SB

722

COMMITTEE REPORT

SENATE

2/5/82

FURTHER: Finance

Date: 3 [illegible]

Mr. President:

The Committee on HEALTH, EDUCATION AND SOCIAL SERVICES has had SB 722

making a special appropriation to the Dept. of Education for a computer network study

under consideration and (a majority of the committee) (the committee) reports it back with the following recommendations:

[ ] do pass [ ] do not pass

[ ] do pass with attached amendments(s)

[ ] replace with CS for _____ [ ] same title [ ] new title

and recommends _____

[ ] AND attaches a "Letter of Intent" [ ] New Fiscal Note

[ ] reports it back without recommendation

[ ] referred to the _____ Committee

MEMBERS SIGNING
DO PASS

MEMBERS HAVING
OTHER RECOMMENDATIONS:

_____

CHAIRMAN

S 60 (Rev. 12/78)

Alaska Department of Education
Sponsored Minnesota Educational
Computing Consortium Use Status 2/1/82

School District	No. of Sites	No. of Teachers	No. of Students	Sites
1. Alaska Gateway	5	15	50	Dot Lake Metasta Lake Northway Tanacross Tok
2. Anchorage	70	250	16000	All Elementary Schools
3. Bering Straits	9	13	122	Breving Mission Elium Gambell Golovin Hoyuk Shaktoolik Shismoref St. Michael Teeler Unalakleet White Mountain
4. Bristol Bay	2	8	20	Naknek Naknek H.S.
5. Chatham	5	5	180	Angoon Eight Fathom Bight Freshwater Bay Gustavus Tenakee
6. Cordova	1	7	30	Cordova
7. Craig	1	1	30	Craig H.S.
8. Dillingham	1	2	20	Dillingham
9. Fairbanks	6	6	800	Elementary Schools
10. Galena	2	8	100	Galena
11. Haines	1	4	45	Haines Elementary
12. Hoonah	2	3	35	Hoonah
13. Iditarod	3	3	50	McGrath Nikolai Holy Cross
14. Juneau	2	3	290	Capitol Elementary J.D. High

School District	No. of Sites	No. of Teachers	No. of Students	Sites
15.Kake	1	1	108	Kake
16.Kenai	12	12	275	Soldotna Elementary Seldovia Nikiski Kenai Jr High Kenai Elementary Soldotna Jr HIgh Soldotna Elementary Redoubt Elementary Paul Banks Elementar Homer Middle
16A. Ketchikan	3	3	100	
17.Klawock	1	1	18	Klawock
18.Kodiak	4	4	70	Kodiak Port Lions Old Harbor Larson Bay
19.Lake & Peninsula	14	40	319	All District Sites
20.Lower Kuskokwim				
21.Lower Yukon	1	1	20	Pilot Station
22.Mat-Su	1	6	120	Palmer
23.Nenana	1	1	12	Nenana
24.North Slope	9	80	1199	All District Sites
25.Northwest Arctic				
26.Pribilof	1	10	100	St. Paul
27.Railbelt	4	9	85	Anderson Cantwell Tri Valley Correspondence
28.Sand Point	1	5	20	Sand Point
29.Sitka	1	2	70	Baranof Elementary
30.S.E. Island	6	6	60	El Capitan Gildersleeve Naukati Thorne Bay White Pass.

School District	No. of Sites	No. of Teachers	No. of Students	Sites
31. Southwest REAA	14	14	75	All Sites except Portage Creek
32. Wrangell	2	10	120	Wrangell Elementary & High School
33. Yakutat	1	4	31	Yakutat Elementary
34. Yukon Koyukuk	1	1	10	Bettles

ETA Newsletter

VOLUME 2 NUMBER 4 JANUARY/FEBRUARY 1982

A Publication of the Office of Educational Technology and Telecommunications
Alaska Department of Education

FOREWORD

Again, a reminder: the Alaska Association for Computers in Education's annual conference will be at the Sheraton Hotel in Anchorage. You can register the evening of April 1 with major conference events taking place April 2-3.

Written by Ed Obie

To ensure that initial experiences with the computer are positive, consider the following points based on ETA experience over the past four years.

1. **Plan instructional applications rather than technological applications.** Begin by identifying a need, realizing that computer technoiogy may or may not be the solution. Given the ever increasing capabilities of a technology and the lure of another "new approach," we often purchase a solution, then begin looking for a suitable problem to solve. For small classes, a teacher doesn't need a computerized student management system. A mimeographed test or quiz may be more appropriate than a computer-based application. If the initial computer technology experience is not relevant or positive to the user, expensive gear may be relegated to limited use or the nearest closet.

2. **Equipment cost is only one part of a proposed application.** Too often money appropriated for a computer application is spent solely for equipment, drastically reducing chances for a successful computer application. Sad commentaries have been written about computers being left in their original packing cartons for a full school year due to lack of training in equipment operation or classroom application. Generally speaking, expect to spend about as much on planning time, courseware purchasing, inservice training, equipment maintenance and follow-up support as on equipment.

3. **Factors to consider when selecting equipment.** A prime consideration in the purchase of equipment should be the availability of programs that meet identified needs. Although a particular computer may have many more features than another and the cost may be less, instructional courseware for that computer may not be readily available. Local support and maintenance should also be major considerations. Discount house purchases can result in being the most expensive alternative.

4. **Be wary of exaggerated computer courseware claims.** The development of computer courseware for education is still in its infancy. It is best to preview a demonstration program (if available). As a minimum prérequisite to purchase, review evaluations of the program's technical and instructional qualities as well as its content. Due to the current state of the art of courseware production, be prepared to find errors in content and format.

5. **Buy now – Wait later.** Except in rare circumstances, don't hesitate to buy state of the art equipment now because you think something newer and better is coming tomorrow. The same decision will face you if you wait. Although technology will continue to advance, your unit will be a wise investment, providing you with 3-5 years of good service. It can take 1-3 years for design, development and distribution of quality computer classroom programs for new "advanced" microcomputers.

6. **Change is a central concept in implementing computer applications successfully.** "Implementing change" might be more appropriate terminology than "implementing a computer application." Human nature often implies a resistance to change unless the amount of gain is equal to or greater than the amount of effort required. You can greatly increase your chances for a successful computer application if you involve users in planning, proceed in manageable progressive steps, and provide adequate inservice training and follow-up activities.

7. **Plan a broad-based approach to computer implementation.** Historically, computers have been introduced into the school setting by an enthusiastic teacher with interest and expertise in computer science and/or programming. Programs introduced through this approach will often flourish for the duration of the teacher's assignment but then be jeopardized when the teacher leaves or changes roles. For long term success, it is crucial to integrate a computer application into the curriculum in a formal sense to prevent "person dependency." Planning in a formal sense should include allocation of resources, assignment of staff, scheduling, and inservice training of large segments of the total staff.

8. **Purchase existing computer products as opposed to developing programs in-house.** Many successful low-cost computer programs have been developed "in-house" by existing staff. However, it takes 1-2 years of dedicated training to master a programming language, plus 2-3 years of programming experience to produce a quality program comparable to those produced by major commercial firms. These companies have a full range of staff including instructional designers, content experts, system analysts and programmers whose skills are difficult to duplicate locally. Estimates of programmer time range from 20 to 200 hours to develop one hour of classroom instruction. For selected applications, authoring programs currently available may offer alternatives to existing products.

9. **Computers do not replace teachers.** Computers can serve as topics of study (computer science, computer literacy, programming) or as classroom tools to aid instruction (drill and practice, tutorial, simulation, testing, problem solving, student management). Combined with a teacher, the computer becomes a powerful instructional tool in the classroom.

10. **Introduction of computers requires additional financial resources.** As with implementation of any new approach or program, equipment costs, inservice training, supporting materials, and maintenance are additional expense items. These costs are offset, however, by reduced requirements for teacher time to conduct drill and practice activities, increased numbers of students served by existing staff, improved quality of instructional programs, and expanded opportunities for students to acquire new employable skills.

Computers are an essential part of today's schooling, both as objects of study and as instructional tools. Successful implementation of this technology, however, is dependent upon such factors as planning, careful selection of hardware and courseware, adequate inservice training, integration into existing curriculum, staff allocation, and follow-up support.

THE JOURNAL OF COURSEWARE REVIEW

The Journal of Courseware Review (edited by Carolyn Stauffer) is the latest publication of the Foundation for the Advancement of Computer-aided Education. The quarterly *Journal* will review microcomputer programs for content, use, and educational validity.

Individual copies can be ordered from the Foundation's Evaluation Center for $6.95 (check or money order), which includes postage and handling:

Foundation for the Advancement
of Computer-aided Education
P.O. Box 28426
San Jose, CA 95159

A REMINDER

Have you applied for membership in the Alaska Association for Computers in Education?

For applications or information contact:

Chuck Williams
AACE Membership Chairman
1602 Hillcrest Drive
Anchorage, AK 99503
Phone: (907) 276-3305

MAIL 18-Mar-82 14:46 FOR: DOE/MLF
FROM: SAND POINT MSG #: 27945
ATTN: STEVE HOLE DATE: 18-Mar-82
SUBJ: LEGISLATIVE INQUIRY TIME: 12:43

DEAR STEVE,

HERE IN SAND POINT WE ARE NOT INVOLVED WITH THE STATE FINANCED IST COURSES. HOWEVER, WE HAVE 2 APPLE COMPUTERS WHICH ARE USED VERY MUCH WITH A GREAT DE BY
B
OTH ELEMENTARY AND HIGH SNTS. IN HIGH SCHOOL, W
USE THE COMPUTERS MOSTLY IN MATH CLASSES. THE ELEMENTARY SCHOOL HAS BEEN USING THE MILLIKEN MATH CAI SOFTWARE FOR THE PAST 2 YEARS. IT HAS PROVED TO BE HIGHLY MOTIVATING, AND STUDENTS DEFINITELY SHOW IMPROVEMENT AFTER USING THE COMPUTERS. WE HAVE RECENTLY PURCHASED SPELLING AND READING COMPREHENSION SOFTWARE. STUDENTS WILL BE USING THESE PROGRAMS SHORTLY. MECC MATERIALS HAVE BEEN USED IN A LIMITED WAY, BUT WE HOPE TO USE THEM MORE AS TIME GOES ON.

THE STATE OF ALASKA HAS BEEN A LEADER AMONG STATES IN ITS SUPPORT FOR EDUCATION. I WOULD HATE TO SEE THE STATE GO BACKWARDS BY CUTTING FUNDS FOR THE MOST IMPORTANT EDUCATIONAL TOOL OF RECENT TIMES, THE COMPUTER. (FRANCE HAS DECIDED TO INSTALL COMPUTERS IN EVERY HIGH SCHOOL IN THE COUNTRY.)

MOST SCHOOL DISTRICTS PAY DEARLY FOR COMPUTING SERVICES FROM PRIVATE FIRMS TO HANDLE ADMINISTRATIVE WORK. MICROCOMPUTERS COULD PERFORM THESE SAME SERVICES FAR MORE CHEAPLY AND AT THE SAME TIME BE AVAILABLE FOR STUDENT USE. THE STATE COULD ACTUALLY SAVE MONEY BY PROVIDING MICROS FOR SCHOOLS.

SINCERELY,
JOHN BRUDER, COMPUTER INSTRUCTOR
CC: SAND POINT

MAIL 18-Mar-82 14:47 FOR: DOE/MLF
FROM: NORTH SLOPE MSG #: 27921
ATTN: STEVE HOLE DATE: 18-Mar-82
SUBJ: LEGISLATIVE INQUIRY TIME: 11:02

THE NORTH SLOPE BOROUGH SCHOOL DISTRICT SUPPORTS SB 720 AND 721. COMPUTER ASSISTED INSTRUCTION IS BECOMING AN INTEGRAL PART OF OUR CURRICULUM. IT IS MAKING IT POSSIBLE TO EXPAND AND ENRICH OFFERINGS TO STUDENTS IN ALL OF OUR VILLAGES. COMPUTER ASSISTED INSTRUCTION IS PROVIDING US WITH THE TECHNOLOGY TO INDIVIDUALIZE PROGRAMS, MOTIVATE LOW ACADEMIC STUDENTS, AND STIMULATE AND CHALLENGE TALENTED AND GIFTED STAFF IN THE USE OF COMPUTERS. WE ARE COMMITTED TO UTILIZING THIS APPROACH AS A PART OF OUR INSTRUCTIONAL PROGRAM ON THE NORTH SLOPE.

