

Scientist-in-Residence Project

INTERIM REPORT

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## DESCRIPTION OF THE PROGRAM

### Purposes

The Scientist-in-Residence program is an innovative approach to improving science education in rural Alaskan high schools which enroll primarily low-income Eskimo adolescents. University of Alaska scientific faculty make classroom presentations in village schools and also interact with students outside of the classroom. In addition, the visiting scientists are to provide informal in-service training for the teachers, particularly in how to use the local environment to illustrate and teach scientific principles.

During 1980, four "Scientists-in-Residence" (S.I.R.) participated in the program, visiting two school sites in the Lower Yukon River area. Their visits lasted for two days at each site. The schedule of these visits is presented in Table 1.

### General Evaluation Approach

The evaluation team--consisting of the principal investigator, a research associate, and an on-site evaluator--collected information on the program operations and its effects. In January, 1980, the research associate travelled to the experimental and control schools to administer three instruments: the Science-in-the-Arctic test, the Educational and Occupational Goals questionnaire, and a Scientific Interests questionnaire. The first of these was to establish some baseline data on students' scientific reasoning ability. The second and third were designed to collect baseline information on students' interest in scientific careers and knowledge of scientists and their work.

In February, before the first visit by a scientist, the on-site evaluator took up residence in St. Mary's. His role was to observe the response of teachers, students, and villagers to the scientists' visits. He also observed science classes and talked with the teachers about their syllabuses, methods, and plans.

TABLE 1. Visiting Scientists, Winter and Spring, 1980<sup>1</sup>

DATE	NAME	NUMBER OF CLASSROOM PRESENTATIONS	SPECIALTY
2/17 - 2/24	Ray Bailey	16	Gross and microscopic anatomy of human systems.
3/6 - 3/21	Jim Reynolds	13	Biology, ecology, and population dynamics of far northern fish.
3/31 - 4/4	Jim Crook	19	Parasitology; infectious disease; and training of allied health personnel for rural care delivery.
4/13 - 4/18	Jean Aigner	18	Archaeology and human adaptation in arctic regions.

<sup>1</sup>A fifth scientist, Prof. R. Parthasarathy, a physicist, was unable to make his scheduled visit to the experimental sites because of conflicts with his teaching duties at the University.

After the last S.I.R. visit, the research associate returned to the experimental and control schools to administer post-tests. On this occasion, he also administered an evaluation survey to the students at the experimental schools which examined the students' reactions to the program. In addition, he conducted structured interviews with teachers and administrators to assess their response to the program.

This is a preliminary report of the findings of these various evaluative efforts. Its purpose is "formative": To provide information useful in improving the program's operations during its second year. This paper emphasizes qualitative information and the difficulties encountered in putting the program into operation. The quantitative information--such as effects on students' scientific reasoning abilities--is currently being analyzed and will be presented in the summative evaluation of the program.

### Sites

During its first year of operation, the project has involved four rural high schools -- two experimental sites and two control sites.

Experimental Sites: *St. Mary's* is a Catholic boarding school located in the village of St. Mary's (pop. 436) on the Andrafsky River. Like most villagers in this region, the people of St. Mary's depend largely on fish for cash income. St. Mary's high school provides education in grades 9 through 12 for students both from the village and from throughout the region. Enrollment at the end of the 1979/1980 school year was 117.

*Mountain Village* is one of the largest villages in the region with a population of 600. A relatively prosperous place, Mountain Village benefits from fishing, a fish canning plant, and its location as the school district's central office. The high school, for the 1979/1980 school year, had an enrollment of 64 in grades 9 through 12.

Control Sites: The village of *Emmonak*, like Mountain Village, is rather large with a population of about 545. Fishing is the keystone of its economy. The high school, consisting of grades 9 through 12, had 49 students enrolled for the 1979/1980 school year. Seventeen miles south of Emmonak is the second control site in the village of *Alakanuk* (pop. 575). The high school is about the same size as that in Emmonak with 47 students in grades 9 through 12.

None of the schools have more than a few non-Native students. The administrative personnel and faculty are, on the other hand, White with very few exceptions. Most teachers and administrators are new to village Alaska and a number have little or no prior teaching experience.

