Computer Processes and Their Application to Student Records in American Higher Education

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COMPUTER PROCESSES AND THEIR APPLICATION TO STUDENT RECORDS IN AMERICAN HIGHER EDUCATION

By
Walter John Heinzel

A Thesis Submitted to the Faculty of the Graduate School of Loyola University in Partial Fulfillment of the Requirements for the Degree of Doctor of Education

June 1968
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CHAPTER I

INTRODUCTION

Within recent years the computer has grown from a scientific curiosity to an indispensable tool. Today there is virtually no form of human endeavor that is not in some way affected by modern data processing techniques. An understanding, or at least a working knowledge of the computer and its capabilities and limitations, is urgently needed in the educational community.

One of the most fascinating facets of computers and their allied data processing procedures is that they make possible feats that were formerly considered nearly impossible. It is now possible to treat large masses of data that simply could not be handled before. For example, one of the more popular applications of the computer is in predicting election results. The computer is programmed with the pattern of the voting of certain ethnic groups, cities, states, geographical areas, etc. By feeding the computer small samples of the voting as results are revealed, it is possible to predict the trend of voting with reasonable success. The computer places these samples in the pattern of previous years and extrapolates the data.¹

In the world of business and industry every new machine

which in the long run will expedite work and save money is adopted and adapted immediately. This is not necessarily true in the academic world; horse-and-buggy equivalents are all too common in thoroughly uncomfortable numbers and proportions. Higher education cannot afford the continued presence of systems of operation which lack all the prerequisites of efficiency.

With the tremendous increase in the number of young people attending institutions of higher education, manual systems of record keeping are being taxed to their utmost. Manual methods and procedures are becoming impractical from the standpoint of time and accuracy because of limited facilities in personnel and equipment. Deadline dates for reports, updating student records, certification of students for graduation, issuance of transcripts, and recording of grades at the end of a term are rather inflexible as far as closing out one term and the beginning of a new one. Yet the work load between the unchanging deadlines is soaring to greater and greater heights. Machines and automation may not be the complete answer, but they afford an opportunity to process student records at a much faster pace than manual operations do.

In planning for computer processing of student records, attention needs to be given to understanding the goals that are to be reached. The basic propositions about data processing and its place in student personnel service must be reviewed, for they constitute a general frame of reference that is easily lost sight of. These propositions are: (1) a data processing system is a means to an end, a way of providing aids to the instructional program; (2) it serves the educational research efforts of the institution;
and (3) to be really effective the institution needs are spelled out first and the place of data processing in providing them is then determined. From this point of view the equipment or system has only capabilities and limitations.  

**Purpose and Justification of the Study**

The traditional purpose of college education in the United States has centered about the student as an individual. Just as Christianity has stressed the sacred and enduring worth of every soul and as democracy has stressed the unalienable rights of all men, so has American education, buttressed by these two great spiritual forces, believed in the dignity and destiny of each individual student and sought to develop his abilities and potential to its greatest capacity. As mass education and diversified specialization of the professors tended to neglect the rights of students as individuals, the force of this traditional purpose reasserted itself to insist that the student as a person shall not be overlooked.

Increased enrollments, large classes, departmentalization of the fields of research, knowledge, and teaching, emphasis upon research and productive scholarship—all have tended to reduce the traditional personal relationship of student and teacher almost to the vanishing point. It has become essential to have a strongly qualified department or agency in the administrative structure, namely, Student Personnel Services, to insure that this personal

---

A broadened interpretation of the responsibility of the college in the education of young men and women has come to be commonly accepted. Devotion to scholarship and emphasis upon learning are the first criteria of a good college. So the Student Personnel Services in cooperation with the faculty and administration seeks to promote each student's educational progress at the level of his own ability. It must be recognized that a college has the concomitant responsibility of providing for the personal and social well-being of its students.

The student personnel program must be developed by each college and university in accordance with its respective purposes and educational philosophy, curriculum, type of student body, personnel to be assigned, and available financial support. In a teachers college the program in addition to the usual collegiate personnel plan must be conceived in its functional relationship to future teachers. A teachers college has the responsibility of preparing students who are not only technically competent but are socially fit to be the teachers of children.

Student personnel services include all phases of student life other than the instructional program. This does not imply a dichotomy between the instructional and student personnel services. One must realize that the individual student exists as an entity, and that all experiences, curricular and cocurricular or extra-curricular, are educative. It means merely that for purposes of delegated administrative organization some workable plan must be adopted. The plan must be conceived in terms of a sound philos-
ophy of educational administration and in accordance with student
needs and institutional objectives. Necessary also is an inte­
grated working relationship among all those involved in adminis­
tration, those responsible for the facilities and equipment, and
particularly those responsible for instruction and student person­
nel services.

The Office of the Registrar is concerned with many factors
related to college life: students, courses, faculty, classrooms,
personnel, schedules, and equipment, to mention but a few. It is
the hub of the wheel around which the activities of the institu­
tion revolve. This means that the registrar has a key role in
facilitating the achievement of a common goal.

The registrar's position is a composite of many duties be­
because he serves the entire academic community: students, faculty,
and administration. As one of the oldest administrative officers
in a college or university, the registrar is more than just a
keeper of records and gatherer of facts. Cooperating with all
student personnel officers, the registrar is concerned with the
institutional instructional programs and helps to generate the
best possible academic environment. As the institution's archival
officer he protects and perpetuates the student's academic record.

Statement of the Problem

In order to facilitate and increase the efficiency of the
other offices functioning under the auspices of student personnel

\[\text{3} \text{Council of Student Personnel Associations in Higher Edu­}
\text{cation, Careers in College Student Personnel Work (Champaign,}
\text{Illinois: The Association, 1964).}\]
services, more efficient and effective methods of student record keeping had to be developed. Therefore, the purpose of this investigation was to identify and implement techniques and methods necessary for computer processing of student records. The system should involve the processing of information about students from the time of admission to graduation. Since the implementation and maintenance of student records is one of the prime responsibilities of a registrar, major emphasis was placed on these phases of a registrar's duties: (1) processing applications for admission; (2) registration and grade processing; and (3) generating the cumulative academic record.

Once it has been established that it is necessary to implement a computer system of processing student records, one may ask what happens to all this data and information. Why is it being collected? What use will be made of all the data and information?

The system of computer processing designed for Chicago State College will serve a two-fold purpose in the educational program of the college. First, the system will provide for a rapid, efficient, and accurate method of processing student records. Second, it is anticipated that the accessibility of student data will make a major contribution to the instructional program of the college, thereby benefiting the administration, the faculty and staff, and the students.

This study will consider the following questions:

1. What are the procedures and processes necessary to develop and implement a computer system of data processing to pro-
cess student records?

2. How will the administration of the college benefit from a computer data processing system?

3. To what extent or degree will the system benefit or aid the faculty?

4. What benefit, if any, will the students derive from the computer data processing system?

Scope and Limits of the Study

This study attempted to investigate the desirability of establishing a system of data processing with the use of a computer. The major emphasis was on the contribution the system could make to student personnel services.

The need for computer processing has been prevalent in all areas of operation of the college for some time. A good system of computer data processing must serve all of the units in the educational structure of the institution. However, it is only the record keeping function of the registrar's office, and the implications thereof, that were considered in this investigation.

To date most of the educational applications of data processing tend to duplicate manual systems and do not reflect the potential of computer science for such total information system services as permanent storage, information retrieval, computer-assisted instruction, and administrative decision making. These are new applications which are being demonstrated successfully in experimental projects.⁴

Methods to be Used in the Study

Many of the studies concerning data processing procedures have been essentially descriptive studies outlining changes or new procedures in existing systems. The studies were mainly concerned with the mechanics of the data processing system and one phase or another of the total operation. All of them were related to local situations and involved attempted solutions to local problems. Therefore, it was the intention of the author to investigate the possibility of developing a computer processing system which would combine the many specialized needs for student information and the many divided tasks into a workable system network to collect, store, retrieve, use, and evaluate information.

The procedure for conducting the study was as follows:

1. Conducting a review of the literature on computer processing and its application to educational problems.

2. Analyzing the present manual system of record keeping in terms of speed, efficiency, and accuracy.

3. Checking all forms and records to insure that pertinent information and data about students were being collected.

4. Conferring with other offices in Student Personnel Services to ascertain their needs for information and data.

5. Participation in the design of new forms for computer processing which will be convenient to use, expedite the work of the personnel in data processing, and
gather what is considered to be pertinent student data.

6. The Director of Data Processing assumes a key role in the implementation of change to computer processing in the area of system design.

7. Defining the total operation of computer processing procedures, and the role of participating personnel, as well as the capabilities and limitations of the system.

8. Conducting a trial run with a dual registration procedure to test the efficiency and effectiveness of the system.

9. Comparing the system of computer processing at Chicago State College with the systems developed at (1) Eastern Illinois University, (2) Northeastern Illinois State College, and (3) Western Illinois University.

10. Recording the advantages and disadvantages of the system as designed for Chicago State College as compared with the other three institutions for possible revision of the system.

College education in the United States has traditionally stressed the value of the individual student as the justification of its educational program. This is the student personnel point of view: seeing the needs and possibilities of each student in relationship to the educational program of the college. In a teachers college the needs of the student are twofold: (1) the need for educational and professional preparation to teach; and (2) the need for personal and social development. Perhaps the supreme expression of modern academic irony is to express and sin-
ce rely believe in the student personnel point of view, and then
naively act as if an individual's finest product, the work of his
mind, can be represented by a hole in an I.B.M. card.

In its short life the computer has been closely associated
with institutions of higher education. In most cases its presence
there has been justified, initially, by its importance for re-
search. As a secondary function it has become increasingly valu-
able in processing student records. Therefore, it should be seen
that the problem for the schools, as for society as a whole, when
using computer processes, is mechanizing without dehumanizing.
This study was an attempt to show that it would be possible to
mechanize some aspects of student personnel work without sacrific-
ing personal contact with the student.
CHAPTER II

REVIEW OF RELATED LITERATURE

A large university without an electronic computer is rare these days. Many large institutions maintain two computers, one for academic, the other for administrative purposes. Commenting on the recent purchase by the University of Massachusetts of one of the largest computer systems in the country Dean Edward Moore said, "In view of the remarkable strides being made in scientific research today, a top university must have a high-powered computer." How valid would his statement be, had he replaced "university" by "college"—specifically, the small state-supported college?

Many of the current problems in American education are described as information system problems. Information management problems are woven through the entire fabric of the educational process: from problems of storing, retrieving, and displaying information; through problems of selecting, reshaping, and communicating information; to problems of receiving, learning, and using information. The electronic computer, mainstay of an advanced information processing technology, is described as being central to the solution of information management and control problems in education.

Present applications of computer and information system

technology to education are viewed as being limited in scope largely because of the lack of understanding by educators of the potential use of computers rather than technical problems. Contributing to the limitations in present usage is the fragmented approach to system design. A "Total Systems" approach is a more efficient and effective means of serving the information needs of the administrator, teacher, counselor, student, and school business official.²

Much of the essential drudgery involved in educational information processing is either so taken for granted or so artfully distributed among teachers, counselors, and administrators that we are not always aware of the enormity of the loss of professional time that is consumed in clerical work. Corvine has stated that:

Though living in the computer age, most educators continue to use what must now be regarded as relatively primitive techniques for processing information. Applying pen, pencil, or typewriter to paper, they produce vast quantities of records and reports pertaining to students, teachers, budgets, schedules, and business transactions. They labor long over their records to enumerate, evaluate, and predict; endless hours of paper shuffling are spent in coding, duplicating, filing, sorting, posting, copying, searching, counting, listing, and computing. Considerable professional talent is dissipated in this unremitting, tedious, repetitive, clerical manual system.³

The American Association of Collegiate Registrars and Admissions Officers⁴ recently completed its sixth survey on trends in computer usage in the areas of admissions, financial aid, records


³Walter Corvine, "Basic Data Processing" (report presented to a seminar in data processing, Northern Illinois University, October, 1967).

⁴Report of the New Developments and Techniques Committee of the Data Systems and Machine Activities Group to the American Asso-
and registration. The questionnaire sent out by the Association sought to determine the extent of use of electronic computers and was divided into several major categories. These were: (1) kinds of computers in use, (2) input/output devices, (3) computer facility administration, (4) applications of computer resources, (5) analysis of computer applications by size of institutions, and (6) analysis of computer applications being programmed.

Replies to the questionnaire were received from 1412 institutions. Of the responding institutions, 585 were using computers and 827 were not. A summary of the report indicates the following: (1) the size of an institution seems to be a major determinant in deciding whether a computer will be used or not; (2) the vast majority were using I.B.M. equipment, with the 1620 and the 1401 leading the list of I.B.M. machines; (3) magnetic tape and disk or drum were the predominant input/output devices; (4) administrative responsibility for computer operations were either a combined academic/research/administrative unit or a centralized administrative unit; and (5) generating grade reports, posting permanent records, scholastic actions, instructional studies, and institutional studies led in the application of computer resources. 5

The New Developments and Techniques Committee also asked the recipients of the questionnaire to list other computer applications in the realm of admissions, records, and registration about

5Ibid.

5Ibid.
which they wished more information. Some of the responses were:
(1) registration by remote terminals, (2) degree auditing, (3) sectoning, (4) constructing master schedules by computers, (5) final examination scheduling by computer, (6) faculty and/or student directories, (7) student profiles, and (8) automation of the various governmental reports, SS 109 forms, Social Security forms.⁶

Many studies have been conducted concerning electronic data processing with a computer by colleges and universities. Asprey⁷ conducted a survey of computer activities on campuses similar in size and purpose to Vassar College. Her sample consisted of twenty-five liberal arts colleges, of which twelve represented the East, seven the Midwest, and six the West. Six of the colleges are for women, six for men, and thirteen are coeducational. Of the twenty-five institutions surveyed, ten had computers and six were intending to acquire one soon. Five of the colleges which did not have a computer had made arrangements for computer time at a neighboring institution. She found that the institutions surveyed divided their computer time between instruction and research and administrative tasks. Some of the schools emphasized the use of the computer in undergraduate teaching, specifically in the areas of the natural and social sciences, engineering, mathematics, and computer sciences. Several of the schools were advising mathematics majors, especially those interested in teaching, to take an introductory computer course. The use of the facilities by graduate

⁶Ibid.
students was reported to be mainly for research purposes. As usual, administrative uses were similar to those reported in the study made by the American Association of Collegiate Registrars and Admissions Officers.

Many large universities are experiencing difficulties in coping with the increasing workload from mounting enrollments, because of limited facilities in personnel and equipment. Renner\(^8\) reports that Texas Tech has changed to computer processing in both the areas of institutional accounting and the student personnel accounting functions. They had been utilizing a unit record system, several semiautomated devices, "as well as much manual ingenuity for processing student records."\(^9\) Their plan is to integrate all equipment into a central system, the TOTAL SYSTEM concept, for instruction, research, and administrative use.

Computer processing is helping Oregon State University with the problems of administering, measuring, and controlling information on the academic and professional staff through the UPDATE system (University Personnel Data Administration Technic).\(^10\) The objective of the UPDATE system is to acquire rapid input, modification and output of many of the common informative elements of the academic staff. System characteristics include centralization of information collection and reporting, as well as the accommodation


\(^9\)Ibid., 213.

of current status on academic personnel. Inherent in this goal is the one-form input which eliminates many of the different forms filled out and submitted by the teaching staff or service organization. 11

Indiana University recently began a new system of admissions by using a computer and has increased the efficiency of time and personnel in the handling of admissions cases. 12 The new system makes notification of the admissions decision possible, even for large numbers of applicants, soon after data have been entered into the computer. The system permits greater efficiency in admissions in three ways: (1) the mechanical details of all clearly admissible cases are handled by the computer, the admission letter being addressed for prompt delivery; (2) borderline cases are decided by the Admissions Officer, who can tell the computer what to say in the letter; and (3) the Admissions Officer can take final action and dictate or otherwise prepare whatever kind of letter he thinks appropriate; this was the method for all cases in the past. 13

This last procedure permits personal attention where needed; the first two save time for the third.

Unfortunately, many people are under the assumption that when admissions are computer-based, the machine is doing all of the decision making. This is simply a misunderstanding, because the computer will only do what it is told to do.

11 Ibid., p. 60.


13 Ibid., p. 184.
The State University of Iowa and the Iowa State Department of Public Instruction introduced the use of computers and data processing in Iowa elementary and secondary school administration. The new program is called UPDATE (Unlimited Potential Data through Automation Technology in Education) and is administered by the Iowa Center for Research in School Administration, located at the university. Professor Robert Marker, the associate director of the center and head of the UPDATE program, indicates the program is aimed at introducing computer processing in three areas: (1) research; (2) training school personnel; and (3) service to school districts.

The program is intended to free teachers from the bulk of time consuming clerical tasks, letting them spend their time in their classrooms teaching. Services developed using the computer included class registration, class scheduling, automatic class loading, locker assignment, auditorium seat assignment, homeroom sectioning, ability sectioning, grade cards, attendance reports, honor and eligibility lists, pupil progress reports, guidance reports, staff certification, teacher assignment, activity fund records, inventory control of textbooks, library materials and audiovisual equipment, and preparation of budgets, payroll, requisitions, purchase orders, fiscal reports, and bus routes.

The Iowa program is voluntary and schools may take any number of services on a nonprofit basis. Marker says the program is

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15 Ibid., p. 288.
possible in Iowa because the University is "unique in possessing the three necessary ingredients: complete computer facilities, personnel who understand both the needs of schools and data processing techniques, and high speed electronic document readers."\textsuperscript{16}

The public school system of Memphis, Tennessee began a program of electronic data processing in 1962. According to Freeman\textsuperscript{17} the program produced these desirable benefits: (1) improved control of financial operations; (2) more efficient performance of routine accounting functions; (3) an economical method of providing statistical information for use in guidance and direction of a school system; and (4) reduction of the clerical, noneducational work performed by teachers.

The introduction of high-speed data processing equipment is initiating a minor revolution in the organizational relationship among educational agencies which consume vast amounts of data. The California State Department of Education, through its Bureau of Pupil Personnel Services, has assumed a leadership role in an attempt to develop a master program for the handling of educational data through the use of computers.\textsuperscript{18} As a result of a study conducted by a state committee on data processing in selected California secondary schools, a pilot data processing center was established. This led to the consideration of the feasibility of

\textsuperscript{16}Ibid.

\textsuperscript{17}John P. Freeman, "Starting an EDP Program in a School System," \textit{American School Board Journal}, Vol. 146 (February, 1963), 34.

establishing a common center for cooperative research and development in data processing as applied to pupil personnel and curricular services.

The California State Department of Education applied for and received a grant from Public Law 531 through the Cooperative Research Branch of the United States Office of Education. As a result, a research and development center has been established to serve the following purposes: (1) design and development of model systems for collecting and handling data to meet the requirements of pupil personnel and curricular functions, including the analysis of existing systems and a planned transition to a more effective system; (2) evaluation and analysis of available data processing equipment and the development of specifications of required capabilities of new equipment for educational use; (3) establishment and maintenance of a library and clearing house for information relevant to educational data processing methods, systems, and equipment; (4) provision for consultation to local school systems; (5) development of proposals for cooperative establishment of compatible systems for the mutual benefit of local school systems; and (6) conduct and support of simulation studies in such areas as data processing (pre-trial of new systems) and in specific applications such as scheduling, guidance, validation of counseling procedures, and curriculum changes.  

The center experimented with methods of performing decision-making functions on computers which involved the use of  

19Ibid., pp. 456-458.
theoretical models of the consequences of decisions. It was possible to explore varieties of solutions to problems involving the analysis of complex information which affects administrative decisions. Perhaps the most important kind of simulation study would involve pre-trial of data processing systems themselves, particularly computer programs, prior to their actual installation or use.

A systems analysis and computer simulation project is underway at the System Development Corporation to find new solutions to implementing instructional media through analysis and simulation of school organization. The intent of the investigation is to suggest new combinations of media and personnel that will accomplish the task of education more efficiently. The study is also concerned with how space may be arranged more efficiently and how information processing technology can be used to facilitate the implementation of media.

The computer simulation vehicle is being designed so that students, their progress through school in time, and the school's use of resources can all be simulated. The complete simulation vehicle should: (1) make it possible to represent the progress of samples of students through any kind of school that can be described; (2) provide information regarding the changes that may occur in students and in resources through time; (3) provide the capability of getting a report on changes in the students and in resources at variable time intervals; (4) permit the simulation of

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resource depletion and show the effects on students when resources are not available; (5) provide a record of any student's history through the school; and (6) yield detailed, summarized reports on each activity, showing the student load on different activities in different time periods. Also, the design can be further developed by iteration of the sequence of: (1) design formulation; (2) model construction; (3) computer cycling of the model to represent dynamic changes in time; (4) analysis of the results of the computer runs; and (5) revision of the model.

