	20%
6 -	Sixth choice	34	19%
		181	

Q6. P.E.

1 -	First choice	64	35%
2 -	Second choice	31	17%
3 -	Third choice	25	14%
4 -	Fourth choice	17	9%
5 -	Fifth choice	18	10%
6 -	Sixth choice	29	16%
		184	

Science means "to know" about something by looking at it and studying it. Some things are considered science such as biology, chemistry, physics. Other things are usually not considered science such as literature, history, or a language. Please look at the list below. If you believe the topic is an aspect of science, circle "1" for yes, it is science. If you believe the topic is not science, circle "2" for no, it is NOT science. If you are not sure, please circle "3".

Q7. Agriculture

1 -	Yes, it's science	116	63%
2 -	No, it's not science	35	19%
3 -	Don't know	33	18%
		184	

Q8. Sculpturing

1 -	Yes, it's science	28	15%
2 -	No, it's not science	122	67%
3 -	Don't know	32	18%
		182	

Q9. Environment

1 -	Yes, it's science	165	90%
2 -	No, it's not science	12	7%
3 -	Don't know	6	3%
		183	

Q10. Traffic safety

1 -	Yes, it's science	23	13%
2 -	No, it's not science	149	81%
3 -	Don't know	11	6%
		183	

Q11. Computers

1 -	Yes, it's science	130	71%
2 -	No, it's not science	25	14%
3 -	Don't know	21	11%
4 -	Other	8	4%
		184	

Q12. Circle the <u>one</u> number below which is the best answer to the question, "What is an example of the environment?".

1 -	Desert	10	5%
2 -	Your backyard	6	3%
3 -	Mountains	10	5%
4 -	Oceans	0	---
5 -	Air we breathe	12	7%
6 -	Water we drink	4	2%
7 -	Weather	9	5%
8 -	All of the above	132	72%
9 -	None of the above	1	<1%
		184	

Q13. Which one of the following do you believe might be the nation's largest environmental site that is undergoing environmental cleanup?

1 -	Alaska Oil Spill	96	53%
2 -	Grand Canyon in Arizona	10	6%
3 -	Hanford in Washington	39	22%
4 -	Gulf of Mexico along Texas coast	8	4%
5 -	Yellowstone National Park	16	9%
6 -	None of the above	11	6%
		180	

Please read each statement and indicate whether you believe the statement is true, false or that you are not sure (don't know).

Q14. There isn't much just one person can do to protect the environment.

1 -	True	27	15%
2 -	False	144	79%
3 -	Don't know	12	6%
		184	

Q15. People can become very ill because of the environment.

1 - True	142	78%
2 - False	20	11%
3 - Don't know	21	11%
	183	

Q16. Although there are a few, there really aren't very many job opportunities in environmental areas.

1 - True	28	15%
2 - False	102	55%
3 - Don't know	54	29%
	184	

Q17. Environmental studies apply primarily to large groups of people, not so much to individuals.

1 - True	57	31%
2 - False	67	37%
3 - Don't know	59	32%
	183	

Q18. The actions of a student in middle school can help or hurt the environment just as much as the actions of an adult.

1 - True	147	80%
2 - False	20	11%
3 - Don't know	16	9%
	183	

Below is a list of things that some people do, but others choose not to do. Please look at each item and indicate whether this is something your family usually does, sometimes does, or generally does not do. If you're not doing something, but your family has discussed doing it, please indicate that.

Q19. Save soft drink or other aluminum cans for recycling.

1 - Usually do	125	68%
2 - Sometimes	32	18%
3 - Rarely	13	7%
4 - Talked about	13	7%
	183	

Q20. Save plastic milk or pop bottles for recycling.

1 - Usually do	63	35%
2 - Sometimes	37	20%
3 - Rarely	53	29%
4 - Talked about	29	16%
	182	

Q21. Save glass jars and bottles for recycling.

1 - Usually do	73	39%
2 - Sometimes	31	17%
3 - Rarely	50	27%
4 - Talked about	29	16%
	183	

Q22. Turn off unneeded lights and appliances so as not to needlessly use electricity.

1 - Usually do	106	58%
2 - Sometimes	59	32%
3 - Rarely	10	5%
4 - Talked about	8	4%
	183	

Q23. Carry a litter bag in your family vehicle in which to dispose of trash.

1 - Usually do	85	47%
2 - Sometimes	38	21%
3 - Rarely	42	23%
4 - Talked about	17	9%
	182	

Q24. Wash and reuse plastic utensils rather than to toss out when used.