Three of the sites--Mt. Village, Emmonak, and Alakanuk--fall within the same school district. St. Mary's is an independent Catholic school under the jurisdiction of the Diocese of Fairbanks. All are isolated from urbanized Alaska and can only be reached by air or, in the summer and fall, by water. Telephone service is adequate though unreliable in all the villages. All receive television transmissions via the Alascom satellite network.

The project team chose these schools because of their similarities. All serve Yupik Eskimo students and all are located in villages of roughly the same size with similar economies and social structures. Another consideration in selection was accessibility. Some villages--such as those on the coast--are weathered in much of the winter and spring, making travel impossible.

St. Mary's High School alone departs from the mold of the typical bush high school. Project members chose it primarily because of its relative independence from the political and administrative problems that frequently beset public schools. Thus, it would be possible to examine the effects of the new program approach with less interference from unrelated sources. Moreover, a good deal of data already existed on St. Mary's students and its academic program from six years of intensive research conducted by one of the project's members, Professor

Kleinfeld. Given this backlog of information, the project team believed that they would be better able to assess the effects of the scientists' visits on the school.

Finally, as with all experimental educational projects, the willingness of school officials and the local people to allow outside researchers and educators into their schools was a necessary criterion for selection. The Lower Yukon School District, from the first, supported the project's objectives and activities as did the faculty and administration at St. Mary's High School. This is a particularly important criterion in rural Alaska where some districts are hostile to outside researchers.

#### EVALUATION METHODS

In evaluating the effects of the S.I.R. project, we have used, concurrently, several research methodologies to minimize biases intrinsic to any single method. This interim evaluation report is based on the reports of an on-site evaluator, students' written responses to evaluative questions, interviews with teachers and administrators, and the evaluations of the visiting scientists themselves.

(1) On-Site evaluator's observations: A member of the evaluation team, trained in classroom observational techniques, lived in the village of St. Mary's during the period of the S.I.R. visit. He attended all classes in which scientists taught, observing student and teacher responses, and conducted unstructured interviews with teachers, administrators, and students after each S.I.R. visit. He also provided descriptions of the science curriculum, science teaching techniques, and student attitudes towards the school science program. His reports constitute the core of the formative evaluation. The information he provided was passed on to the project director and to the scientists prior to their visits to the schools.

(2) Scientists' evaluations: Scientists who participated in the project kept a diary of their activities and reactions. After each visit, the project director and members of the evaluation team met with the scientist for a structured debriefing. This process provided additional data for the formative evaluation.

(3) Students' evaluations: After the last scientists' visit, the research associate administered written evaluation surveys to the students at the two experimental schools. In addition, he gathered additional information on student response through unstructured interviews.

(4) Teacher interviews: The research associate interviewed each of the teachers and the administrators after the last of the scientists' visits on their reactions to the S.I.R. program as a whole, its effects on students and on the school science program, and their suggestions for improvements in the program.

By using these various methodologies--structured and unstructured interviews, paper-and-pencil evaluations, and participant observation--to evaluate the project we sought to compensate for the weaknesses that each individual method entails when used by itself. We also used two individuals--the research associate and the on-site evaluator--to provide overlapping information that would compensate for possible individual bias.

## RESULTS

### Teachers' Responses to the S.I.R. Program

Following the visit of the first scientists, the on-site evaluator uncovered a serious problem while interviewing teachers at the sites. Four of the five teachers--including one of the science teachers--whose classes were to be visited expressed misgivings about the impending visits. One teacher reported that she

was "afraid and felt threatened--am I going to be embarrassed?" Each of the four felt threatened by the scientists' presumed expertise. Would it make them look bad in the eyes of their students? These teachers apparently conveyed their apprehension to the first scientist. He reported that he found the teachers initially suspicious and not as cooperative as he had hoped.

In part, this apprehension stemmed from the uncertainty in the teachers' minds as to the role and function of the visiting scientists. Perhaps a more thorough explanation of the project would have allayed their suspicions. Perhaps suspicion is endemic to the situation--the outside "expert" arriving with presumably little understanding of local conditions. When the first scientist actually arrived and assumed a supportive rather than an evaluative role, he defused the suspicions and removed the threat the teachers at both sites felt. All five of the teachers reacted positively. These feelings did not recur.