The Bureau of Data Processing within the Chicago Public Schools maintains a "Total Information Service" which feeds data into six areas: (1) budget and finance; (2) personnel and payroll; (3) materials; (4) student accounting and scheduling; (5) research; and (6) computer education. It is the development of computer education that will eventually support the teacher in the classroom through on-line data displays. Tapping the central information file, teachers will have at their fingertips most of the relevant information from the cumulative record file. It is anticipated that data will be so convenient that teachers will make productive use of them to acquire a better understanding of their students' day-to-day learning needs and cyclical patterns.

The preceding paragraphs have presented a diverse and varied use of computer processing. Still another use of computer processing was illustrated by a study at the University of North Carolina at Chapel Hill. The study attempted to isolate specific

\[21\text{Ibid., pp. 385-386.} \quad 22\text{Ibid., p. 386.} \quad 23\text{Fred F. Harcleroad, "Introducing New Technology and Pro-}
sources of faculty resistance to uses of audiovisual materials and to determine the reason for such resistance. It also tried to determine how the amount of use of audiovisual materials could be increased through special consultation services, and preparation of college level audiovisual materials for courses, including television courses. The data were fed into a Univac computer, and correlations were run. A major finding was the high degree of correlation between higher faculty rank and quantitative use of new media.

There has been and will be much debate about the value of computers used on-line in regular instructional tasks. Arguments have considered cost, distribution, reliability, ease of use, relevance to educational purpose, richness of instructional experience, effectiveness relative to alternative procedures, and facilitation of research or materials development. It has been argued that computer assistance will limit the distribution of instruction in comparison, for example, with much more portable programmed text booklets; on the other hand, the computer has been proposed as the amplifier or distributor of the best teaching talent available.

In Solon, Ohio, high school seniors taking calculus learn the language of computers on Saturdays using facilities of a nearby computer firm. During the school term, the students spend thirty-six hours in their high school classroom studying the special com-

puter language, plus twenty-four in laboratory work at the firm where they get on-the-spot training.25

Proviso Township High School in Maywood, Illinois uses a computer and keypunch system to teach mathematics and business education.26 Mathematics and business education students team up in the program. For example, once mathematics students learn the computer's ins and outs, they give it problems to solve. A typical problem might contain thirty instructions written in computer language. The math student gives this to the business education student who, as keypunch operator, punches the card for each instruction, gives the cards to the math student, who then feeds them into the memory bank of the computer. Besides solving classroom problems with computers, students also solve a few for the high school district. They do some programming for internal test analysis and have written a program that takes the raw score of a given test and finds, from stored tables on a disk, the corresponding standard score and percentile score using conversion tables.27

Deerfield High School, Deerfield, Illinois has purchased a low-cost computer to help students understand mathematical principles and concepts faster.28 The purpose of Deerfield's program is not to prepare experts in computer operation, but to help college


27 Ibid.

bound students understand how and why the machine functions. To get the most mileage from its computer, Deerfield uses a closed circuit TV camera that scans the computer read-out and feeds the picture to TV monitors in other classrooms throughout the school.29

Pupils in grades four, five, and six at Ravenswood School District in Palo Alto California drill daily in mathematics and spelling using a teletype sender-receiver that hooks up with computers at Stanford University's computation center five miles away.30 The computer instructs the student to type his name, then finds the proper program for him, and transmits the drill number. If the pupil gives the right answer, the computer goes to the next question. If an incorrect answer is given, or if the pupil hesitates too long, the computer gives the correct answer.

Research in the field of guidance has tended to be dominated by the experimental psychology approach. In this age of the guided missile and advanced technology it is a wonder that the guidance field has not taken great advantage of the new technology to facilitate new ways of doing research in the schools.31 Wrenn32 has stated that American schools are currently changing in struc-

29 Ibid.


ture and organization, and that more understanding is needed of the complex problems facing the schools. These changes in the role and structure of the school have been brought about by modern technology. As a result, Grossman\textsuperscript{33} says, this new technology has brought about new procedures and techniques in research. The term "operations research" has been coined to describe this new type of analytical, experimental, and quantitative scientific methodology. The heart of this approach is the use of the computer to simulate actual situations or to create models of situations.

Although it is expected that counseling will continue to be an important and integral aspect of guidance, many of the time consuming details of guidance can now be automated, freeing time for counselors to do a good job of counseling. Cooley\textsuperscript{34} suggests that to aid the counseling aspect of a guidance program, computer input should consist of test scores, grades, biographical information, and the student's school and career plans. Output from the system would include certain information regarding the desirability and feasibility of a student's plan. The task of the guidance program then, given this information, would be to plan experiences for students which would give them more information about their plans, and about themselves in relation to those plans. One key component of the output would be the probable success and satisfaction associated with a particular student plan.

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\textsuperscript{33}Grossman, \textit{op. cit.}, pp. 171-172.
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In an effort to seek more effective and efficient guidance procedures, Cooley recommends the development of a system of programmed experiences. Instead of the sequences of separate one-sentence stimuli needed to take a student through the intricacies of arithmetic, programmed experiences would lead him through the types of experiences needed in order to develop a realistic concept of what a mechanical engineer does, what training he needs to have, what special abilities he has, the current and projected employment situation, and so forth. Such experiences might include work experience, meeting role models, and visiting plants and laboratories. In such a system the computer seems to be viewed as a giant teaching machine, providing the entire instructional sequence.

Several other proposals have been formulated by Cooley to insure a continuous, systematic examination of student growth as a function of institutional practice. These are: (1) analysis of student achievement; (2) performance of diagnostic functions; and (3) systems analysis of school practice.

The increasing emphasis upon the teacher's role in guidance necessitates a ready access to individual student records. Instead of having the teacher to go the records office for student information, computer processes could furnish selected items of guidance information to all instructors. The list of items can

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35 Ibid., 564.  
36 Ibid., 566.  
be formulated by a committee of counselors and faculty members. Programming and operating data processing equipment requires expert knowledge of a kind not usually within the realm of guidance personnel. By consulting with guidance personnel and faculty members, the specialist in data processing should be able to furnish the necessary student information.\(^{38}\)

Guidance personnel in higher education need to be especially perceptive about the environment in which they are working as well as about the special problems faced by individuals in this environment. Many problems of guidance in the modern university require an understanding of two points of view: the student's subjective interpretation of his experiences, and the institutional values and expectations that create the unique environment of a school.\(^{39}\)

Probably no single area of educational data processing has generated as much excitement and interest as that of computer scheduling. Although computers have proved useful for data processing in the schools, most people discounted the feasibility of programming the intricacies of a master schedule. It was assumed that the assembly of a master schedule, to include all the variables and the staff decisions, was too complex and subtle a problem. Nevertheless a few experimenters believed that master scheduling could be organized by a computer.

The concept of computer scheduling has been formalized now

\(^{38}\)Ibid., p. 221.

for at least ten years. Computer sectioning can be defined as "the process of using a stored program computer to assign students to courses of their choice from a fixed time schedule of class offerings." The definition implies the use of a computer to do what is and has been previously done by hand. Computers have been used very effectively by a small number of schools in assigning students to classes, experimenting with time schedules, and allocating space. As student class assignment is the easiest of these problems to handle, it has received the greatest amount of attention.

Purdue University opened the field of computer scheduling in 1957. The program, which is known as PASS (Purdue Academic Student Scheduling), has survived through computer failures, impossible deadlines, and five major reprogramming tasks due to changes in equipment and concepts. The primary purpose for the development of PASS was to design a computer system which would accommodate as many students as possible in the courses of their choice while minimizing costs of instruction and maximizing the use of instruction resources. The program was designed to provide: (1) time for lunch, employment, athletics, glee club; (2) section enrollment reports, closed section reports, registration reports; (3) fee assessments; (4) class lists, grade cards; and (5) automatic computer loading and data change capabilities. The student even has his

42 Ibid., p. 190.
choice of professor built into the system but, unfortunately, the student has no choice of hours for his classes. The effectiveness of the system is dependent upon the time distribution of classes over as broad a period of time during a given academic week as deemed desirable. The more effective hours in the academic week, the more effective the system becomes, and the greater the selectivity of courses, the higher the utilization of staff, and the greater the use of space with corresponding increase in the institution's enrollment capacity. 43

In keeping with the philosophy of improved course selectivity, one of the most significant projects is the continuing and actual implementation on the computer based program, CUSS (Comprehensive University Scheduling System). 44 The plan calls for the construction of an optimum schedule of staff, students, and facilities that will provide the greatest course selectivity consistent with an institution's educational policies.

Another program of computer scheduling was developed at the Massachusetts Institute of Technology. The program was designed by Holz 45 and is called GASP, which stands for Generalized Academic Simulation Programs. GASP was developed at M.I.T. with the cooperation of several other educational institutions, financial assistance from the Ford Foundation, and a time grant from International Business Machines Corporation. The word simulate is used in the title of GASP because the program mimics the clerical aspect of a

43 Ibid., p. 191. 44 Ibid., p. 192.
typical manual scheduling procedure. The generation of the schedule is derived from successive computer runs, each run being updated or revised through human analysis of the previous run. This process is repeated until a satisfactory schedule is created. GASP will not take over the job of scheduling completely, but will be a good tool to help the schedule maker do his job more effectively and efficiently.

While M.I.T. was working on GASP, Stanford University was simultaneously trying to solve the problem of generating school schedules with SSSS (Stanford School Scheduling System). The Stanford system is based on algorithmic solution, allowing for more pre-programmed decision making in the computer. Algorithm is defined as:

A fixed step-by-step procedure for accomplishing a given result; usually a simplified procedure for solving a complex problem, also a full statement of a finite number of steps. A defined process or set of rules that leads and assures development of a desired output from a given input. A sequence of formulas and/or algebraic/logical steps to calculate or determine a given task; processing rules.

Scheduling effectiveness with SSSS is a function of the system's algorithms. It assumes that the components of the scheduling problem can be accurately and sequentially defined in sufficient detail to program the computer. Although the algorithmic solution is somewhat more sophisticated than the pragmatic approach, GASP, the basic requirements of GASP and SSSS are comparable.

46 Bushnell and Allen, op. cit., pp. 54-55.


48 Bushnell and Allen, loc. cit.
Both GASP and SSSS have been used in the past few years in several school systems. In the spring and summer of 1965, GASP was used to schedule twenty-five high schools. Nine in the New England states used the 7094 at M.I.T., ten used the 7094 system at the University of Chicago, one Memphis high school used the 7090 at the University of Georgia, one high school in Spokane, Washington used the 7090 at Washington State University, and McDonnell Automation Center used their adaptation of GASP to schedule three Colorado high schools. The University of Indiana used its own version to schedule several Indiana schools.49

Thirty-three schedules now in use were constructed at the Stanford Computer Center, using SSSS. Eleven of the schools are in California, six in Oregon, four in Nevada, four in Colorado, two in Arizona, and one each in Utah, Michigan, Iowa, Arkansas, and Pennsylvania, as well as Yamoto High School, an Air Force Dependents school in Tokyo, Japan. SSSS was also used for a number of simulation studies to examine the effects of different combinations of resources on scheduling efficiency.50

Holz51 indicates that there are four dimensions which must be taken into consideration with computer scheduling. These are: (1) time; (2) space; (3) staff; and (4) students. Some problems will remain insoluble and some compromises may have to be made in order to facilitate the adaptation of a computer program. One realizes that a man-computer relationship exists, but in a situa-

tion in which man is the master. This is reassuring for those who are concerned with the human element and automation.

The application of computers and electronic data processing procedures in education is a relatively recent development. In comparison with the widespread use and rapidly expanding applications of computer technology in the business, military, and scientific communities, education has lagged far behind. Many of the reasons are psychological because many educators are frightened by the prospects of automation in education. From the experience gained in military, business, and scientific applications of computers, it seems likely that as the number and variety of significant applications in education grows, and as their value and usefulness are demonstrated for educators, resistance should diminish. Perhaps then the promise of computer technology for providing effective assistance to educators in realizing educational objectives may be more quickly realized.
While technological developments have cascaded upon business and industry, the organizational patterns of American schools have failed to avail themselves of this technology. In trying to move practice closer to philosophical goals that are generally accepted, there is a growing awareness of a lag between the development of an idea, of a practice or a technique, and the time when the practice is accepted and used.\(^1\) One of the obvious changes in education is the development of a sense of urgency toward incorporating technological developments into educational practice.

As more and more students enter colleges and universities, the institutions are becoming glutted with the literally hundreds of pieces of essential data that are generated for each student. The multitude of records and data are the prime responsibility of the registrar. One of the time consuming functions of a registrar is the implementation and maintenance of a student's record from the time of admission to graduation.

The following paragraphs will describe the manual system of student record keeping at Chicago State College. Included in the presentation will be these facets of student personnel services:

(1) admission to the college; (2) registration; (3) record keeping procedures and techniques; (4) dissemination of student information; and (5) evaluation of a student's academic record for graduation.

Admission to the College

Students may apply for admission to the college in one of three offices. These are the (1) Office of Admissions, (2) Office of the Graduate School, and (3) Office of the Registrar. The academic classification of the student determines which office will initiate the processing of the prospective applicant. The academic classifications are: (1) undergraduate student, a student who has not earned the baccalaureate degree; (2) graduate student, a student who has been formally admitted to the Graduate School; (3) unclassified graduate student, a student with the baccalaureate degree who has not been formally admitted to the Graduate School; and (4) special student, a student who is attending another college or university and has written permission to take a course or courses at Chicago State College.

Office of Admissions. All undergraduate students, whether they intend to become full-time or part-time students, or register for classes during the day or in the evening, must apply for formal admission to the college. Upon the receipt of an application\(^2\) for admission, the admissions office initiates a Student Record Folder for the prospective applicant. The following pieces of essential data are processed, recorded, evaluated, and indexed for each

\(^{2}\)See Appendix 1, p. 161.
prospective applicant: (1) application for admission to the college, (2) high school transcripts, (3) college transcripts, if applicable, (4) scores on the American College Testing Program (ACT), (5) medical report, (6) evaluation of credits on previous college work, if applicable, (7) preregistration form, (8) information concerning the awarding of scholarships, if any, and (9) letter of acceptance or rejection by the admissions officer.

The folder is filed in the Office of Admissions until the student has registered and is attending classes. After the student has registered and is attending classes, the folder is transferred to the Records section of the Office of the Registrar. The folder would only remain in the admissions office due to the following circumstances: (1) if the student is eligible for admission but did not appear, (2) the student withdraws from the college before registration, and (3) the application for admission is rejected. The folders for the prospective applicants in these three categories are filed in the admissions office for a period of three years. If nothing has occurred during this period of time to alter the prospective applicant's situation or classification, the folder is destroyed.

Office of the Graduate School. Students seeking admission to a graduate degree program must file an application\(^3\) for admission in the Office of the Graduate School. Upon receipt of an application for admission, the graduate school initiates a Student Record Folder for the prospective applicant. The following pieces

\(^3\)See Appendix 2, p. 162.
of essential data are processed, recorded, evaluated, and indexed for each prospective applicant: (1) application for admission, (2) pertinent correspondence, (3) all college transcripts, including an official transcript of the student's record at the degree-granting institution, (4) departmental evaluation showing the specific requirements the prospective applicant must meet for the Master's degree, and (5) letter of acceptance or rejection. A duplicate file containing these items is also kept in the department in which the student will do his graduate work.

The folder is filed and maintained in the Office of the Graduate School. Folders for prospective applicants who have not completed the application procedure or were rejected are filed in the office for a period of one year. Again, if nothing has occurred during this period of time to alter the prospective applicant's situation, the folder is destroyed.

**Office of the Registrar.** Unclassified graduate students and special students apply for admission to the college in the Office of the Registrar. These students are not applying for formal admission to a degree granting program. Consequently, they are merely seeking a Permit to Register so that they would be eligible to register for classes. Upon the receipt and evaluation of the proper credentials, the permit is issued. Unclassified students must present evidence of a bachelor's degree from an accredited institution, and special students must present a letter and

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4See Appendix 3, p. 163.

5See Appendix 3, p. 163.
transcript from the institution in which they are working toward the baccalaureate. A Student Record Folder is not maintained for students in these academic classifications.

Registration

The registrar is responsible for all phases of student registration and registration procedures. Included in this responsibility is the formulation and construction of the master schedule of classes. Unfortunately, he does not have at his disposal such scheduling aids as PASS, SSSS, CUSS, and GASP.

Student registration forms. Each student is required to complete four registration forms during the registration period. These are: (1) registration worksheet,6 (2) Kardex card7--white for undergraduate students and yellow for students with degrees, (3) Student Statistical Envelope8--goldenrod for day session students, white for evening session students, and green for students registering for off-campus courses, and (4) Student-Activity form.9 In addition to the four forms listed above, the student must print his name and address on a class card10 for each of the courses for which the student is registering. All forms and class cards are carefully checked for accuracy and completeness during the registration procedure, and checked again in the records office.

In most institutions registration is an arduous and tedious process and Chicago State College is no exception. The description

6See Appendix 4, p. 164. 7See Appendix 5, p. 165.
8See Appendix 6, p. 167. 9See Appendix 7, p. 168.
10See Appendix 8, p. 169.
presented by the writer concerning registration has been brief because the important facets here are the forms and the information they contain. It is the data gathered from the registration forms that provide the information and statistics for a variety of reports, data for the Student Record Folder, and enrollment statistics.

Record Keeping Procedures and Techniques

The methods and techniques of student record keeping will be presented for a period of one term. The writer will present what takes place in the records office from the time of registration to the posting of grades on the Permanent Record Card, and the mailing of grade reports to the students.

Permanent Record Card. As explained previously, once a student has been admitted to the college, has registered, and is attending classes, the Student Record Folder is filed in the records office. A Permanent Record Card is generated for each entering student, with pertinent data recorded on the PRC, as derived from the student's folder. The academic progress of the student is recorded on the PRC throughout his academic career in the college.

Processing registration materials. Each registrant must complete the four registration forms, plus a class card for each course the student registers for. The registration materials are processed in the following manner: (1) the registration worksheets are alphabetized and filed; (2) Kardex Cards are alphabetized in two files--one for undergraduate students and the other for graduate students; (3) Student Statistical Envelopes are
alphabetized in three files—one for day session students, one for evening session students, and one for off-campus students; and (4) the Student-Activity form is filled out in duplicate, the student receiving one copy at registration and the other copy being alphabetized and sent to the Director of Student Activities. Prior to the alphabetizing of the Student Statistical Envelopes, the class cards of each student are checked against his Kardex card and then inserted into the statistical envelope.

**Preliminary class lists.** Once the class cards for each student have been checked and inserted into the statistical envelopes, the envelopes are sent to the Service Bureau Corporation of Chicago for processing. A student number is assigned by the Service Bureau and punched into all the class cards of an individual student. The student's name and address, as well as the term-ending date, are also punched into the class cards. A preliminary class list for each course and section is prepared by the Service Bureau from the class cards for a particular course and section. The preliminary class list contains the student's number and name, as well as the course number and title.

After the Service Bureau completes its processing, the preliminary class lists and the class cards are returned to the registrar's office. The class lists are checked against the class cards for accuracy and then distributed to the faculty. A duplicate copy is also kept on file in the office. No changes are permitted to be made on the class lists unless an instructor has written notice from the Office of the Registrar.

A student identification number is given to each student.
who registers each term by the Service Bureau. Although the possibility of assigning permanent student identification numbers was considered and discussed with the Service Bureau, it was felt that assigning a permanent student number was unnecessary for the particular system developed.

Final class lists. The same procedure is used to generate the final class lists as was used for the preliminary class lists. Shortly after the final date for dropping classes, class cards are again sent to the Service Bureau. The final class lists and the class cards are returned, checked for accuracy, and distributed to the faculty.

Final class lists are distributed to the faculty shortly before mid-term. Faculty members record D and F grades on the class lists and return them to the records office. After the records office processes the D and F grade reports, the class lists are returned to the faculty for the recording of final grades.

Faculty members may not add or delete names from the final class lists without the written approval of the registrar.

Mid-term D and F grade reports. The Faculty Assembly of the college has legislated that students be informed of unsatisfactory academic progress at mid-term. The final class lists for each instructor serve as the vehicle for gathering this information in the records office. A Mid-term D and F Grade Report is mailed to each student receiving a grade of D or F. A duplicate copy of the report is filed in the student's folder.