SINCERELY,
DON RENFROE
SUPERINTENDENT
CC: NORTH SLOPE

MAIL 18-Mar-82 07:43
FROM: LOWER KUSKOKWIM
ATTN: STEVE HOLE
SUBJ: LEGISLATIVE INQUIRY

FOR: DOE/MLF
MSG #: 27782
DATE: 17-Mar-82
TIME: 12:41

THE LOWER KUSKOKWIM SCHOOL DISTRICT WISHESTO VOICE STRONG SUPPORT FOR SB 719, 720, 721, AND 722. WE ARE COMMITTED TO THE EFFECTIVE USE OF COMPUTERS IN OUR EDUCATIONAL PROGRAMMING AND FOR ADMINISTRATIVE PURPOSES. THE GOVERNOR'S TASK FORCE ON EFFECTIVE SCHOOLING LENDS SUPPORT TO OUR VIEW THAT TRADITIONAL INSTRUCTION SUPPLEMENTED BY COMPUTER-ASSISTED INSTRUCTION CAN LEAD TO HIGHER ACHIEVEMENT. IT LIKEWISE IS ESPECIALLY IMPORTANT FOR SMALL SCHOOLS IN RURAL AREAS SUCH AS OURS FOR WHERE IT IS DIFFICULT TO OFFER FULL SCHEDULES OF CLASSES. WE HAVE JUST ESTABLISHED A COMPUTER-ASSISTED INSTRUCTION SPOECIALIST POSITION TO OVERSEE THE DISTRICT'S EFFORTS.
MARY FRANCIS, CURRICULUM DIRECTOR, LKSD
CC: LOWER KUSKOKWIM

MAIL 18-Mar-82 07:41
FROM: VALDEZ
ATTN: STEVE HOLE
SUBJ: RESPONSE MSG #27654

FOR: DOE/MLF
MSG #: 27880
DATE: 17-Mar-82
TIME: 15:48

VALDEZ CITY SCHOOLS SUPPORTS FUNDING FOR COMPUTER ASSISTED INSTRUCTION; HOWEVER, DUE TO THE IMPLEMENTATION IN VALDEZ CITY SCHOOLS OF THE IBM SYSTEM 34, WE WOULD NOT BE AFFECTED BY THE POSSIBLE FUNDING CUTS.

GEORGE MAYKOWSKYJ
SUPERINTENDENT
VALDEZ CITY SCHOOLS
CC: VALDEZ

MAIL	18-Mar-82 07:42	FOR:	DOE/MLF
FROM:	VALDEZ	MSG #:	27876
ATTN:	STEVE HOLE	DATE:	17-Mar-82
SUBJ:	RESPONSE MSG. #27654	TIME:	15:31

VALDEZ CITY SCHOOLS SUPPORTS FUNDING FOR COMPUTER ASSISTED INSTRUCTION; HOWEVER, DUE TO THE IMPLEMENTATION IN VALDEZ CITY SCHOOLS OF THE IBM SYSTEM 34, W BE AFFECTED BY THE POSSIBLE FUNDING CUTS.

GEORGE MAYKOWSKYJ
SUPERINTENDENT
VALDEZ CITY SCHOOLS
CC: VALDEZ

MAIL	18-Mar-82 07:42	FOR:	DOE/MLF
FROM:	SW REGION	MSG #:	27873
ATTN:	STEVE HOLE	DATE:	17-Mar-82
SUBJ:	LEGISLATIVE INQUIRY	TIME:	15:27

SOUTHWEST REGION SCHOOL DISTRICT HAS IMPLEMENTED THE IST PROGRAM AT ALL OF ITS SMALL HIGH SCHOOLS THIS PAST YEAR. WE HAVE UTILIZED PERSONNEL PROVIDED BY THE DEPARTMENT OF EDUCATION FOR THE PURPOSE OF INSERVICING OUR STAFF IN THIS AREA. WE ARE ALSO PILOTING PROGRAMS IN THE SPECIAI EDUCATION AND BUSINESS AREAS. WE HAVE FOUND THE IST PROGRAM AND THE APPLE COMPUTER TO BE VERY HELPFUL TO OUR TEACHERS, ESPECIALLY IN THE SMALL HIGH SCHOOL SITUATION. THE DISTRICT HAS INCREASED THE NUMBER OF COMPUTERS FROM NINE TO TWENTY-FOUR THIS PAST YEAR, THEREFORE, MAKING A DEFINITE COMMITMENT TO THE USE OF MICRO COMPUTERS IN EDUCATIONAL PROGRAMS.

I STRONGLY SUPPORT SB 719, 720, 721 AND 722. IT IS IMPORTANT THAT THE FINANCIAL ASSISTANCE IS PROVIDED TO SCHOOL DISTRICTS THAT IMPLEMENT PROGRAMS THAT HAVE BEEN DEVELOPED AND ENCOURAGED BY THE DEPARTMENT OF EDUCATION.

SINCERELY,

NELS NICHOLS,
AREA PRINCIPAL

P.S. PLEASE DISTRIBUTE TO APPROPRIATE INDIVIDUALS.

CC: SW REGION

MAIL	18-Mar-82 07:37	FOR:	DOE/MLF
FROM:	KENAI PENINSULA	MSG #:	27894
ATTN:	STEVE HOLE	DATE:	17-Mar-82
SUBJ:	LEGISLATIVE INQUIRY - COMPUTERS	TIME:	17:29

WITHIN OUR PROGRAM ON THE KENAI, COMPUTERS ARE EMERGING AS ONE OF THE KEY DEVELOPING ISSUES FOR THE 80'S. PERHAPS THE FIRST APPLICATION MADE OF THEM IN ALL ORGANIZATIONS IS IN THE ACCOUNTING/PURCHASING/ BUDGETING/INVENTORY AREAS. THIS HAS BEEN TRUE FOR US AND WE ARE CURRENTLY DEVELOPING A DEPARTMENT WITHIN DISTRICT ADMINISTRATION THAT DEALS WITH THESE ADMINISTRATIVE APPLICATIONS OF COMPUTER SERVICES.

PREVIOUS TO THIS YEAR, MOST COMPUTER SERVICES HAVE BEEN CONTRACTED OUT OF ANCHORAGE BUT RECENT UPGRADING OF THE BOROUGH'S SYSTEM OFFERED US THE OPPORTUNITY TO SHARE TIME ON THEIR MAIN FRAME COMPUTER. PLANS ARE TO EXTEND CONSOLE COVERAGE WITHIN CENTRAL OFFICE OPERATIONS AND FOUR MAJOR HIGH SCHOOLS AT THE BEGINNING, EXPANDING TO OTHER SCHOOL SITES IN THE NEXT THREE TO FIVE YEARS. IN EFFECT, THE GOAL IS TO PROVIDE BUILDING SITE COMPUTER SERVICES IN THREE MAJOR AREAS - THE BUSINESS FUNCTIONS PREVIOUSLY MENTIONED; STUDENT SERVICES SUCH AS SCHEDULING, ATTENDANCE ACCOUNTING, AND GRADE REPORTING; AND CURRICULUM MANAGEMENT SERVICES THAT WOULD PLACE ON COMPUTER THE FOLLOWING SERVICES:

1. ALL K-12 CURRICULUM DOCUMENTS INCLUDING TEACHING GOALS AND RELATED PERFORMANCE OBJECTIVES.

2. SUGGESTED TEACHING ACTIVITIES, TECHNIQUES, METHODS RELATED TO PERFORMANCE OBJECTIVES. THIS IS VIEWED AS AN INTER-ACTIVE SEGMENT OF THE SERVICE. TEACHERS COULD CALL UP THE SYSTEM FOR IDEAS OR ADD SUCCESSFUL CLASSROOM ACTIVITIES TO A BANK AVAILALBE TO ALL.

3. INSTRUCTIONAL MEDIA RELATED TO TEACHING AC TIVITIES LISTING WHERE THEY ARE LOCATED - IN THE SCHOOL, AT NEARBY SCHOOLS OR IN THE DISTRICT MEDIA CENTER.

4. ASSESSMENT ACTIVITIES - PRE AND POST ASSESSMENT INSTRUMENTS AND TECHNIQUES RELATED TO PERFORMANCE OBJECTIVES.

WITHIN THE REGULAR FIVE YEAR CYCLE OF CURRICULUM REVIEW, COMPUTERIZATION OF CURRICULUM DOCUMENTS WILL PERMIT REVISION TO EXISTING CURRICUL'M THROUGH FOUR BASIC INSTRUCTIONS - ADD, DELETE, MODIFY, SHIFT TO ANOTHER GRADE LEVEL OR AREA. COMBINATIONS OF THESE FOUR ARE ALSO POSSIBLE.

AT THE CLASSROOM LEVEL, COMPUTER ASSISTED INSTRUCTION IS EXPANDING AT AN INCREASING RATE. OVER $160,000 IN HARDWARE REQUESTS WERE REVIEWED FOR THE FY83 BUDGET. AT THIS TIME, WE ARE ENCOURAGING THIS EXPANSION AS IT IS COMPATABLE WITH TRAINED STAFF AND AVAILALBE COURSEWARE AND SOFTWARE THAT COMPLIMENTS DISTRICT CURRICULUM. THE DISTRICT IS PLANNING A SHORT COURSE FOR PROGRAM MANAGERS TO PROVIDE THEM WITH THE INFORMATION THEY WILL NEED TO MAKE DECISIONS REGARDING EXPANDING COMPUTER APPLICATIONS IN THE CLASSROOM. AT THIS POINT, ALL CLASSROOM APPLICATIONS OF THE CAI ARE BEING ACCOMPLISHED ON MICRO-COMPUTERS, PRIMARILY THE APPLE OR E
THE BLACK APPLE.

A MAJOR DISCUSSION POINT WITHIN THE DISTRICT DEALS WITH THE NATURE OF AVAILABLE SOFTWARE AND COURSEWARE THAT SEEMS DESIGNED AS REINFORCEMENT OR DRILL FOR IN-CLASS INSTRUCTION. BECAUSE OF THIS, SEVERAL LINES OF INVESTIGATION ARE UNDER WAY:

1. WHAT MATERIALS ARE AVAILABLE THAT GO BEYOND DRILL AND REINFORCEMENT TO TEACHING THROUGH SIMULATION, ETC.

2. WHAT SYSTEMS ARE AVAILABLE THAT CAN BE MODIFIED TO MATCH DISTRICT CURRICULUM THAT WOULD PROVIDE SYSTEMATIC REINFORCEMENT WITH SUITABLE MONITORING OF STUDENT PROGRESS.

3. WHAT SYSTEMS ARE AVAILABLE AT THE INTERMEDIATE SIZED COMPUTER (TURN-KEY) LEVEL THAT WILL COMPLIMEDNT OR ENHANCE THE PLANNED MAIN FRAME APPLICATIONS AND THE EXISTING OR PLANNED MINI-MICRO APPLICATIONS.

SEVERAL MAJOR TASKS REMAIN AHEAD OF US.

