

DEFINITION  
OF  
NEEDS AND RECOMMENDATION

TEST SCORING EQUIPMENT ALTERNATIVES

COMMITTEE REPORT

Presented to the  
Department of Education  
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March 20, 1979

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TEST SCORING EQUIPMENT ALTERNATIVES

COMMITTEE REPORT

PURPOSE

The Test Scoring Equipment Alternatives Committee established by the Senior Staff meeting of December 12, 1978 was instructed to respond to the following:

- (a) examine departmental requirements;
- (b) review equipment options and capabilities;
- (c) explore possible MDS involvement;
- (d) assess financial implications; and
- (e) present a report with recommendations as soon as possible.

PROCESS

The committee reviewed in detail the test scoring requirements of the department, examined the data capture needs of departmental projects and considered services required by school divisions. A brief summary of these requirements is documented in Appendix A.

With reference to these requirements the committee subsequently identified the available options and option capabilities. The options included:

- (a) Retention of the IBM 1230 Mark Sense Reader
- (b) Acquisition of Test Scoring Services from MDS
- (c) Purchase service from a service bureau (eg. ERIBC or NCS)
- (d) Purchase Equipment (NCS)
- (e) Lease Equipment (NCS)

These options and their respective capabilities were analyzed. From this analysis the following conclusions emerged.

- ( i ) Retention of existing system - The existing equipment does not meet the defined departmental requirements. To satisfy departmental needs it would be necessary to process data manually or to contract to an outside agency. The department would not be providing any additional service to school systems.
- (ii) Acquisition of MDS Service - MDS does not have an optical scanner. Arrangements can be made for the Department to use an IBM 3886 scanner but "the availability of the scanner is at the discretion of the owner and not MDS." "MDS cannot make any commitments to the Department of Education with respect to turn around or the continuation of the service into the near or distant future."
- (iii) Purchase service from a Service Bureau - The department could serve as a broker for the various branches and also for school systems wishing such a service. Turnaround time would present a problem and also the costs would run at approximately \$1.00 per document.
- (iv) Purchase Equipment (NCS) - The purchase price of an NCS 7008 OMR unit is \$74,300 (U.S.); the annual maintenance contract is \$540.00. From a school division's perspective the purchase option would be preferred since this would ensure a long term commitment by the Department to provide a service to school divisions.
- ( v ) Lease Equipment (NCS) - The Department could enter into a 5 year lease agreement with NCS to obtain an OMR system which would meet the departmental requirements outlined in Appendix A. If this option is selected it will be necessary to ensure that sufficient consideration is given to support functions such as operation, programming, and consultation. The annual rental fee for this installation would be \$21,180.00.

(Discussions pertinent to the above conclusions are shown in Appendix B.)

#### RECOMMENDATION

The Test Scoring Equipment Alternatives Committee recommends that:

1. The Department of Education enter into an agreement with National Computer Systems to lease an optical scanner, model 7008, at an annual contract fee of approximately \$21,180.00.
2. The Department of Education provide a test scoring service to school divisions commencing September 1, 1979.
3. The Department of Education provide these services with existing staff.

FINANCIAL IMPLICATIONS

The adoption of option (v) - Lease Equipment (NCS) - carries with it the following financial commitments:

1. Annual rental fee for a 7008 optical scanner is \$21,180.00(U.S.). In view of the fact that the acquisition of this equipment would replace the cost (\$8,000.00) of the present IBM 1230 mark sense reader, the increase in rental fee payment would only be \$13,180.00.
2. One-time costs would also include \$400.00 (freight and installation) and \$1,200.00 (Dossier programming class - on site).
3. Organizational costs will be incurred in order to provide the required services. It is necessary that the machine-related operations in the Department be consolidated under a single unit, preferably a data-processing unit, which will provide services to other branches of the Department as well as to school divisions. The organizational consolidation will also require a re-allocation of time of present staff.
4. Minimal costs will be involved in the provision of space with basic air conditioning and the installation of special electrical outlets.

BENEFITS

The benefits which would be derived from the adoption of this strategy are of three types - tangible, speculative, and intangible.

(a) Tangible

- test scoring support of the Measurement and Evaluation Branch's assessment programme could be required for as many as 16,000 tests at one grade in one subject area.
- data capture support would be provided to other branches - survey and research activities, information systems, student academic records, G.E.D.
- standardized test scoring services required by school divisions could be done at considerably less cost.
- the Department would be perceived as providing a service designed to support current provincial priority assessment programmes as well as division-initiated test programmes.
- reduction in data capture costs would be realized.
- conversion of some existing data capture processes to less expensive and more accurate OMR processes.

(b) Speculative

- this data capture facility could be used by school divisions for other applications such as attendance monitoring, time tabling, registration, inventories.
- other users of this equipment could include community colleges and universities.
- potential data capture required for a standardized accounting system could be supplied by this system.

(c) Intangible

- the Department would develop its own test scoring capacity and would be less dependent upon external agencies.
- the Department and school divisions would have more timely information readily available for decision-making.
- the Department would be able to develop plans for longitudinal studies involving analysis of student achievement data.

## TEST SCORING EQUIPMENT REQUIREMENTS

The following requirements constitute the minimum capabilities identified by the Test Scoring Equipment Alternatives Committee. These capabilities should be embodied in any service or equipment acquired to satisfy the needs of the Department of Education and school divisions. The requirements are as follows:

### Data Capture Capabilities

1. Variable - sized input sheets.
2. Variable input sheets - single sheets, booklets.
3. Variable response entries - pen, pencil, ballpoint, etc.
4. Variable input range - primary students to secondary students.
5. Flexibility in data location and configuration on input sheets.
6. Input documents design dictated by user needs and not to be limited by machine constraints.
7. Multiple type data readability.

### Edit Capabilities

1. Simultaneous input document editing and processing.
2. Error identification feature.

### Applications Capabilities

1. Multiple applications - test scoring, grade reporting, surveys, attendance recording, inventory control, etc.

### Accuracy Capabilities

1. Variable response entry discrimination.
2. Erasure and smudge differentiation.

### Process Capabilities

1. Criterion and norm-referenced tests.
2. "Off-the-shelf" and standardized tests.
3. Teacher-made tests.
4. Test variety - C.T.B.S., G.E.D., M.A.T., Stanford, Gates-MacGinitie, D.A.T., Metropolitan Readiness, Otis Lennon, G.A.T.B.Y., California Achievement, etc.

Volume Capabilities

1. Minimum of 8,000 input documents per day.
2. Two-week turnaround for peak volume periods.
3. Peak loads - May-June - 40,000/month.

Output Capabilities

1. Test score printing directly on test sheets.
2. Production of basic statistical results for an individual student, class, school and division.
3. Item analyses, frequency distributions.
4. Student diagnostic profiles.

Record Creation Capabilities

1. Create data bases on tape medium.
2. Generate individual records with unique identifiers - longitudinal analysis purposes.

Support Capabilities

1. Equipment maintenance.
2. Forms design services.
3. Forms production to meet user needs.