Two reports are prepared concerning the mid-term D and F grades. One is a list of students and indicates the course or
courses in which the student is doing unsatisfactory work. The other report is a summary of D and F grades by course and department. The first report is sent to the counseling center and the second to department chairmen, the registrar, and the Dean of Students.

Other duties and responsibilities. Several facets of record keeping are an ongoing process throughout a term. These are:
(1) initiation of a permanent record card for all new students;
(2) recording transfer credit onto the PRC for transfer students;
(3) issuance of transcripts;
(4) completion of information forms concerning students' records from various State Departments of Education;
(5) generating information bulletins for the faculty;
(6) assisting the Placement Office in initiating a file for all graduating students; and
(7) completion of SS109 forms for the Selective Service System, enrollment certificates for the Veterans Administration, and reports for Social Security benefits.

The activities listed above are typical of what happens in the records office, in addition to what has been presented concerning the processing of student registration materials and forms. Fortunately, the peak periods for requests of one service or another are not all at the same period of time. For example, requests for transcripts arrive daily, but the peak period is at the end of a term. On the other hand, the initiation of the PRC takes place in the early weeks of a term.

Final grades. At the end of a term, faculty members record their grades for the students on the final class lists. They bring their class lists to the records office and mark-sense letter
grades which are printed on the students' class cards. One copy of the final class list is filed in the records vault and faculty members keep the second copy for their records.

At the close of the term the mark-sensed class cards are sent to the Service Bureau for processing. The class cards are sorted, interpreted, and alphabetized, and a grade label is prepared for each student. The grade label indicates the term, course, course number, course title, credit hours, grade, grade points, total credit hours attempted, total grade points, and the grade point average. The student's name and identification number are also placed on the grade label. When the labels are returned to the records office, they are checked against the student's registration Kardex card to insure accuracy and are then placed on the student's permanent record card.

Final grade reports are also prepared by the Service Bureau and include the following: (1) student's name and address; (2) course, course number, section letter, and credit hours; (3) grade, grade points earned, and grade point average; (4) student number; and (5) term ending date by month and year. The final grade reports are also checked against the Kardex to insure accuracy. The student copy of the final grade report is mailed to the student approximately one week after the close of the term. The office copy is kept on file permanently in the records vault.

Dissemination of Student Information

The Service Bureau prepares various reports for the college from the information indicated on the student statistical en-
velope. These include: (1) the number of students and credit hours by academic classification, full-time and part-time; (2) a master register and summary of the data taken from the student statistical envelope; (3) a listing of students by curriculum, sequence, and academic classification; (4) a listing of students admitted to the Graduate School by the graduate program being studied; (5) a student directory; and (6) a tabulation and summary of final grades and credit hours according to department.

The statistics supplied by the various reports prepared by the Service Bureau are the basis for several internal reports. These are: (1) Enrollment Figures; (2) Bachelor of Science in Education Degree Graduates; and (3) Curricula and Sequences of All Day Session Students at Time of Registration.

The Enrollment Figures report is completed for each of the four terms of the college. The report is given in terms of: (1) day session enrollment; (2) evening session enrollment; (3) total enrollment; and (4) Crane Campus enrollment. The statistics in each of the four sections are reported in terms of: (1) academic classification; (2) men; (3) women; and (4) total.

The Bachelor of Science in Education Degree Graduates is also completed for each of the four terms of the college. The statistical categories of the report are: (1) total graduates; (2) curricula and sequences; (3) acceleration program; (4) age range; (5) academic status; (6) ACT scores; (7) admissions data; (8) Federal loans; and (9) remedial courses taken, if any.

The Curriculum and Sequence report is prepared in the same manner as the other reports. The one major difference with this
report is that the statistics are given only for day session stu-
dents. The report is prepared in this manner because at the pres-
ent time a student cannot earn the bachelor's degree at the col-
lege except by attending the day session. The report lists the
number of students by academic classification under the following
categories: (1) Kindergarten-Primary; (2) Intermediate Grade; (3)
Upper Grade Teaching Major; (4) High School Business Education;
(5) High School Home Economics; (6) High School Industrial Educa-
tion; (7) Admitted to Graduate School; (8) Special Students; (9)
Unclassified Students; and (10) Master's Degree.

Several external reports are prepared using the statistics
prepared by the Service Bureau. The reports are concerned with
enrollment figures, student characteristics, degrees conferred,
degrees conferred by area of study, and undergraduate and graduate
programs. The reports are prepared for the (1) United States Of-
lice of Education, (2) the Illinois Board of Higher Education, (3)
the Illinois Board of Governors of State Colleges and Universi-
ties, and (4) the University of Illinois.

Information is also collected and recorded in the Student
Record Folder. Several forms have been devised to collect student
information. These are: (1) registration Kardex card; (2) activ-
ity record; (3) mid-term D and F Grade Report; (4) written reports
by the counseling staff; (5) Instructor Report of Student's Work;
(6) requests to carry additional hours; (7) third term evaluation
of credits; (8) SS109 forms for male students; and (9) notes, cor-
respondence, or other reports concerning the student.

The knowledge that college success is shaped by non-intel-
lectual characteristics as well as by aptitude is an important clue in the guidance aspect of student personnel services. The student record folder should contain important information about a student's background, ability, achievement, scholarship, interests, personality, attitudes, and socio-economic status. Guidance personnel need to be especially perceptive about the environment in which they are working as well as about the special problems faced by the students in their environment.

The impersonal and mechanistic nature of our mass society makes it more important than ever for schools to have greater concern for the individual. Renewed emphasis on the individual results from the necessity of providing counter-balance to strong tendencies toward homogenization of tastes and differences to the group. There is a real problem of personal identity for the student. His is the struggle to emerge as an individual from the mass of students: he needs to become, in his own eyes, more than a number on an examination paper.

Academic Evaluation for Graduation

All students in degree-granting programs must file an application for graduation. Undergraduate students file for graduation in the registrar's office, while graduate students apply in the Office of the Graduate School. Typically, the student must file the application for graduation during the term preceding the one in which the student anticipates completing all requirements.

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Graduate School. When an application for graduation is filed in the graduate school, notice of the application is forwarded to the department concerned. It is the department's responsibility to complete the prescribed completion papers indicating that the student has completed all requirements for the Master's degree. It is usually the responsibility of the graduate advisor to assume this task. When it has been determined that the student has met all requirements for graduation, the completion papers are filled out, signed, and forwarded to the Coordinator of Graduate Studies. Once he concurs, a copy is mailed to the student, the department receives and files its copy, and a copy is filed in the folder maintained in the graduate school office. A copy of the completion papers is forwarded to the registrar's office so that appropriate notations can be entered on the student's permanent record card.

Undergraduate students. All undergraduate students must file an application for graduation in the Office of the Registrar. It is the registrar's responsibility, with assistance from his staff and the counseling staff, to evaluate the student's academic record. The evaluation is conducted in the following manner: (1) checking the PRC against all final grade reports filed for the student; (2) verifying all transfer credit, if applicable; (3) verifying and noting proficiency examination, if any; (4) verifying the completion of all required courses in the student's curriculum; (5) verification of the completion of all required courses in the student's sequence; (6) verifying the selection of electives in the student's curriculum and sequence; (7) totaling the number of
credit hours earned to make certain the student has completed the credit hours required for graduation; (8) calculating the student's grade point average to ascertain the eligibility for graduation; and (9) noting the courses in progress and checking these courses at the end of the term.

Once it has been ascertained that the student is eligible for graduation, the student is notified that his credentials are in order. All materials are filed in the student's folder. Conversely, if a student is not eligible for graduation, the student is notified as to the deficiencies which must be satisfied.

The Office of the Registrar is responsible for generating the graduation list for the term. The list includes both graduate and undergraduate students. The list is forwarded to the appropriate college officials who are involved with the printing of diplomas and commencement programs.

In conclusion, as the needs of educational systems increase in intensity, two tenets present themselves with increasing force. The first is that education is not a discrete enterprise involving traditional methods no longer appropriate elsewhere, but it too must reflect and contribute to its time as a vital force. The second tenet is that educators cannot afford to ignore the potential of modern technology in order to meet the demands that our world makes on education.

If we consider the American ideals of quality education and education for all, problems will confront many educational systems. Many of these problems can be described as information system problems, which are woven through the entire fabric of the educational
process. They take on the familiar proportions of (1) storing, retrieving, and displaying information; (2) communicating information; and (3) receiving and using information to learn, and plan, and make decisions.

One of the hidden benefits of installing electronic data processing equipment is that it forces a review of the present operating procedures. As a result, many of the present procedures will probably need to be revised. For example, data may be collected and processed and no one knows who uses it. Perhaps some of the revisions will not be due to data processing, but are changes that should have been made in the manual system long ago.
CHAPTER IV

CONVERTING TO COMPUTER PROCESSING

There is a pressing need today for colleges and universities to develop an educational information system for planning and control. Many of the present systems generate reams of paper data with no planned system of preparing logical reports. What is needed is an electronic computer data processing system which selects, rejects, edits, headlines, and turns data into vital and dynamic educational information.

Three facets must be considered in formulating plans to establish an effective and progressive computer processing installation. These are: (1) procedural planning and development; (2) staff organization; and (3) personnel.

Procedural Planning and Development

In establishing a new installation, planning and implementation will be determined by the objectives established. Objectives should be broad and long-range in nature. The individual charged with the responsibility of developing the various procedures should bear in mind at all times the effect the procedure will have on the total system. It is desirable to develop an effective system that requires a minimum amount of file maintenance and one that will utilize the basic source data to the utmost.

Ordinarily, the most difficult and time consuming aspect
of computer processing is data conversion. Consequently, a great deal of consideration should be given to the information to be converted. Since speed is a factor, then all data should be pertinent, well organized, complete, and—whenever possible—gathered at its source. Once the data have been converted, then the limitation as to what can be done with the material will depend wholly upon the computer personnel. Imagination or lack of imagination can be the difference between a mediocre installation or an outstanding installation.

When planning a system of computer processing, the system must be tailored to meet the specific needs of the institution. While it might seem logical that set systems ought to be available, it is not likely that an institution will be able to adopt, without modification, the data processing forms and procedures used by another institution. The four programs developed for computer processing described in the review of literature, namely PASS, GASP, SSSS, and CUSS, should present excellent illustrations of individual planning and development. Therefore, the responsibility falls on each school to develop its own system and procedures, drawing on sources such as the following for ideas: (1) procedures developed by other institutions; (2) university centers doing research in the educational applications of computer processing; (3) advice of sales representatives of equipment manufacturers; (4) expert knowledge of system service representatives of equipment manufacturers; (5) manuals issued by equipment manufacturers; (6) advice of representatives of companies selling business forms; and (7) the personal ingenuity of the individual or individuals
actually planning the system.¹

In considering computer processing procedures, emphasis should be given to the TOTAL SYSTEM concept. The processing procedures of the total operation of the institution must be highly interrelated with each other. For example, most of the records with which an institution is involved concern students, and this introduces a common element to all records and reports. Enrollment data essential to efficient operation, long-range program planning, reporting to state and federal agencies, all draw upon information from student records.

In planning and installing the system, it is not wise to attempt to install and implement every part and every aspect of the planned system at one time. Chances of success are greatly enhanced if each subsidiary job is started individually and brought to a high state of operational efficiency before the next routine is put into operation.

Staff Organization

Educational computer processing of institutional records is a fairly new concept. Consequently, it is necessary to determine where it will fit into the administrative structure of a school. The machines used for processing are only a part of the data processing picture; people are intimately interwoven with the system established. This points to the importance of good organizational arrangements for effectively utilizing the installation. Regardless of where the data processing operation is placed in the

¹Statement by Walter Corvine, personal interview.
organizational structure, it must be conceived as a service function, serving the needs of the total operation of the school. The data processing unit will serve best when it crosses the entire organizational structure and functions and acts as an overall intelligence system linking all elements in a school's operation.

Administrative control of a computer facility can be the decisive factor in determining what functions are performed. Probably no one administrative arrangement can represent an ideal in all circumstances, as local conditions can vary so much that what works well in one school could not work in another. The administration of the computer facility at Chicago State College can be described as a centralized administrative unit, under the direction of the Director of the Computer Centre. In the line-and-staff organization of the college, the immediate superior of the Director of the Computer Centre is the Dean of Administration. The Dean of Administration is responsible for the overall business and service operations of the college. The structure is consistent with the findings of the American Association of Collegiate Registrars and Admissions Officers which were cited previously in this work.

Personnel

One of the most important considerations when installing electronic data processing equipment is the selection and training of personnel. It is possible to have the best equipment available, yet without a competent staff maximum results cannot be obtained. In selecting personnel, one must bear in mind that machines can
only do what they are instructed to do; consequently, they are completely dependent upon the people who develop the procedures and operate the equipment.

There are two common approaches to the solution of the problems of personnel. One is to take personnel from within the organization and give them the necessary technical training in data processing equipment. The theory behind this approach is that it may be easier to teach the technical aspects of data processing equipment than the operations of a school. This approach is very popular with management because they can immediately alleviate any fears that employees might have about their future and automation.

Another approach is to establish qualifications for each position on the staff. Then, by means of testing and personal evaluation, determine who will fill the positions. The individuals selected may be within the organization or, quite possibly, it will be necessary to go outside the school to obtain qualified personnel.

Selecting the Equipment

The electronic data processing system designed for an institution should indicate the kind of equipment to be used. The availability of equipment, or the equipment at hand, should not be the deciding factors in the kind of system or program that should be developed. The data processing system should be designed according to the needs of the institution and the needed equipment then being secured. Consideration should be given to long-range

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\(^2\)Statement by Joseph Tilton, personal interview.
plans and needs, as well as changing conditions within the institution, when equipment is selected. Therefore, consideration must be given to new developments that may appear in the future and some provision must be made for incorporating them into the data processing system.

There is really no such thing as a particular "automatic data processing machine;" there are merely several basic types of machines that can be used in a system for automatic data processing. This is to say that each type of machine, such as a particular series of accounting machines, may have many capabilities, depending on the number of features and special attachments that are ordered with the machine. For example, the IBM Model 402 Accounting Machine may be ordered with as few as forty-four or as many as eighty columns of counter capacity.

Once equipment is acquired, all jobs to be done and systems to be established must be conducted within the capabilities of the equipment. For example, the IBM 402 Accounting Machine has the ability to print up to forty-three alphabetical characters per line. It is obviously not possible to produce with this model accounting machine a report containing more than this number of characters on a line.

The Data Processing System

Automatic data processing machines are divided into two general groups: (1) punch-card equipment, which may be referred

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to as electromechanical machines; and (2) electronic data processing machines, often called electronic computers. With either type of equipment, certain basic steps are necessary, the data being recorded in machine usable form on an input medium. In an electromechanical system the medium is either a punch card or paper tape. The electronic system uses a punch card, paper tape, magnetic tape, or magnetic characters printed on paper. Once recorded in machine usable form, the data can be entered into the processing equipment. The equipment, however, does nothing on its own; it must be instructed how the information is to be processed and how the results are to be shown in the output. Data are then processed according to a sequence of instructions and results recorded, depending on the system, as printed information on paper, or as coded data on punch cards, paper tape, or magnetic tape.

The punch card equipment is usually referred to as unit record equipment, and the system as unit record data processing. The fundamentals of unit record data processing can be classified into four functions. These are: (1) recording, (2) sorting, (3) calculating, and (4) summarizing. These functions are accomplished by various unit record machines. Unit record data processing is an important segment of all data processing.

**Unit record equipment at CSC.** The data processing system established for Chicago State College contains several pieces of equipment for unit record data processing. The equipment is that...

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5Ibid., pp. 8-9.
which is required to carry out the four functions of data processing described in the previous paragraph. The equipment and punch-card formats are those of the International Business Machines Corporation. The pieces of equipment are IBM model: (1) 026 Key punch, (2) 056 Verifier, (3) 519 Reproducer, (4) 557 Interpreter, (5) 082 Sorter, (6) 085 Collator, and (7) 407 Accounting Machine.

The initial step in any punch-card procedure is the conversion of source information from printed or handwritten documents to punched cards. The recording function involves those tasks that are primarily concerned with the preparation of the punched card. This means putting the information into card form which can be checked for accuracy and then processed by machine. The machines in the system which perform the recording function are the IBM Model: (1) 026 Keypunch, which punches the card; (2) 056 Verifier, which checks the accuracy of the punching; (3) 519 Reproducer, which duplicates existing cards; and (4) 557 Interpreter, which prints on the card the punched information.

The first step in processing information coded in punch cards is the arrangement of the information in an orderly fashion. The classifying function involves those tasks that are primarily concerned with the rearranging of punched cards. These tasks may vary from the rearranging of cards in one file to the manipulation of several files at the same time. The machines in the system which perform the classifying function are the IBM Model: (1) 082 Sorter, which sorts cards; and (2) 085 Collator, which sorts files.

Many data processing applications in education require the simple calculations of adding, subtracting, multiplying, and dividing...
The calculating function is primarily concerned with making calculations from punched cards. Information punched in a card can be read into the calculator, a series of mathematical steps can be performed in one operation, and the results can be punched into the same card. The function of the calculator is to rapidly and accurately calculate with data contained in punched cards. International Business Machines Corporation have several calculators on the market at the present time.

Concurrent with the development of the calculator has been the development of the computer which can also perform the calculation function. The computer is also capable of doing calculation from punched cards. Not only can the computer do everything that the calculator can, but it does it better and faster, and has more capability with none of the limitations of the calculator. Of the two machines, the calculator is more limited in the complexity and speed of arithmetic operations. The computer has been developed to the point where extremely involved mathematical operations are commonplace. Because of this, a computer is sometimes used in unit record installations rather than the calculator. The system then has the calculation benefits as well as the extended capabilities of the computer.

The electronic data processing system installation at Chicago State College is a computer processing system. Therefore, the IBM Model 1401 Central Processing Unit is used for all mathematical calculations.

Three pieces of punch-card equipment comprise the minimum installation capable of automatic data processing. The keypunch
and the sorter team with the third basic device, which is called an accounting machine. The last function, the summarizing function, involves tasks that are primarily concerned with producing the results from processed punched cards. The basic purpose of the accounting machine is to (1) print alphabetical and numerical data from punched cards in the desired fashion, and (2) total data by proper classification. The machine used for this purpose is the IBM Model 407 Accounting Machine.

**Instructing punch-card equipment.** Although punch-card equipment is capable of performing many clerical type operations rapidly and with relatively high degrees of accuracy, these machines are unable to think or in any way exercise judgment on their own. They must, in every instance, be instructed exactly as to what to do, how to do it, and in what order it must be done. The machines are instructed by means of panel boards which control and direct the operations of the machines. The flexibility of punch-card data processing equipment is generally dependent upon the size and complexity of the control panel and the operator's ability to wire these boards to attain maximum effectiveness.

**Electronic data processing.** Electronic data processing equipment differs from punch-card equipment principally in that electronic devices such as tubes and transistors are used primarily in the processing operations instead of electromechanical devices. Electronic processing machines are commonly, though not always accurately, called electronic computers.

There are several ways in which computers may be classified or grouped. The two most common methods are: (1) by the use
to which the equipment is put, general purpose and special purpose
equipment, and (2) by relative size, small, medium, and large-
scale equipment. Computers designed to do a variety of standard
mathematical and clerical operations in accordance with the re-
quirements of many jobs or systems are called general purpose com-
puters. They are characterized by their ability to understand a
relatively large number of instructions and operate under these in-
structions to perform whatever tasks they have been told to do.
Since these and many other instructions can be selected and ar-
ranged in many different ways to meet varying requirements, general
purpose computers are very flexible.

When a computer has been designed specifically for the ac-
complishment of one particular job, it is classified as a special
purpose machine. Since the purpose of such a computer is fixed,
the instructions used to control the operations required are perma-
nently built into the equipment and cannot be altered to perform
operations other than those for which it was designed.

Computer usage in educational management and control has
been limited in the past to the general purpose computer. Equip-
ment manufacturers have not considered the problems of education
sufficiently different from those of business to justify the con-
sideration of a special purpose computer for use in education.
Education's use of the computer is not presently limited to any one
size classification of computers.

The computer, then, can make the so-called "bread and but-

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6 Whitlock, op. cit., p. 30.
applications of educational management and control. Its second major area of contribution lies in the research and development application. The usefulness of the computer in research and development is enhanced by its ability to simulate actual conditions.

The computer has almost unlimited capability to correlate, compare, interrelate, and synthesize data. School administrators now have the necessary facility for taking the vast amount of educational data available and correlating them with various kinds of sociological and technological information to supply the answers to a host of questions facing education today.