1 - Usually do	73	40%
2 - Sometimes	53	29%
3 - Rarely	37	20%
4 - Talked about	20	11%
	183	

And now we need a little information about you.

Q25. Your age

1 - 10	18	10%
2 - 11	73	41%
3 - 12	62	35%
4 - 13	25	14%
5 - 14	1	<1%
	179	

Q26. Your sex

M - Male	99	59%
F - Female	68	41%
	167	

Q27. Your race

C -	Caucasian	110	71%
B -	Black	7	5%
H -	Hispanic	28	18%
A -	Asian	5	3%
I -	Indian (American)	4	3%
O -	Other	1	<1%
		155	

Q28. Grade in school that you will be going into in the fall

1 -	5th	17	10%
2 -	6th	89	50%
3 -	7th	66	37%
4 -	8th	6	3%
		178	

Q29. What is your favorite subject in school?

1 -	Mathematics	48	27%
2 -	Science	47	26%
3 -	Physical Education	30	17%
4 -	Reading	15	8%
5 -	Art	8	4%
6 -	History	6	3%
7 -	Writing	5	3%
8 -	Spelling	5	3%
9 -	Other	17	9%
		181	

Q30. What school did you attend this past spring?

The data to this question is better obtained through registration records. This is also true with age and grade in school.

APPENDIX F-B

SSC Student Survey A

July 24, 1992

Once again, we want to ask your opinion on a number of questions. The first part of this survey may look familiar. It asks the same questions that were asked at the first of the week. Again, as before, you can't give a bad answer. We're interested in learning if any of your opinions have changed during the past week. The latter part of this survey asks for your opinions and thoughts on the Science Camp. Tell us how you <u>really</u> feel about the camp and let us know what we might do to make it better.

Below is a list of six subjects often taught in schools. Please look at all six on the list. If you were required to take just one of the six, but were able to choose which one you want, what would you take? Please circle the number "1" next to the subject which is your first choice. Then if you were required to take just two subjects, what would be your second choice? Please circle the number "2" next to the subject. In the same way, please indicate your third, fourth, fifth and sixth choices by circling the appropriate number next to each choice.

Q1. History

1 -	First choice	9	6%
2 -	Second choice	13	9%
3 -	Third choice	24	16%
4 -	Fourth choice	41	27%
5 -	Fifth choice	33	22%
6 -	Sixth choice	30	30%
		150	

Q2. Reading

1 -	First choice	20	13%
2 -	Second choice	17	11%
3 -	Third choice	33	22%
4 -	Fourth choice	33	22%
5 -	Fifth choice	25	17%
6 -	Sixth choice	23	15%
		151	

Q3. Science

1 -	First choice	45	30%
2 -	Second choice	43	28%
3 -	Third choice	29	19%
4 -	Fourth choice	19	13%
5 -	Fifth choice	9	6%
6 -	Sixth choice	6	4%
		151	

Q4. Writing

1 -	First choice	9	6%
2 -	Second choice	16	11%
3 -	Third choice	25	17%
4 -	Fourth choice	26	17%
5 -	Fifth choice	40	27%
6 -	Sixth choice	34	23%
		150	

Q5. Arithmetic/Math

1 -	First choice	27	18%
2 -	Second choice	34	24%
3 -	Third choice	12	8%
4 -	Fourth choice	15	10%
5 -	Fifth choice	24	16%
6 -	Sixth choice	37	24%
		149	

Q6. P.E.

1 -	First choice	45	30%
2 -	Second choice	27	18%
3 -	Third choice	23	15%
4 -	Fourth choice	17	11%
5 -	Fifth choice	19	13%
6 -	Sixth choice	20	13%
		151	

Science means "to know" about something by looking at it and studying it. Some things are considered science such as biology, chemistry, or physics. Other things are usually not considered science such as literature, history, or a language. Please look at the list below. If you believe the topic is an aspect of science, circle "1" for yes, it is science. If you believe the topic is not science, circle "2" for no, it is NOT science. If you are not sure, please circle "3".

Q7. Agriculture

1 -	Yes, it's science	115	75%
2 -	No, it's not science	26	17%
3 -	Don't know	12	9%
		153	

Q8. Sculpturing

1 -	Yes, it's science	28	19%
2 -	No, it's not science	105	70%
3 -	Don't know	18	12%
		151	

Q9. Environment

1 -	Yes, it's science	145	95%
2 -	No, it's not science	4	3%
3 -	Don't know	3	2%
		152	

Q10. Traffic safety

1 -	Yes, it's science	16	11%
2 -	No, it's not science	119	79%
3 -	Don't know	16	11%
		151	

Q11. Computers

1 -	Yes, it's science	112	74%
2 -	No, it's not science	23	15%
3 -	Don't know	17	11%
		152	

Q12. Circle the <u>one</u> number below which is the best answer to the question, "What is an example of the environment?".

