Educational Data Processing

1972-1977

T H E I S S U E :

Formation of Regional Computer Cooperatives

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INTRODUCTION

Many efforts have been extended in Iowa during the past decade to make the benefits of the computer available to the schools of the state. These efforts have been evident in the activities of the State Department of Public Instruction, the Iowa Educational Information Center, area schools, intermediate education agencies, county offices and local school districts. Some of these activities have involved all of the school districts in Iowa. Others have not, and only involve the larger school districts or where federal and state funds have been provided to support vocational-technical education programs or to establish research and development centers for administrative services.

In addition, as the computer continues to make its technical, social, and economic impact on our society, the vocational-technical and arts and sciences programs of our area schools recognize the community's needs for the education and training of students in data processing. These needs dictate the provision of computer related education courses in our educational programs.

Both of these educational aims - the provision of adequate vocational education and educational administrative services - are hampered by the relatively high cost of data processing equipment and the scarcity of experienced educational data processing personnel.

An increasing interest is evident in the provision of data processing services to local school districts by an educational service agency. The State Department of Public Instruction believes that this is the most economical way to extend data processing services to all of the schools serving grades K-14, regardless of size or location.

In order to accelerate the acquisition of equipment and the extension of vocational and technical education in data processing, to provide adequate data processing services to the intermediate and local school districts in Iowa and to provide nonvocational computer instruction, it would be well to consider that the needs of these agencies responsible could most economically and expeditiously be met if they would share in the cost and use of the computer center.

Computer related education of educational data processing is usually conceived of in two broad general areas: (1) instruction and (2) administrative.

The former usually refers to activities such as:

(a) vocational-technical education in the areas of computer programmer, programmer analyst, and data processing management,

(b) the career training in the operation and maintenance of data processing equipment, and

(c) the use of data processing equipment in the instructional process such as CAI (computer assisted instruction) and as a tool in mathematics, science and/or research.

The second area of educational data processing involves the use of data processing equipment and procedures in:

(a) administrative clerical services in financial, property and payroll accounting, pupil accounting, student scheduling, educational media accounting and curriculum accounting, and

(b) providing the school administrator with information and tools of such a sophisticated nature for use in better school management.

Historically, there has been little cooperation between these two broad areas in terms of using the same equipment and/or personnel to accomplish their specific goals. Advancements in computer design, terminals and software packages have been realized in the last few years that eleminate some of the previous problems in sharing equipment. Experience in cooperative educational data processing endeavors has shown that the two functions can be exercised with the same personnel and equipment.

The purpose of this paper is to outline some of the conditions that should exist as well as the critical issues that must be considered in order to effectively begin and operate an educational data processing system as defined in the Iowa Plan for the Statewide Use of the Computer for Education.