Interestingly, the science teachers at the control sites of Emmonak and Alakanuk also reacted, initially, with suspicion. When the research associate interviewed them, he found that they felt that they were being evaluated, that the various paper-and-pencil instruments being used would provide data on their teaching effectiveness. This suspicion persisted despite the research associate's assurance that their teaching effectiveness was not the issue being studied.

The on-site evaluator also reported two incidents which he felt indicated that not all the teachers and administrators were taking the project seriously. During the presentation of one scientist, the teacher thumbed through a mail-order catalogue. During the visit of the final scientist, several pre-arranged classes were pre-empted by standardized testing. This occurred even though the school was informed of the dates of the visit in advance. On the other hand, most of the teachers and administrators expressed appreciation for the project and for the high quality of the participating scientist. As one administrator said, "I'm 100 percent behind it--it's the best program of its kind I've seen in my two years out here."

Although the science teachers at both the experimental sites criticized one of the scientists for using unfamiliar jargon and not gearing the material presented to the students' level, the teachers' reactions were generally positive. Comments such as the following were typical: "He was professional, extremely competent, in control.... Good material--most relevant and most valuable stuff for the students.... Delightful--the students really enjoyed him. They were receptive and responsive.... Her material was excellent. She made the students feel dignified and appealed to their pride."

From the end-of-the-year interviews with seven teachers, we find the same positive reactions. Commenting on the strengths of the program (Question 1, Attachment A), four of the teachers remarked on the value of having outside resource people to enrich the school science program. Two others mentioned the opportunity for students to meet scientists and interact with them as "real people." When asked about the weaknesses of the program (Question 2), three of the seven teachers felt that the material was, at times, too difficult for the students. Two other teachers thought that the frequency of the visits disrupted their programs.

The science teachers at both schools felt that their students had learned "a lot" from two of the scientists and at least "some" from the other two. (Question 3).<sup>1</sup> Similarly, the science teachers rated student interest as "high" for three of the scientists and "some" for the fourth (Question 4).

The teachers were less positive about the effect of the project on their students' general interest in science or scientific careers (Questions 5 and 6). One teacher indicated that two students had become very interested in archaeology as a result of their contact with the visiting anthropologist. The remaining

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<sup>1</sup>Evaluators interviewed the science teacher at each of the schools and five other teachers whose classes were visited by scientists.

five teachers reported no indication of increased interest in science among their students.

Asked to assess the impact of the program on curriculum, teaching methods and approaches, teachers again thought the project had little effect (Questions 7-9). One of the science teachers mentioned that she found some of the content of the scientists' presentations very relevant and intended to use it next year. The science teacher at the other experimental site mentioned that she had picked up some tips on how to encourage student participation in discussions.

Asked if the visits had prompted them to acquire further training or education, the teachers said "no" (Question 10). One of the science teachers had planned, before the program began, to take courses during the summer. Through her contact with one of the scientists, she arranged an independent study course at the University of Alaska. Another teacher responded that she had been motivated to prepare herself better in the scientific areas covered by the scientists.

Question 11 asked for the teachers' suggestions for improvements in the program. These will be included in our recommendations. Finally, teachers were asked if they saw the project as primarily an enrichment program or a program that might have long-term effects on students' interest in and knowledge of science (Question 12). While several thought that it had the potential for long-range impacts, all felt that, at the present time, it was primarily an enrichment program.

In sum, the teachers had a favorable response to the program. After an initial reaction of suspicion and insecurity, the teachers grew increasingly positive about the scientists and their presentations. Although they reported that the visits had little impact on students' interest in science or scientific careers or on the science curriculum of their schools, they felt that exposing the students to professional scientists enriched their students' school experience.