1 -	Desert	1	<1%
2 -	Your backyard	4	3%
3 -	Mountains	7	5%
4 -	Oceans	1	<1%
5 -	Air we breathe	11	7%
6 -	Water we drink	0	---
7 -	Weather	3	2%
8 -	All of the above	123	81%
9 -	None of the above	1	<1%
		151	

Q13. Which one of the following do you believe might be the nation's largest environmental site that is undergoing environmental cleanup?

1 -	Bad Lands in South Dakota	6	4%
2 -	Grand Canyon in Arizona	5	3%
3 -	Hanford in Washington	57	38%
4 -	Gulf of Mexico along Texas coast	20	13%
5 -	Yellowstone National Park	23	15%
6 -	None of the above	39	26%
		150	

Below are a series of statements, some of which people say are true, some, people say are false, and some, people say they don't know whether the statement is true or false. Please read each statement and indicate whether you believe the statement is true, false or that you are not sure (don't know).

Q14. There isn't much just one person can do to protect the environment.

1 -	True	25	16%
2 -	False	126	82%
3 -	Don't know	3	2%
		154	

Q15. People can become very ill because of the environment.

1 - True	129	84%
2 - False	16	10%
3 - Don't know	9	6%
	154	

Q16. Although there are a few, there really aren't very many job opportunities in environmental areas.

1 - True	14	10%
2 - False	97	67%
3 - Don't know	33	23%
	144	

Q17. Environmental studies apply primarily to large groups of people, not so much to individuals.

1 - True	51	33%
2 - False	68	44%
3 - Don't know	35	23%
	154	

Q18. The actions of a student in middle school can help or hurt the environment just as much as the actions of an adult.

1 - True	131	85%
2 - False	15	10%
3 - Don't know	8	5%
	154	

Below is a list of things that some people do, but others choose not to do. Please look at each item and indicate whether this is something your family usually does, sometimes does, or generally does not do. If you're not doing something, but your family has discussed doing it, please indicate that.

Q19. Save soft drink or other aluminum cans for recycling.

1 - Usually do	111	74%
2 - Sometimes	21	14%
3 - Rarely	5	3%
4 - Talked about	12	8%
	149	

Q20. Save plastic milk or pop bottles for recycling.

1 - Usually do	55	37%
2 - Sometimes	31	21%
3 - Rarely	39	26%
4 - Talked about	25	17%
	150	

Q21. Save glass jars and bottles for recycling.

1 -	Usually do	56	37%
2 -	Sometimes	35	23%
3 -	Rarely	40	26%
4 -	Talked about	20	13%
		151	

Q22. Turn off unneeded lights and appliances so as not to needlessly use electricity.

1 -	Usually do	95	63%
2 -	Sometimes	46	30%
3 -	Rarely	10	7%
4 -	Talked about	0	---
		151	

Q23. Carry a litter bag in your family vehicle in which to dispose of trash.

1 -	Usually do	82	55%
2 -	Sometimes	32	12%
3 -	Rarely	27	18%
4 -	Talked about	9	6%
		150	

Q24. Wash and reuse plastic utensils rather than to toss out when used.

1 -	Usually do	67	46%
2 -	Sometimes	44	30%
3 -	Rarely	24	16%
4 -	Talked about	11	8%
		146	

Now we would like to ask you some questions about the Summer Science Camp. While your answers will be combined with answers of others who participated, we are very interested in what **YOU** have to say. Please say what ever you feel is appropriate.

Q25. On a scale of 1 to 7, where 1 means you disliked summer camp very much and 7 means you liked the camp very much, please indicate how you feel about the Science Summer Camp.

1 -	Disliked camp very much	5	3%
2 -		1	<1%
3 -		6	4%
4 -		9	6%
5 -		17	11%
6 -		34	23%
7 -	Like camp very much	77	52%
		149	

Q26. If you had the opportunity to attend another camp, similar to this but with some new material, would you participate?

1 -	Yes, definitely	59	40%
2 -	Yes, probably	49	33%
3 -	Not sure, I'd have to think about it	33	22%
4 -	Probably not	7	5%
5 -	Definitely not	1	<1%
		149	

Q27. Of all the activities throughout the week, which one did you like the best?

1 -	Unit on soils	31	21%
2 -	Unit on birds	87	58%
3 -	Unit involving Indians	0	---
4 -	Other (specify)	33	22%
		151	

Q28. What about your favorite unit did you like the most?