The computer system at CSC. A computer system is an interrelated group of components acting as a unit to solve problems. As such, it consists of a series of functional parts, each of which plays a specific role in the system. These components can usually be categorized as (1) input/output, (2) secondary memory-input/output, and (3) central processing unit. The components of the computer system are those manufactured by the International Business Machines Corporation. The pieces of equipment are the IBM Model (1) 1402 Card/Read/Punch Unit, (2) 1403 Printer, (3) four 7330 Magnetic Tape Units, and (4) 1401 Central Processing unit.

The input unit is the machine primarily concerned with making information available to the system. Instructions and data must be readily accessible in or for processing to take place.

The machines in the system which perform the input function are the IBM Model (1) 1402 Card/Read/Punch Unit, and (2) 7330 Magnetic Tape Unit.

The punched card is the input document when using the 1402 Card/Read/Punch Unit, and it is identical to the unit record punched card. The punched cards can be prepared either on standard unit record machines or by the computer itself. They are interchangeable and can be processed with either system. Punched card input is often used in small computer systems and in systems that have unit record equipment as well as a computer. Card input may be used with smaller satellite computers in a large computer installation to translate input into some faster input media and to translate the output media back to card output.

Another way to get information into the computer system is magnetic tape. Magnetic tape is probably the most common method used for high speed input/output. Magnetic tapes are usually prepared by the computer for use on the computer. The data on tape usually serve one of two purposes. The first is the storage of information needed during particular computer runs. The more important tape use is for data in the form of files. It becomes an attractive alternative to card files. The CSC computer system contains four 7330 Magnetic Tape Units to perform these functions.

The output unit is the machine concerned with getting information out of the system. After the processing is completed, there usually are answers, reports, or other output that must be prepared in a form usable by people. Three pieces of equipment serve as the output media. These are the IBM Model (1) 1402 Card/
Read/Punch Unit, (2) 7330 Magnetic Tape Unit, and (3) 1403 Printer. The first two devices were also used for input to the system. Certain pieces of equipment are dual purpose devices, while others are one or the other. The 1403 Printer is strictly an output device.

The 1402 Card/Read/Punch Unit can both read and punch cards for input/output. A card reader transfers the data from the punched card into the memory of the computer system. Information can also leave the computer system through a computer card punch which punches information from the memory of the computer into blank cards. The equipment is housed together in one unit.

As stated previously, magnetic tapes are usually prepared by the computer for use on the computer. The basic concept of computer tape is similar to that used for home recording; in both, an electrical charge magnetizes the oxide coating. On computer tape the recording is coded data. The same machine that reads magnetic tape into the memory can also be used to write magnetic tape from the memory and is called a tape drive. Although the two operations of reading and writing magnetic tape can be accomplished by one unit, the two functions are usually separated during actual operation. There is frequently more than one tape drive connected to the system. One of these is usually designated as the input tape drive and is used for reading tapes. The other is designated as the output tape drive and is used for writing tapes. The CSC system contains four 7330 Magnetic Tape Units.

The printer, by far, is the most common form of final output from a computer system. The 1403 Printer is a single purpose device and only prints information from the computer as output.
It prints information on paper forms, the format of which may be a full page, a check, or an address label. Computer printing uses only capital letters, no lower case letters, the same as in unit record interpreting. Information is printed in a form readily understandable, and in almost any format desired.

Processing is what occurs between input and output. Usually most of the processing functions are housed in one unit called a central processing unit. This unit houses the processing sections of memory and control. The memory section of the computer is the section capable of retaining information in the form of data and/or instructions. All information entering the system must first enter memory. All information leaving the system must come from memory. Memory is the brain of the machine in the sense that it retains all necessary information for the operations performed.

The memory of a computer can retain two types of information. These are (1) data, and (2) instructions. The data include all information, numeric or alphabetic, needed for the solution of problems being processed. Instructions are a specific form of coded information used to control the computer system. Since the computer is under stored program control, these instructions must be in the system before processing can take place. Once the instructions are in memory, the computer is directed to perform each instruction, and no further human direction is required once the operation begins. Data are entered into the system from the input/output devices identified in previous paragraphs.

Control is the heart of the computer. Various computer operations are controlled by means of instructions, and the series of
instructions that direct the machine to accomplish a particular task constitute a program. The control section directs the operation of the computer in order to fulfill the conditions set forth by the program. The control unit reads the instructions and plans for their proper execution by following the principles of operation for a given machine. Each computer system has its own set of instructions and they are not interchangeable.

The computer is considered not a single machine, but a series of interrelated devices, each fulfilling a specific function. The processing function of the computer system is performed by the IBM Model 1401 Central Processing Unit.

One of the most important aspects of internal computer processing is speed. In computer systems, the slowest components are normally the input and output processing devices. None of the input/output devices can approach the speed of the central processing unit. Data already present in memory can be processed most rapidly and efficiently. Stored data can be used almost immediately, no matter where it is stored in memory.

Input/output memory devices combine the characteristics of the two operations of input/output and memory. These devices provide ways of getting data into and out of the computer, and they are also capable of storing large quantities of information. The most advantageous feature is that information stored can be retrieved at random, not sequentially. The input/output memory devices have the following characteristics: (1) they make use of auxiliary equipment and are differentiated from the central processing unit; and (2) they are capable of obtaining any one record of
information without sequentially processing all the records that precede it within the memory of input/output. 8

One method of random access storage is disk storage. Disk storage is extremely practical in systems where the same files are used over and over for various processing applications. Magnetic disk pack storage is excellent for random access types of operations in which the data are not arranged in any particular sequence before they are written on the disk. In any operations requiring that transactions be processed as they occur, disk is the storage device that can do so best. 9 Two IBM Model 1311 Disk Pack Units are included in the computer system for random access storage.

The preceding paragraphs have depicted the electronic data processing installation at Chicago State College. The college has just passed through the process of converting from manual techniques of record keeping to automated ones. It is anticipated that the computer system will provide (1) new time dimensions for the working day and for the human concept, (2) efficient and effective controls over human error, (3) large capacities to store information, and the capability to rapidly access this information and (4) automatic organizational, administrative, and management controls.

Automation in data processing is found in the realm of computers. Man inserts instructions and data into the machine.


and the machine follows the instructions in processing data through to the finished product. This is accomplished by various techniques and controls that cause each unit of the computer system to operate at a certain time. In performing its functions, the computer can run rings around humans in three areas of uncontested superiority. These are: (1) speed, (2) accuracy, and (3) reliability. However, humans should not overlook the shortcomings of the man-made machine. It has (1) an extremely low intelligence, (2) a very limited language handling capacity, and (3) a complete inability to learn.
CHAPTER V

THE TOTAL SYSTEM CONCEPT

During the last decade, the development of electronic computers has provided a dramatic impact by supplementing man's mental powers. The ability of man to extend himself through the use of computers should also apply to his ability to make decisions and to administer his affairs more wisely. Man must apply these new concepts to education, which has become a monumental, mushrooming, dynamic, expensive, but extraordinarily rewarding undertaking. To a school or university the concept of a local computer utility has a great deal to offer. It offers the services of high-speed data processing for the administrative operations of the school. The computer can bring instantaneous access and search techniques to the assistance of would-be gleaners from the library. It makes available the tutoring capabilities of the knowledge transfer systems for instructional purposes. Computers make information processing so readily available that every student can and should be given training in it and access to it. It is conceivable that in the school with a computer system, computing service will be supplied to the entire student body and faculty on just as free a basis as the library.

The key to the successful applications of a computer system is not the implementing of current practices on equipment with
tremendous speed, but the redesign of the system as a whole. In the broadest and simplest concepts, a computer system has its greatest value in extending man's mental capabilities in two interrelated areas. The system is useful where (1) significant time consuming, repetitive, and voluminous operations of data and facts exist, and (2) where not so simple, but significantly more complex, calculations and/or logical determinations are to be made.

**Total Systems Approach**

This approach to information systems recognizes and emphasizes the fact that the nature of data processing is such that it cannot function in isolation from other departments of the institution. Data processing must be appropriately conceived as only one of the major functions of an information system which is dependent upon people, materials, procedures, and information, as well as machines. Senensieb has stated that the total systems approach requires the

... acceptance of newer systems concepts which recognize an organization as an organic system composed of many interdependent subsystems; concepts which call for the determination of the real management information needs, and which will utilize fully the unique capabilities of the computer and other new tools to produce better, more integrated administrative and educational processes.¹

Since the information system of any organization is interwoven throughout the organization, practically all of its functions are affected by the introduction of high speed data processing equipment. Therefore, commitment to a total systems approach

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and the effective utilization of a computer system in an educational institution demands that the president recognize that the administrative structure and organizational policies, to which information system personnel, as well as others, relate, must be such as to make possible the orderly development, maintenance, and control of procedures which will promote the free flow of information throughout the institution—horizontally across conventional administrative lines, and vertically between the highest and lowest levels of users, whether the users be administrators, researchers, teachers, or students.

Just what is a total information system for an educational institution? Grossman and Howe present a good definition to start with:

An information system is nothing more than a planned method of collecting necessary data and converting it to summaries and other reports that serve some vital purpose in the educational program. All of these systems are powered either by hand (manual systems) or by machine (automated systems).  

A total educational information system is a complex of procedures, methods, and instruments coordinated to collect and digest all factors involved in the educational process and to yield a product which is useful and meaningful in obtaining the goals of education. The system must be "total" in principle if not in practice. Today the system must also be automated or else it will not work except in the very smallest of units. The concept of a total educational information system may be summarized as follows: (1) the emphasis on "total" is more one of attitude than of reality; (2) such a sys-

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tem goes far beyond machines, but they do make the system possible. (3) the organizational structure of the system must have the power to be total; and (4) very little innovation in education can be justified on the basis of saving money, but rather on the assumption that education will be improved. 3

Projected Data Processing Utilization

When high speed data processing equipment is introduced into an educational organization, attempts to utilize the equipment usually fall into one of three categories. These are: (1) job-by-job conversion of existing procedures is made with no attempt to integrate the data; (2) combine and/or coordinate inputs and outputs of the procedures serving various administrators in order to eliminate some of the duplication of effort inherent in free-standing procedures; and (3) the total systems approach. The key to the system is the effective planning, with administrative support, of the information system.

The system was planned and coordinated by Mr. Walter Corvine, the Director of the Computer Centre. He was ably assisted by Mrs. Eleanor Rudolph, assistant to the director. Administrative liaison was the responsibility of Dr. Theodore Stolarz. The writer participated in many of the aspects of developing the information system, but his major contribution was in the area of student personnel services.

The Information System

I. Student Personnel Services

A. Admissions
   1. Profiles
   2. Progress reports
   3. Mortality studies

B. Student Health Service
   1. Medical record
   2. Referrals

C. Financial Aids
   1. Scholarships
   2. Work-study program
   3. Student aides
   4. NDEA loans
   5. Veteran's benefits

D. Registration
   1. Undergraduate, graduate, evening, extension
      a. origination
      b. maintenance and updating
      c. necessary statistical reports

E. Scheduling
   1. Development of computer scheduling programs
   2. Maximum space and faculty utilization with maximum flexibility

F. Achievement Records
   1. Credit hours--attempted and successful
   2. Grade reporting
3. Permanent records

4. Grade point averages
   a. all students
   b. by pre-defined parameters

G. Curriculum Records
   1. Lower division, upper division, graduate, unclassified
      a. changes and/or progress
      b. necessary statistical reports
   2. Experimental curriculum reports
   3. Specialized curriculum reports

H. Graduates
   1. Placement
   2. Certification
   3. Follow-up studies

I. Counseling
   1. Projected achievement
   2. Actual achievement

J. Student Files
   1. Student profiles
   2. Comparison studies

II. Administrative Assistance
    A. Educational
       1. Department reports
       2. Curriculum reports
       3. School planning
B. Business

1. Accounting system(s)
   a. general
   b. payroll
   c. accounts payable and receivable
   d. costs (historical and projected)

2. Purchasing
   a. purchase order control
      (1). open and completed purchase orders
      (2). supplier listings
   b. bidding reports
   c. projected and actual delivery
   d. frequency usage

3. Personnel
   a. skills inventory
   b. personnel studies
      (1). tenure
      (2). average time
      (3). average wage
      (4). sickness
      (5). progress

III. Institutional Research

A. Evaluation of College Program

1. Cost study
2. Budget development
3. Statistical surveys
   a. student
b. faculty

c. plant

d. specialized

4. Faculty reports

a. distribution

b. history and background

c. rank and salary

d. achievement and progress

IV. Faculty Research

A. Grant Assisted

B. Independent

C. Released-time

V. General Functions

A. Internal communications

B. Public relations

C. Alumni projects

D. Student projects

1. Research

2. Elections

3. Surveys

E. Cooperative Assistance with Other Schools

VI. Data Processing Education

A. Teaching Fundamentals to Students

1. Undergraduate

2. Graduate

B. Data Processing Curriculum Development

1. College
2. High school  
3. Vocational-numerical control  
4. Elementary school  

C. Training Professionals  

1. College teachers of data processing  
2. High school teachers of data processing  
3. In-service teachers for data processing assisted instruction  
4. In-service teachers in essential data processing evaluation techniques  
5. Guidance personnel in use of data processing  
6. Coordinators of data processing  
   a. cooperating schools  
   b. cooperating school systems  
   c. school districts  

In the total information system concept, the confluence of all information flow is the Computer Centre which provides an active communication network for the entire college. It is possible under this concept for the data processing installation to fulfill any combination of the following objectives:  

1. Relieving instructors of clerical tasks related to the preparation of student records and the scoring of objective tests so that more time can be allotted to giving individual student assistance.  

2. Assisting counselors to program students through the use of grouping techniques and automatic scheduling, thereby permitting more time for student counseling.
3. Providing instructors and students with access to data processing equipment as part of the curriculum of a new body of knowledge--applied computer science--related to math, physical science, social science, and business administration. Computer-assisted instruction (programmed learning) may some day exceed record production as a function of automated data processing.

4. Preparing personnel records and accounting applications for the business office.

5. Completing a statistical analysis of student data and budget projections for the president of the college.


7. Providing statistical data used for curriculum research and evaluation.

8. Preparing reports for the various federal, state, and local agencies seeking information from the college.⁴

A good information system must serve all the units in the educational organization. One of the solutions to this problem is to store the individual unit records in one file from which they can be retrieved in any format desired. Thus, all of the information in the file could be stored in five groupings or tracks. These five major areas should include (1) students, (2) staff, (3) facilities, (4) program, and (5) finance. This integrated filing system can be used, for example, to relate selected students to

⁴Statement by Theodore Stolarz, personal interview.
their instructors, the courses they are taking, and the facilities being used.

**Student Personnel Services**

The total information system will play a very important role in the implementation of student personnel services. For every student attending the college, a cumulative record must be maintained which includes complete and personal information about the student. As the college becomes larger and the number of students increases, the task of record keeping is rapidly becoming gigantic. However, computer processing makes possible rapid access to accurate, complete, and timely information on the needs, talents, interests, strengths, and weaknesses of the individual student.

**Institutional research.** An office of Institutional Research was created and staffed as part of the administrative structure of the college in July, 1967. It is anticipated that, once the cumulative records of the current students and incoming students have been processed in the Computer Centre, several significant areas could be studied. Perhaps alternative systems of student management would become feasible. It could be possible to develop programs that provided for (1) large group instruction along with small seminars and individual study (the writer is not referring to the traditional patterns of large lecture sections with students assigned to discussion sections), (2) grouping according to ability in various subject matter areas, (3) continuous progress plans, where students are encouraged to proceed at their
own rates of speed, (4) the use of the computer system as an instructional aid by serving as a mediating or controlling device for the presentation of programmed learning material, and (5) computer-aided counseling services. The implementation of these programs would necessitate flexibility of scheduling students, staff, and space, a flexibility that the writer feels could only be solved by computer based information processing techniques.

Administrative Assistance

A computer system can be a tremendous asset in serving the administrative functions effectively and efficiently in their day-to-day operations. Computers can handle normal administrative paperwork and at the same time serve in the management of educational resources. Information could be provided concerning (1) shifts or changes in enrollments, curriculum, or course organization, (2) student data for reports to the governing board, (3) determination of class size, decisions on course offerings, curriculum content, schedule of classes, and assignment of staff and facilities, and (4) business functions of accounting, inventory, and purchasing procedures. The administration would be in a better position for actions and decisions in ascertaining whether the educational processes are organized, scheduled, and maintained at minimum cost and maximum utility.

Institutional Research

Any form of administrative information system requires continual and rapid updating of the data base, because of the continuing changes in the system. In a college or university the status
of each student alters frequently, faculty and staff personnel actions are being taken daily, the budget is constantly changing, and regulations are being revised; the data base must reflect all these alterations if it is to be current. In addition, demand for particular facts is in constant flux, which requires that files frequently be added, expanded, deleted, or reorganized.

When the data base has been prepared, the college administration can query it as to the side effects of maximizing some function (number of freshman students admitted) or minimizing some other function (limiting the number of students in a particular program). Variables might include the averages in such areas as:

1. number of hours taught weekly by faculty members;
2. salary;
3. student-teacher ratio;
4. amount of faculty research productivity;
5. number of consulting hours per month.

The data base should contain in it all information about the internal operations of the college.

Faculty Research

The potential of electronic data processing equipment in the improvement of educational research and the subsequent decision making in education has many facets. Its use in the routine clerical chores of day-to-day management and control should free teachers, administrators, and other school personnel to participate more in on-going research programs. Basic data and research information on what is currently being done in the college or elsewhere, and how well it is being done, can now be stored and retrieved at will. The possibility now exists for the use of
large samples yielding a quantity of data which would have been previously unanalyzable.

The computer system's capability to correlate, compare, interrelate, and synthesize data is almost unlimited. But simply being able to compute more chi-squares or bigger correlation matrices, or t-tests, and doing it faster and easier, may not in itself make much difference in the quality of the educational research being done. The value is that it should produce a movement away from the traditional univariate research design which proved so successful for physical scientists, but which has had little pay-off in educational research. 5

General Functions

Campus-wide participation in the use of the computer installation requires constant planning and forethought. It is the intent of the college to introduce the facilities to the students because the Computer Centre is considered a vital component of modern education. An introductory program is being discussed, to be pursued on an experimental basis, to bring selected classes into the Computer Centre for a demonstration-lecture. This will include a general description of computer systems and their uses, followed by a demonstration of a special problem suited to the class and worked out in advance with the cooperation of the instructors.

Other types of service to the college will include (1) data for the Alumni Association, (2) college directories, (3) mailing labels, (4) time for student research projects, and (5) comprehen-

5Statement by Carl Clark, personal interview.
sive mailing lists. These services will be available to all departments of the institution.

Data Processing Education

On many campuses instructional uses of computers can be traced to IBM's early policy of making its sixty per cent educational contribution contingent on the institution's offering at least one course in scientific computation or numerical analysis and one course in business data processing. A recent survey by the Curriculum Committee on Computer Science of the Association for Computing Machinery lists twenty-three colleges and universities reporting some sort of curriculum that could be identified as computer science. The survey does not include the many two-year colleges that are offering vocational training in computer programming and operation. A review of section six of the information system outline will indicate the far-reaching plans for computer sciences at Chicago State College.

In education, as in business, data processing applications first developed as single-purpose, one area services produced with electronic accounting machines. As these applications increased in variety, the integrated phase of development appeared along with the first commercial use of the computer around 1955. Two or more interoffice applications were planned to complement each other by eliminating the repetition of similar source data. The

advanced phase of integrated data processing called the "total in-
formation system" approach has appeared in the past few years.
The electronic computer, mainstay of an advanced information
processing technology, is central to the solution of information
management and control problems in education.
CHAPTER VI

COMPUTER PROCESSING OF STUDENT RECORDS

The great increase in school populations has brought new and increasing demands for information handling and processing in education. For example, class scheduling and the maintenance of student records have become so complex and extensive that many schools could not perform these functions without the help of automated machinery. The computer has been called upon in increasing numbers to provide services of this kind in education.

As one of the oldest administrative officers in a college or university, the registrar is the official charged with the basic functions of registration, assignment of class locations and hours, scheduling of examinations, maintenance and updating of student records, certification of students for graduation, and the issuance of transcripts. Generally, too, the registrar has the responsibility of certifying students under Selective Service and Veterans Administration regulations.

Probably the single most important phase of the registrar's responsibility is that of registration. Arranging the machinery for registration, scheduling times for registrants to appear, sectioning, and checking students' forms for accuracy of information contained thereon, as well as for possible class conflicts, are vitally necessary to insure efficient and effective
operation. Registration forms must be so structured as to collect pertinent data and information which will be meaningful in the academic situation. The registrar, in the construction of simple but effective registration forms, must exercise an overview of the entire academic picture in order to make the registration forms contribute to this total educational purpose.