Students' Responses to the S.I.R. Program

To measure student interest in the presentations, the on-site evaluator ranked student interest and attention. "High" interest was defined as observed high attention--sustained eye contact, not performing other tasks, refraining from talking and joking with others, and absence of yawning, fidgeting, or sleeping, asking questions, and reluctance to leave room at bell. From the on-site evaluator's observations of the 63 class meetings led by visiting scientists, student interest and attention was rated "high" in 62%, "medium" in 17%, and "low" in 13%. For 8% of the classes, there were no observations. Classes for which attention was highest were those in which the scientist illustrated his or her topic with slides, films, demonstrations, or dissections. Classes in which the scientist discussed science as a profession or the career steps required to become a scientist were those which drew the least interest. The subject areas observed to stimulate the greatest interest were: (1) the causes, consequences of the spread of infections and venereal disease such as rabies and gonorrhoea; (2) migration of Eskimo ancestors across the Bering Straits land bridge; and (3) the biological systems of fish. From these results, we can conclude that topics which relate directly and immediately to village life--for example, the sources, spread and control of rabies--engage students most fully.

Results of the students' evaluation of the program confirm these observations (Figure 1). Of the 133 students surveyed at the experimental sites, 80% had at least one scientist visit their classroom. Thirty-two percent had personal contact with a scientist outside the classroom. Of those who had outside-of-class contact, almost all (85%) were students at St. Mary's High School. The visiting male scientists stayed in the boys' dormitory at St. Mary's, greatly increasing the possibility of informal contact with students. Only 20% of the students at Mountain Village High School who responded to the survey had informal



contact with the scientists. At Mountain Village, students returned to their homes at the end of the day.

When asked how much they liked having scientists visit their school, 59% of the students responded that they liked it "a lot" while an additional 29% answered that they liked it "some." Only one respondent indicated that he/she "didn't like it much" and no one answered "didn't like it at all."

Asked to rank how much they learned from each presentation on a four-point scale, 25% of the students felt they had learned "a lot." Another 43% indicated that they had learned "some" while 9% thought that they had not learned much or nothing at all. To get an indication of the interest the visits had aroused in science-related experiences, we asked students at both schools whether or not they would be interested in a position as a summer science intern. Nearly half (46%) of our 133 respondents answered affirmatively. Despite this seemingly high interest in possible summer science internships, the program has had difficulty filling those positions. At the time of this report, only one of the three positions available had been filled--and that by a student from a rural high school not included in the program. This can be explained, in part, by the students' participation in fishing activities during the summer months. Another factor has been the difficulty of communicating with students who had expressed an interest in the internships. Telephone service is undependable and some students are in fish camps, miles from a telephone or post-office.

Eighty-five percent of the respondents cited a specific learning area when asked what they felt was the most important thing they had learned: 46% mentioned "rabies and diseases"; 22% mentioned "Eskimo ancestry and land bridge migration"; 8% mentioned "cells" and 6% "fish." Only 3% indicated that the most important thing learned was about science as a profession.

When asked, "What are the good things" about the program, 85% mentioned that they had learned more about scientific topics. Thirteen percent felt that being exposed to scientists and/or gaining a better understanding of scientists was the good thing while 11% mentioned career orientation and information.

When asked the converse--"what are the bad points" of the program--81% responded that there was nothing bad and only 5% had negative comments to make.

Examples of students' comments on what they had learned include:

- "How scientists do their work and what they study."
- "How they go about determining how old people have really lived in various places in Alaska."
- "I learned that rabies and diseases are getting to be a problem in Alaska with all the sewage and waste materials in the frozen ground."
- "I learned about how a fish keeps its balance under water and what it eats and also how it spawns each year."
- "I learned about the cells in our bodies and what they do when we do something to them and what different drugs do to bodies."

Examples of how students responded when asked what were the good things about the program include:

- "They present to us subjects which are very important for us in day-to-day life and in a very exceptionally interesting way, too! Especially when you have the opportunity to meet them."
- "We learn more that we wouldn't really get to learn being isolated out here. Gets some students interested in majoring in science."
- "It gives the students a better idea of what the scientists study."
- "I don't care what they teach--they are interesting."

- "I think that the scientists bring ideas that are essential knowledge to Alaskans in keeping Alaska a good and healthy place to live."

Some of the negative comments made in response to the question concerning the "bad things" about the program were:

- "Waste money on them."
- "We miss some of our school work."
- "The scientists not making the effort to talk to students."
- "After they finished, you don't know what they talked about."
- "They should try to see people not in science classes."