Q29. Of all the activities throughout the week, which one did you like the least?

1 -	Unit on soils	58	39%
2 -	Unit on birds	26	18%
3 -	Unit involving Indians	18	12%
4 -	Other (specify)	46	31%
		148	

Q30. What did you dislike most about this least favorite activity?

Q31. What could be done to make the camp better if we have it next year?

Q32. Circle the number next to the statement which best tells what you might say to a friend who is thinking of attending Summer Science Camp.

1 -	It was great! I encourage you to go.	83	55%
2 -	It was okay. I recommend you go.	53	35%
3 -	It wasn't anything special. Go if you want.	10	7%
4 -	Boring! Don't go.	3	2%
5 -	Yuk! Yuk! And double Yuk!	2	1%
		151	

And now we need a little information about you.

Q33. Your age

1 -	10	12	8%
2 -	11	62	44%
3 -	12	53	37%
4 -	13	14	10%
5 -	14	1	<1%
		142	

Q34. Your sex

M -	Male	82	57%
F -	Female	61	43%
		143	

Q35. Your race

C -	Caucasian	87	67%
B -	Black	6	5%
H -	Hispanic	22	17%
A -	Asian	9	7%
I -	Indian (American)	4	3%
O -	Other	1	<1%
		129	

Q36. Grade in school that you will be going into in the fall

1 -	5th	14	10%
2 -	6th	68	48%
3 -	7th	53	38%
4 -	8th	3	2%
5 -	Other	3	2%
		141	

Q37. What is your favorite subject in school?

1 -	Science	40	28%
2 -	Mathematics	38	26%
3 -	Physical Education	29	20%
4 -	Reading	11	8%
5 -	Writing	6	4%
6 -	Art	6	4%
7 -	History	5	3%
8 -	Spelling	5	3%
9 -	Other	5	3%
		145	

Q38. What school did you attend this past spring?

Registration data is a better source for this information than the survey.

APPENDIX F-C

Responses to Open-Ended Questions

IEI Summer Science Camp

Open-ended questions were asked in the "after" survey.

Q27. Of all the activities throughout the week, which one did you like the BEST?

Q28. What about your favorite unit did you like the best?

Q29. Of all the activities throughout the week, which one did you like the LEAST?

Q30. What did you dislike most about this least favorite activity?

Q31. What could be done to make the camp better if we have it next year?

Q27. Of all the activities throughout the week, which one did you like the best?

1 Owl Pellets / dissecting

Dissecting owl pellets
Evidence unit
Owl pellets
Owl pellets

2 Plot study / mapping area

The plot
Mapping area
Mapping area
Drawings
Plot study
Plot
The one where we did the plot
Plot study

3 Project Wild Games

Games
The games
Scavenger hunt
Oh Deer
Salmon run

4 Birds

Unit on birds
Unit on birds

5 Trapping bugs

Trapping bugs
Traps
Making traps
Trapping

Q27. Of all the activities throughout the week, which one did you like the best?

6 Weather / acid rain / environment

Environment
Learning about acid rain.
Learning about acid rain
Weather
Acid
Unit on weather
Water cycle and water & oil

7 Other

I wasn't here
Walk about
Recycling video
Computers.
Ecology
Lab
Everything
Everything, especially birds

Q28. What about your favorite unit did you like the best?

1 Owl pellets / dissecting

With the owl pellet when we opened it up
Seeing the owl & hawk & owl pellets
The dissecting owl pellets.
Dissecting the pellets and seeing the bones.
Owl pellets
The dissecting
Things about owls
Owl pellets
Owl pellets
I like owl pellets.
The owl pellets
The owl pellets
Owl pellets and chemistry
I liked dissecting the owl pellet
The dissecting of the owl pellet.
How owls hunt
Owl pellets
Owl pellets
I liked the birds because they were neat.
The owl pellets
Doing owl pellets
The owl pellets
Owls and owl pellet
The owls and the owl pellet.
I liked the owl pellets.
Dissecting owl pellets
Dissecting owl pellets and oil and water experiments.
I liked doing the pellets
Owl pellets

2 Plot study / soil testing / mapping area

Soil testing
I liked the unit on soils.
Testing the soil for pH.
The map making
Soil Testing
The unit on soils when we put different chemicals in the soil and watched it turn colors.

How they changed colors
The one on the plot
pH test
Testing the soil
Testing the soil

2 Plot study / soil testing / mapping area (cont.)

The colors they turned
Put the trap in
I enjoyed making the plot out in the desert.