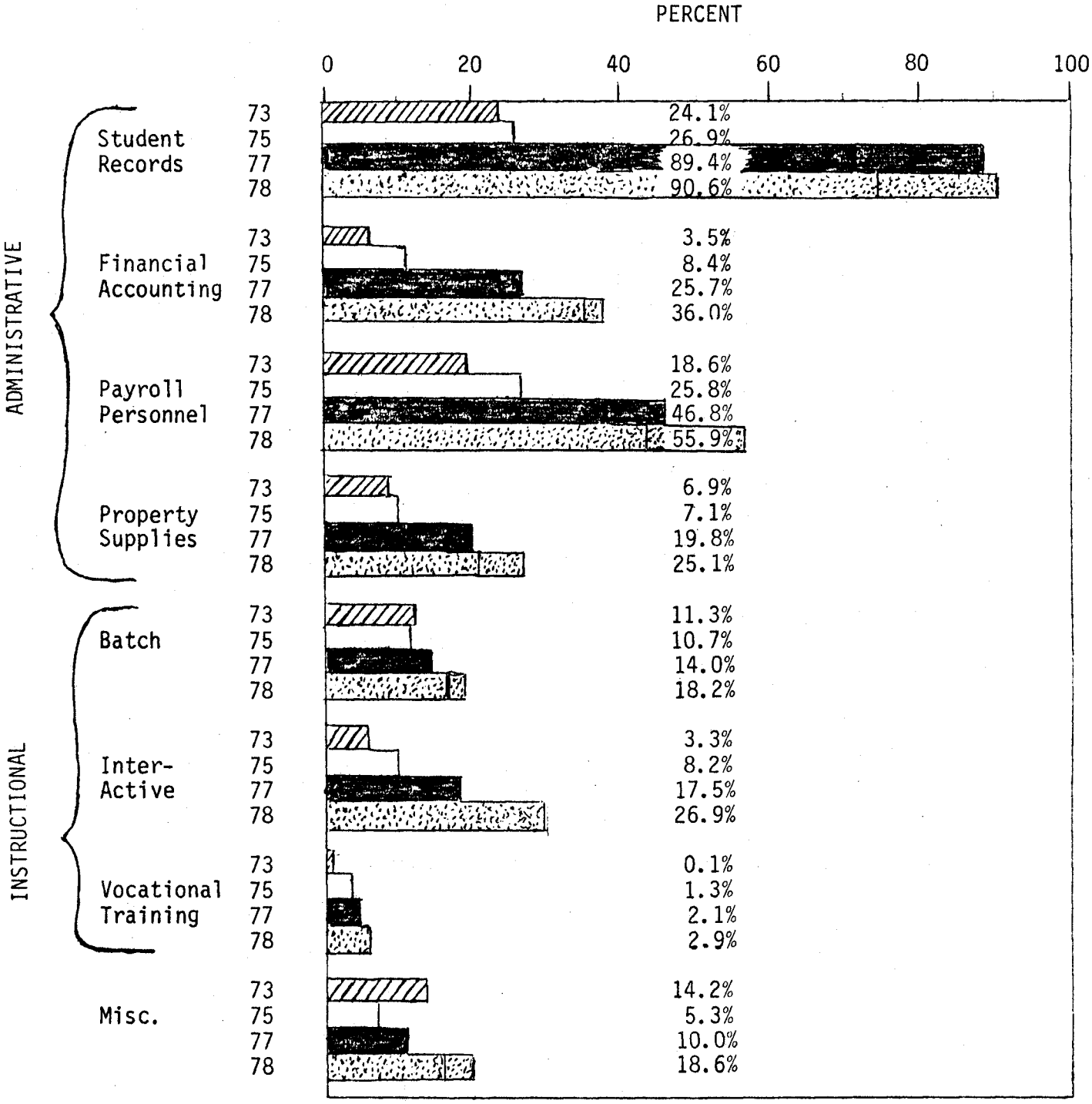
COMPUTER SERVICES - Today

Applications Used

Budget Comparison

Equipment Expenditures

Percent of public school districts receiving computer services for fiscal years 1973, 1975, 1977 and 1978



*Reported November 1, 1976, Annual Program Plans

BUDGET COMPARISON
For Educational Data Processing

Area	Total Agencies	Total Students	Actual 1972	Actual 1974	Actual 1976	Current 1977	Budgeted 1978
One	29	47,526	35,551	189,149	301,072	400,231	515,874
Two	31	30,325	38,415	182,632	478,662	654,449	997,776
Three	30	18,756	59,330	80,181	167,404	193,250	314,029
Four	23	14,196	8,658	13,066	34,876	65,609	80,900
Five	48	36,948	37,616	89,312	165,714	241,890	268,929
Six	24	24,731	47,207	45,093	47,586	177,607	200,844
Seven	28	46,052	59,579	69,223	42,424	48,335	52,465
9	25	64,590	39,555	394,651	466,920	583,650	626,500
IX	1	2,831	376,161	272,886	79,768	64,212	83,402
10	40	69,920	605,045	649,939	882,188	821,603	898,367
X	1	4,333	293,117	310,058	290,539	298,266	387,123
Eleven	65	123,086	533,253	610,259	897,916	1,030,441	1,258,844
Twelve	32	38,314	170,797	107,739	169,012	211,286	1,090,365
13	34	39,864	55,797	108,061	136,976	105,086	113,568
XIII	1	2,635	217,041	148,843	57,274	90,456	135,214
14	23	14,927	5,961	5,484	N.A.	38,535	36,360
XIV	1	707	1,429	7,060	8,587	10,426	11,468
Fifteen	28	32,059	141,183	115,716	137,711	183,486	201,098
Sixteen	15	24,567	34,014	42,343	60,546	191,190	144,140
TOTAL	479	636,367	2,759,709	3,441,695	4,892,095	5,410,008	7,418,266