1. DEVINE, DESIGN AND DELIVER APPROPRIATE TEACHER INSERVICES REGARDING CLASSROOM APPLICATIIONS OF CAI.

2. DETERMINE, DESIGN AND DELIVER APPROPRIATE CLASSROOM COMPUTER LITERACY COURSES TO STUDENTS.

3. DEVELOP MANAGEMENT LEVEL SKILLS AND UNDERSTANDINGS OF COMPUTER APPLICATIONS TO EDUCATIONAL SETTINGS.

4. DEVELOP AND PLAN FOR LONG RANGE NEEDS AT ALL LEVELS FOR COMPUTER USE.

5. MAINTAIN A MANAGEMENT POSITION THAT LEADS STAFF IN APPLICATION OF COMPUTERS TO ALL ASPECTS OF DISTRICT OPERATIONS WITHOUT JUMPING ON SOME COURSE OF ACTION THAT WILL END UP DOWN SOME BLIND ALLEY IN THIS RAPIDLY DEVELOPING AND CHANGING FIELD.

IF YOU READ IN ALL THIS OBVIOUS ENTHUSIASM REGARDING EDUCATION APPLICATIONS OF COMPUTERS A CERTAIN LEVEL OF CONSERVATIVE CAUTION, THEN YOU HAVE PERCEIVED THE DISTRICT POSITION. WITH THE EXPLOSION OF COMPUTER APPLICATIONS THROUGHOUT THE DAILY LIFE OF ANY COMMUNITY, WE WOULD BE GUILTY OF GROSS MISMANAGEMENT IF WE WERE NOT CAREFULLY CONSIDERING WHEN, WHERE, WHY, AND HOW TO IMPROVE EDUCATIONAL SEDRVICES THROUGH THE USE OF COMPUTERS. IT IS OUR INTENT TO HAVE THEM SERVE OUR EDUCATIONAL GOALS.

DENNIS DAGGETT
ASSISTANT SUPERINTENDENT
OF INSTRUCTIONAL SERVICEDS
LAH
CC: KENAI PENINSULA

MAIL	18-Mar-82 07:40	FOR:	DOE/MLF
FROM:	FAIRBANKS	MSG #:	27890
ATTN:	STEVE HOLE	DATE:	17-Mar-82
SUBJ:	LEGISLATIVE INQUIRY	TIME:	17:02

THE FAIRBANKS NORTH STAR BOROUGH SCHOOL DISTRICT WOULD LIKE TO ENCOURAGE YOU TO SUPPORT SENATE BILLS 719-721. THESE BILLS PROVIDE MATCHING FUNDS TO SUPPORT THE ACQUISITION OF MICROCOMPUTERS BY LOCAL SCHOOL DISTRICTS AND PROVIDE FUNDS FOR A FEASIBILITY STUDY OF A STATE-WIDE COMPUTING NETWORK.

FAIRBANKS IS CONCERNED ABOUT EHE IMPROVEMENT OF COMPUTER AWARENESS AND INSTRUCTION IN ITS SCHOOLS. ASSISTANCE IN PURCHASING THE NECESSARY EQUIPMENT WOULD BE VERY HELPFUL DUE TO THE LARGE BUDGET AMOUNT NEEDED TO INTRODUCE COMPUTERS IN THE CLASSROOM CURRICULUM. THIS LEGISLATION SEEMS APPROPRIATE IN THAT IT ENCOURAGES LOCAL COMMITMENT AS WELL AS OFFERING FINANCIAL SUPPORT. FAIRBANKS HAS COMMITTED FUNDS IN THE REGULAR BUDGET FOR THE COMPUTER PROGRAM AND THIS WOULD ENABLE US TO STRENGTHEN THAT EFFORT.

WE WOULD APPRECIATE ANY SUPPORT YOU CAN GIVE TO ENCOURAGE THE PASSAGE OF THESE IMPORTANT BILLS.

SINCERELY,

KENNETH S. BURNLEY, SUPERINTENDENT
FAIRBANKS NORTH STAR BOROUGH SCHOOL DISTRICT
CC: FAIRBANKS

MAIL 18-Mar-82 07:47

FOR: DOE/MLF
MSG #: 27730
DATE: 16-Mar-82
TIME: 17:40

FROM: KING COVE
ATTN: STEVE HOLE
SUBJ: LEGISLATIVE INQUIRY

DEAR DR. HOLE:

REFERENCE MESSAGE # 27654

COMPUTER ED IS PART OF OUR VOC. EC. PROGRAM. WE WOULD LIKE TO EXTEND THIS TO THE ELEMENTARYCULUM. KING COVE CONSIDERS COMPUTER ED A NEEDED INNVOATION IN EDUCATION. WE ARE STRONG ADVOCATES OF THIS ENITITY.

CORDIALLY,

BEN C. KIRKER
SUPERINTENDENT
CC: KING COVE

MAIL 18-Mar-82 07:47

FOR: DOE/MLF
MSG #: 27717
DATE: 16-Mar-82
TIME: 16:53

FROM: KODIAK ISLAND
ATTN: STEVE HOLE
SUBJ: COMPUTER EDUCATION LEGISLATION

THE COMPUTER ASSISTED INSTRUCTION (IST) PROGRAMMS HAVE BEEN SUCESSFULLY IMPLEMENTED AT 4 OF OUR 5 SECONDARY VILLAGE SITES. (READING, MATH, ALASKA HISTORY). THE ALASKA HISTORY COMPONENT IS ALSO BEING PILOTED AT THE SENIOR HIGH IN KODIAK PROPER.

WE WOULD LIKE TO ENCOURAGE LEGISLATION WHICH WOULD ALLOW FOR THE DEVELOPMENT OF SCIENCE, SOCIAL STUDY AND MATH ELECTIVES AT THE 11TH AND 12TH GRADE LEVEL TO ASSIST US IN OUR SECONDARY VILLAGE PROGRAM EFFORTSS. BASIC SKILLS REQUIRED COURSES ARE NOT AS USEFUL IN IST FORMAT AS UNIQUE ELECTIVES WHICH ARE OFTEN NECESSARY FOR A SMALL HANDFUL OF SECONDARY STUDENTS AND MAY BE DIFFICULT FOR TEACHERS TO ADDRESS, BECAUSE OF THE WIDE VARIETY OF OFFERINNGS THAT SECONDARY VILLAGE TEACHERS ARE RESPONSIBLE FOR. WE THEREFORE SEE THE IST PROGRAM FORMAT AS CAPABLE OF HANDLING THIS NEED FOR HIGHER LEVEL ELECTIVES TO "ROUND OUT" SECONDARY VILLAGE PROGRAMS.

WE ENCOURAGE THE LEGISLATURE TO SUPPORT THE IST PILOT PROJECT, IN PARTICULAR THE TEACHER TRAINING COMMPONENT AND DEVELOPMENT OF SECONDARY ELECTIVE COURSES.

MARY ANNE KENDALL, DIR OF ININSTRUCTIONAL SUPPORT
KODIAK ISLAND BOROUGH SCHOOL DISTRICT
CC: KODIAK ISLAND

MAIL 18-Mar-82 14:48

FOR: DOE/MLF
MSG #: 27913
DATE: 18-Mar-82
TIME: 09:21

FROM: PETERSBURG
ATTN: STEVE HOLE
SUBJ: COMPUTER LEGISLATION

IN ANSWER TO YOUR EMS WE ARE NOW FINDING OURSELVES IN THE COMPUTER BUSINESS AND ARE ENJOYING IT. I THINK ONE OF THE FACTS WE NEED TO RECOGNIZE IS THE ROLE OF THE COMPUTER IN THE FUTURE AND TO MAKE SURE THAT SCHOOL SYSTEMS PREPARE TO MEET THIS NEED. COMPUTER INVOLVEMENT IS EXPENSIVE AND SCHOOL SYSTEMS NEED FINANCIAL SUPPORT IF THE COMPUTER PROGRAM IS TO EVOLVE LIKE IT SHOULD.

WE PRESENTLY HAVE FIVE APP'E COMPUTERS IN OUR SCHOOL. WE HAVE MANAGED TO USE THESE QUITE EXTENSIVELY TO BUILD A BASIC PROGRAM THAT WE PLAN TO CONTINUE IN GROWTH. WE ARE SEEING DAILY THE APPLICATION POSSIBILITIES OF THE COMPUTER TO EDUCATION. WE HAVE FOUND THAT COMPUTERS ARE NOT JUST FOR SOME BUT FOR ALL. OUR PRIMARY EMPHASIS HAS BEEN ON THE ELEMENTARY LEVEL - GRADES K - 7, BUSINESS EDUCATION CLASSES AND PARENT AND ADULT EDUCATION. WE PLAN TO EXPAND THIS PRESENT PROGRAM AND TO GIVE GREATER EMPHASIS TO THE HIGH SCHOOL LEVEL. EXPANSION IS GENERALLY BASED UPON ABILITY TO FINANCE A PROGRAM AND BILLS THAT SUPPORT COMPUTER EDUCATION WOULD ENABLE SUCH EXPANSION.

MEL STOCKTON, PRINCIPAL, PETERSBURG
CC: PETERSBURG

INDIVIDUALIZED STUDY BY TECHNOLOGY (IST)

Alaska is the largest state, more than twice the size of Texas, and is also the most sparsely populated of the 50 states, averaging less than one person per square mile. Thus, Alaska faces unique problems in providing quality secondary education to its children in the many small, isolated rural communities located throughout the state. Prior to 1975 many rural Alaskan children had to attend boarding schools in the larger Alaskan cities or the lower forty-eight states in order to obtain a secondary school education. This situation was unsatisfactory to parents. Furthermore, many of these children were not able to complete their secondary education due to the homesickness and culture-shock they experienced when they left their homes and families.

In 1975 two events occurred which changed the course of Alaskan secondary education. First, the state-operated school system in Alaska was disbanded by state law, and replaced with 21 Regional Education Attendance Areas (REAAs). These REAAs received virtually 100 percent of their funding from state taxes, but each had its own locally elected board with full policy-making powers. The second event in 1975 was the settlement of a lawsuit (Hootch vs. Lind) that established the right of Alaskan children to an education through twelfth grade in their own community. As a result of these two events, rural Alaskan children would no longer have to leave their homes and families to receive a secondary school education.

Presently, about 180 small Alaskan communities have high school programs. However, about 60 of these communities have programs with 10 or fewer students, and another 95 or so have programs with fewer than 50 students. In these small communities it is not feasible to hire a large number of teachers with specialized knowledge to offer a comprehensive array of high school courses. Innovative uses of resources and creative ways to satisfy curriculum needs are essential if these communities are to provide their children with a quality secondary level education. Several approaches now being used to enhance high school instruction in Alaska are student exchanges, itinerant teachers, mobile labs, televised (or videotaped) instruction, correspondence courses, and educational student trips. Individualized Study by Technology (IST) is another such approach utilizing the microcomputer, and is the focus of this paper. Individualized courses developed in the IST program permit the small, isolated, rural schools to provide a more complete high school curriculum, and have the advantages of reducing the workloads of the teachers and allowing students to work at their own pace.

A typical rural community in Alaska

TABLE 5

ALASKA STATEWIDE ACHIEVEMENT TEST (ASAT) RESULTS

	NUMBER OF ITEMS	ASAT MEAN SCORES (% CORRECT)		
		ASAT 1979 STANDARDIZATION GROUP		
		ALL STUDENTS	RURAL STUDENTS	IST STUDENTS
NUMBER OF STUDENTS		1440	158	296
MATH COMPUTATION	36	64	42	50
MATH APPLICATION	66	61	44	50
READING COMPREHENSION	45	67	42	53
READING WORD IDENTIFICATION	39	74	62	72

A typical IST classroom setting in a small rural Alaskan school showing the location of each IST component of instruction: the printed materials (on which the students are working at their desks), the microcomputer, the audio cassette tape equipment, and the teacher.