Q28. What about your favorite unit did you like the best?

Doing tests
Chemistry
I liked soil testing
I liked working on our plot cause I found out about insects, sage brush and weather.

I liked researching and testing and finding out stuff about our 20 by 20 plot, that I never would have known otherwise.

The desert
Going out on the plot and studying the plants and animals
Study on our plot study
I liked the plot
Soil, it was interesting.
pH test
The chemistry
Soil samples

3 Project Wild Games

I liked being outside and see different animals.
I like wildlife (animals) very much. I like the owl and the hawk.
Doing the scavenger hunt
The treats and games.
Scavenger hunt
I liked when we played Oh Deer and went on the scavenger hunt.

4 Birds

Listening to all the interesting talks about birds.
Learning about how lot of us can save the birds.
About the owls and how they can't turn their heads all the way around.
Because I like birds a lot.
The learning about the birds.
I liked to learn about the birds.
I liked the stuff about birds.
When the bird lady came.
That I got to see the birds.

I enjoyed having Taffy Mercer and the lady from the Audubon Society come talk to us. I also enjoyed dissecting owl pellets.
I liked the birds experiment because you got to do things.

4 Birds (continued)

Birds of prey
The live birds
Unit of birds
I got to see a real live barn owl.
The live hawk and barn owl
The birds
Birds and how they live

Q28. What about your favorite unit did you like the best?

Bird
When we got to go and see the birds two times.
They brought birds in to show us.
Seeing the birds and hearing the information
When they talked about the difference within the owls
I liked learning about where they stay and live.
Birds
Looking at the burrowing owl
The difference between the birds. Some are made for speed, some are made for quiet flying.

The Falcon
The birds
How they can train them and know so much about them
Birds
Unit on birds
Where you got to see a live hawk and a live owl. Plus some of the talks.
Learning about the birds' heads
Talking about the their differences.
That birds can only tell themselves only five things.
The birds and made things
Unit on Birds, unit on soils, owl pellets
I liked the birds the best.

5 Trapping bugs

My favorite unit was when we had a tin can and buried it in the ground in a certain area and catch bugs.

Finding bugs
Traps
Seeing if you caught anything

6 Weather / acid rain

I liked making the weather instrument
The weather vane, barometer, and the anemometer.
Water cycle

7 Environmental awareness / recycle, reuse, reduce

How many years it takes for an object to disintegrate
Taught me how to recycle to save Earth.
I liked it because it talked about littering.

8 Other

It was just fun.
They're just neat to learn about and with the things they do and how. And the cute guys.

Q28. What about your favorite unit did you like the best?

I liked experimenting
Sails are neat.
It was fun.
It was fun and I got to know stuff I never knew before.
It's wasn't dirty nor gross or smelling it was fun and easy.
Interesting
Fun
We got to type and print up what we typed.
It's cool?
All of it
Snacks
It was fun
The analyzing
Just learning about it.
It was interesting to learn about.
Being outside in the environment
I don't know.
I liked the hands-on things
Computers
Don't know
Computers I liked the best.
I want to catch a lizard.
I like the lab because there's interesting stuff.
They're interesting
All
All
Everything

Q29. Of all the activities throughout the week, which one did you like the LEAST?

1 Owl pellets

Dissecting owl pellets
Owl pellets

2 Plot study

Plot study
Plot study
Plot. It was confusing and boring.

3 Project Wild Games

Habitat lap sit

4 Birds

Birds

5 Trapping bugs

Bugs

6 Weather / acid rain

Weather
Balloon
Our balloon prediction

7 Environmental awareness

Water & oil

Q29. Of all the activities throughout the week, which one did you like the LEAST?

8 Other

Surveys
Making things
Watching the movie.
Movie
Getting my drawings erased
Speeches
Bananas
The cranberry juice!
Paper work
All
This test
Lecture

9 None / all were fun / Don't know

They were all fun.
(There was not one)
None
None
I liked all of them.
I like all of them.
None
Don't really have one
I don't know
Nothing
None
None
None of them
I like them all.
None
None
I don't know.
None
None
Liked all, had fun.
Nothing

Q30. What did you dislike most about this least favorite activity?