Overall, the student response was very positive as confirmed both by observations of their reactions to the scientists' presentations and by their written evaluations of the S.I.R. program. They appear to be learning more about the specific topic areas which the scientist present than they learn about scientific processes or career opportunities. Finally, when asked whether or not they wished to see the program continued next year (Question 7), 77% answered "yes", 18% responded "don't know" and only 2 students out of 133 gave a flat "no" response.

#### Participating Scientists' Evaluations

We drew information on the visiting scientists' responses and observations from the debriefing that the evaluation team conducted with each scientist after his/her visit and from the "diary" that each scientist kept during his/her stay at the schools.

The visiting scientists were very positive about the reception that the students gave them. All of them commented on the interest and curiosity that the students displayed. One scientist described his interaction with the students after showing a film on bowhead whales: "Kids came over and fired questions one

after another. They started with the film and went off in one direction after another."

In some classes, despite persistent efforts to get the students involved in a discussion, the scientists failed. This may have less to do with the students' lack of interest than with the shyness characteristic of students in village schools. The independent observations of the on-site evaluator show that student interest--as measured by nonverbal behavior--was high even in those classes in which scientists had difficulty generating a discussion.

While scientists reported several informal discussions with students at St. Mary's High School, they had few at Mountain Village. Again, the boarding school situation presented opportunities for informal contacts that the day school did not.

The visiting scientists found the teachers' reaction to their presence mixed. Some of the scientists felt that the teachers had been receptive to their material but were not interested in their methods. Most discussions with teachers focused on specific content rather than teaching approaches or techniques. Two of the scientists found the teachers at one of the sites less receptive than those at the other site. Only one of the scientists attempted an informal in-service session with teachers. This, again, met with mixed reactions.

Overall, the scientists felt they had a negligible impact on teachers. Although some teachers asked questions about specific topics, there were no general discussions about teaching methods in the sciences. One scientist's attempt to persuade a science teacher to use locally available materials for demonstrations met with strong resistance. The teacher simply felt that she was not sufficiently knowledgeable about local animal life to make use of it in her teaching.

All of the scientists reported that they, personally, had benefitted from their visits. What impressed them most was the warm, appreciative manner in which the students received them. One of the scientists, who had little experience in village Alaska, remarked, "I learned so much--it's a whole new world." All the scientists volunteered to participate in the program again even though they received no special pay and the visits absorbed from five to seven days of their time. Despite their lack of impact on teachers, they felt positive enough about their interactions with students to wish to return to the villages.

Preliminary Observations: Success in Meeting the Program's Goals

As we have noted, we can draw but preliminary conclusions as to the program's success in meeting its stated objectives. More definitive judgements must await our analysis of the quantitative data.

(1) *Increased minority student interest and competence in science.*

From the results we have up to this time, we have no clear evidence of increased scientific interest and competence. Certainly, students manifested high interest in the scientists' presentations. Whether or not this indicates a growing interest in the general area of science, we cannot, at this point, say. Similarly, we do not have as yet any evidence of increased competence which might have been reported in the teacher interviews. Our quantitative data should provide us with better information on this goal.

(2) *Improvement in the high school science curriculum.*

As reported by the teachers and administrators at the experimental sites, the S.I.R. project has not had a major effect on the science curriculum. At one of the sites, the science teacher does intend to use information on water resources and on crystalization which she learned from the visiting scientists. At the other site, the science teacher reported that she will use methods for

stimulating student discussion learned from the scientists. These effects are, however, modest. As the program did not get underway until mid-February, the science curricula at both schools was more or less set for the rest of the year. For the coming school year, the teachers did not indicate that they intended to change their curricula in response to the S.I.R. program.

One of the aims of the program was to encourage teachers to take greater advantage of local materials and examples in teaching. We found no evidence that this goal was being achieved. On the other hand, the science teachers at both schools reported that contact with the scientists had spurred their interest in certain fields. One of them said "It [the program] has really lit a fire under me."

(3) *Increased community understanding of the relevance of science to local conditions.*

Three of the four visiting scientists made evening presentations which were open to the community. The best attended of these drew only fourteen villagers. This low level of participation can be explained, in part, by the lack of publicity given the presentations. In addition, one of the scientists met with the Advisory School Board in Mountain Village. There were no other reported interactions between the scientists and the wider community. Of the three stated objectives, the program has been least successful in achieving this goal.