TABLE 3

PILOT TEST TEACHERS' ATTITUDES TOWARDS IST

(NUMBER OF TEACHERS = 39)

	PERCENT OF TEACHERS IN AGREEMENT
The IST courses are well designed to be used and managed in a classroom like mine.	74
Amount of work required of an IST teacher:	
a) too much	0
b) more than a traditional course	35
c) less than a traditional course	65
d) not worth the bother	0
I would prefer to use the whole IST courses as they now exist.	59
Of those teachers who would prefer to use only parts of the IST courses, the parts they preferred to use were:	
a) computerized instruction	100
b) IST workbook and exercises	100
c) audio cassette tapes	57
d) published materials	43
e) outside readings	7
IST components compatible with teaching styles:	
MOST COMPATIBLE	Computer Exercises
LEAST COMPATIBLE	Audio Cassette Tapes
IST components producing the greatest interest for students as viewed by the teachers:	
MOST INTERESTING	Computer Exercises
LEAST INTERESTING	Supplementary Activities

WHAT WERE THE STUDENTS ATTITUDES TOWARDS IST?

Table 7 indicates that nearly all students considered the microcomputer exercises interesting; about 59 percent found the reading and written components of the IST courses interesting; and 49 percent considered the audio cassette tapes interesting. The audio cassette tapes were the only IST media component considered boring by a significant percent of the students. Most students reported the difficulty level of the courses to be "about right" for them. Also, half of the students indicated they almost always understood what needed to be done and could work by themselves on their courses; no students indicated they rarely or never knew what to do and almost always had to get help from their teacher. These data suggest that: a) most students find learning using the IST media components of instruction an interesting experience and b) the instructions and procedures in the IST courses are sufficient for most students to have confidence in their ability to progress through the courses on their own.

TABLE 7

PILOT TEST STUDENT ATTITUDES TOWARDS IST

(NUMBER OF STUDENTS = 49)

	PERCENT
The Computer exercises in the IST courses are:	
(a) interesting	92
(b) of little interest	8
(c) boring	0
The audio cassette tapes in the IST courses are:	
(a) interesting	49
(b) of little interest	24
(c) boring	27
The reading and written work in the IST courses are:	
(a) interesting	59
(b) of little interest	35
(c) boring	6
Clarity of IST course instructions and need for teacher assistance:	
(a) almost always understand what needs to be done and can work by myself	50
(b) sometimes do not understand what needs to be done and need my teacher's help	50
(c) rarely or never know what needs to be done and must get my teacher's help	0
IST course difficulty:	
(a) easy	22
(b) about right	73
(c) difficult	5

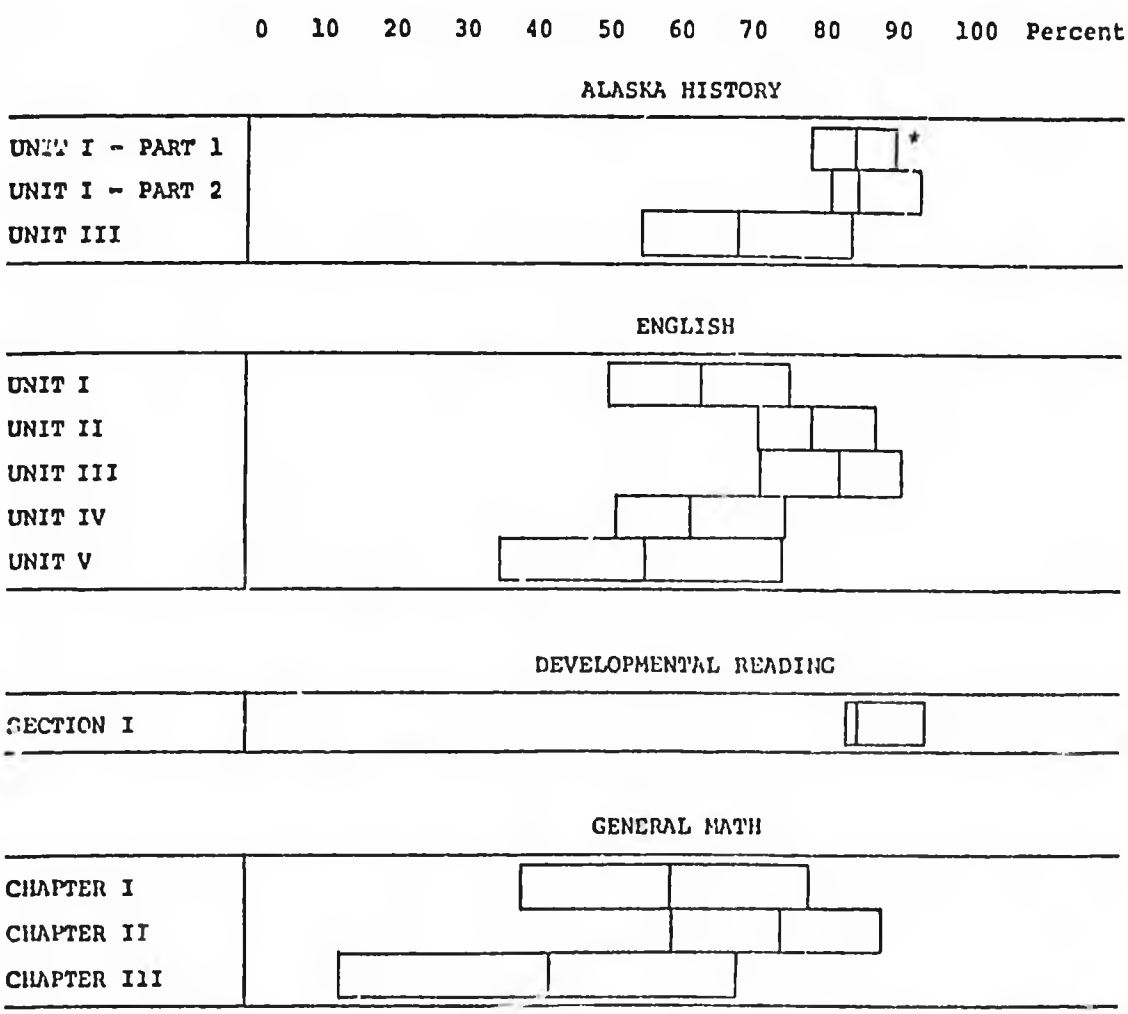
HOW MUCH DID THE STUDENTS LEARN?

Student learning in the IST courses was assessed using unit, section, and chapter computer tests and post-course paper-and-pencil tests.

Computer Tests - As indicated in Figure 1, the mean performance of students was at least 60 percent on all computer tests completed by at least 25 students, except Unit V in the English course and Chapter III in the General Math course. The students performed at an 85 percent mastery level on the Alaska History Unit I - Parts 1 and 2 and Developmental Reading Section I computer tests.

FIGURE 1

COMPUTER TEST PERFORMANCE RESULTS



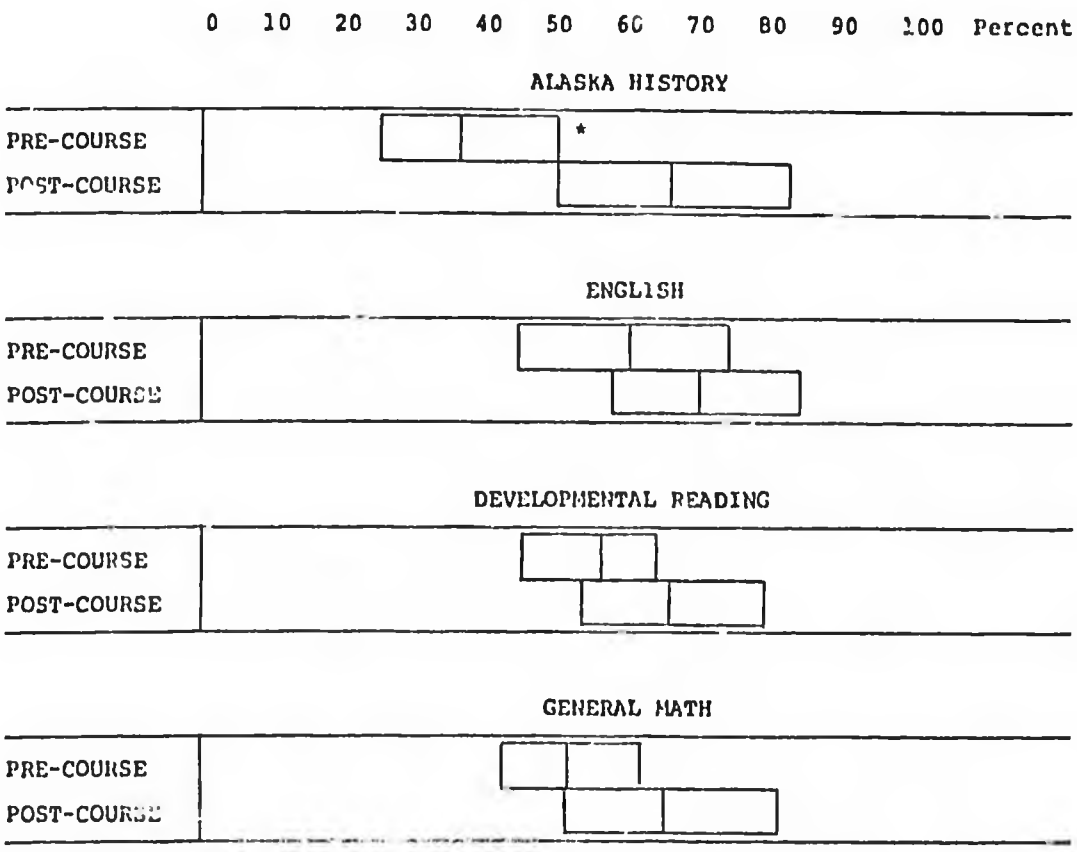
* The bar represents the range of scores for the middle 50 percent of students. The dark line within the bar represents the mean score for all students.

Post-course Tests - The students' pre-course and post-course knowledge of course content was measured by paper-and-pencil tests. The students' test scores were based only on those items related to the portions of the courses they completed. However, items on the Developmental Reading test were not related to any particular portion of the course, thus students' test scores were based on all questions on this test. As indicated in Figure 2, the students, on the average, were generally unfamiliar with the content of the Alaska History course, and somewhat familiar with the content of the English, Developmental Reading, and General Math courses prior to their enrollment in these courses. At the end of the school year, the mean test scores increased to between 60 percent and 70 percent in all four courses.

The most significant factor in overall student performance in all four IST courses was the students' prior knowledge of the course content. After taking into consideration this pre-course knowledge, students' pre-course math and reading skills (as measured by the subtests of the Alaska Statewide Achievement Test) were also significantly related to student performance in all four courses. Student age and grade level did not significantly relate to student performance in any of the IST courses.

FIGURE 2

PRE-COURSE AND POST-COURSE TEST PERFORMANCE RESULTS



* The bar represents the range of scores for the middle 50 percent of students. The dark line within the bar represents the mean score for all students.

WHAT ARE THE COSTS FOR THE IST COURSES?

As shown in Table 8, the total cost per-student in the 1980-1981 pilot testing averaged $1620 for each complete course. The per-student cost to the Alaska Department of Education made up the majority of the total costs, averaging $1470 per course. The average per-student cost to the sites was $150 per course. These costs include all print, audio cassette tapes, and microcomputer materials and equipment.

Most of the DOE per-student costs in the 1980-1981 pilot testing were for course development. These are one-time costs, thus as the number of students using the IST courses increases the per-student costs to DOE substantially decreases, while the per-student costs to the sites increases minimally. An example of the effect on costs as enrollment in the courses increases is also presented in Table 8. The DOE per-student cost estimates, based on six students per course at each of 100 sites, reduce to an average of $207 per course while the average site per-student cost estimates increase to only $209 per course. DOE costs should continue to decline. The costs to sites, however, will probably rise somewhat due to inflationary increases in costs for equipment and printing. The teacher training costs to sites will likely decrease in the future, however, due to more efficient training procedures and a reduction in the number of teachers needing training.