1 Boring / lecture / not interesting

It was kind of boring. Just didn't interest me.
Lectures
It was not that interesting.
It was boring
We didn't do experiments
It was so boring I fell asleep.
It wasn't that exciting
Because it was boring.
Boring
Learning the same thing twice
Didn't like it because there wasn't so interesting.
Because it was boring. All we did was test the soil.
Boring
It was boring
It was kind of boring
Because it was very boring and weird.
It (the whole thing) was boring.
Kind of boring
The soil unit was short and not very interesting.
It was boring.
It was just too boring.
It wasn't fun enough
Learning the same thing twice
I didn't like listening to all the people give speeches.
Speech
It was just boring
I already know some stuff about birds.
The people who came and talked were boring!!!
Well, I've dissected owl pellets before and doing it again was old hat.
It was boring
Boring
The lecture giver

2 No Indians

We didn't get to learn about the Indians. Everything was fun!
Because he did not come
We never did get to see the Indians.
Nothing, they were fun but I wanted to know more about Indians.
There were no Indians

3 Nothing / Liked everything

Nothing
I liked the whole thing !!!
Like everything
Don't know
Nothing
Don't know
I liked it all.

Q30. What did you dislike most about this least favorite activity?

Don't really have one
Nothing
Nothing
Nothing
Nothing
Nothing
Nothing
Nothing
Nothing
Don't know
Don't know
I like them all
I don't know
Nothing

4 Comments on SSC subjects and activities

I didn't really enjoy talking about soils.
(GROSS) I hate dissecting. It smelled very bad!
We learn about bugs. I think bugs are gross even though some are helpful
Soil testing
I hate the weeds.
Because we tested dirt and it was dumb.
There wasn't very much information on the soil. We just did soil samples.
The scavenger hunt
I dislike the soils experiment.
I disliked outside work. (It's not my thing!)
It's disgusting touching left overs of an owl.
The deer game
The lady that came to talk
Digging in the dirt
Getting the dirt
Digging in the dirt
I liked some of it, but I would much rather do something on a much bigger animal.

The Audubon
Because we had to take temperatures and make a plot.
I really don't know.
I just didn't like learning about soil. I wanted to learn something else.
Soils, it was not very fun.
Hiding the butterflies

4 Comments on SSC subjects and activities (cont.)

Just watch the bird
The testing
I would have liked to learned more about the birds.
Soils
The games
The owl pellets were fun and gross.
Collecting soils and experimenting
When we had to see what kind of pH they had.
The birds

Q30. What did you dislike most about this least favorite activity?

Going through the weeds and digging for dirt.

5 Other

It was not there.
They're a waste
We had them come at the start of SSC and then they came again and said the same stuff.

We didn't do it.
Too many stickers and too many people
Look up
Look up
We didn't really get into it.
I had to redraw them.
Only getting to use one test tube.
Not enough time
Sticker in my shoe
It was kind of too hard to understand.
It was stupid
Standing around
Not enough space
Eating it
We didn't do it
YUCK!
It's not that I didn't like it. It's because we didn't get to do it.
Because we didn't do it
Didn't have it
I did not know what was going on
Because it wasn't that big
My ears hurt
Very confusing
I don't know
The tests
It was too hurried.
Getting dirty

5 Other (continued)

I don't like the paper work. It's because I don't like to write.
Didn't do that
I learned something
I didn't like having to look for a whole bunch of things
I didn't like the dirt
The speaker was childish and thought we were 3rd graders.
We didn't do it.
Did not like the plants.

Q31. What could be done to make the camp better if we have it next year?

1 Food/snack changes

Better snacks (ha ha) It was great!
More food
More food
Better snacks and drinks
More candy!
Everybody gets their own soil kit and get Hi-C fruit drinks instead of cranberry or apple. More time to dissect the owl pellets.

Bigger snacks
No bananas
Not have cranberry juice
More juice
Have bigger snacks.
Let the kids have better snack juices.
A little free time to buy stuff (like pop) and no more cranberry juice.
Better snacks
Better snacks
To not have any cranberry juice anymore

2 More hands-on activities

I don't know. More activities, and mostly better weather!
Do experiments every day
More hands on & lab work
Add more science activities
Not so boring.
More live animal stuff and more hands-on stuff.
More hands-on things
More science stuff
More experiments
More projects.

3 More games

Make funner activities and same teachers in the same room.
Play more games
To do more fun things
Put more funner things to do.
Have funner
Add funner stuff
Playing more games.
Play more games

4 Curriculum changes

Pick some more interesting topics.
More stuff on history of the site
More things about animals
Do not dissect owl pellets.

Q31. What could be done to make the camp better if we have it next year?

Don't have weather.
Have more activities involving chemistry in the lab.
Get more animals.
Chemicals!!!
Work with more chemicals.
Field trips
Have more animals come here.
More chemistry
More dissecting, more chemistry, more things that have to do with marine biology.