The philosophy and objectives of the total systems concept were discussed in the previous chapter of this work. The planned implementation of the total systems concept at Chicago State College was enumerated in the outline entitled The Information System. While it was the intent of this study, thus far, to illustrate the need, purpose, and implementation of computer processing in institutions of higher learning, it was the purpose of this section to relate computer processes to the processing of student records. Therefore, this investigation was restricted to the several aspects of the information system outline under the heading of Student Personnel Services.

While it was imperative that many of the techniques and procedures of student record keeping be revised, the responsibility for initiating the various phases of student records did not change. The various offices charged with performing the implementation and maintenance of student records from admission to graduation remain the same.

The plan was to present the information relating to computer processing in a manner similar to the procedure used in describing the manual techniques of student record keeping. Therefore, the following paragraphs will describe the system of
computer processing techniques as they pertain to (1) admission to
the college; (2) registration; (3) record keeping procedures and
techniques; (4) dissemination of student information; and (5)
evaluation of a student's academic record for graduation.

Admission to the College

The procedures for applying for admission to the college
were described in detail in Chapter III, Manual Techniques of Rec­
ord Keeping. In this section of the work, it is the intent of the
writer to describe the methods and techniques developed to process
prospective applicants with the computer.

Office of Admissions. The Office of Admissions initiates
the processing procedure for all undergraduate students applying
for admission to the college. Upon the receipt of an application\(^1\)
for admission, the Admissions Office:

1. Forwards the application with the application fee to the
cashier in the Business Office.

2. The cashier stamps "Application Fee Received" on the ap­
application and forwards it to the Computer Centre.

3. The Computer Centre initiates:

   a. A seven-card format of "Student History."\(^2\)

   b. Name and address cards for Admissions and Health
      Services.

   c. Admission control cards.\(^3\)

1See Appendix 9, p. 170.
2See Appendix 10, p. 171.
3See Appendix 11, p. 172.
d. Four sets of printed labels, one set for admissions and three sets for Health Services.

4. The Computer Centre returns the application for admission, control cards, and labels to the admissions office. They also forward name and address cards and labels to Health Services.

5. Health Services mails a copy of the Medical Health Record\(^4\) to the prospective applicant.

6. When the Medical Health Record is returned to Health Services by the prospective applicant, Health Services forward the applicant's name and address card to Admissions.

7. The Student Medical Record is then filed in the office of Health Services.

Upon the receipt of the admissions materials from the Computer Centre, the admissions office initiates a Student Record Folder for the prospective applicant. The following pieces of data are included: (1) application for admission, (2) high school transcripts, (3) college transcripts, if applicable, (4) scores on the American College Testing Program (ACT), (5) student medical report, (6) evaluation of credits on previous college work, if applicable, (7) pre-registration form, (8) information concerning the awarding of scholarships,\(^5\) if any, and (9) letter of acceptance or rejection by the admissions officer. A graphic illustration of the foregoing procedure is contained in Figure 1, Procedure

\(^4\)See Appendix 12, p. 173.

\(^5\)See Appendix 13, p. 174.
Once it has been ascertained as to whether the prospective applicant has been accepted or rejected for admission to the college, the admissions office forwards the student record folder and control card to the Computer Centre. If the student has been accepted for admission, the Computer Centre (1) completes the processing of the student history in the master student file, (2) prepares name and address cards for incoming freshman students for the registrar, (3) prepares a registration packet for transfer students, (4) returns the student record folder and control card to Admissions, and (5) destroys the seven-card student history format after the student has registered and all materials are processed. If the prospective applicant has been rejected for admission to the college, the Computer Centre (1) stores the seven-card student history format for possible re-application, (2) prepares three copies of the rejection list and forwards the lists to Admissions, Health Services, and the Office of Financial Aid, and (3) returns the student record folder and control card to Admissions. The seven-card student history format is filed in the Computer Centre for a period of three years if (1) a student is eligible for admission but did not appear, (2) the student withdraws from the college before registration, and (3) the application for admission is rejected. If nothing has occurred within a period of three years to alter the prospective applicant's situation or classification, the seven-card format is destroyed. A graphic illustration of the foregoing procedure is contained in Figure 2, Procedure for Processing Applications which have been
Figure 1

Procedure for Processing Applications for Admission

1. Admission Form Arrives
   - $15 Fee
   - No $15
   - Return Sender

2. Form and Check Sent to Cashier
3. Form Sent to Computer Center
4. Student Hist. Cards Punch Missing Fields Left Blank
5. N&A Card Duplicated on Admission Control Card
6. One Set of Labels for File Folders
7. Control Cards, Labels and Forms Returned to the Office of Admissions
8. Evaluation Process
   - Accepted or Rejected

Three Sets of Labels Printed
Cards and Labels Sent to Health Service
Medical Form Sent to Student
Accepted or Rejected (see p. 90).

A comparison of the materials contained in the Student Record Folder using computer processing techniques with that of manual techniques of record keeping will reveal that the data and information are almost identical. One may wonder why the Student Record Folder is necessary if all the materials were processed in the Computer Centre. There are several very important reasons for maintaining a dual system of initiating a student's record at this stage of implementing computer processing. These are:

1. The Computer Centre began its formal operation in May 1967. Its initiation with processing student records was with the entering students for the Fall Trimester, 1967.

2. There are thousands of student record folders in the Office of the Registrar which must be processed. The initial phase of processing these records has begun, with the processing being restricted to the current active file of students.

3. No procedure has been developed for processing an applicant's high school and college transcripts.

4. A dual system of student information will be maintained until it has been clearly demonstrated that the computer system is functioning effectively and efficiently.

After the Student Record Folder has been returned to the Admissions Office by the Computer Centre, the processing procedure is identical to that which was described under the sub-heading of Office of Admissions in Chapter III, Manual Techniques of Record Keeping.
FIGURE 2
PROCEDURE FOR PROCESSING APPLICATIONS WHICH HAVE BEEN ACCEPTED OR REJECTED
Coordinator of Graduate Studies. In a revision of the administrative organizational structure of the college in July 1967, the graduate school degree-granting programs were placed under the direction of the Coordinator of Graduate Studies. Students seeking admission to a graduate degree-granting program must file an application\(^6\) for admission in the office of the Coordinator of Graduate Studies. Upon the receipt of an application for admission, the office:

1. Forwards the application with the application fee to the cashier in the Business Office.

2. The cashier stamps "Application Fee Received" on the application and forwards it to the Computer Centre.

3. The Computer Centre initiates a seven-card format of Student History.
   a. The seven-card format is destroyed after the student has registered and all materials are processed.
   b. The seven-card format is filed for three years and then destroyed if the applicant is rejected.

After the Computer Centre returns the application for admission, the office of the Coordinator initiates a Student Record Folder. The rest of the processing procedure is identical to that explained in Chapter III.

Office of the Registrar. Unclassified graduate students\(^7\) and special students\(^8\) apply for admission to the college in the

\(^6\)See Appendix 14, p. 175.
\(^7\)See Appendix 15, p. 176.
\(^8\)See Appendix 16, p. 177.
Office of the Registrar. Neither of these two academic classifications is charged the application fee because the students are not applying for formal admission to a degree-granting program. A limited amount of data are collected from students with either of these academic classifications. The data are gathered from the application and enrollment envelope. The procedure for admitting these students is identical to that explained in Chapter III.

Registration

Nothing is quite so frustrating to the registrar as the task of working out class schedules and registration. Ideally, different courses should be allowed different amounts of class time; some teachers are better off lecturing to large groups and others consulting with a few students at a time; some students should be allowed more unsupervised study time than others. But almost always the flexibility that would allow such variations is utterly lacking. To match the college's resources to its students needs with a manual system of constructing the schedule of classes, the registrar is forced back to the familiar fifty-minute period for every course. It is anticipated that it will probably be two years before the college will be able to develop a computer-based schedule of classes. Once the initial phase of student record keeping has been completed, it is anticipated that the registrar and a systems analyst will begin to work on the problem.

Preparation of Registration Cards. Registration cards[^9] must be prepared for all courses and sections of courses offered

[^9]: See Appendix 17, p. 178.
each trimester. The following procedure is implemented to generate the registration cards.

1. The Computer Centre duplicates a set of master course cards and a set of the faculty identification cards for the registrar's office.

2. The registrar's office assembles the registration deck from these two sets of cards. This is accomplished by following the departmental course offerings as published in the schedule of classes. For example, the Department of Art is listed first and the courses are listed in numerical order. The procedure is to
   a. select the master course card of the first course listed;
   b. select the identification card of the instructor teaching the course, indicate the section number and number of cards to be generated, and file the card behind the master course card;
   c. repeat steps one and two until the deck is completed; and
   d. return the completed deck to the Computer Centre.

3. The Computer Centre processes the deck and prepares a read-out to be checked by the registrar.

4. If the read-out is correct, the registration cards are produced and forwarded to the registrar's office for use in registration.

A graphic illustration of the procedure is presented in Figure 3, Preparation of Registration Cards (p. 94).
**COMPUTER CENTER**

**1.**
- Duplicates master crse card deck one to one
- Interprets duplicated deck
- Duplicate faculty id deck six to one
- Interprets duplicated deck
- Sends two decks to registrar

**2.**
- Registrar assembles registration deck for trimester
- Compares with schedule
- Writes sec. no. on each instr. card
- Sends assembled deck to computer center

**3.**
- Punches section no. into instr. cards
- Lists assembled deck for check by registrar
- Sends list to registrar for checking
- Sends two decks to registrar
- Returns list to computer center for corrections

**Figure 3**
PREPARATION OF CLASS CARDS
Student registration forms. Each student is required to complete or check four registration forms during the registration period. These are (1) Registration Worksheet,\textsuperscript{10} (2) name and address card,\textsuperscript{11} (3) Enrollment Envelope,\textsuperscript{12} and (4) registration cards. The registration worksheet is the only form upon which the student must do any writing. The form contains general instructions, space for the student to work out his program, and space for a numerical listing of courses. The student must check the name and address card to verify the correctness of the information. If the name and address card is wrong, there is space on the card for the student to make corrections. The enrollment envelope is a pre-printed form which is prepared for each registration. The information is gathered from the application for admission and previous enrollment at the college. The enrollment envelope is prepared for all current students for the following registration period. Each student must secure a registration card for each course he intends to register for. The registration cards and the name and address card are contained in the enrollment envelope. The data gathered at registration provide the information and statistics for the reports described in Chapter III.

Freshman Blocked Mail Registration. Freshmen applying for admission to the college for a fall term are registered by mail. The procedure for registering freshmen by mail is as follows:

\textsuperscript{10}See Appendix 18, p. 179.
\textsuperscript{11}See Appendix 19, p. 180.
\textsuperscript{12}See Appendix 20, p. 181.
1. The Admissions Office notifies the student that he is eligible for admission and mails the pre-registration form.13

2. The Registrar builds a series of blocks containing the courses in the first term of the various curricula and sequences.

3. The student returns the pre-registration form with the registration fees.

4. The original copy of the form is forwarded to Admissions, the carbon copy to the Registrar.

5. The Registrar forwards a copy of the freshman blocks to the Computer Centre.

6. The Computer Centre
   a. holds the registration cards for each block;
   b. creates a print-out of the freshman schedules;
   c. punches name and address cards;
   d. prepares two sets of labels for mailing purposes;
   e. returns print-outs, name and address cards, and labels to the Registrar.

Figure 4 presents a graphic illustration of the procedure to this point (see p. 97).

When the student returns the pre-registration form he indicates his choice of curriculum and sequence. The student must also indicate whether or not he wishes to be registered for a full academic program. With this information in front of him, the registrar assigns the student to an appropriate block, indicates the

13See Appendix 21, p. 182.
FIGURE 4
FRESHMEN BLOCK REGISTRATION
STEP ONE
block number on the name and address card, and mails a copy of the
block to the student.

After all the incoming freshman students have been blocked,
the registrar forwards the name and address cards to the Computer
Centre for processing. A detailed illustration of the processing
procedure is presented in Figure 5, page 99. When the processing
is completed, the Computer Centre forwards the class schedule
cards14 and name and address cards to the Registrar.

Record Keeping Procedures and Techniques

Again, the methods and techniques of student record keep-
ing will be presented for a period of one term. The writer will
describe what takes place in the Computer Centre and the records
office to process student records.

Permanent record card. Presently the procedure for gener-
ating the permanent record card is identical to that of the manual
system of record keeping. This procedure will remain in effect un-
til all current student records have been processed by the Comput-
er Centre. At that time, it is anticipated that the computer sys-
tem will generate, maintain, and update the student's permanent
record. Using the computer, two copies of a student's total rec-
ord would be generated at the end of each term. One copy will be
mailed to the student and the other copy forwarded to the regis-
trar. The printout would include all courses the student has com-
pleted, with letter grades, number of credit hours completed, tri-
mester grade point average, and cumulative grade point average.

14 See Appendix 22, p. 183.
FIGURE 5
FRESHMEN BLOCK REGISTRATION
STEP TWO
Processing registration materials. Each registrant must complete or check the three registration forms, plus a registration card for each course registered for. The registration materials are processed in the following manner:

1. The registration packet is forwarded to the Computer Centre.

2. The Computer Centre
   a. checks all forms and forwards registration worksheet to the records office,
   b. updates names, addresses, and social security numbers,
   c. processes name and address cards with registration cards,
   d. generates student class cards for instructors and forwards them to the various departments for distribution,
   e. prepares a duplicate set of the registration cards to serve as an active and current file in the records office,
   f. prepares a print-out on the student schedule card of the programs of all students who have registered for the term,
   g. forwards the student schedule card to the records office which, in turn, forwards a copy of the form to the Director of Student Activities,
   h. prepares preliminary class lists for instructors and forwards them to departments for distribution.
A graphic illustration of the computer processing is presented in Figure 6, Class Card Processing, on page 102.

After the computer has processed the name and address cards with the registration cards to produce the necessary outputs, enrollment envelopes are processed. The student master tape file is updated, corrections made, if necessary, and the permanent information checked for accuracy. The enrollment envelopes are then filed and stored till the end of the term.

**Preliminary class lists.** The entire procedure for producing the preliminary class lists with computer processing is different from that of the manual system. The preliminary class lists are produced as part of the procedure for generating class cards for instructors. Once again, refer to Figure 6 for a graphic illustration of the processing procedures. There is a tremendous saving of effort in the records office in terms of checking and filing registration forms, as well as the necessary preparation required in the past, to send the materials to the Service Bureau.

When using the manual system of record keeping, a non-permanent student identification number was assigned to each student. With the computer system of processing student records, the social security number was decided upon for student identification. All materials processed in the Computer Centre concerning the student are filed and stored by social security number.

**Changes of student programs.** When using the manual system of record keeping, all changes initiated by a student were hand posted onto the appropriate form. With the computer system of processing student records, the computer updates and changes the
**FIGURE 6**
CLASS CARD PROCESSING

- COMPUTER CENTRE RECEIVES REGISTRATION PACKETS
  - HOLD ENROLLMENT ENVELOPES FOR LATER UPDATE
  - N & A CARD CORRECT
    - UPDATE NAMES AND ADDRESSES
    - UPDATE SOCIAL SECURITY AND STUDENT CLASSIFICATION
  - PROCEED TO
    - PROCESS N & A CARDS REGISTRATION CARDS
      - STUDENT CLASS CARDS
      - INTERPRET CLASS CARDS
        - COLLATE LIKE GROUPS
          - INTERFILE INSTRUCTOR HEADER CARDS
            - CLASS CARDS TO DEPTS FOR DISTRIBUTION
          - DUPLICATE SCHEDULES FOR REGISTRAR
            - SEND TO REGISTRAR'S OFFICE
        - SEND DECK TO REGISTRAR FOR FILE
          - TAPE FILE OF STUDENT PROGRAMS
            - SORT INTO COURSE ORDER
              - SEND TO DEPARTMENTS
            - CLASS LISTS FOR INSTRUCTORS
Changes are processed in the following manner:

1. The student fills out the change of program form\textsuperscript{15} in the registrar's office during the first week of classes, and in the counseling center throughout the term.

2. All forms are forwarded to the records section of the registrar's office to initiate the processing procedure.

3. The necessary materials are forwarded to the Computer Centre for processing.

4. The Computer Centre processes the add, drop, or total withdrawals, and forwards the appropriate forms to either the registrar's office or the instructors involved.

A graphic illustration of the change of registration procedure is presented in Figure 7, Changes of Registration, page 104.

The future expansion of the college will necessitate an expansion of the facilities and uses of the Computer Centre. One of the most pressing and critical areas is that of "real time" processing of data. This type of processing involves systems and equipment which will allow users immediate access to information in the computer's memory.

The planned system will involve the use of remote terminals which will be located away from the Computer Centre. One of the Cathode Ray Terminal Units, which are produced by the Bunker-Ramo Corporation, will be installed in the registrar's office. The Cathode Ray Terminal Unit will provide for immediate processing of student records by personnel in the registrar's office.

\textsuperscript{15}See Appendix 23, p. 184.
FIGURE 7
CHANGES OF REGISTRATION
The unit resembles a television set and the information is displayed in letters, numbers, or special characters, but other forms are possible, such as the display of a graph on the screen. A photograph can be taken of the screen to record the information for distribution and filing. The unit will make possible remote inquiries of the central system by operating the keyboard to request information, and receive visual answers displayed on the screen. The opportunities for using this kind of equipment by faculty and staff are almost limitless. It is anticipated that the Cathode Ray Terminal Units will be added to the computer system in July 1968.

Final class lists. The same procedure is used to generate the final class lists as was used for the preliminary class lists. Shortly after the last day to drop classes, with the records in the registrar's office and the Computer Centre being updated and identical, the final class lists are generated.

Again, the class lists are distributed to the faculty shortly before mid-term. Faculty members record D and F grades on the class lists, return them for processing, and receive them again for the recording of final grades.

It is anticipated that preliminary and final class lists will no longer be generated with the beginning of the fall term of 1968. It is a duplication of effort coinciding with the generation of instructors' class cards. The class lists serve as a check against the registration cards filed in the registrar's office to verify the accuracy of the procedure established for computer processing.
Mid-term D and F grade reports. The procedure for processing D and F mid-term grade reports is identical to that described for the manual system. It is anticipated that a new procedure will be instituted when final class lists are no longer generated. The procedure will be to generate a second set of grade cards for each instructor. The faculty can record D and F grades on these cards, destroy the cards of students that are not receiving a mid-term D or F grade and forward the completed cards to the Computer Centre for processing. The Computer Centre will then generate the reports discussed in Chapter III, and forward them to the appropriate offices.

Final grades. At the end of a term, faculty members will record their grades for the students on the final class lists, and also on the students' grade cards. While the final class lists are printed, they will be filed in the records vault. It is only the grade cards that will be forwarded to the Computer Centre for processing. Until a new permanent record card is developed, the Computer Centre will generate grade labels for the present permanent record card and the final grade report for all students. The information contained on these two forms is identical to that described in the manual system of record keeping. As stated previously, when the Computer Centre has updated its student history files to include the student's total academic record, students will receive an updated copy of their academic record at the close of each term. This procedure will then eliminate the necessity for generating grade labels and final grade reports.
dissemination of Student Information

As stated previously, an office of institutional research was created and staffed in July 1967. It is now the responsibility of this office to complete the reports and studies previously conducted by the registrar's office. The office has the responsibility for continuing the reports discussed in Chapter III. The Office of Institutional Research has been deliberately housed adjacent to the Computer Centre for easy access to student information. Some of the newer responsibilities of the office were enumerated in the information system outline. Also, several statements discussed in the section on Student Personnel Services of Chapter V would lend themselves to investigation and study. It is anticipated that with an office established to carry out organized institutional research, a great wealth of information should become available for faculty, staff, administration, and student use.

The counseling center at the college will also be a recipient of a Cathode Ray Terminal Unit. The possibilities for its use by the counseling staff in conjunction with their guidance responsibilities are almost limitless. Information about a student would be available instantly and little time would be wasted by the counselors in searching through student folders seeking information. The availability of the units in the counseling center and the registrar's office should prove to be a tremendous asset for faculty and students.

Central computer facility. Information systems using computers and other data processing equipment are playing an increasingly important role in the operation of educational institutions.
The total system concept approach to the informational needs of an educational institution calls for a specification and definition of the data and reports needed to operate the school. In defining the system, the basic data elements of the system also have been specified. Frequently, these data elements are common to similar educational institutions and can be used to establish a common data base. Having data and data systems that are comparable between and among institutions will provide information to administrators which would develop a better understanding of the educational programs at the several institutions.