TABLE 8

PER-STUDENT COSTS FOR EACH COMPLETE IST COURSE

(Based on 1980-1981 costs)

COURSE	NUMBER ENROLLED	COST TO DOE*	COST TO SITE	TOTALS
COST FOR 1980-1981 ENROLLEES				
ALASKA HISTORY	75	1,751	202	1,953
ENGLISH	59	2,027	130	2,157
DEVELOPMENTAL READING	117	1,047	141	1,188
GENERAL MATH	116	1,056	127	1,183
COST ESTIMATES FOR 100 SITES WITH 6 STUDENTS PER SITE				
ALASKA HISTORY	600	219	259	478
ENGLISH	600	199	182	382
DEVELOPMENTAL READING	600	204	201	405
GENERAL MATH	600	204	195	399

* Alaska Department of Education

Educational Technology for Alaska Program
Office of Educational Technology & Telecommunications
Alaska Department of Education

The Educational Technology for Alaska (ETA) Program has the responsibility for providing general technical assistance to Alaska schools in the area of computer assisted instruction at all grade levels.

Services available from the ETA include:

(A) Inservice Training

ETA offers 1-3 workshop for educators including the following topics:

- Introduction to CAI
- Introduction to the microcomputer
- Introduction to ETA developed materials
- Introduction to MECC materials
- Selection & Evaluation of computer courseware
- Microcomputer maintenance
- Introduction to BASIC programing
- Techniques for integrating computers into the curriculum

(B) Planning Assistance

ETA has developed an instrument to help school districts plan the implementation of computers into their existing curriculum. ETA provides on-site assistance for school district planners.

(C) Information Dissemination

ETA produces and distributes a monthly newsletter for educators on microcomputers topics including:

- Current techniques in computer assisted instruction
- Computer courseware reviews
- Promising practices of computers in Alaskan schools
- Advances in computer hardware
- Future trends for computers in education
- Notices of up-coming meetings/events for computer users

(D) Product Development

ETA produces computer assisted courses of study custom-designed for Alaska schools. Current courses include:

- Alaska History
- English
- General Math
- Developmental Reading
- U.S. History
- General Science
- Health Education
- Consumer Education

(E) Computer Courseware Library

ETA maintains a current collection of courseware from commercial and public domain sources. Alaska educators can access library items for review prior to local purchase.

Educational Technology for Alaska sponsored
Minnesota Educational Computing Consortium Courseware

The Educational Technology for Alaska (ETA) Program, through an annual institutional license agreement with the Minnesota Educatonal Computing Consortium (MECC), makes a major collection of computer programs available to Alaska educators at markedly reduced proces. This courseware includes both classroom-tested programs, teacher training materials, and administrative applications. The classroom programs are designed to supplement existing classroom instruction grades K-12. Content areas include:

- Social Studies
- Business
- Math
- Science
- Language Arts
- Spelling
- Special Needs

Alaska Department of Education
Individualized Study By Technology
Use Status 2/1/82

School District	IST H	IST R	IST E	IST M	No. of Teachers	No. of Students	No. of Schools	Sites
1. Adak				x	3	135	2	Adak Jr High
2. Alaska Gateway		x	x	x	3	16		
3. Bering Straits	x	x	x	x	13	122	11	Brevig Mission Elim Gambell Golovim Koyuk Shaktoolik Shismaref St. Michael Teller Unalakleet White Mountain
4. Chatham	x	x	x	x	5	72	5	Angoon Eight Fathom Bight Freshwater Bay Gustavus Tenakee
5. Chugach	x			x	1	10	1	Whittier
6. Craig	x	x	x	x	4	40	1	Craig
7. Delta Greely	x				1	40	1	Delta Junction
8. Haines				x	1	8	1	Haines Jr High
9. Hoonah	x	x	x		1	21	1	Hoonah
10. Ididarod	x	x	x	x	4	60	4	McGrath Nikolai Lime Village Holy Cross
11. Kake	x				2	48	1	Kake
12. Kenai	x				1	15	1	Soldotna
13. Klawock	x			x	1	3	1	Klawock
14. Kodiak	x			x	3	30	3	Kodiak Old Harbor Port Lions

School District	IST H	IST R	IST E	IST M	No. of Teachers	No. of Students	No. of Schools	Sites
15. Lake and Peninsula	x	x	x	x	8	140	8	Chignik Bay Chignik Lake Igiugig Kokhauok Illiamna Nondalton Perryville Port Heiden
16. Lower Koskokwim	x		x		1	10	8	Akiak
					1	4		Eek
					1	23		Kosigluk
					1	15		Kipnik
					1	25		Nunapichuk
					1	5		Platinum
					1	15		Quinnagak
					1	10		Toksook Bay
17. Lower Yukon		x	x		1	20	1	Pilot Station
18. Mat-Su	x				1	5	1	Glacierview
19. Nenana		x	x	x	2	25	1	Nenana
20. North Slope	x				9	175	9	Atgasuk Barrow Elementary Barrow High Point Lay Kaktovik Auatuvuk Pass Nuiqsut Point Hope Wainwright
21. Northwest Arctic	x				1	60	1	Kotzebue High
22. Pribilof	x			x	3	20	1	St. Paul
23. Railbelt	x			x	3	32		Anderson
					2	5		Cantwell
	x				4	37		Tri Valley
				x				Correspondence
24. Skagway					4	40		Skagway
25. S.E. Island	x	x		x	5	25	5	El Capitan Gildersleeve Naukatic Thorne Bay Whale Pass

School District	IST H	IST R	IST E	IST M	No. of Teachers	No. of Students	No. of Schools	Sites
26. S.W. REAA	x	x	x	x	14	75	9	Aleknagik Clarks Point Koliganek Levelock Manokotak New Stuyahok Togiak Twin Hills Ekwok
27. Wrangell	x	x	x	x	3	25	1	Wrangell
28. Yukon Flats	x			x	1	12	1	Fort Yukon
29. Yukon Koyukuk	x			x	2	20	1	Bettles

INDIVIDUALIZED STUDY BY TECHNOLOGY (IST)

by

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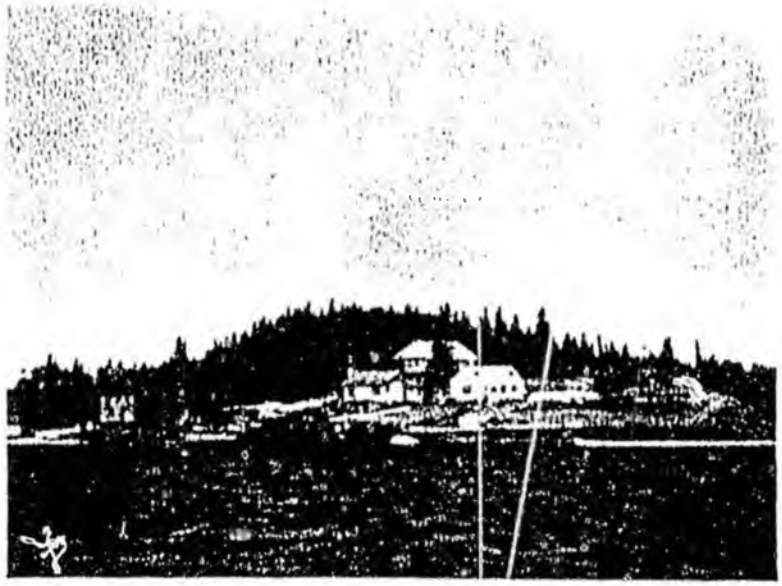


INDIVIDUALIZED STUDY BY TECHNOLOGY (IST)

Alaska is the largest state, more than twice the size of Texas, and is also the most sparsely populated of the 50 states, averaging less than one person per square mile. Thus, Alaska faces unique problems in providing quality secondary education to its children in the many small, isolated rural communities located throughout the state. Prior to 1975 many rural Alaskan children had to attend boarding schools in the larger Alaskan cities or the lower forty-eight states in order to obtain a secondary school education. This situation was unsatisfactory to parents. Furthermore, many of these children were not able to complete their secondary education due to the homesickness and culture-shock they experienced when they left their homes and families.

In 1975 two events occurred which changed the course of Alaskan secondary education. First, the state-operated school system in Alaska was disbanded by state law, and replaced with 21 Regional Education Attendance Areas (REAAs). These REAAs received virtually 100 percent of their funding from state taxes, but each had its own locally elected board with full policy-making powers. The second event in 1975 was the settlement of a lawsuit (Hootch vs. Lind) that established the right of Alaskan children to an education through twelfth grade in their own community. As a result of these two events, rural Alaskan children would no longer have to leave their homes and families to receive a secondary school education.

Presently, about 180 small Alaskan communities have high school programs. However, about 60 of these communities have programs with 10 or fewer students, and another 95 or so have programs with fewer than 50 students. In these small communities it is not feasible to hire a large number of teachers with specialized knowledge to offer a comprehensive array of high school courses. Innovative uses of resources and creative ways to satisfy curriculum needs are essential if these communities are to provide their children with a quality secondary level education. Several approaches now being used to enhance high school instruction in Alaska are student exchanges, itinerant teachers, mobile labs, televised (or videotaped) instruction, correspondence courses, and educational student trips. Individualized Study by Technology (IST) is another such approach utilizing the microcomputer, and is the focus of this paper. Individualized courses developed in the IST program permit the small, isolated, rural schools to provide a more complete high school curriculum, and have the advantages of reducing the workloads of the teachers and allowing students to work at their own pace.

A typical rural community in Alaska

The Individualized Study by Technology (IST) program is one component of Educational Telecommunications for Alaska (ETA), a multi-year project funded by the National Institute of Education (NIE) and the Alaska Department of Education (DOE) for the purpose of developing and demonstrating educational uses of modern electronic technologies. The IST program, in particular, was initiated in response to the need to bring high quality secondary school level educational programs to Alaska's small, isolated, rural schools with limited staff and support materials. The Northwest Regional Educational Laboratory (NWREL) in Portland, Oregon was the design and implementation contractor for the project.

During the 1979-1980 school year two NWREL developed courses, Alaska History and English, were pilot tested in seven rural sites. Two more courses, Developmental Reading and General Math, were then developed by NWREL in 1980. All four of these IST courses were pilot tested in 29 rural sites during the 1980-1981 school year.

THE IST PROGRAM

The IST courses have been developed to address the specific needs of rural Alaskan students. They utilize a unique indivdualized instructional design which includes the teacher, traditional texts and printed materials, microcomputer assisted/managed instruction, and audio cassette tapes. The teacher manages the integrated use of the three media components which provide the primary instruction in each lesson of the IST courses. For example, in an Alaska History lesson introducing students to the geography of Alaska, the students: a) listen to a dramatic episode on an audio cassette tape which primarily introduces geographic terms; b) perform a computer activity composed of multiple choice questions which review the terminology previously introduced in the audio cassette tape; c) read a passage entitled "Geography of Alaska: Introduction" which presents general information about the geography of Alaska; and d) perform another computer activity composed of multiple choice and fill-in the blank questions which review the general information previously presented in the reading passage.

Although used in an integrated fashion, each media component serves specific purposes. The traditional texts and printed materials include published textbooks, texts adopted from correspondence courses, reading selections, worksheet exercises, and projects. The texts and readings are intended to be the primary sources of information for the students; the worksheets and projects are intended for drill of concepts and their application.

The microcomputer instruction includes activities which introduce vocabulary, develop map skills, and drill essential facts, concepts, and concept applications. Review and test activities are also included in the microcomputer instruction. The test scores are recorded and stored on student computer disks which can be accessed by teachers for grading purposes. The microcomputer also provides immediate feedback to the students indicating the correctness of their responses, and the correct answers if incorrect ones had been given.