Implementation Problems

The first and most serious problem to arise was the threat the teachers saw in the visiting scientists. We have discussed this above.

Another problem was teacher and administrator's attitude towards the program. While most of the teachers supported the scientists fully and expressed their appreciation for the visits, two of the teachers appeared to view the scientists' visits as an opportunity to take a free period.

Coordination and scheduling presented a few other problems but such problems were minimized largely due to the efforts of the on-site evaluator. This individual took upon himself the role of field coordinator, communicating the teachers' views and needs to the scientists and the scientists' plans to the teacher. That there was as few problems in this area as there were reflects the on-site evaluator's efforts and not necessarily the effectiveness of the program's structure.

The future success of the program, should it continue, will hinge to a great extent on how well the project directors can overcome the difficulties in communication and transportation which are inherent to the Alaskan situation. It is not clear who will assume the role of field coordinator once the on-site evaluator departs the scene.

Another problem encountered in implementing the program was coordinating the scientists' presentations with the teachers' syllabuses. In most instances, teachers did not know what the scientist intended to present until he or she actually arrived. Consequently, teachers could do little to prepare their students.

In sum, most of the problems in implementing the program concerned communication and coordination between the scientists and the teachers. Problems that arose in transportation have not been mentioned for the simple reason that not much can be done about them. The traveller in bush Alaska is at the mercy of the elements and the airlines to a much greater degree than the traveller in the Lower 48.

## CONCLUSIONS

### Strengths and Weaknesses

From the results of the preliminary evaluation, we can identify some of the strengths and weaknesses of the S.I.R. program.

Strengths include the enrichment provided by outsiders who bring their knowledge, experience, and perspective to share with students and teachers in remote areas of the state. Similarly, students have the opportunity to meet and talk with professional scientists--an opportunity not available to most people in rural Alaska. The scientists also serve as valuable resource people for teachers, providing them with information, contacts, and sources.

Weaknesses include the lack of contact with people in the community outside of the school. This type of wider interaction is not part of the structure of the program although it is an objective. Also absent from the program's structure is someone to serve as a field coordinator--a function demanded by the logistical problems endemic to rural Alaska.

Another weakness is the lack of follow-up to the scientists' presentations. There is currently no mechanism for reinforcing what the scientists have presented. Similarly, there is no method for scientists or teachers to assess what students have actually learned from the scientists' visits.

One of the implicit goals of the program is to provide role models with whom students having an interest in science can identify. All four of this year's scientists were, however, White. An indication of the gravity of the identification problem was summed up in the comment of one Senior student who remarked, "An Eskimo scientist?--How stupid!" A scheduled visit by a physicist who is a native of India did not occur due to a conflict with his classes at the University. The program needs to address this problem of non-White representation.

#### Operational Recommendations

On the basis of this preliminary evaluation, we offer the following recommendations for improvement of the current program model. These recommendations do not address the issue of whether basic changes in the model would increase the potential for goal attainment.

1. *Improve subject area coordination and planning.* The visiting scientists should provide teachers at the sites with a list of ten topics on which they can speak. The teacher could then prioritize these topics according to his/her own syllabus. This information should be provided at the beginning of the school year.

2. *Develop a contact person at the school.* This individual can communicate with the teachers and arrange for community-wide presentations or activities.

3. *Visiting scientists should be cautioned about using slang, jargon, and obscure scientific terminology without adequate explanation.*

4. *Involve the community more.* To increase community-scientist interaction, the project director could solicit community ideas for relevant and timely topics and subject areas of general interest.

5. *Visiting scientists should provide teachers with information or questions that they can use to reinforce what has been taught and assess how much the students have learned.*

6. *Resumés of the visiting scientists should be provided to school officials, teachers, and community leaders well in advance.*

7. *Try to involve Alaska Natives in the program.* Although there are very few Native scientists, there are many Natives who are involved in public health, nursing and social service delivery who are knowledgeable and experienced.

8. *Spread out visits.* Four visits in three months proved to be disruptive for some. Two each semester seems to be about right.

9. *Visits by scientists in fields other than the life sciences.* All of the S.I.R. visits this year were by scientists in the life sciences. The program would have wider appeal if individuals in the "hard" sciences--physics, chemistry, engineering and so on--were included.