Chicago State College has initiated exploratory talks with Northern Illinois University and Illinois State University concerning the establishment of a central computer facility. Discussions have led to an agreement that a large computer system could be installed at one location, and each of the other users would have real time access to it by means of small satellite computers. The control computer system envisioned would be similar to an IBM 360-Model 65 installation. This system would accommodate all administrative needs as well as faculty and student needs. A common system would allow for an interchange of ideas and systems among the schools.

Academic Evaluation for Graduation

At this writing, Chicago State College is a single-purpose institution—-that of teacher education. All undergraduate students earn a Bachelor of Science in Education degree, and graduate students are awarded the Master of Arts, Master of Science, or
Master of Science in Education degree, depending upon their program of study. All students in degree-granting programs must file an application for graduation in either the registrar's office for undergraduate students, or in the office of the Coordinator of Graduate Studies for graduate students.

The transition from a manual system of evaluation of a student's record for graduation to an automated one will not be completed until all current student records have been processed by the Computer Centre. It is anticipated that the procedure for evaluation will be a combination of man-computer operation to complete the task. The computer will be programmed to evaluate the required courses in a curriculum, and the registrar with his staff will evaluate elective courses or departmental courses in a particular sequence. For example, a student applies for graduation and indicates that his curriculum is Secondary Teaching Major, English sequence. Students electing to follow this program must complete thirty-eight credit hours of work in English beyond the number of credit hours required of all students for graduation. Of the thirty-eight credit hours, eighteen credit hours are specified and twenty credit hours may be chosen, with departmental approval, from a listing of twenty-seven courses offered by the department. The computer can be programmed to evaluate the required courses in the curriculum, and the eighteen credit hours of required course work in the English sequence. The registrar and his staff would be responsible for the evaluation of the twenty credit hours of work in English.

The procedure used to evaluate the records of graduate
students will be identical to that discussed in the section on manual techniques of record keeping. There are several reasons which influenced the decision of maintaining the manual system for graduate students. These are (1) the responsibility for evaluating graduate students is not centrally located, each department being responsible for its own program, (2) the number of courses to be evaluated is very small when compared with the undergraduate program, and (3) the programs are planned in the various departments to meet the individual needs of the student.

The Trial Run

A trial run of the computer system was conducted during the Fall Trimester, 1967. A dual registration procedure was implemented to test the efficiency and effectiveness of the system. All students enrolling at the college were required to complete a dual set of registration forms, one set for the manual system and the other set for computer processing. Several facets of the operation of the computer system became evident during the dual registration procedure. These were:

1. The efficiency and effectiveness of the system depends upon the accuracy of the input documents. These are prepared by human beings. Computer personnel have coined a word which is apropos to the foregoing statements. The term is GIGO--Garbage in, Garbage out.

2. A need for constant communication between the Computer Centre and the Office of the Registrar. Responsibilities must be delegated to the appropriate offices and all per-
sonnel just be acquainted with what they are expected to contribute to the system.

3. A time-table of the operational procedures must be drawn up and strictly adhered to for each term. Each office must meet the necessary time limitations for the completion of their responsibilities if the system is to function efficiently and effectively.

4. Social Security numbers must be on file for all students because it will be the coding technique used to implement the system.

5. The system as developed is more sophisticated than what would be necessary for the present enrollment of the college. The system was planned so that all facets of the operation would be functioning perfectly when the new campus proposed for the college is completed. It is anticipated that the plant will be constructed for a maximum of 15,000 students.

6. The design of the registration forms facilitated the operation of the Computer Centre and also gathered the pertinent student information.

7. Faculty resistance to new procedures and methods diminished as they became acquainted with the system.

8. There is a need for a new position to be created in the Office of the Registrar for coordinating the functions of this office with that of the Computer Centre. Such a position was approved by the president of the college with the concurrence of the governing board. The position will
There are many reasons for the adoption of the computer system of data processing by the college. These are (1) increased volume of data, (2) accuracy and control, (3) economy, (4) improved report schedules, and (5) research applications. There is a limit as to how much volume of work may be divided and how many people can participate without causing undue delays or excessive errors. The processing of data usually requires repetitive operations to be performed on one document after another with few variations. This type of work is a natural for machines. A machine can be depended upon to react exactly the same time after time to a given set of conditions. The machine does not think, it just performs according to the instructions given to it by the program.

The more the human element can be removed from the processing of data, the more accurate the results will be. The human being has a mind and makes a decision each time he performs an action. Because he is not a machine, he will not always make the same decision under the same set of conditions. The free will of the human mind is certainly an advantage which mankind has over all other creatures, but in the drudgery involved in the task of plodding through reams of paper it is a disadvantage. Man realizes this and has invented machines to do the drudgery for him. After all, why should man, who has the ability to think, to analyze, and to make decisions, do mechanical operations which can be performed by a lower type of intelligence?
CHAPTER VII

A COMPARISON OF DATA PROCESSING SYSTEMS

College and university administrators are beginning to be aware of the potential utility and power of truly integrated computer information systems. In the early days of university data processing centers, it was a widespread conviction that research and administrative units should be separate; that even within the administration separate facilities should be used for, say, grade reporting and payroll, to avoid peaking and queuing.¹ As computers become faster, as time-sharing systems become practical, as inter-computer system integration makes it possible to have a separate satellite that is all one's own part of the time and a feeder to a very elaborate and sophisticated system another part of the time, and as programs provide reliable scheduling and multi-program processing so that both payroll and grade reports can be handled at the same time, the movement is toward the design of centrally planned and managed systems that meet the needs of research, instruction, and administration.

Whenever there is information to be sent, recorded, remembered, dug up, worked on, worked over, taken apart, put together, put back, sorted, merged, compared, compiled, presented, or di-

carded, one is likely to find an electronic computer. Processing information, doing in fact almost everything imaginable to it except ignoring it, is the peculiar capability of this electronic creation. The uninitiated, seeing a large computer system in operation for the first time, is easily overwhelmed at the sight of these machines of metal and glass as they spin their tapes, hum to themselves, rapidly blink lights, and whiz paper through a madly clanking printer. Computers are rather sensitive to heat, cold, and humidity, and need controlled environments in which to operate at peak efficiency. Sufficient space must be available to provide adequate facilities for the equipment and the necessary air-cooling and dehumidifying devices.

The main component of an electronic data processing system is, of course, the central processing unit, or the computer itself. Computers are of two main types, analog or digital, with the latter far outnumbering the former. Digital computers can be either special purpose or general purpose computers. Little will be said in this work of the special-purpose computer. It is designed for a limited type of problem. General purpose computers are designed to deal with a countless variety of operations. They may be called upon to do a simple reproducing operation one minute, a fairly complicated payroll calculation the next, and a complex mathematical computation immediately thereafter. In general, a computer's capacity and speed are related to its cost; the lower the speed and the smaller the capacity, the lower the cost.

With all computers, no matter what type or classification, there must be a convenient method of feeding information into a
machine and of getting it back in modified form. To begin with, data usually are in a form not acceptable to a computer; data most often originate on a piece of paper in either written or printed format that the computer cannot recognize. After the computer has accepted the data and made its computations, there must be some way to retrieve this new information in a form man can use. Because a computer is capable of carrying out operations on data so quickly, no method has been discovered which can either input or output data fast enough to keep up with the computer's internal operating speeds.  

The writer investigated the computer systems developed by Eastern Illinois University, Northeastern Illinois State College, and Western Illinois University. The purpose of the investigation was to determine what computer system each of these institutions had developed to solve their individual record keeping problems. Each of the schools, including Chicago State College, used equipment designed and manufactured by the International Business Machines Corporation. Three phases of computer system development are represented at the four institutions. These systems are (1) the 1620, which is the oldest of the IBM computer systems; (2) the 1401, the second phase of computer system development by IBM; and (3) the 360, one of a new generation of computers, with first customer deliveries in 1965.

Eastern Illinois University

The data processing system established at Eastern Illinois

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University contains both unit record equipment and electronic data processing equipment. The unit record equipment consists of the standard IBM units for this purpose but the electronic data processing equipment consists of the very elaborate and sophisticated IBM System 360-Model 30.

Unit record equipment at EIU. The unit record equipment included in the system are those pieces necessary to implement the four functions of (1) recording, (2) sorting, (3) calculating, and (4) summarizing. The pieces of equipment are the IBM Models: (1) 029 Card Punch, (2) 059 Card Verifier, (3) 514 Reproducer, (4) 557 Interpreter, (5) 083 Card Sorter, and (6) 088 Collator.

Student records are initiated in the form of punched cards. Information must be converted from source documents to punched cards. The recording function involves those tasks concerned with the preparation of the punched cards. The machines in the system which perform the recording function are the IBM Models: (1) 029 Card Punch, which punches the card; (2) 059 Card Verifier, which checks the accuracy of the punching; (3) 514 Reproducer, which duplicates existing cards; and (4) 557 Interpreter, which prints on the card the punched information.

The sorting or classifying function involves those tasks which are concerned with the rearranging of punched cards. The machines in the system which perform the sorting or classifying function are the IBM Models: (1) 083 Card Sorter, which sorts cards; and (2) 088 Collator, which sorts files.

The calculating function is concerned with making calculations from punched cards. The function of the calculator is to
calculated—rapidly and accurately—with data contained in punched cards. A computer is sometimes used in unit record systems rather than a calculator. The IBM System 360-Model 30 Central Processing Unit is used for all calculating functions.

The last function, the summarizing function, involves tasks concerned with producing the results from processed punched cards. The machine used for this purpose in the EIU system is the IBM Model 1403 Printer.

The unit record system at Eastern Illinois University is similar to that developed for Chicago State College. The same types of machines are used, but not the same models. This is true for all the equipment with the exception of the IBM Model 557 Interpreter, which is identical at both schools. The models used at Eastern are a generation newer than those at CSC. One machine which is not included in the EIU system is the IBM Model 407 Accounting Machine. The IBM Model 1403 Printer is used to fulfill the summarizing function. The IBM Model 407 Accounting Machine is included in the CSC system for two very basic reasons. These are: (1) the machine is necessary for teaching classes in data processing; and (2) the capacity of the IBM Model 1401 Central Processing Unit is not as great as the IBM System 360-Model 30, and therefore an auxiliary machine is necessary so as not to overburden the central processing unit when the processing can be accomplished in another manner. In both systems, the IBM Model 1403 Printer serves as the output device of the computer. The IBM Model 407 Accounting Machine can perform the summarizing function directly from punched cards, and can turn the holes in the cards
back into recognizable numbers and letters. The computer can then
be used for other processing and operations.

The computer system at EIU. A computer system is an inter-
related group of components, which consist of a series of function-
al parts, each of which plays a specific role in the system. The
components are categorized as: (1) input/output, (2) secondary
memory-input/output, and (3) central processing unit.\(^3\) The compo-
nents of the computer system are the IBM Models: (1) 1030 Data
Collection system, which consists of the 2701 Transmission Control
Unit, five 1031 Input Stations, three 1033 Printers, and 1034 Card
Punch; (2) 2821 Control Unit for the 1052 Printer Keyboard, 1403
Printer, and the 2540 Card/Read/Punch Unit; (3) 2848 Display Con-
trol Unit to control the eight 2260 Display Stations; (4) 2841
Storage Control Unit for the five 2311 Disk Pack Units, 2321 Data
Cell Drive, two 2401 Series Magnetic Tape Units, and the 2403 Ser-
ies Magnetic Tape Unit; and (5) 360 Central Processing Unit.

The machines in the system which perform the input func-
tion are the IBM Model: (1) 1031 Input Station and 1034 Card
Punch of the 1030 Data Collection System; (2) 1052 Printer Key-
board and the 2540 Card/Read Punch Unit; (3) 2260 Display Station;
and (4) 2311 Disk Pack Unit, 2321 Data Cell Drive, and the 2401
and 2403 Series Magnetic Tape Units. The input devices of the com-
puter systems at Chicago State College and Eastern Illinois Univer-
sity are shown in Table I.

The output units are the machines concerned with getting

\(^3\) Abrams and Corvine, loc. cit.
TABLE I

INPUT DEVICES OF TWO COMPUTER SYSTEMS

<table>
<thead>
<tr>
<th>Chicago State College</th>
<th>Eastern Illinois University</th>
</tr>
</thead>
<tbody>
<tr>
<td>1402 Card/Read/Punch Unit</td>
<td>1031 Input Station</td>
</tr>
<tr>
<td>1311 Disk Pack Unit</td>
<td>1034 Card Punch</td>
</tr>
<tr>
<td>7330 Magnetic Tape Unit</td>
<td>1052 Printer Keyboard</td>
</tr>
<tr>
<td></td>
<td>2540 Card/Read/Punch Unit</td>
</tr>
<tr>
<td></td>
<td>2260 Display Station</td>
</tr>
<tr>
<td></td>
<td>2311 Disk Pack Unit</td>
</tr>
<tr>
<td></td>
<td>2321 Data Cell Drive</td>
</tr>
<tr>
<td></td>
<td>2401 Magnetic Tape Unit</td>
</tr>
<tr>
<td></td>
<td>2403 Magnetic Tape Unit</td>
</tr>
</tbody>
</table>

As stated previously, processing is what occurs between input and output. The pieces of equipment which serve as the output media are the IBM Models: (1) 1033 Printer of the 1030 Data Collection System; (2) 1403 Printer and the 2540 Card/Read/Punch Unit; (3) 2260 Display Station; and (4) 2311 Disk Pack Unit, 2321 Data Cell Drive, and the 2401 and 2403 Series Magnetic Tape Units. The output devices of the computer systems at Chicago State College and Eastern Illinois University are shown in Table II, p. 120.

As stated previously, processing is what occurs between input and output. The processing functions are housed in one unit called the central processing unit. The processing function of the EIU computer system is performed by the IBM Model 360 Central Processing Unit.
TABLE II
OUTPUT DEVICES OF TWO COMPUTER SYSTEMS

<table>
<thead>
<tr>
<th>Chicago State College</th>
<th>Eastern Illinois University</th>
</tr>
</thead>
<tbody>
<tr>
<td>1402 Card/Read/Punch Unit</td>
<td>1033 Printer</td>
</tr>
<tr>
<td>1403 Printer</td>
<td>1403 Printer</td>
</tr>
<tr>
<td>1311 Disk Pack Unit</td>
<td>2540 Card/Read/Punch Unit</td>
</tr>
<tr>
<td>7330 Magnetic Tape Unit</td>
<td>2260 Display Station</td>
</tr>
<tr>
<td></td>
<td>2311 Disk Pack Unit</td>
</tr>
<tr>
<td></td>
<td>2321 Data Cell Unit</td>
</tr>
<tr>
<td></td>
<td>2401 Magnetic Tape Unit</td>
</tr>
<tr>
<td></td>
<td>2403 Magnetic Tape Unit</td>
</tr>
</tbody>
</table>

Input/output memory devices combine the characteristics of the two operations of input/output and memory. These devices provide ways of getting data into and out of the computer, and they are also capable of storing large quantities of information. These devices provide for random access to stored information. Five IBM Model 2311 Disk Pack Units and an IBM Model 2321 Data Cell Drive are included in the computer system for random access storage. The input/output memory devices of the computer systems at Chicago State College and Eastern Illinois University are shown in Table III, p. 121.

At least three phases of the use of electronic data processing at Eastern Illinois University are outstanding in their overall plan of operations. These phases of computer-based operations are: (1) textbook rental system, (2) registration, and (3) IBM
Model 2260 Display Stations. The other phases of their operation are similar to that of the other institutions investigated.

### TABLE III

**INPUT/OUTPUT MEMORY DEVICES OF TWO COMPUTER SYSTEMS**

<table>
<thead>
<tr>
<th>Chicago State College</th>
<th>Eastern Illinois University</th>
</tr>
</thead>
<tbody>
<tr>
<td>1311 Disk Pack Unit</td>
<td>2311 Disk Pack Unit</td>
</tr>
<tr>
<td>2321 Data Cell Drive</td>
<td></td>
</tr>
</tbody>
</table>

Textbook rental system. Students attending EIU have a choice of either buying or renting the texts that are required for their course work. A system has been devised with the aid of electronic data processing which encourages students to rent their textbooks. The system eliminates tedious and laborious manual methods of accounting for the university operated bookstore. The system is implemented by the 1030 Data Collection System. The primary purpose of this particular installation is the implementation of computer processing of the bookstore’s records. The System consists of the IBM Model 2701 Transmission Control Unit which controls the operation of the IBM Model 1031 Input Station, 1033 Printer, and the 1034 Card Punch for Terminals.

Each student is issued an identification card upon acceptance and registration at the university. The student's identification is punched into each end of the card. After a student has completed his registration and has obtained a copy of his Student Class Schedule, the student is ready to pay a visit to the university.

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4See Appendix 24, p. 185.
sity bookstore for the purpose of renting books. The student presents his identification card and Student Class Schedule to personnel in the bookstore. The personnel operating the bookstore know the titles of the texts, or can look them up, of all the books required for each of the courses listed on the Student Class Schedule. The student's identification card, together with a pre-punched book charge card, are inserted into the IBM Model 1031 Input Station, three of which are located in the bookstore. Through the operation of the IBM Model 2701 Transmission Control Unit, the data are fed into the memory of the computer. A print-out of the transactions, for a specified time period, is available as output from the computer through the IBM Model 1033 Printer. The print-out lists (1) title and author of the book, (2) date of publication, (3) publisher, (4) cost, (5) total number of volumes of a particular title in stock, (6) number of volumes charged out during the present term, and (7) number of volumes left in stock.

If the computer is unavailable to process the data transmitted by the 1031 Input Station, the data are recorded by the IBM Model 1034 Card Punch for Terminals. A punched card is processed by the 1034 Card Punch and the card may then be processed whenever the computer is ready for operation. An accurate record is now available for all transactions, with a minimum amount of clerical work, and data are available anytime one wishes to receive a print-out of the transactions. The same procedure is followed to clear the student's record when the books are returned to the bookstore.

Registration. The procedures for student registration at
Eastern Illinois University will be presented from the time the various department chairmen begin to schedule their respective courses, to when the student obtains his Student Class Schedule. The respective department heads submit their course offerings to the Dean for Student Academic Services. The Dean for Student Academic Services is responsible for (1) collating the course offerings, (2) printing the schedule of classes, and (3) preparing a pre-punched deck of master schedule cards which must be forwarded to the Data Processing Centre. The master schedule cards are processed into the memory of the computer.

All currently enrolled students are requested to complete a Preferred Schedule Request Card\(^5\) for the following term, and to submit the card to the Office of Registration and Advisement. The card lists the courses, section, and hours of the day that the student would prefer to register for. Also, students must indicate alternate courses for which they are eligible to register. The office forwards all the Preferred Schedule Request Cards to the Data Processing Centre for processing. The procedure for preregistration is as follows:

1. The master schedule cards prepared by the Dean for Student Academic Services are processed by the Data Processing Centre.
2. The information contained on the Preferred Schedule Request Card is processed.
3. The IBM System 360 Central Processing Unit matches the re-

\(^5\)See Appendix 25, p. 185.
quests by the students with the master schedule. If there is a perfect match, the IBM Model 1403 Printer prints the student's program on the appropriate form.

4. If a perfect match cannot be accomplished, the computer
   a. searches for other sections of the courses the student has requested until the student has a program;
   b. uses a combination of courses listed, plus the alternate courses listed to build a program; or
   c. is unable to build a full program from both sets of courses listed by the student, and prints only a partial program on the Student Class Schedule form.

5. Students are instructed to report to the Office of Registration and Advisement for assistance if they are not scheduled for a full program.

When all the Preferred Schedule Request Cards have been processed, a tally report is prepared by the Data Processing Centre and forwarded to the Dean for Student Academic Services. The dean distributes the tally report of the pre-registration to the appropriate administrative staff for review. Decisions now can be made, with the latest pertinent data at hand, as to whether there is any need to revise, add to, or change the original master schedule of classes in any way. All adjustments in the master schedule are reported to the Dean for Student Academic Services, who is responsible for notifying all offices of the institution of any changes or adjustments.

After the pre-registration period, the Data Processing Centre prepares and assembles the pre-registration print-out and a
kit of registration data cards for each student. Registration now takes place for all students currently enrolled at the university. A kit of registration data cards is prepared for each new student also, but new students must build their schedule of classes from the openings which remain after the pre-registration period, and the adjustments, if any, in the master schedule of classes.