*Reported November 1, 1976, Annual Program Plans

Educational Data Processing
479 Educational Agencies
LEA * AEA * MASC

Contracted Services in Fiscal Year 1977		$4,339,666
*Private vendors serving Iowa Schools receive = 18%	or	$ 658,910
*15 private vendors are identified as serving Iowa Schools		
*12 of these vendors serve a dozen schools or less		
*Major Private Vendors:		
Westing House Learning Corporation	$302,594	
Network Data	$ 97,315	
*Public vendors serving Iowa Schools receive = 82%	or	$3,680,756
*20 public vendors are identified as serving Iowa Schools		
*7 of these public vendors serve a dozen schools or less		
*Major Public Vendors:		
Mid-Iowa	$1,002,164	
AEA 9	$ 596,890	
AEA 10	$ 217,804	
SUI	$ 186,689	
MASC XV	$ 147,038	
AEA 13	$ 87,587	
AEA 12	$ 54,311	
UNI	$ 52,066	
ISU	$ 42,965	
AEA 1	31,225	

*Reported November 1, 1976, Annual Program Plans

EXPENDITURES

Size of School District

Budgeted Expenditures for computer services in Iowa school systems by enrollment categories and for public, AEA and Area Schools.*

ENROLLMENT CATEGORY	NUMBER OF LOCAL EDUCATIONAL AGENCIES TOTAL	NUMBER SERVED	CURRENT FY 1977	BUDGETED FY 1978
145-499 (K-12)	154	130	$ 89,303	$ 149,661
500-749 (K-12)	91	89	97,411	171,324
750-999 (K-12)	74	74	157,834	221,309
1000-1499 (K-12)	46	46	141,590	193,387
1500-1999 (K-12)	23	23	145,371	181,086
2000-2999 (K-12)	32	31	285,190	326,594
3000-ABOVE (K-12)	29	29	1,266,004	1,498,031
Area Educ. Agencies	15	15	982,453	1,021,542
Merged Area Schools	15	14	1,174,510	1,566,325
TOTALS	479	451	$4,339,666	$5,329,259

*Reported November 1, 1976, Annual Program Plan.

RECOMMENDATION

Now

Next Steps

RECOMMENDATION

NOW: In order to coordinate expenditures of available funds to acquire compatible equipment and to begin implementation of the Iowa Plan for the Statewide Use of the Computer for Education, the staff of the Department of Public Instruction suggest the State Advisory Committee on Educational Data Processing recommend to the State Board of Public Instruction that no action be taken at this time on approving or disapproving any expenditures for fiscal year 1977 and 1978 for new, additional and replacement of major data processing equipment until one or more regional computer centers are identified and a network defined. All other budget items are recommended including funds identified for replacement equipment totaling less than $5,000.00.

ACTION

On February 18, the State Board of Public Instruction voted to accept the recommendation on taking no action at this time on approving or disapproving any expenditures for fiscal year 1977 and 1978 for new, additional or replacement of major data processing equipment until one or more regional computer centers are identified and a network defined. All other budget items were approved including funds identified for replacement equipment totaling less than $5,000.

As a result, a meeting has been scheduled in March with educational administrators for the purpose of reviewing the action of the State Board of Public Instruction and to assist in formulation of one or more regional computer center consortiums.

NEXT STEPS

THEN . . . Based upon the decision of the State Board of Public Instruction, the staff of the Department of Public Instruction with the support of the State Advisory Committee on Educational Data Processing will encourage the available equipment monies be allocated to implement the Iowa Plan for the Statewide Use of the Computer for Education.