The audio cassette tapes include lectures, dramatic episodes, teacher-student dialogues, narrations, and interviews. They are intended to introduce and reinforce skills and concepts, to supplement information presented in the printed materials, to guide students through reading and

written work, and to repeat in aural form information which students might have difficulty reading. In addition, several tapes are accompanied by worksheets called Listening Guides. This format provides students the opportunity to confirm in writing their understanding of the concept being taught and to receive immediate feedback on, and explanation of, correct responses.

The teacher is an essential element of the IST program. The teacher's time is actively spent in managing and facilitating student learning through such activities as a) providing one-on-one and group instruction, b) monitoring student progress, c) maintaining records of student performance, d) providing constructive feedback to students by correcting their IST written work, and e) managing the use of the microcomputer. These tasks are somewhat different from the more traditional teacher tasks of a) planning the course structure, b) developing and organizing the course materials and activities, and c) presenting the subject matter to the students. The teachers, therefore, who supervise IST courses are able to give more personal attention to specific instructional needs of students and devote more time to other important responsibilities at their school.

THE IST COURSES

The four IST courses used in the pilot test are intended as full-year courses at the ninth and tenth grade level. They were developed around printed materials such as correspondence courses or published texts. The courses include computerized drills and tests, audio cassette tape activities, printed materials, diagnostic placement tests, individual student progress charts, and complete teacher's guides with answer keys.

The Alaska History course was based on an Alaska Centralized Correspondence Study course. It has no one text, but a number of books, brochures, and other references are utilized. This course consists of five units: I. Alaskan Geography, II. Alaska's Native Groups, III. Russian Exploration - History to 1867, IV. American Purchase to Statehood - 1867 to 1959, and V. Alaska's Resources. Its purpose is to prepare Alaska's students for active citizenship by teaching Alaska's geography, history, and issues affecting its future.

The English course was based on a high school English course developed by the Alaska Centralized Correspondence Study unit in DOE. No one text is used in this course, but paperback books of short stories and novels are required reading. This course consists of twelve units. The first six units stress grammar and usage, the second six units stress literature and writing. The course goals are: a) to teach correct sentence structure, punctuation, capitalization, and spelling; b) to improve students' ability to organize thoughts into written sentences and paragraphs; c) to give students an appreciation of short stories, novels, and poetry; and d) to give practice at everyday skills such as filling out forms, writing letters, and requesting library books.

The Developmental Reading course was developed around the Scott, Foresman Basics in Reading, Book 7, text entitled With the Works. This course consists of 36 lessons divided into four sections. The initial two sections emphasize characterization, vocabulary building through structure and context, fact vs. opinion, using a dictionary and an encyclopedia, types of fiction, story elements, charts and tables, non-fiction organization, figures of speech and idiom, and elements of style. The final two sections emphasize evaluating sources of information, bias and connotation, summarizing and classifying, outlines, propaganda, choice of words, analogy, skimming and reviewing, drawing conclusions, graphs, outlining from notes, and types of literature. The purposes of this course are: a) to increase the ability of the students to comprehend the meaning of word phrases, sentences, paragraphs, and entire selections; b) to increase the ability of students to study effectively; and c) to instill in students a greater appreciation of literature by broadening their background experience.

The General Math course was developed around the Silver Burdett text, General Mathematics Skills and Applications. This course consists of nine chapters: I. Whole Numbers, II. Adding and Subtracting with Decimals, III. Multiplying and Dividing with Decimals, IV. Fractions, V. Measurement, VI. Ratio and Proportion, VII. Percent, VIII. Geometry, and IX. Statistics and Probability. The course stresses mastery of computation skills with integers, fractions, decimals, ratios, and percentages, and practical applications of these in present day living and work situations.

THE EVALUATION DESIGN

Educational Skills Development, Inc. (ESD) of Lexington, Kentucky conducted an evaluation of the 1980-1981 pilot testing of the IST program under contract to DOE. In this evaluation the effectiveness of the IST program was assumed to depend upon a variety of factors. In addition to course quality, training, and implementation, such factors as cultural values, social and environmental contexts, local facilities, community perspectives, students' characteristics, and teachers' attitudes were studied. Thus the goal of the evaluation was more than to simply determine whether IST "worked", but also to provide explanations for the degree of effectiveness achieved by the program, and recommendations for changing or improving it. Based on this goal, the evaluation was designed to determine how the characteristics of the student, teacher, setting, and courseware combine to influence student performance. In addition, concerns about the costs of implementing the IST program in the 1980-1981 pilot testing were addressed. Data for the evaluation included pre-course and post-course tests, monthly student progress reports, site visit reports submitted by regional supervisors and members of the evaluation team, Alaska Statewide Achievement Test (ASAT) scores, student and teacher personality inventories, student and teacher attitude surveys, teacher training evaluation reports, course design analyses, and student microcomputer performance results. Data from this variety of sources permitted a more complete analysis of the IST program.

WHERE WERE THE IST COURSES PILOT TESTED?

Twenty-five schools (304 students) provided data for the 1980-1981 IST evaluation. These schools, all of which volunteered to participate in the pilot testing, constituted a cross section of the rural Alaskan schools for which IST is intended. Participating sites typically purchased the needed microcomputer equipment, paid for teacher travel to training sessions, and agreed to provide data required for the evaluation of the courses. The pilot test sites represented a wide range of rural settings in which the IST courses were implemented. As indicated in Table 1, the pilot test schools were located throughout the State of Alaska. A typical school was located in a rural community with a population of less than 300 people. Most schools in the pilot testing were Regional Education Attendance Area (REAA) schools, and the typical student-to-teacher ratio was 11 + 1. A local power company typically provided the electric power to the schools and most school children had parents who had not completed high school.

TABLE 1

IST PILOT TEST SITE CHARACTERISTICS

(NUMBER OF SITES = 25)

		PERCENT
SITE LOCATION:	Southeastern Region	24
	Southcentral Region	44
	Northern Region	32
TYPE OF SCHOOL:	REAA	64
	Borough	36
TYPICAL EDUCATIONAL LEVEL OF PARENTS:	Both parents completed high school	28
	Only one parent completed high school	20
	Neither parent completed high school	52
POWER SOURCE:	Local Power Company	50
	Gas or Diesel Generator	33
	Both of these sources	17

	MEDIAN	MINIMUM	MAXIMUM
Community Population:	255	93	950
Number of Students in School:	50	7	189
Number of Teachers at School:	3	1	20
Student-Teacher Ratio:	11:1	4:1	21:1

HOW RELIABLE WAS THE MICROCOMPUTER EQUIPMENT?

Relatively few serious problems were reported during the 1980-1981 pilot testing. Class time lost due to microcomputer hardware problems averaged about two days per month per site. Considering the environmental conditions and prior experience of personnel at the sites, the microcomputer equipment performed exceptionally well. The breakdown of equipment, therefore, is a relatively minor concern in the future implementation and effectiveness of the IST program.

An IST student working on a microcomputer activity in a rural Alaskan school.

WHAT WERE THE IST TEACHERS LIKE?

Thirty-nine teachers participated in the IST pilot testing. As shown in Table 2 these teachers usually supervised one or two IST courses, with an enrollment of about 5 to 7 students per course. The teachers averaged five years teaching experience. They typically had a bachelor's degree in Social Studies or Education. Also, most teachers felt their prior experiences had prepared them to perform two important functions of an IST teacher: 1) the maintenance of student performance records, and 2) the management of student learning in a setting where several different activities are occurring simultaneously in the classroom. The majority of the teachers, however, had no prior experience in the classroom use of audio cassette tapes or computers.

An analysis of the relationship between teacher characteristics and student performance was conducted in the evaluation of the pilot testing. Student performance was found to be significantly better in the IST courses supervised by teachers who felt their prior experience had prepared them to manage student learning when several different activities are occurring simultaneously in the classroom and to use audio tapes in the classroom. Other teacher characteristics, such as years teaching experience, academic degree, academic area of specialization, familiarity with instructional computer programming, and prior experience in the classroom use of computers, generally were not significantly related to student performance.

TABLE 2

IST PILOT TEST TEACHER CHARACTERISTICS

(NUMBER OF TEACHERS = 39)

		PERCENT
Number of IST Courses Supervised:	One	36
	Two	31
	Three	11
	Four	22
Highest Degree Received:	High School	6
	Bachelor's	64
	Master's or Doctorate	30
Major Area of Study:	Social Studies	28
	Education	24
	Language/English	14
	Biology	14
	Mathematics	7
	Social Science	7
	Administration	7
Prior Education Training and Experience in:	Classroom use of:	
	Audio Cassette Tapes	48
	Computers	30
	Maintaining Student Records of performance	73
	Managing student learning when several activities are occurring simultaneously in the classroom	85
	Writing computer programs for instruction	12

	MEDIAN	MINIMUM	MAXIMUM
Years Teaching Experience:	5	1	18

WHAT TYPE OF SPECIAL TRAINING AND ASSISTANCE DID THE IST TEACHERS RECEIVE?

Most IST teachers attended a three-day pre-service training workshop prior to beginning the IST courses in their schools. In this workshop the teachers were introduced to the IST program, its courseware, media components, and procedures. The teacher guides were presented and discussed, and each teacher had "hands-on" experience with the first few lessons in each course. The teachers practiced the setting-up, operation, and management of the microcomputer, as well as procedures for preventing and solving microcomputer problems. In addition, the roles and responsibilities of the teacher in the IST program were covered.

A midyear meeting for IST teachers was held in January, 1931 in Anchorage. This two-day meeting brought the teachers together to share their IST experiences with other teachers and with the representatives of the Alaska Department of Education. Successful strategies and problem areas concerning implementation of the IST courses were identified and discussed, with solutions recommended. Additional "hands-on" IST training and demonstrations were provided.

In addition to the two meetings, each pilot test site was visited twice by IST support staff from DOE. The initial visit (of two to three days) occurred early in the school year and served the purpose of assisting with the implementation of IST in the classroom. The primary purposes of the second site visit were to observe the operation of the IST courses in the schools and to assist teachers with any problems they were having.

The training and assistance received by IST supervising teachers was found to be essential to the successful introduction and implementation of the IST courses. No teacher considered the training received to be so basic that it was not worthwhile, but neither did any teacher consider the amount of training required to operate the IST courses to be too much. Fifty-three percent of the teachers considered the amount of training to be reasonable but demanding; 47 percent considered it to be easily accomplished.

Teacher training and assistance will be more efficient and cost-effective in the future. As a result of the experience gained by DOE during the pilot testing, initial training sessions are now conducted by DOE at several relatively small regional meetings rather than one large statewide meeting and a telecommunications network has been set up through which teachers can contact other teachers or DOE representatives for assistance with IST problems. Additionally, improved teacher guides are now available which include helpful hints from experienced IST teachers.

IST students completing a written course assignment.

HOW DID THE TEACHERS IMPLEMENT THE IST COURSES AT THEIR SCHOOLS?

Classroom Management - The IST program allows for some flexibility in classroom management procedures. No single classroom management model seemed to be most effective. IST students in smaller schools usually worked on IST courses in the same classroom as other students working in non-IST courses. Such a classroom was often divided into areas serving distinct functions. One area was designed for group instruction, another area for individualized study, and a third area for placement of materials and equipment. The teacher typically stored all IST materials and equipment, and the students typically worked with the microcomputer and listened to the audio cassette tapes in the third area. The individualized reading and written work required of the IST students was completed in the area set aside for individualized study.

IST students in the larger schools were usually set apart from other students working in non-IST courses. In some of these schools a single classroom was designated as the IST room. All IST course activities, including computer work, were conducted in this room, and all IST materials and equipment were located here. Non-IST activities occurred in the IST room at times during the school day, but never simultaneously with IST activities. In other large schools IST courses were conducted in several classrooms during specified periods in the school day. The IST materials were located in each of the classrooms. The IST equipment, particularly the microcomputer and its associated materials, was located and used in a central location such as a library or learning resource center.