The IBM Model 2260 Display Stations. Eight units of the IBM Model 2260 Display Station are included in the IBM System 360-Model 30 electronic data processing system. The display stations are located in the following offices: (1) two units in the Data Processing Centre, (2) Registration and Advisement, (3) Records, (4) Payroll, (5) Business Services, (6) Dean for Student Academic Services, and (7) Assistant to the President. Each of the stations has access to the computer and the information contained within the system. The usual procedure for the operation of the display stations is to program each station so that it has computer access only to such data and information pertinent to its own operation. For example, if the Office of Registration and Advisement wanted to discover the salary of a particular faculty member, the program for the display station in this office would be so written that this kind of information would not be available to the display station. The uses of the display stations to facilitate the educational endeavors of the institution are limited only to the ingenuity, know-how, and ability of the staff to devise new and enlightening ideas and techniques.

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6 See Appendix 26, p. 187.
Northeastern Illinois State College

Northeastern Illinois State College had its beginning as a branch of Chicago Teachers College. The school was known as the Sabin Branch of Chicago Teachers College and was located at 2216 West Hirsch Street. In September of 1961 a newly completed north campus of Chicago Teachers College opened its doors and assimilated the students attending the Sabin Branch. The North Campus, operating under a separate administration, became known as Chicago Teachers College North. What had been called the Main Campus of Chicago Teachers College now became Chicago Teachers College South. In July of 1965 both campuses of Chicago Teachers College were removed from the control of the Chicago Board of Education and became state colleges. The names of the two campuses were changed to Illinois Teachers College: Chicago-South and Illinois Teachers College: Chicago-North. Each institution continued operation under its own administration and in fact became two separate institutions under the operation and control of the Illinois Board of Governors of State Colleges and Universities. In July of 1967 the names of the two institutions were changed again and they became the Chicago State College and Northeastern Illinois State College.

When Northeastern Illinois State College, nee Chicago Teachers College North, moved to its new location in September, 1961, an electronic data processing system was installed to process student records. All operational procedures and techniques had been worked out so that all student records generated by the institution would be accomplished by the Data Processing Centre. The data processing system established at Northeastern
Illinois State College contains both unit record equipment and electronic data processing equipment.

Unit record equipment at NISC. The unit record equipment included in the system are those pieces necessary to implement the four functions of (1) recording, (2) sorting, (3) calculating, and (4) summarizing. The pieces of equipment are the IBM Models: (1) 026 Key Punch and 029 Card Punch, (2) 056 Card Verifier, (3) 519 Reproducer, (4) 557 Interpreter, (5) 082 Card Sorter, (6) 085 Col-lator, and (7) 407 Accounting Machine.

The system of data processing at NISC is basically a punched-card system. With the exception of the IBM Model 1620 Central Processing Unit, the system consists of electromechanical accounting machines. In punched card data processing, each transaction is recorded into punched-card form by a keypunch operator and verified by a verifier operator. After this initial operation the transaction is a card, filed with other cards pertaining to a particular student. The philosophy of punched card data processing is to process cards through machines according to a predeter-mined set of instructions called a procedure. The input format for the NISC system is always a punched card.

In punched card data processing, the punched hole is the machine language. Any machine which punches holes in cards is performing the recording function. The machines in the system which perform the recording function are the IBM Models (1) 026 Key Punch and 029 Card Punch, which punch the card; (2) 056 Veri-

fizer, which checks the accuracy of the punching; (3) 519 Reproduc-
er, which duplicates existing cards; and (4) 557 Interpreter, 
which prints on the card the punched information.

The sorting or classifying function is concerned with the 
arrangement of punched cards into desired sequences. The machines 
in the system which perform this function are the IBM Models: (1) 
082 Card Sorter, and (2) 085 Collator, which sorts files.

Calculating as applied to punched card data processing re-
fers to the multiplication, division, addition, and subtraction of 
data. A calculating unit operates with electron tubes and per-
forms operations at electronic speeds according to instructions 
supplied by its control board. Electronic computers work much 
more satisfactorily than electromechanical calculators because of 
their great storage capacities and increased flexibility. The IBM 
Model 1620 Central Processing Unit is used for all calculation 
functions in the NISC data processing system.

Summarizing is the function which is concerned with the 
preparation of reports. The other three functions of the unit 
record system involve the preparation of punched cards by record-
ing data in them, classifying them in the proper sequence, and 
calculating them in anticipation of all this data's being shown 
upon a report in the most usable form. The machine used for this 
purpose is the IBM 407 Accounting Machine.

The equipment which is used to comprise the unit record 
system at Northeastern Illinois State College is identical to that 

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8Ness, op. cit., p. 64.
at Chicago State College. This is necessarily true because both systems use the punched card as the input source document. With the CSC system, the punched card is just one of the input sources; the punched card is the only input source for the NISC system.

The computer system at NISC. The computer system at NISC consists of several pieces of interrelated equipment. The components of the computer system are the IBM Models: (1) 1622 Card/Read/Punch Unit, (2) 1443 Printer, and (3) 1620 Central Processing Unit.

The input unit is the machine which is concerned with making information available to the central processing unit. The machine in the system which performs the input function is the IBM Model 1622 Card/Read/Punch Unit. This unit is the only piece of equipment in the NISC data processing system which performs the input function. A comparison of the input devices for the computer systems at Chicago State College and Northeastern Illinois State College is illustrated in Table IV.

<table>
<thead>
<tr>
<th>TABLE IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>INPUT DEVICES OF TWO COMPUTER SYSTEMS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chicago State College</th>
<th>Northeastern Illinois State College</th>
</tr>
</thead>
<tbody>
<tr>
<td>1402 Card/Read/Punch Unit</td>
<td>1622 Card/Read/Punch Unit</td>
</tr>
<tr>
<td>1311 Disk Pack Unit</td>
<td></td>
</tr>
<tr>
<td>7330 Magnetic Tape Unit</td>
<td></td>
</tr>
</tbody>
</table>

The output unit is the machine which is concerned with getting information out of the central processing unit. After the processing is completed, there usually are data which must be pre-
pared in a form convenient to use by people. The pieces of equipment which serve as the output media are the IBM Models: (1) 1622 Card/Read/Punch Unit, and (2) 1443 Printer. A comparison of the output devices for the computer systems at Chicago State College and Northeastern Illinois State College is shown in Table V.

### Table V

**OUTPUT DEVICES OF TWO COMPUTER SYSTEMS**

<table>
<thead>
<tr>
<th>Chicago State College</th>
<th>Northeastern Illinois State College</th>
</tr>
</thead>
<tbody>
<tr>
<td>1402 Card/Read/Punch Unit</td>
<td>1622 Card/Read/Punch Unit</td>
</tr>
<tr>
<td>1403 Printer</td>
<td>1443 Printer</td>
</tr>
<tr>
<td>1311 Disk Pack Unit</td>
<td></td>
</tr>
<tr>
<td>7330 Magnetic Tape Unit</td>
<td></td>
</tr>
</tbody>
</table>

One of the best computers for learning to convert from a manual system of record keeping to a machine system is the IBM Model 1620 Data Processing System, better known as a 1620 Computer. Although not the most recent computer on the market, it is of the modern generation of computers in that it is a solid-state machine. By solid-state is meant that its memory or storage element is made of solid-state devices, magnetic cores, instead of moving mechanical parts, and that its main logic and control circuitry is likewise of solid-state transistors and diodes instead of vacuum tubes. The processing function of the computer system is performed by the IBM Model 1620 Central Processing Unit.

---

One of the components of a computer system is a functional part which is classified as a secondary memory-input/output device. The piece of equipment which will provide this function in the Chicago State College system is the IBM Model 1311 Disk Pack Unit. The NISC system does not include a secondary memory-input/output device even though the 1620 is compatible with the 1311 Disk Pack Unit.

One phase of the data processing system developed for Northeastern Illinois State College will be discussed further at this time. This phase is related to the processing of the student's permanent record. When a student has been accepted for admission to the college, has registered and is attending classes, a Permanent Student Record card\(^{10}\) is initiated for the student. The card is filed in the student's record folder in the registrar's office. At the end of each term, the Data Processing Center prepares a Grade Report Form\(^{11}\) in triplicate for each student. One copy is forwarded to the registrar, a copy is sent to the student's advisor, and the third copy is mailed to the student. The registrar's copy is filed with the student's Permanent Student Record Card. The student's Grade Report Form becomes a cumulative record as the student continues to attend the institution. As the student completes his courses, term by term, he receives a cumulative record of all work he has attempted and completed. Both the student and his academic advisor are aware of the student's academic progress and achievement.

\(^{10}\)See Appendix 27, p. 192.

\(^{11}\)See Appendix 28, p. 193.
Successive Grade Report Forms for all students are filed in the office of the Registrar. The procedure is to process:

1. The first Grade Report Form generated for a student in the student's folder.
2. If the student has transferred from another institution, courses accepted for transfer credit are also listed on the Grade Report Form.
3. When a second Grade Report Form is generated for a student it is filed in the student's folder, and the first report is removed and destroyed.
4. A transcript of the student's academic record is achieved by placing the student's most recent Grade Report Form in a precise location on the Permanent Student Record card and making a copy.

The procedure eliminates a tremendous amount of work in updating student records. It replaces manual methods of posting student records, with their enormous opportunities for errors, and also makes obsolete the system of pasting grade labels onto permanent type student record cards for accounting purposes as far as the student's cumulative record is concerned. Students, faculty, and the college administration derive considerable information and benefits because of the efficiency and effectiveness of the system.

Western Illinois University

The data processing system established at Western Illinois University contains both unit record equipment and electronic data processing equipment. The unit record equipment consists of the standard IBM units, and the electronic data processing equipment
consists of the IBM 1620 Data Processing system, and the IBM System 360-Model 30, equipment which IBM made operational in 1965.

Unit record equipment at WIU. The unit record equipment included in the system consists of those pieces necessary to implement the four functions of (1) recording, (2) sorting, (3) calculating, and (4) summarizing. The pieces of equipment are the IBM Models: (1) 024 and 026 Keypunch, and the 029 Card Punch; (2) 056 and 059 Card Verifier; (3) 514 Reproducer; (4) 548 and 552 Interpreter; (5) 082 and 083 Card Sorter; and (6) 085 Collator.

The machines in the system which perform the recording function are the IBM Models: (1) 024 and 026 Key Punches, and the 029 Card Punch, which punch cards; (2) 056 and 059 Card Verifiers, which check the accuracy of the punching; (3) 514 Reproducer, which duplicates existing cards; and (4) 552 Interpreter, which prints on the card the punched information.

The sorting or classifying function is performed by these machines in the system: (1) 082 and 083 Card Sorter, which sort cards; and (2) 085 Collator, which sorts files.

The calculating function is concerned with making calculations from punched cards. The IBM Model 1620 Data Processing System is used in the WIU system with punched cards instead of a calculator. The system also contains the IBM System 360-Model 30 Central Processing Unit which can and does serve for calculating functions with punched cards, as well as other input media.

The summarizing function is concerned with producing the results of the processing of data. The machines used for this purpose in the WIU system are the IBM Models 1403 and 1443 Printers.
The unit record system at Western Illinois University is similar to that developed for Chicago State College. The same types of machines are used but, in some machines, not the same models. Some of the equipment is older than similar equipment at CSC, some of the same vintage, and some of the equipment is a generation newer. The differences in the pieces of equipment which comprise the unit record section of the data processing systems at the two schools are:

1. WIU uses three models of key punch machines, while CSC has one. These are the 024, 026, and 029 for WIU, and the 026 for CSC. The 024 Key Punch is the older of the two and the 029 the more recent. There is only one basic difference between the 024 and 026 Key Punch machines: whereas the 024 cannot print as it punches, the 026 can.

2. Two models of verifiers are included in the WIU system. These are the 056 and 059, while the CSC system uses the 056 Verifier. The 059 Verifier is a later model.

3. The WIU system uses a 514 Reproducer while the CSC system uses a 519. The IBM Model 519 Reproducer is slightly different in design, but is exactly the same in speed, operation, and function as the 514. The one difference in the 519 is that it has a printing unit and can print up to eight digits on the face of cards going through the punch unit.12

4. The 548 Interpreter is used in the WIU system, while the

CSC system uses a 557 Interpreter. The 557 Interpreter is faster than the 548--100 printed cards a minute versus 60 for the 548. In addition, the 557 can read information from a master card and print it on successive/detail cards.13

5. Two Sorters are included in the WIU system. These are the 082 and 083. The 082 Sorter is included in the CSC system. The 083 Sorter is a faster machine than the 082 and operates at a rate of 1,000 cards per minute compared with 650 for the 082. One new feature of the 083 is the Edit Switch. With this switch turned ON, the machine can check for double-punched digits or double-punched zones and reject as errors any cards having such punching.14

6. The IBM Model 407 Accounting Machine is not included in the WIU system. The 1403 and 1443 Printers are used to fulfill the summarizing function.

The computer system at WIU. The components of the computer system at Western Illinois University are those which are categorized as: (1) input/output, (2) secondary memory-input/output, and (3) central processing unit. The components of the computer system are the IBM Models: (1) 1622 Card/Read/Punch Unit, (2) 2821 Control Unit for the 1403 Printer and the 2540 Card/Read/Punch Unit, (3) 1443 Printer, (4) 2841 Control Unit for four 2311 Disk Pack Units and two 2514 Model Magnetic Tape Units, and (5) 1620 and 360 Central Processing Units.

13Ibid., p. 127. 14Ibid., pp. 73-74.
The machines in the system which perform the input function are the IBM Models: (1) 1622 Card/Read/Punch Unit and the 2540 Card/Read/Punch Unit, (2) 2311 Disk Pack Unit, and (3) 2514 Magnetic Tape Unit. The input devices of the computer systems at Chicago State College and Western Illinois University are shown in Table VI.

**TABLE VI**

**INPUT DEVICES OF TWO COMPUTER SYSTEMS**

<table>
<thead>
<tr>
<th>Chicago State College</th>
<th>Western Illinois University</th>
</tr>
</thead>
<tbody>
<tr>
<td>1402 Card/Read/Punch Unit</td>
<td>1622 Card/Read/Punch Unit</td>
</tr>
<tr>
<td>1311 Disk Pack Unit</td>
<td>2540 Card/Read/Punch Unit</td>
</tr>
<tr>
<td>7330 Magnetic Tape Unit</td>
<td>2311 Disk Pack Unit</td>
</tr>
<tr>
<td></td>
<td>2514 Magnetic Tape Unit</td>
</tr>
</tbody>
</table>

The machines in the system which serve as the output media are the IBM Models: (1) 1622 Card/Read/Punch Unit, (2) 1403 Printer and 2540 Card/Read/Punch Unit, (3) 1443 Printer, (4) 2311 Disk Pack Unit, and (5) 2514 Magnetic Tape Unit. The output devices of the computer systems at Chicago State College and Western Illinois University are shown in Table VII, p. 137.

Processing is what occurs between input and output. The processing functions of the WIU computer system is performed by the IBM Models 1620 and 360 Central Processing Units.

Random access storage is a very important consideration in electronic data processing. Input/output memory devices provide ways of getting data into and out of the computer system, and provide for random access to stored information. Four IBM Model 2311
TABLE VII
OUTPUT DEVICES OF TWO COMPUTER SYSTEMS

<table>
<thead>
<tr>
<th>Chicago State College</th>
<th>Western Illinois University</th>
</tr>
</thead>
<tbody>
<tr>
<td>1402 Card/Read/Punch Unit</td>
<td>1622 Card/Read/Punch Unit</td>
</tr>
<tr>
<td>1403 Printer</td>
<td>2540 Card/Read/Punch Unit</td>
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<td>1311 Disk Pack Unit</td>
<td>1403 Printer</td>
</tr>
<tr>
<td>7330 Magnetic Tape Unit</td>
<td>1443 Printer</td>
</tr>
<tr>
<td></td>
<td>2311 Disk Pack Unit</td>
</tr>
<tr>
<td></td>
<td>2514 Magnetic Tape Unit</td>
</tr>
</tbody>
</table>

Disk Pack Units are included in the computer system at WIU for random access storage. The input/output-memory devices of the computer systems at Chicago State College and Western Illinois University are shown in Table VIII. The systems are almost identical, with the exception of the model of the units.

TABLE VIII
INPUT/OUTPUT MEMORY DEVICES OF TWO COMPUTER SYSTEMS

<table>
<thead>
<tr>
<th>Chicago State College</th>
<th>Western Illinois University</th>
</tr>
</thead>
<tbody>
<tr>
<td>1311 Disk Pack Unit</td>
<td>2311 Disk Pack Unit</td>
</tr>
</tbody>
</table>

A review of the electronic data processing systems developed at the several institutions investigated in this work will reveal that only Western Illinois University has two central processing units. These are the IBM Models 1620 and 360 central processing units. It is the intention of the university to establish two separate electronic data processing facilities, one for administrative functions, and the other for faculty and students. Both
of the computer installations will be under the supervision and direction of the Director of Data Processing.

The installation for the faculty and students will be housed in a new building which will be completed early in 1968. The building will provide for faculty offices, classrooms, lecture halls, seminar rooms, and excellent facilities for data processing equipment, plus office space for the supporting staff. The installation will consist of the following pieces of IBM unit record and electronic data processing equipment: (1) 024 and 026 Key Punch, (2) 056 Verifier, (3) 548 Interpreter, (4) 082 Sorter, (5) 1230 Test Scoring Machine, (6) 1622 Card/Read/Punch Unit, (7) 1443 Printer, and (8) 1620 Central Processing Unit.

The installation which is to serve and perform the administrative tasks of the university will remain at its present location. The Data Processing Center is located in Sherman Hall, with the other administrative offices of the university, and especially those offices dealing with Student Personnel Services. The installation will consist of the following pieces of IBM unit record and electronic data processing equipment: (1) 026 Key Punch and 029 Card Punch, (2) 059 Verifier, (3) 514 Reproducer, (4) 552 Interpreter, (5) 083 Sorter, (6) 085 Collator, (7) 2821 Control Unit for the 1403 Printer and the 2540 Card/Read/Punch Unit, (8) 2841 Storage Control Unit for the 2311 Disk Pack Unit and 2514 Magnetic Tape Unit, and (9) the 360-Model 30 Central Processing Unit.

It is the intention of the university to serve all facets of the institution's make-up with these two data processing centers, administration, faculty, and students. Modern equipment
will be made available, with trained staff to support the facility. The university has taken a tremendous step forward in providing these facilities for all facets of university life.

The three methods of processing data, or in performing any kind of work, are manual, mechanical, and automated. We are all familiar with the manual method. This is the method by which man does all the work without the assistance of machines. The mechanical method of processing data is frequently referred to as conventional or unit record processing. This method involves the use of many types of machines capable of processing punched cards through a limited series of functions. Automation in data processing is found in the realm of computers. Man inserts instructions and data into the machine, and the machine follows the instructions in processing data through to the finished product. This is accomplished by various techniques and controls that cause each unit of the computer system to operate at a certain time. In other words, the machine controls itself without human intervention.

A simple definition of the three methods of processing data is as follows:


Mechanical: man running machines.

Automation: machines running machines.
CHAPTER VIII

SUMMARY AND CONCLUSIONS

The computer evolved in the academic world, both in concept and engineering, with major assistance from the electronics industry, and in many colleges and universities it remains essentially an academic possession. There are demands on freshmen in many colleges today to know computer systems, and the expanding interest of secondary schools in teaching computer science has made the computer as popular a tool for problem solving as the slide rule and desk calculator were two decades ago.

The use of punched-card equipment for record keeping purposes antedates the use of the computer for similar purposes by many years. Until recently, few administrators in higher education knew much about computers. As computers became better understood, and as smaller ones became available, some institutions converted their punched-card procedures for card based computer systems, essentially doing more quickly and economically what had formerly been done with cards, and a small minority even introduced more advanced tape systems.

What is really driving administrators in higher education to think more systematically about electronic data processing systems is the pressure of rising costs, increasing demands for more and better data from governing boards, state and federal agencies,
foundations, and from planning and fiscal control agencies, combined with the generally increased complexity of administrative problems that derive from rapid growth.

The purpose of this investigation was to identify and implement techniques and methods necessary to shift from manual to computer processing of student records. The existing manual system of record keeping was analyzed to establish whether or not it was really necessary to implement a computer system of processing student records. Five years of struggling with a manual system under a trimester calendar, experiencing difficulties in coping with the increase in work load due to higher enrollments, and having limited facilities in personnel and equipment have convinced the College administration of the need for a data processing center.

Since the information system of any organization is interwoven throughout the organization, practically all of its functions are affected by the introduction of electronic data processing equipment. Therefore, commitment to a total systems approach and the effective utilization of a computer system in an educational organization demand that the administration of the College recognize, in the beginning, that the administrative structure and organizational policies, to which personnel relate, must be such as to make possible the orderly development, maintenance, and control of procedures which will promote the free flow of information throughout the organization: horizontally across conventional administrative lines, and vertically between the highest and lowest level of users, whether administrators, researchers, teachers,
or students.