The priorities would be:

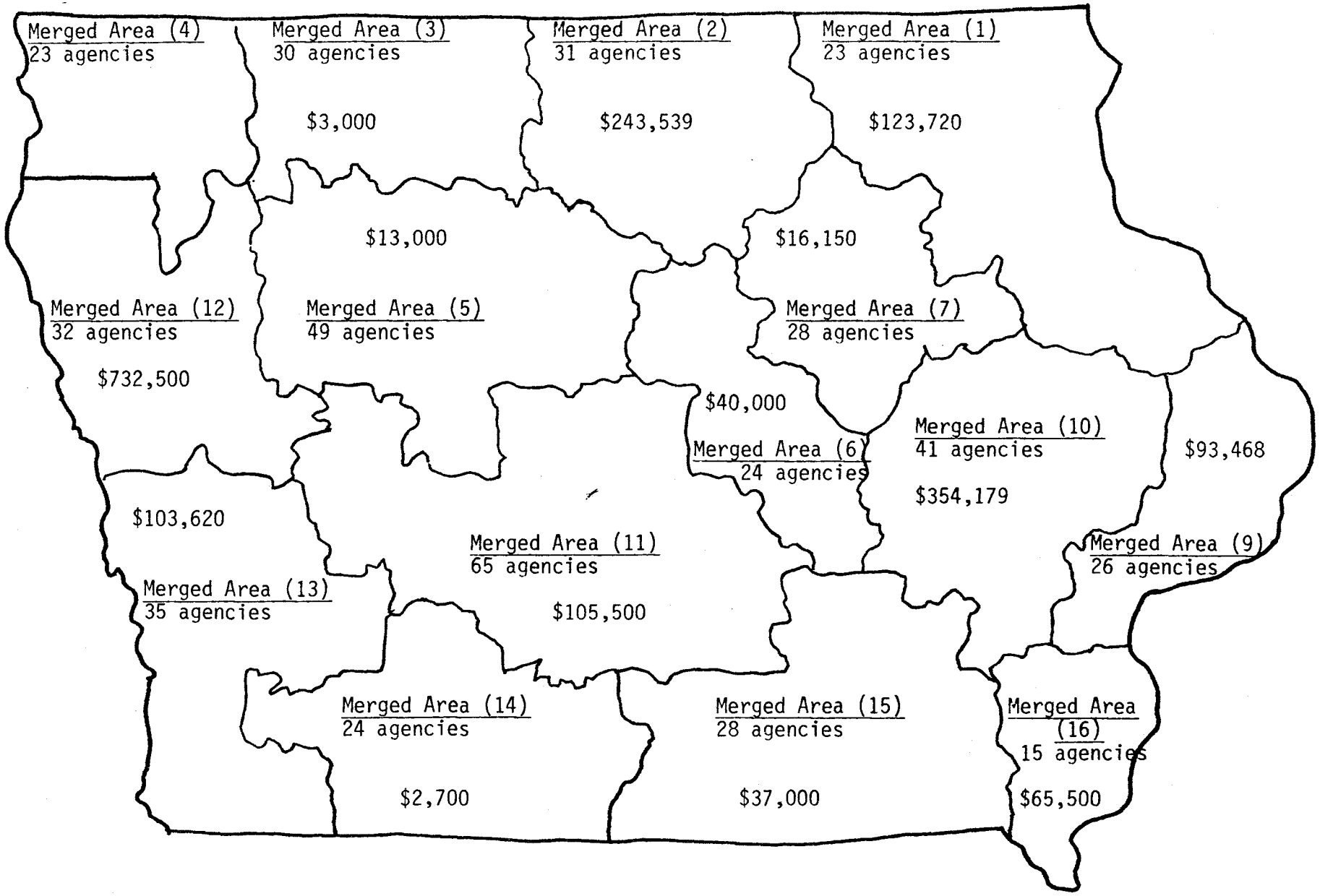
1. Participate in formulating one or more Regional Centers.
   - *Computer Center Consortiums
     - Formal Agreement
       - User Advisory Group
       - Site
       - Funding
     - Inservice
       - Area Service/Delivery Centers
       - Data Processing Equipment Alternatives
     - Plan for Fiscal Year 1979-84
       - User Needs

   *Encumbrance of $1.00 per student will be required from each area to implement the Regional Computer Center to be returned in service.