Teacher Supervision - The best model for teacher supervision of the IST courses was to have the teacher in the same classroom as the students. Having a teacher available to provide IST students with assistance when needed was an important factor in the successful implementation of the courses. The students, however, did not need constant supervision. Most teachers attended to other responsibilities, such as assisting non-IST students, correcting written work/tests, and record-keeping, while they were supervising the IST students.

Use of Aides - Implementation of the IST courses did not necessarily increase the need for aides at the 1980-1981 pilot test sites. The use of aides in assisting IST supervising teachers was dependent upon the situation at each school and did not seem to significantly impact on the successful implementation of the IST courses. Typically, aides were used at schools to assist teachers in managing IST and non-IST classroom activities, in maintaining records of student performance, and in supervising microcomputer operations where the computer was located in an area outside the classroom in which other IST activities occurred.

Use of Microcomputer - Most teachers developed some system to specify the order in which students were to use the microcomputer. Although the systems typically resulted in some students not having access to a computer at the very moment they were ready to use it, rarely did students have to waste time while waiting their turn. The flexibility in the structure of the IST courses usually permitted students to work on other IST activities while they waited. The most efficient student-to-computer ratio was found to be about six IST students per computer per class period. This ratio maximized computer use during a typical class period and minimized the waiting time

experienced by students.

The location of the microcomputer in the schools somewhat influenced its effectiveness. The computer was most effective when it was located in an isolated area in the same classroom in which the students performed their other IST activities. In this location the computer was easily accessible to the students, the teacher was readily available to assist the students, and the distractions near the computer were minimal. Locating the computer in this location was not possible at some schools due to local conditions. Most schools in which the computer had to be located outside the classroom had aides available to assist students using it. Some schools that offered several IST courses and scheduled them in several different classrooms attempted to locate their computer in the "most effective" area by moving it from room to room as needed during the school day. Although few computer malfunctions were actually experienced during the 1980-1981 pilot testing, the constant movement of the computer equipment increased the likelihood of malfunctions.

Storage of IST Materials - A comprehensive set of materials comes with each IST course. The complete IST Alaska History course, for example, has five large loose-leaf-like teacher guides, five student manuals for each student, cassette tapes, selected reading materials, and computer diskettes. The manner in which these materials were organized affected their accessibility to the students. Accessibility was greatly enhanced by placing the materials presently being used by the students in an organized manner on easily accessible bookshelves and storing the rest of the materials out of the way, in a secure, dry, and cool place until needed by a student.

WHAT WERE THE TEACHERS' ATTITUDES TOWARDS IST?

Table 3 indicates that nearly 75 percent of the teachers considered the IST courses to be well-designed for their classrooms. Also, more than 66 percent viewed the amount of work required to manage and operate the IST courses as generally less than that required when using traditional courses; the other teachers viewed the IST courses as requiring a reasonable amount of work. No teacher considered the courses to be "too much work" or "not worth the bother".

Table 3 also indicates that most teachers reported a preference for using the whole courses, rather than parts of them. All teachers who would prefer to use parts reported that they would like to use the computerized instruction and IST workbooks and exercises. The teachers generally felt that the microcomputer activities and textbooks were the components of the IST courses most compatible with their teaching styles. Audio cassette tapes and projects were considered the least compatible. The computer activities were viewed by the teachers as the most interesting component of the courses for the students, while the supplemental activities were viewed as the least interesting. Overall, the data suggested that the supervising teachers were generally very satisfied with the design and usefulness of the IST courses.

TABLE 3

PILOT TEST TEACHERS' ATTITUDES TOWARDS IST

(NUMBER OF TEACHERS = 39)

	PERCENT OF TEACHERS IN AGREEMENT
The IST courses are well designed to be used and managed in a classroom like mine.	74
Amount of work required of an IST teacher:	
a) too much	0
b) more than a traditional course	35
c) less than a traditional course	65
d) not worth the bother	0
I would prefer to use the whole IST courses as they now exist.	59
Of those teachers who would prefer to use only parts of the IST courses, the parts they preferred to use were:	
a) computerized instruction	100
b) IST workbook and exercises	100
c) audio cassette tapes	57
d) published materials	43
e) outside readings	7

IST components compatible with teaching styles:		
	MOST COMPATIBLE	Computer Exercises
	LEAST COMPATIBLE	Audio Cassette Tapes
IST components producing the greatest interest for students as viewed by the teachers:		
	MOST INTERESTING	Computer Exercises
	LEAST INTERESTING	Supplementary Activities

WHAT WERE THE IST PILOT TEST STUDENTS LIKE?

A total of 304 students enrolled in one or more of the IST courses during the 1980-1981 pilot test. As indicated in Table 4, these students were mostly Eskimo, with the Aleut, Tlingit, and Athabascan native groups also represented. The typical students enrolled in the English, Developmental Reading, and General Math courses were 15 or 16 year old, ninth grade males. The typical student enrolled in the Alaska History course was a 17 year old, eleventh grade male. The general academic ability of the IST students who participated in the 1980-1981 pilot testing, prior to their enrollment in the IST courses, was typical of rural Alaskan ninth and tenth grade students (as measured by the Alaska Statewide Achievement Test - ASAT). The ASAT results are summarized in Table 5.

TABLE 4

IST PILOT TEST STUDENT CHARACTERISTICS

	ALL COURSES	ALASKA HISTORY	ENGLISH	DEVELOPMENTAL READING	GENERAL MATH
Number of Students	304	75	59	117	116
Age: Median	16	17	15	16	16
Minimum	10	14	13	10	12
Maximum	20	20	20	20	19
Grade Level: Median	9	11	9	9	9
Minimum	5	6	8	5	7
Maximum	12	12	12	12	12

	PERCENT
Native Group Affiliation:	
Eskimo	58
Aleut	16
Tlingit	11
Athabascan	10
Non-Native	5
Gender: Male	64
Female	36

TABLE 5

ALASKA STATEWIDE ACHIEVEMENT TEST (ASAT) RESULTS

	NUMBER OF ITEMS	ASAT MEAN SCORES (% CORRECT)		
		ASAT 1979 STANDARDIZATION GROUP		
		ALL STUDENTS	RURAL STUDENTS	IST STUDENTS
NUMBER OF STUDENTS		1440	158	296
MATH COMPUTATION	36	64	42	50
MATH APPLICATION	66	61	44	50
READING COMPREHENSION	45	67	42	53
READING WORD IDENTIFICATION	39	74	62	72

A typical IST classroom setting in a small rural Alaskan school showing the location of each IST component of instruction: the printed materials (on which the students are working at their desks), the microcomputer, the audio cassette tape equipment, and the teacher.

WHAT PORTION OF AN IST COURSE WILL A TYPICAL STUDENT COMPLETE IN AN ACADEMIC YEAR?

The typical English, Developmental Reading, and General Math students progressed through their courses in the sequence established in the design of the courses. The typical Alaska History student, however, skipped Unit II (Alaska's Native Groups) because most supervising teachers felt its content would be more appropriately presented after Unit IV.

As indicated in Table 6, the typical student could be expected to complete three of the five units in the Alaska History course, 10 of the 12 units in the English course, 30 of the 36 lessons in the Developmental Reading course, and 43 of the 92 lessons in the General Math course. These data suggest that: a) the faster students could complete the entire English and Developmental Reading courses, and most students could complete approximately 83 percent of these courses in one academic year; b) most students could be expected to complete the Alaska History course in one and one-half academic years; and c) most students would need two academic years to complete the General Math course. These projections are based on the progress reported by students who participated in the 1980-1981 pilot testing, with an effective academic year considered as 170-175 school days.

TABLE 6

IST COURSE COMPLETION INFORMATION

IST COURSE	TOTAL COURSE	PORTION EXPECTED TO BE COMPLETED IN ONE ACADEMIC YEAR	% OF TOTAL COURSE EXPECTED TO BE COMPLETED IN ONE YEAR
ALASKA HISTORY	5 Units	Units I, III, IV	64
ENGLISH	12 Units	Units I thru X	83
DEVELOPMENTAL READING	36 Lessons	Lessons 1 thru 30	83
GENERAL MATH	92 Lessons	Lessons 1 thru 43	47

WHAT WERE THE STUDENTS ATTITUDES TOWARDS IST?

Table 7 indicates that nearly all students considered the microcomputer exercises interesting; about 59 percent found the reading and written components of the IST courses interesting; and 49 percent considered the audio cassette tapes interesting. The audio cassette tapes were the only IST media component considered boring by a significant percent of the students. Most students reported the difficulty level of the courses to be "about right" for them. Also, half of the students indicated they almost always understood what needed to be done and could work by themselves on their courses; no students indicated they rarely or never knew what to do and almost always had to get help from their teacher. These data suggest that: a) most students find learning using the IST media components of instruction an interesting experience and b) the instructions and procedures in the IST courses are sufficient for most students to have confidence in their ability to progress through the courses on their own.

TABLE 7

PILOT TEST STUDENT ATTITUDES TOWARDS IST

(NUMBER OF STUDENTS = 49)

	PERCENT
The Computer exercises in the IST courses are:	
(a) interesting	92
(b) of little interest	8
(c) boring	0
The audio cassette tapes in the IST courses are:	
(a) interesting	49
(b) of little interest	24
(c) boring	27
The reading and written work in the IST courses are:	
(a) interesting	59
(b) of little interest	35
(c) boring	6
Clarity of IST course instructions and need for teacher assistance:	
(a) almost always understand what needs to be done and can work by myself	50
(b) sometimes do not understand what needs to be done and need my teacher's help	50
(c) rarely or never know what needs to be done and must get my teacher's help	0
IST course difficulty:	
(a) easy	22
(b) about right	73
(c) difficult	5

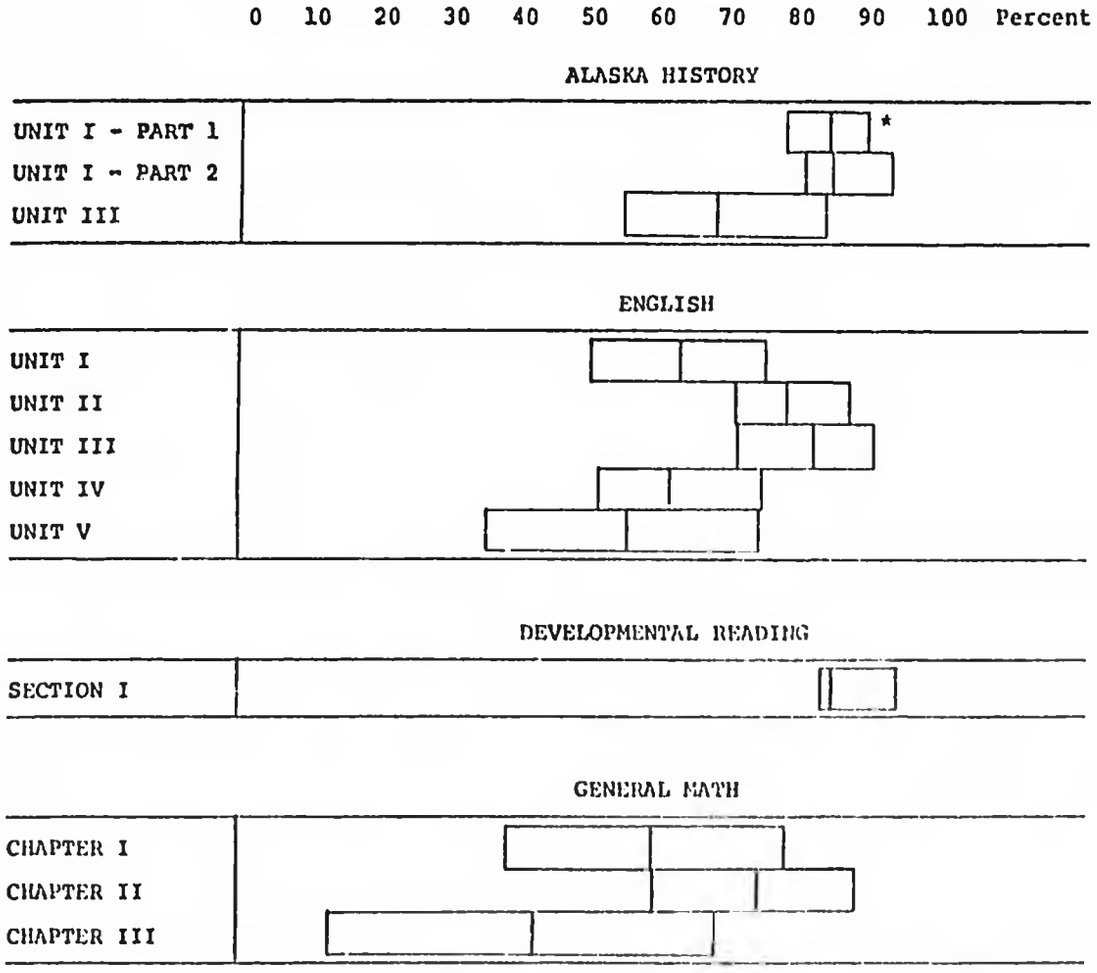
HOW MUCH DID THE STUDENTS LEARN?