In conclusion, we emphasize that the evaluations in this report are made on the basis of largely qualitative data. We have not yet analyzed the results from our objective measures.

In addition, the generalizability of our results to the potential effectiveness of this type of program in other areas of the country is qualified by circumstances which are specific to Alaska. The serious problems of communication and transportation with which any program must contend in rural Alaska often do not exist elsewhere. At this point, we are not addressing the issue of the general potential of this approach to improving science education in rural schools or with minority groups. This matter will be discussed in the final report.

## SCIENTIST-IN-RESIDENCE PROJECT

Teachers' Evaluation

## I. Experimental Schools:

1. What do you feel were the strengths of the Scientists-in-Residence Project?

2. What were the Project's weaknesses?

3. How would you evaluate each of the presentations in terms of how much your students learned?

- |             | A LOT | SOME | NOT MUCH | NOTHING AT ALL | NO VISIT |
|-------------|-------|------|----------|----------------|----------|
| a. Bailey   |       |      |          |                |          |
| b. Reynolds |       |      |          |                |          |
| c. Crook    |       |      |          |                |          |
| d. Aigner   |       |      |          |                |          |

4. How would you describe the interest that your students displayed in each of the presentations?

- |             | HIGH | SOME | LOW | NONE | NO VISIT |
|-------------|------|------|-----|------|----------|
| a. Bailey   |      |      |     |      |          |
| b. Reynolds |      |      |     |      |          |
| c. Crook    |      |      |     |      |          |
| d. Aigner   |      |      |     |      |          |

5. Do you think that the Project has had any effect on your students' interest in science? on their interest in scientific careers?

6. Did any of your students catch on fire about science as a result of contact with the visiting scientists?

7. Have there been any changes in the curriculum as a result of the scientists visits?
8. Have any new methods of teaching resulted from the scientists' visits?
9. Have any new approaches to teaching science come out of these visits?
10. Has your interest in acquiring further training or education been prompted by these visits?
11. What suggestions do you have for changes in the program for next year?
  - a. In types of presentations, subject matter, approaches
  - b. In scheduling
  - c. In greater formality or informality of the scientists' presentations
  - d. In integrating the visits and the presentations into the regular curriculum
  - e. In communications between scientists and teachers, scientists and students
12. Do you think the program will have any long-term effects on students' interest in science and scientific careers or do you see it as primarily an enrichment program?

NAME \_\_\_\_\_

SCHOOL \_\_\_\_\_

GRADE  9  10  11  12

SCIENTIST-IN-RESIDENCE PROJECT

Student Evaluation

In the Scientist-in-Residence project, four scientists from the University of Alaska came to your school, and taught science classes. We would like to know what you thought of this project. Please give us your opinion by answering the questions below. Thank you.

1. Did a scientist from the University of Alaska talk to any of the classes that you are in?

YES

NO

2. Did you talk after class with any of the scientists who visited your school?

YES

NO

3. How much did you like having scientists from the University visit your school?

a. I liked it a lot

b. I liked it some

c. I didn't like it much

d. I didn't like it at all

e. No scientist visited my classes or talked with me

4. How much do you think you learned from the presentations of each scientist?

*Please mark one box for each scientist.*

	LEARNED A LOT	LEARNED SOME	DID NOT LEARN MUCH	LEARNED NOTHING AT ALL	DIDN'T VISIT MY CLASS
a. First presentation - CELLS by Dr. Ray Bailey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Second presentation - FISH by Mr. Jim Reynolds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Third presentation - RABIES AND DISEASES by Dr. Jim Crook	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Fourth presentation - LAND BRIDGE MIGRATION AND ESKIMO ANCESTRY by Dr. Jean Aigner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PLEASE TURN OVER →

5. From all the scientists' visits, what is the most important thing you learned?

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6. The Scientist-in-Residence Project will invite some students to take a science job this summer. Are you interested in taking this science job?

YES

NO

7. Would you like more scientists to come to your school next year?

YES

NO

DON'T KNOW

8. What do you think are the good things about having scientists from the University visit your school?

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9. What do you think are the bad things about having scientists from the University visit your school?

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