2. Establish fifteen Area Service/Delivery Centers
   - *Formal Agreement
     - Site
     - Management
     - Funding
   - *Inservice
     - Teachers
     - Administrators
     - Board Members
   - *Plan for Fiscal Year 1979-80
     - User Needs
       - Administrative Services
       - Instructional Services
       - Career Education
         - Operators
         - Programmer
         - Systems Analyst
         - Related Courses
     - Data Processing Requirements
       - Volume
       - Specifications for Equipment
       - Procedures for Acquiring Equipment
       - Staff

   *Encumbrance of an additional $1.00 per student will be requested to implement the Area Service/Delivery Center to be returned in service from the area center or the designated Regional Computer Center.

EXPENDITURES
For Equipment In FY 1977 and 1978



*Reported November 1, 1976, Annual Program Plans

EXPENDITURES
For Equipment In FY 1977 and 1978

Area	1977 Initial	1977 Additional	1977 Replacement	1977 Total Budget	1978 Initial	1978 Additional	1978 Replacement	1978 Total Budget
One	27,900	25,260	--	400,231	37,700	32,860	--	515,874
Two	65,044	4,050	7,192	654,449	146,253	11,000	10,000	997,756
Three	--	--	1,000	193,250	--	--	2,000	314,029
Four	--	--	--	65,609	--	--	--	80,900
Five	2,000	--	--	241,890	11,000	--	--	268,929
Six	30,000	--	--	177,607	--	10,000	--	200,844
Seven	650	--	--	48,335	2,500	13,000	--	52,465
9	--	38,468		583,650	--	50,000	5,000	626,500
IX	--	--	--	64,212	--	--	--	83,402
10	12,000	--	--	821,603	15,700	--	--	898,367
X	34,827	32,000	29,652	298,266	10,000	20,000	200,000	387,123
XI	--	16,000	--	1,030,441	--	16,000	--	1,258,844
Mid-Iowa	--	--	73,500	--	--		--	--
XII	9,000	--	--	211,286	96,000	2,500	625,000	1,090,365
13	--	--	--	105,086	--	--	--	113,568
XIII	5,000	--	24,660	90,456	21,500	20,000	32,460	135,214
14	1,200	--	--	38,535	1,500	--	--	36,360
XIV	--	--	--	10,426	--	--	--	11,468
Fifteen	12,000	10,000	--	183,486	--	15,000	--	201,098
Sixteen	60,000	--	500	191,190	--	5,000	--	144,140
TOTAL	259,621	125,778	136,504	5,410,008	342,153	195,360	874,460	7,418,266
		$521,903				$1,411,973		

*Reported November 1, 1976, Annual Program Plans

REGIONAL CENTERS - The Future

Commitments

Issues

I F

COMMITMENTS NEEDED TO ESTABLISH A REGIONAL EDUCATIONAL COMPUTER CENTER

1. Student Population

The student population to be served educationally and administratively should be of a size which will allow the center to effectively accommodate the program of each of the cooperating agencies. Based upon experience in other states, a student population of 275,000 would appear to provide an economical and efficient base.

2. Administrative Commitment

The support of the top administrators of the participating agencies (Superintendents and Boards of Education) must be evident and present in order for the center to operate effectively and efficiently. This support should be active rather than passive. An indifferent approach by the administration would result in the development of less than the full potential of the center and jeopardize the successful operation of the joint endeavor.

3. Demonstrated Interest and Support

Local districts, intermediate units, and the area schools should initiate cooperative activities in school information systems and vocational programs eliminating costly and time-consuming promotion and research activities.

4. Desire to Develop Compatible Systems

An added and greatly needed feature in educational information systems is that of compatibility with those of other educational agencies. A desire should be evident to use data processing procedures that are compatible with other area centers and schools as well as statewide and USOE systems.

5. Inservice Program

A strong program to provide inservice to Area Service /Delivery Center staff must be supported by the regional computer center. This program must provide an informed base of users who can effectively utilize the systems as well as participate in the planning of future services.

6. Availability of Physical Facilities

The facilities for housing the data processing installation could be available in an existing educational facility. The cost of converting esisting facilities to meet hardware (wiring, temperature, humidity, floor capacity, etc.) must be considered.