To talk more about acids
Help life in the plot areas so more kids can see it.
Study different subjects so people will come back that had already been.
Do lots of experiments.
I could learn physics or chemistry
Seeing chemicals more.
The same thing but different experiments.
Less on soils and no bird talks by the last lady that did the last talk
To use chemicals
Field trips
In depth more.
Dissect frogs or other stuff
Do experiments on bugs and pets.

5 Less lectures, school-likeness

Not have long speeches speakers
Make it less like school. Have more games about...
Less speakers and more hands-on work.
No lecture, longer

6 Change facilities, times, etc.

Different time - all day if possible. Different week or longer week or two.
Make it two weeks long.
Have more classes outside.
Be longer
More room, longer

6 Change facilities, times, etc. (cont.)

More time, days
Smaller class
To be more organized
Longer time
Have more room when we get into a big group.
Have it longer
Make it longer.
Make the days shorter
Longer
Make it for 3 weeks and more experiments.
Make 5 weeks

Q31. What could be done to make the camp better if we have it next year?

You could speed it up some.
Make it longer.
Make it longer
Have it be longer
Have it longer.
Explain the plot better, 2 weeks instead of one.
Give us soil testers
Have it longer.
Longer period
Make it two weeks instead of one.
Throw in more time.
Do it at a smaller place so people can find where they are supposed to be easier. Send a letter home telling what group they're going to be in.

Have it longer and have more about plants and animals
Not to do things when it is wet.
Separate each grade.
More activities and longer.
Longer

7 Nothing / Don't know / Okay as is

Nothing
I don't know.
I think that the camp is very nice already.
It was O.K.
It's fine
Don't know
Nothing
Don't know
Nothing
I don't know
I don't know
It's fine the way it is.

7 Nothing / Don't know / Okay as is (cont.)

Nothing
Nothing, keep it same. Just don't play the sitting on lap and making chain game.
It's great. Don't do anything.
Nothing
It is great as it is.
Nothing
Nothing

8 Other

Put people in with some people they know and not just strangers.
Make sure they are able to make it on time
Less surveys
Spending the night.
We could go out to the campus and pick up litter.

Q31. What could be done to make the camp better if we have it next year?

Make sure every is ineold.(?)
More organized
Don't want to get my drawings erased.
Always write in the journal.
No more surveys
Make sure the Indian doesn't have different plans.
More
Leaders explain more about the things and longer time
To learn about what the kids want to do.
Don't let it rain!!!
Have cable T.V's
More kids
On the traps, we could get to keep what we catch.
No more paper work
Do things we like.
Give us more stuff

Q31. What could be done to make the camp better if we have it next year?

APPENDIX F-D

Teachers Survey

IEI Summer Science Camp

July 24, 1992

This questionnaire is intended for professional teachers. Just as you asked your students to complete a questionnaire that will be used to help us measure and improve the Summer Science Camp, we ask you to do the same. Don't put your name on this questionnaire. But, like the students, we ask you to tell it like it is. Your answers are, of course, confidential and will be used only in combination with others. When finished, please give or send to Liz Swinea, Kennewick School District, 200 S. Dayton St., Kennewick, 99336.

Teaching methods include lecture, demonstrations (including field trips), and "hands-on" activities. Some teachers want to use more of the latter two methods which involve students. But subject content, curriculum, and amount to be covered often force greater use of lecture. Think, for a moment, of just the time you spend in actually teaching. Please consider your relative use of these methods in teaching.

Q1. About what percentage of your actual teaching time *in school* do you typically spend lecturing?

1 -	Under 25%	3	30%
2 -	25% - 50%	4	40%
3 -	51% - 75%	3	30%
4 -	76% - 90%	0	---
5 -	91% - 100%	0	---

Q2. About what percentage of your actual teaching time *in school* do you typically spend in demonstrations, field trips, etc.

1 -	Under 10%	2	29%
2 -	11% - 25%	3	30%
3 -	26% - 50%	4	40%
4 -	51% - 75%	0	---
5 -	76% - 100%	1	10%

Q3. About what percentage of your actual teaching time *in school* do you typically spend with students working with "hands-on" activities?

1 -	Under 10%	0	---
2 -	11% - 25%	3	30%
3 -	26% - 50%	4	40%
4 -	51% - 75%	2	20%
5 -	76% - 100%	1	10%

Q31. What could be done to make the camp better if we have it next year?

Q4. In addition to lecture, demonstrations, and "hands-on" activities, what other methods do you typically use in teaching? Please indicate the approximate percentage of teaching time you typically devote to each additional method.

Q5. In working with the *Summer Science Camp*, about what percentage of your actual teaching time did you typically spend lecturing?