Student learning in the IST courses was assessed using unit, section, and chapter computer tests and post-course paper-and-pencil tests.

Computer Tests - As indicated in Figure 1, the mean performance of students was at least 60 percent on all computer tests completed by at least 25 students, except Unit V in the English course and Chapter III in the General Math course. The students performed at an 85 percent mastery level on the Alaska History Unit I - Parts 1 and 2 and Developmental Reading Section I computer tests.

FIGURE 1

COMPUTER TEST PERFORMANCE RESULTS



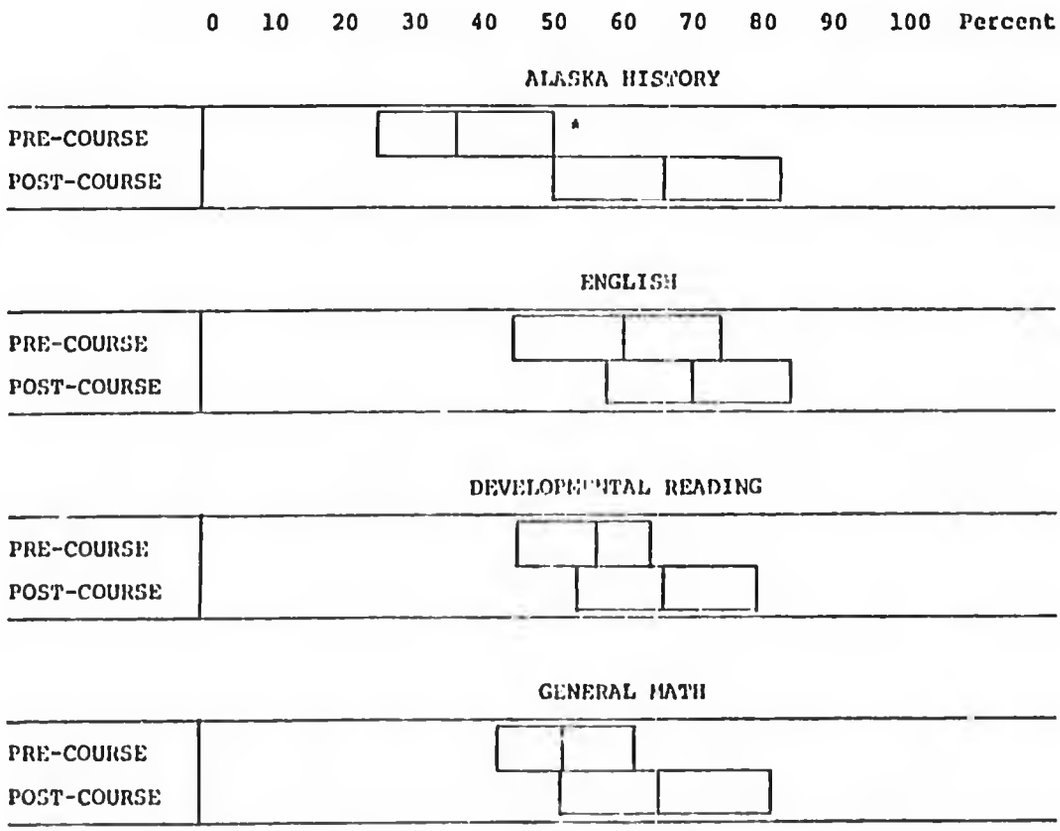
* The bar represents the range of scores for the middle 50 percent of students. The dark line within the bar represents the mean score for all students.

Post-course Tests - The students' pre-course and post-course knowledge of course content was measured by paper-and-pencil tests. The students' test scores were based only on those items related to the portions of the courses they completed. However, items on the Developmental Reading test were not related to any particular portion of the course, thus students' test scores were based on all questions on this test. As indicated in Figure 2, the students, on the average, were generally unfamiliar with the content of the Alaska History course, and somewhat familiar with the content of the English, Developmental Reading, and General Math courses prior to their enrollment in these courses. At the end of the school year, the mean test scores increased to between 60 percent and 70 percent in all four courses.

The most significant factor in overall student performance in all four IST courses was the students' prior knowledge of the course content. After taking into consideration this pre-course knowledge, students' pre-course math and reading skills (as measured by the subtests of the Alaska Statewide Achievement Test) were also significantly related to student performance in all four courses. Student age and grade level did not significantly relate to student performance in any of the IST courses.

FIGURE 2

PRE-COURSE AND POST-COURSE TEST PERFORMANCE RESULTS



* The bar represents the range of scores for the middle 50 percent of students. The dark line within the bar represents the mean score for all students.

WHAT ARE THE COSTS FOR THE IST COURSES?

As shown in Table 8, the total cost per-student in the 1980-1981 pilot testing averaged $1620 for each complete course. The per-student cost to the Alaska Department of Education made up the majority of the total costs, averaging $1470 per course. The average per-student cost to the sites was $150 per course. These costs include all print, audio cassette tapes, and microcomputer materials and equipment.

Most of the DOE per-student costs in the 1980-1981 pilot testing were for course development. These are one-time costs, thus as the number of students using the IST courses increases the per-student costs to DOE substantially decreases, while the per-student costs to the sites increases minimally. An example of the effect on costs as enrollment in the courses increases is also presented in Table 8. The DOE per-student cost estimates, based on six students per course at each of 100 sites, reduce to an average of $207 per course while the average site per-student cost estimates increase to only $209 per course. DOE costs should continue to decline. The costs to sites, however, will probably rise somewhat due to inflationary increases in costs for equipment and printing. The teacher training costs to sites will likely decrease in the future, however, due to more efficient training procedures and a reduction in the number of teachers needing training.

TABLE 8

PER-STUDENT COSTS FOR EACH COMPLETE IST COURSE

(Based on 1980-1981 costs)

COURSE	NUMBER ENROLLED	COST TO DOE*	COST TO SITE	TOTALS
COST FOR 1980-1981 ENROLLEES				
ALASKA HISTORY	75	1,751	202	1,953
ENGLISH	59	2,027	130	2,157
DEVELOPMENTAL READING	117	1,047	141	1,188
GENERAL MATH	116	1,056	127	1,183
COST ESTIMATES FOR 100 SITES WITH 6 STUDENTS PER SITE				
ALASKA HISTORY	600	219	259	478
ENGLISH	600	199	182	382
DEVELOPMENTAL READING	600	204	201	405
GENERAL MATH	600	204	195	399

* Alaska Department of Education

Using the 1980-1981 pilot test costs, the costs of offering the IST courses can be compared with offering similar courses taught by teachers qualified to teach in the appropriate secondary level content areas and using the IST print materials. Conservatively, the hiring of 20 additional teachers would have been necessary to offer similar courses to the 1980-1981 pilot test students, if the IST courses were not available. Taking into consideration the costs for 20 additional teachers, offering the complete IST courses was nearly one-half the cost of offering similar courses with just the print materials and the additional teachers. This estimate cannot be applied to any particular site since some sites would not require additional teachers, while others would need two or more. However, the overall reduction in costs from implementation of the IST courses would probably be real at most sites.

WHAT CAN BE CONCLUDED ABOUT THE IST PROGRAM?

Major conclusions drawn from the evaluation of the 1980-1981 pilot testing of the IST program are:

1. The IST courses can be successfully implemented in settings quite different from each other, comprised of students with different cultural backgrounds, and staffed by professionals who differ in educational background, training, and philosophy.

2. The microcomputer equipment is very reliable considering the relative lack of computer expertise of the teachers and students using the equipment, and the environmental conditions under which it was used in the pilot test.

3. The IST program is quite versatile. The courses can effectively be adapted to serve several different functions in a school and can be successfully implemented in several different ways.

4. Teachers are important to the successful implementation of the IST courses. They are needed to oversee student progress and provide assistance when needed. Teachers, however, need not provide constant supervision to the IST students. They can typically engage in other activities, such as assisting non-IST students or record-keeping, during an IST class period.

5. Some special training and assistance is needed for teachers to supervise the IST courses. The required training and assistance, however, is not considered excessive, with teachers able to successfully implement the IST courses after a single three-day workshop and a personal visit by a supervisor early in the school year.

6. The teachers generally reported a positive attitude toward the IST courses. No teacher considered the courses "too much work" or "not worth the bother".

7. Each of the four IST courses constitutes more than one full academic year of instruction for most students, although very fast students may finish within one year. On the average, about 83 percent of the English and Developmental Reading courses could be completed in one academic year, while 64 percent of the Alaska History course and 47 percent of the General Math course could typically be completed in one year.

8. The IST students generally reported a positive attitude towards the IST courses, particularly the microcomputer component of instruction.

9. The IST students showed significant gains in performance on the concepts and skills studied in the courses.

10. The total per-student cost of developing and implementing the IST courses in the 1980-1981 pilot testing was about one-half the cost of offering comparable courses taught by teachers certified in the course content areas. This imbalance in per-student cost will grow even larger in the future as more students use the IST program.

11. Although not directly evaluated, a reasonable assumption is that, not only are the teachers and students directly involved in the IST courses benefiting from their use, but non-IST students are also benefiting from the added personal attention the teachers are able to provide them.

WHAT IS THE FUTURE OF THE IST PROGRAM?

The pilot testing of the IST courses has demonstrated the efficacy of the IST approach to secondary education in Alaska. Currently about 90 rural Alaskan schools are using at least one of the four pilot tested IST courses. It is expected that the number of schools will increase to more than 100 during the 1982-1983 school year.

In addition to the four pilot tested courses, two full-year IST courses, General Science and U.S. History, have been developed and are being pilot tested during the 1981-1982 school year in about 10 rural Alaskan schools. The General Science course was developed around the Holt text, General Science. It consists of five units: I. Matter, Atoms, and Chemical Changes; II. How Does Energy Affect Matter?; III. How Do We Make and Use Energy?; IV. How Is Our Planet Changing?; and V. What Makes Up Our Living World?. The aims of this course are to help students: a) understand the basic principles and vocabulary of science; and b) learn the basic ideas and scientific discoveries that explain many everyday occurrences.

The U.S. History course was developed around the Scott, Foresman text, America! America!. It consists of 13 units: the first five units cover U.S. History from the first American through 1850; the last eight units cover the period immediately preceding the Civil War through the 1970's. The aim of this course is to help students learn about America's past, present, and future by studying the events, issues, and people of the past.

Besides the six full-year IST courses currently available, two one-semester courses, Consumer Education and Health Education, are now being developed. They are expected to be available for the 1982-1983 school year. Both courses will be developed in a stand-alone modular format. The primary focus of the Consumer Education course is the development of a variety of skills and attitudes for successful management of personal and financial resources. The Health Education course will stress the inter-relationship of physical, emotional, and environmental health.