7. Willingness to Share Total Costs

The support of a data processing installation entails more than instructional costs and the cost of direct services to pupils. Cooperating agencies must exhibit a willingness to share administration, facility preparation and maintenance, and all other overhead costs. As a minimum, $1.00 per pupil each year should be committed to the regional computer center for operational planning [redacted]

8. Leadership Personnel Available

A data processing center needs a top administrator to assume overall responsibility of the success of the center. This person should have a background and understanding in vocational education as well as non-vocational instruction and administrative used of the computer so that he will appreciate the problems and possibilities as they are presented by the users and his staff. Provisions for the employment and support of a capable center administrator must be evident.

9. Willingness to Promote Uniform Practice

All agencies involved should make use of certain proven basic data processing procedures. This will obviate the need for a great deal of costly research and systems development and will permit a more rapid extension of services to the users.

10. Channels for Communication

Continuous communication must be maintained between agencies planning to utilize the center facilities.

CRITICAL ISSUES TO BE CONSIDERED IN ESTABLISHING A REGIONAL COMPUTER CENTER

1. What are the criteria for determining the need for one or more regional computer centers?

    - Size
    - Location
    - Variety of processing
    - Political
    - Legal
    - Distance from central site

2. Should participation in a regional computer arrangement be determined by direction or on a voluntary basis?

3. What should be the organizational concept for regional computer facilities?

    - State controlled
    - Consortium of participating institutions
    - Service center operated by a regional public institution
    - Service center operated by a commercial firm
    - Service center operated by a non-profit corporation controlled by users

4. What is the economic breakeven point for a shared facility and what criteria should be used to determine this?

    - Number of students
    - Number of institutions
    - Volume of processing

5. What method of funding should be used to support the shared facilities?

    - Direct funding by state
    - Operated as cost recovery activities where users support the total cost of the center
    - Line item funding for users
    - Non-designated funding for users

6. How can data communication requirements be met to serve remote users reliably and economically?

    - Commercial rates
    - GSA rates
    - State contract rates
    - State system

7. How should the geographical locations of the regional computer centers be determined?

    - Political
    - Present facilities
    - Size of users
    - Optimization of the data communication network

8. What are the mandatory and desirable characteristics of the regional computer center to make the concept work?

    - Organizational
    - Management control
    - Funding
    - Charge out policy
    - Operational control
    - Priorities

9. How should systems development be conducted for schools participating in a regional computer facility arrangement:

    - Centralized
    - Separate for each regional computer center
    - Separate for each service/delivery center
    - Other

10. Should all hardware and software in the network be procurred centrally? Are there greater risks in security of data and programs in a network than are acceptable?

11. What type computer network configurations can best serve all the computer services needs of schools (instructional support, administration, information retrieval, and research):

    - One large general purpose compter
    - More than one large special purpose computer
    - Combinations of large and small computers in an integrated network.

12. What are the disadvantages of participating in a shared computer arrangement?

    - Area service/delivery centers
    - Regional computer centers

13. If shared computer facility arrangements are not feasible or impossible, is it because of -

    - Technical
    - Operational
    - Political
    - Economic reasons

I F . . .

Regional Computer Centers

WEST (Des Moines)

AREA	ENROLLMENT	AGENCIES
3	18,756	(30)
4	14,196	(23)
5	36,948	(48)
11	123,086	(65)
12	38,314	(32)
13	42,500	(35)
14	15,634	(24)

AREA	ENROLLMENT	AGENCIES
7	289,434	(257)

FY 1977 EDP BUDGET $1,986,979
FY 1978 EDP BUDGET $3,309,657

EAST (Cedar Rapids)

AREA	ENROLLMENT	AGENCIES
1	47,526	(29)
2	30,325	(31)
6	24,711	(24)
7	46,052	(28)
9	67,421	(26)
10	74,253	(41)
15	32,059	(28)
16	24,567	(15)

AREA	ENROLLMENT	AGENCIES
8	346,914	(222)