1 -	Under 25%	9	90%
2 -	25% - 50%	1	10%
3 -	51% - 75%	0	---
4 -	76% - 90%	0	---
5 -	91% - 100%	0	---

Q6. In working with the *Summer Science Camp*, about what percentage of your actual teaching time did you typically spend in demonstrations, field trips, etc.

1 -	Under 10%	1	10%
2 -	11% - 25%	5	50%
3 -	26% - 50%	1	10%
4 -	51% - 75%	1	10%
5 -	76% - 100%	2	20%

Q7. In working with the *Summer Science Camp*, about what percentage of your actual teaching time did you typically spend with students working with "hands-on" activities?

1 -	Under 10%	0	---
2 -	11% - 25%	1	10%
3 -	26% - 50%	3	30%
4 -	51% - 75%	2	20%
5 -	76% - 100%	4	40%

Q8. In your opinion, what is more important for a teacher to have -- an excellent grasp of the subject matter or a love in working with students?

1 -	An excellent grasp of subject matter	2	20%
2 -	Love in working with students	8	80%

Q9. In working with your Hanford and CBC partners, did you gain new knowledge or information on technical or other matters which might be useful to you in the classroom next year?

1 -	Yes	6	66%
2 -	No **(SKIP TO Q11)**	3	33%

Q10. What new knowledge or information did you learn from this experience?

Q31. What could be done to make the camp better if we have it next year?

Q11. If you had the opportunity, would you want to participate in another Summer Science Camp?

1 -	Yes, definitely	8	80%
2 -	Yes, probably	2	20%
3 -	Uncertain	0	---
4 -	Probably not	0	---
5 -	Definitely not	0	---

Q12. What would you suggest be done to improve the program?

Q13. Please comment on your experience in this program.

Q14. What grade level do you usually teach?

1 -	Elementary	4	50%
2 -	Middle school	2	25%
3 -	High School	2	25%

Q31. What could be done to make the camp better if we have it next year?

APPENDIX F-E

Non-Teachers Survey

IEI Summer Science Camp

July 24, 1992

This questionnaire is intended for Hanford employees and other non-teachers. Just as you asked your students to complete a questionnaire that will be used to help us measure and improve the Summer Science Camp, we ask you to do the same. Don't put your name on this questionnaire. But, like the students, we ask you to tell it like it is. Your answers are, of course, confidential and will be used only in combination with others. When finished, please give or send to Liz Swinea, Kennewick School District, 200 S. Dayton St., Kennewick, 99336.

Q1. In working with your teacher partners, did you gain new knowledge or information on technical or other matters which might be professionally useful to you in the work place?

1 -	Yes	14	93%
2 -	No (SKIP TO Q3)	1	7%

Q2. What new knowledge or information did you learn from this experience?

Q3. If you had the opportunity, would you want to participate in another Summer Science Camp?

1 -	Yes, definitely	12	80%
2 -	Yes, probably	3	20%
3 -	Uncertain	0	---
4 -	Probably not	0	---
5 -	Definitely not	0	---

Q4. What would you suggest be done to improve the program?

Q5. Please comment on your experience in this program.

Q31. What could be done to make the camp better if we have it next year?

APPENDIX F-F

Parents Survey

IEI Summer Science Camp

Thank you for allowing Westinghouse the privilege of working with your child on some special science projects. We hope your child learned something and had fun. Would you please take a few minutes to give us your opinions. This will help us do a better job for your children in the future. Your responses are completely confidential. Please do not sign your name.

1. Have you been aware that your child have been in a new science program in summer school? (Circle the number next to your answer.)

1 - Yes	74	90%
2 - No	6	7%
3 - Not sure	2	2%

2. How many children in your family went to the program?

1 - One	69	87%
2 - Two	10	13%

3. What was your child's (children's) response(s) to the program?

1 - Very positive	77	94%
2 - Somewhat positive	5	6%
3 - Neither positive nor negative	0	---
4 - Somewhat negative	0	---
5 - Very negative	0	---

4. Would you want your child (children) to participate in this kind of a program next year?

1 - Yes	81	99%
2 - No	0	---
3 - Not sure	1	1%

5. How far do you think your child (children) will probably go in school?

1 - Some grade less than high school	0	---
2 - Some high school	0	---
3 - Graduate from high school	3	4%
4 - Some college	9	11%
5 - Graduate from College or more	70	85%

6. Have you ever heard of Hanford?

1 - No - PLEASE SKIP TO QUESTION 11	1	1%
2 - Yes - CONTINUE WITH NEXT QUESTION	80	99%

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END

DATE FILMED

11/12/93