FY 1977 EDP BUDGET $3,423,029
FY 1978 EDP BUDGET $4,107,589

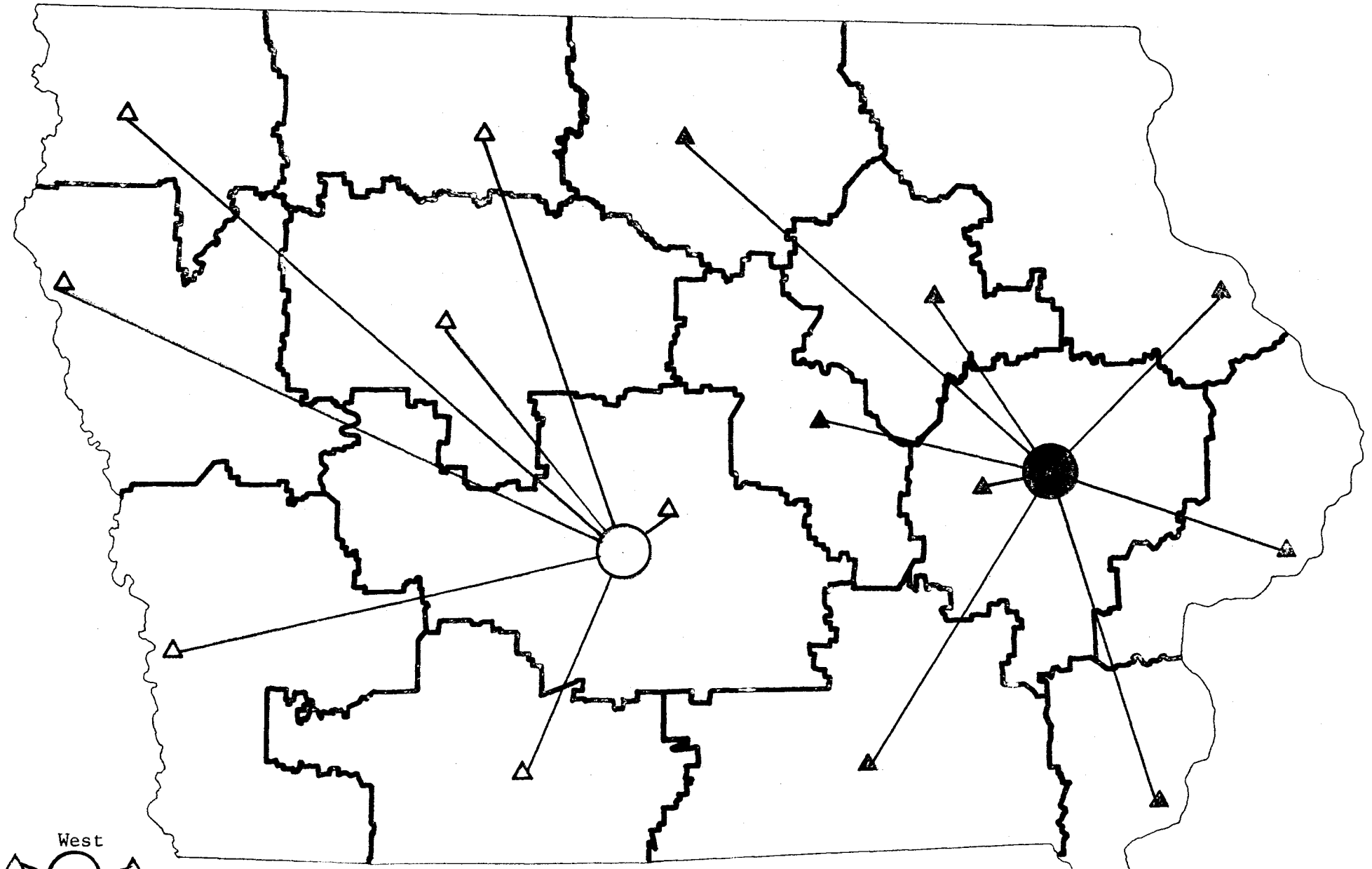
STATEWIDE

AREA	ENROLLMENT	AGENCIES
15	636,339	(479)

FY 1977 EDP BUDGET $5,410,008
FY 1978 EDP BUDGET $7,418,266

*K-14 enrollments, September 1976.
Annual Program Plans, November 1976

REGIONAL COMPUTER CENTERS



289,434	257	7
ENROLLMENT	AGENCIES	AREAS
346,914	222	8

CPB-22456 2/73