Three facets were considered in the early formulation of plans to establish an effective and efficient computer processing installation. These were: (1) procedural planning and development; (2) staff organization; and (3) personnel. When planning a system of computer processing, the system must be tailored to meet the specific needs of the institution. Therefore, the responsibility falls on each school to develop its own system and procedures. The administrative control of the computer facility is under the jurisdiction of the Dean of Administration, with operational control under the Director of the Computer Centre. In selecting personnel, one must bear in mind that machines can only do what they are instructed to do; consequently, they are completely dependent upon people who develop the procedures and operate the equipment.

The data processing system was designed according to the needs of the College and then the necessary equipment was secured to implement the system. The punch card equipment, usually referred to as unit record equipment, which was included in the system were those pieces necessary to implement the functions of (1) recording; (2) sorting or classifying; (3) calculating; and (4) summarizing. The equipment and punch-card formats are those of the International Business Machines Corporation. The pieces of equipment are the IBM Model: (1) 026 Key Punch; (2) 056 Verifier; (3) 519 Reproducer; (4) 557 Interpreter; (5) 082 Sorter; (6) 085 Collator; and (7) 407 Accounting Machine.

The computer system designed for Chicago State College
consists of a series of functional parts, each of which is designed to play a specific role in the system. The components are categorized as: (1) input/output; (2) secondary memory-input/output; and (3) central processing unit. The components of the computer system are those manufactured by the International Business Machines Corporation. The pieces of equipment are the IBM Model: (1) 1402 Card/Read/Punch Unit; (2) 1403 Printer; (3) 7330 Magnetic Tape Units; (4) 1311 Disk Pack Units; and (5) 1401 Central Processing Unit.

The great increase in the number of students attending the College brought new and increasing demands for information handling and processing. The maintenance of student records has become very complex and the necessary forms used to maintain the students' records must be so structured as to collect pertinent data and information which will be meaningful in the academic situation. The registrar must exercise an overview of the entire academic picture in order to insure that computer processing of student records makes a contribution to the total educational effort of the College.

New procedures were instituted to collect and process pertinent data and information which would be meaningful in the academic situation. First, new forms were designed for the Office of Admissions and the Office of the Registrar. The application for admission to the College was revised to effectively aid in the implementation of the formulation of the seven-card format of student history. Registration forms were so designed and structured that pertinent student data could be pre-printed onto the forms
prior to the registration period. The students would be responsible for checking and verifying the accuracy and completeness of the data. Secondly, new processing procedures were developed which would involve the electronic data processing equipment enumerated in the previous paragraphs. Procedures were designed to implement (1) the flow of materials to the Computer Centre; (2) the processing of the information; and (3) the return routing of the materials and information.

The computer system developed for Chicago State College was compared to those of three other state-supported institutions of higher education. These schools were Eastern Illinois University, Northeastern Illinois State College, and Western Illinois University. These institutions were selected because: (1) the four schools, including Chicago State College, are under the same governing board; (2) the equipment and punch-card formats at all four institutions are those of the International Business Machines Corporation; and (3) the student enrollments at the four schools are somewhat comparable.

Each of the systems contained basic unit record equipment and electronic data processing equipment. The unit record equipment included in the three systems were those pieces necessary to perform the functions of: (1) recording; (2) sorting; (3) calculating; and (4) summarizing. The pieces of unit record equipment used in the four systems are shown in Table IX.

The electronic data processing equipment included in the computer systems at each of the institutions were those pieces necessary to perform the functions of: (1) input/output; (2)
secondary memory-input/output; and (3) central processing unit.
The pieces of electronic data processing equipment used in the
four systems is shown in Table X.

<table>
<thead>
<tr>
<th></th>
<th>Chicago State College</th>
<th>Eastern Illinois University</th>
<th>Northeastern Illinois State College</th>
<th>Western Illinois University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Punch</td>
<td>026</td>
<td>029</td>
<td>026</td>
<td>024</td>
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<td></td>
<td></td>
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<td>029</td>
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<td></td>
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<td></td>
<td>029</td>
<td>029</td>
</tr>
<tr>
<td>Verifier</td>
<td>056</td>
<td>059</td>
<td>056</td>
<td>056</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>059</td>
<td>059</td>
</tr>
<tr>
<td>Reproducer</td>
<td>519</td>
<td>514</td>
<td>519</td>
<td>514</td>
</tr>
<tr>
<td>Interpreter</td>
<td>557</td>
<td>557</td>
<td>557</td>
<td>548</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>552</td>
</tr>
<tr>
<td>Sorter</td>
<td>082</td>
<td>083</td>
<td>082</td>
<td>082</td>
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<td></td>
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<td>083</td>
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<tr>
<td>Collator</td>
<td>085</td>
<td>088</td>
<td>085</td>
<td>085</td>
</tr>
<tr>
<td>Accounting Machine</td>
<td>407</td>
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<td>407</td>
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</tr>
</tbody>
</table>

With a carefully designed and implemented College information system operating, innumerable answers can be furnished to the administration, faculty and staff, and students. Foremost, there are student affairs. Many facts about them have been stored in the data base. An academic information system can increase the ability of counselors to take into consideration a student's particular needs and background in planning the student's curriculum.
TABLE X

ELECTRONIC DATA PROCESSING EQUIPMENT USED
IN FOUR COMPUTER SYSTEMS

<table>
<thead>
<tr>
<th></th>
<th>Chicago State College</th>
<th>Eastern Illinois University</th>
<th>Northeastern Ill. College</th>
<th>Western Illinois University</th>
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<tbody>
<tr>
<td>Input/output Devices:</td>
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<td></td>
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</tr>
<tr>
<td>Input Station</td>
<td>----</td>
<td>1031</td>
<td>----</td>
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</tr>
<tr>
<td>Card Punch</td>
<td>----</td>
<td>1034</td>
<td>----</td>
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</tr>
<tr>
<td>Printer Keyboard</td>
<td>----</td>
<td>1052</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Card/Read/Punch</td>
<td>1402</td>
<td>2540</td>
<td>1622</td>
<td>1622</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2540</td>
</tr>
<tr>
<td>Display Station</td>
<td>----</td>
<td>2260</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Disk Pack Unit</td>
<td>1311</td>
<td>2311</td>
<td>----</td>
<td>2311</td>
</tr>
<tr>
<td>Data Cell Drive</td>
<td>----</td>
<td>2321</td>
<td>----</td>
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</tr>
<tr>
<td>Magnetic Tape Unit</td>
<td>7330 2401</td>
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<td>2514</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>2403</td>
</tr>
<tr>
<td>Printer</td>
<td>1403 1033 1443</td>
<td>1403</td>
<td>1403</td>
<td>1443</td>
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<tr>
<td>Input/output-/</td>
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<tr>
<td>Memory Devices:</td>
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</tr>
<tr>
<td>Disk Pack Unit</td>
<td>1311 2311</td>
<td></td>
<td>----</td>
<td>2311</td>
</tr>
<tr>
<td>Data Cell Drive</td>
<td>---- 2321</td>
<td></td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Central Processing</td>
<td>1401 360 1620 1620</td>
<td></td>
<td></td>
<td>360</td>
</tr>
</tbody>
</table>

The computer system can interpret to the student interrelationships among tests, both content examinations and psychological tests. The system can be used to identify "under-achievers" among bright students so that they can be counseled. Grades, along with all the other information collected about students, constitute a data base from which administrators and faculty alike can make
many kinds of studies concerning the College's educational process.

Although it is expected that counseling will continue to be an important and integral aspect of guidance, many of the time consuming details of guidance were automated, freeing time for counselors to do a good job of counseling. For example, data such as (1) psychological test scores; (2) grades; (3) grade point average; (4) data included in the student history tape file; (5) scholarships, honors, or awards granted; and (6) scholastic achievement, would be readily available to the counseling staff. Guidance personnel will be able to query the student's file in the Computer Centre with the aid of remote terminal units located in the guidance center. The units will make possible remote inquiries of the central system by operating the keyboard to request information and receiving visual answers displayed on the video screen.

The College has introduced a program of familiarizing students with the equipment in the Computer Centre. The program consist of formal instruction in electronic data processing for students wishing to take courses in the area and also, on an experimental basis, bringing selected classes into the Computer Centre for demonstration-lectures. The latter learning experiences will include a general description of computer systems and their uses, followed by a demonstration of a special problem suited to the class and worked out in advance with the cooperation of the instructors.

Once the cumulative records of the current students and incoming students have been processed in the Computer Centre,
several significant facets could be studied. Perhaps it could be possible to develop programs that provided for (1) large group instruction along with small seminars and individual study; (2) grouping according to ability in various subject matter areas; (3) continuous progress plans where students are encouraged to proceed at their own rates of speed; (4) the use of the computer system as an instructional aid by serving as a mediating or controlling device for the presentation of programmed learning material; and (5) computer-aided counseling services.

The academic information system can be valuable in faculty activities as well as student affairs. The use of computers as adjuncts to teaching and in research is widely understood. The potential of electronic data processing equipment in the improvement of educational research and the subsequent decision making in education has many facets. Its use in the routine clerical chores of day-to-day management and control should free the faculty to participate more in on-going research programs. Basic data and research information on what is currently being done in the College or elsewhere, and how well it is being done can now be stored and retrieved at will. The computer system's capability to correlate, compare, interrelate, and synthesize data is almost unlimited.

A concentrated on-going faculty research program should concern itself with the instructional program of the College. Instructional studies should be concerned with areas such as (1) planning and evaluating instruction; (2) curriculum revision; (3) distribution of grades; (4) characteristics of students dropped
from the College for poor scholarship; (5) characteristics of the student body as a whole; (6) computer-assisted instruction; and (7) determining scholastic actions--selection of students to be dropped, placed on scholastic probation, or awarded scholastic honors.

Electronic data processing equipment can make several major contributions in the improvement of the research program. First, the equipment can be used to do many of the various routine operations of educational research. Second, it can serve as the calculating tool essential to handling mass data. Third, the equipment can be used to improve research instruments. Fourth, it will improve the adequacy of the data being used in research. Fifth, electronic data processing equipment can be used to simulate an educational system.

The system of electronic data processing developed for the College will be capable of providing pertinent student information to the faculty. Also, the implementation of the system will reduce the day-to-day clerical chores of the faculty, while assisting in the updating and maintenance of permanent student records. The kinds of services provided for the faculty include the generation and distribution of (1) preliminary class lists; (2) final class lists; (3) mid-term D and F grade reports; (4) listings of students by curriculum and sequence for departmental offices; (5) listings of students placed on scholastic probation and dropped for poor scholarship; (6) IBM cards for recording mid-term D and F grade reports and final grades; (7) gummed labels for a particular segment of the student body; (8) enrollment reports by department.
and course; and (9) pertinent student data requested by the facul-
ty. Faculty members have access to all student data and informa-
tion contained in the Office of the Registrar or the Computer
Centre.

The information system can contribute to the day-to-day
administrative decision-making by furnishing pertinent data to the
president of the College. For example, data can be collected on
the allocation of faculty activities, data on salary and fringe
benefits for each faculty member, and data on student registration
and student credit hours for each student taught by each faculty
member. From such data one can calculate for any instructional
program the cost per student, student credit hours for full-time
equivalent faculty, and average teaching load.

A computer system can be a tremendous asset in serving the
administrative functions effectively and efficiently by handling
the normal administrative paperwork and at the same time serve in
the management of educational resources. Information can be pro-
vided concerning (1) shifts or changes in enrollments, curriculum,
or course organization; (2) student data for reports to the govern-
ing board; (3) determination of class size, decisions on course
offerings, curricular content, schedule of classes, and assignment
of staff and facilities; and (4) business functions of accounting,
inventory, and purchasing procedures. To provide data for the
enumerations above, the Computer Centre prepares various reports
for the administrative staff from the information indicated on the
various registration forms. These include (1) the number of stu-
dents and credit hours by academic classification, full-time and part-time; (2) a master register and summary of all data taken from the enrollment envelope; (3) a listing of students by curriculum, sequence, and academic classification; (4) a listing of students admitted to the Graduate School, by the graduate program being studied; (5) a student directory; and (6) a tabulation and summary of final grades and credit hours according to department.

The data and information processed by the Computer Centre provide statistics for several internal and external administrative reports. The internal administrative reports are: (1) Enrollment Figures; (2) Bachelor of Science in Education Degree Graduates; and (3) Curricula and Sequences of Undergraduate Students at Time of Registration. The internal reports are distributed to all faculty and staff offices. The several external administrative reports are concerned with enrollment figures, student characteristics, degrees conferred, degrees conferred by area of study, and undergraduate and graduate programs. The external reports are distributed to the (1) appropriate administrative offices; (2) United States Office of Education; (3) Illinois Board of Higher Education; (4) Illinois Board of Governors of State Colleges and Universities; and (5) University of Illinois.

Any form of an information system which the administration of the College can query requires continual and rapid updating of the data base because of the continuing changes in the system. In a college or university the status of each student alters frequently, faculty and staff personnel actions are being taken daily, the budget is constantly changing, and regulations are being revised;
the data base must reflect all these alterations if it is to be current. Demand for particular facts is in constant flux, which requires that files frequently be added, expanded, deleted, or re-organized. The data base must contain in it all information about the internal operations of the College.

The development of electronic data processing in education seems to follow a classic pattern: data processing at first simply takes over and imitates what used to be done by hand. Then new and more elegant applications are developed as the relationships between the various files are perceived and as individuals experiment with solutions to problems like scheduling, spacial utilization, and resource allocation problems.

The key to the successful applications of a computer system is not the implementing of current practices on equipment with tremendous speed, but the redesign of the system as a whole. The TOTAL SYSTEM approach to data processing recognizes and emphasizes the fact that the nature of data processing is such that it cannot function in isolation from the other departments of the College. Data processing must be appropriately conceived as only one of the major functions of an information system which is dependent upon people, materials, procedures, and information, as well as upon machines. In the total information system concept, the confluence of all information flow is the Computer Center which provides an active communication network for the entire College. Computer processing of student records makes possible rapid access to accurate, complete, and timely information on the needs, talents, interests, strengths, and weaknesses of the individual student.
Perhaps the most difficult problem in establishing a data processing center, one implemented with the TOTAL SYSTEM concept, is not selecting hardware or software, but setting up procedures for collecting and controlling the data at the source/or as near to it as possible. The challenge is to control human behavior and format the data so that they precisely resemble other input of the same type.

Consistency in the reporting of data to the Computer Centre for processing is mandatory. The trial run of the computer system illustrated several facets which had to be corrected in order to facilitate the efficiency and effectiveness of the system. These were:

1. The necessity to revise the Registration Worksheet and the Change of Program form. These forms were revised to implement the use of imprinters with embossed student identification cards. This procedure would insure that a student's name and social security number would be identical on all forms.

2. The necessity for consistent and identical reporting of data becomes apparent when, in order to process a student's record, the computer searches for a perfect match between the input and data in storage. For example, Walter J. Heinzel, Walter Heinzel, Walt Heinzel, W. J. Heinzel, and W. Heinzel would be interpreted as being five different individuals.

3. Close supervision of the clerical staff at registration periods is a necessity to insure the completeness and
accuracy of all data requested. Carelessness in the collection of data results in incomplete and missing information which further results in erroneous statistical reports.

4. Incomplete information on file in the Computer Centre will result in incomplete printouts of data for the various offices requiring student data.

The updating of student files in the Computer Centre will be accomplished gradually over the next two years. The data will be transmitted to the Computer Centre by micro-filming all the permanent record cards in the Office of the Registrar. A copy of the micro-film will be made available to the Computer Centre so that the processing of student records will be expedited. Other data will be recorded on IBM cards and forwarded to the Computer Centre for processing. Data for students who entered the College in the Fall of 1967 and thereafter have been completely processed and all the records with the exception of the permanent record card have been automated.

As the needs of educational systems increase in intensity, two conclusions present themselves with increasing force. The first is that education is not a discrete enterprise involving traditional methods no longer appropriate elsewhere, but it too must reflect and contribute to its time as a vital force. The second conclusion is that educators cannot afford to ignore the potential of modern technology in order to meet the demands the world makes on education.
BIBLIOGRAPHY

Books


**Periodicals**


Cohodes, Aaron (ed.). "Grade School Pupils Don't Use Computers—but they Talk to them," Nation's Schools, 77 (April, 1966), 60.


Freeman, John P. "Starting an EDP Program in a School System," American School Board Journal, 146 (February, 1963), 34.


Renner, Don L. "Moving Ahead with Student Accounting at Texas Tech.," College and University, 41 (Winter, 1966), 210.

Shutt, Bruce T. "Indiana University Goes to Computer-Based Admissions," College and University, 42 (Winter, 1967), 181.


Miscellaneous


Visitations and Interviews


Western Illinois University, Macomb, Illinois. Christian Brix, Director of Data Processing.

Statement by Carl Clark, personal interview.

Statement by Walter Corvine, personal interview.

Statement by Theodore Stolarz, personal interview.

Statement by Joseph Tilton, personal interview.
APPENDICES
ILLINOIS TEACHERS COLLEGE: CHICAGO - SOUTH  
6800 SOUTH STEWART AVENUE  
CHICAGO, ILLINOIS 60621

APPLICATION FOR ADMISSION TO THE UNDERGRADUATE SCHOOL

Effective with the 1966 Fall Trimester, all applications for admission to Illinois Teachers College: Chicago-South must be accompanied by a non-refundable $15 application fee in the form of a check or money order. Checks should be made payable to Illinois Teachers College: Chicago-South.

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<th>INDICATE WHEN YOU PLAN TO ENROLL:</th>
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<td>Fall Trimester</td>
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<td>Spring Trimester</td>
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<td>Spring Term (8 weeks)</td>
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<td>Summer Term (8 weeks)</td>
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TO THE APPLICANT: Read these directions carefully before filling out this blank. Complete pages 1, 2, and 3 of this blank. (Type or write in ink.) Mail to the Office of Admissions, Room 103A, Illinois Teachers College: Chicago - South.

Please answer every question on this blank. If a question does not apply to you, print “Does not apply.” If you have already graduated from high school, request that your transcript be sent to Illinois Teachers College: Chicago - South immediately. If you have not graduated, ask your high school to send a seventh semester transcript. If you have attended or are in attendance at an accredited college, university, art or music school, you must request EACH institution to send a transcript of your record to the College immediately. A SUPPLEMENTARY TRANSCRIPT must be provided for courses in progress as soon as they are completed. Applicants who have attended other colleges must also provide the College with their high school transcripts. Veterans must submit a photostatic copy of their discharge or separation papers with this application. Entire responsibility for having credentials sent to the College rests with the applicant. No application is complete until all required documents are received. All documents become the property of the College.

NAME
__________________________________________  ____________________________________________  ____________________________________________

FORMER NAME (If Any) __________________

PERMANENT HOME ADDRESS

Number and Street  City  County  State  Zip Code

TELEPHONE __________________  HOW LONG HAVE YOU BEEN A LEGAL RESIDENT OF ILLINOIS? ______

SEX: (Check One)  ☐ Male  ☐ Female  PRESENT AGE_________  MARITAL STATUS: (Check One)  ☐ Single  ☐ Married  ☐ Divorced

IF YOU ARE MARRIED, FILL OUT THE FOLLOWING:

HUSBAND'S OR WIFE'S NAME IN FULL  __________________

PRESENT ADDRESS ___________________________________________________  __________________________________________

Number and Street  City  Zip Code  State

YOUR PLACE OF BIRTH  __________________  YOUR DATE OF BIRTH  __________________

City  State or County  Month  Date  Year

ARE YOU A UNITED STATES CITIZEN? __________  If not born in United States, indicate current citizenship status or Serial No. of final citizenship papers ______

Yes or No

FATHER'S NAME IN FULL  ____________________________________________  __________________

Mother's Name in Full  ____________________________________________  __________________

PARENT'S LEGAL PLACE OF RESIDENCE ____________________________________________

Number and Street  City  State  Zip Code

IF YOU HAVE A LEGAL GUARDIAN, FILL OUT THE FOLLOWING AND ATTACH A PHOTOSTATIC COPY OF THE COURT ORDER:

GUARDIAN'S NAME IN FULL  ____________________________________________  __________________

YOUR GUARDIAN FOR HOW LONG? __________________  PRESENT ADDRESS,  __________________

LIVED AT THIS ADDRESS FOR HOW LONG? __________________  RELATIONSHIP OF GUARDIAN TO YOU?  __________________

HAVE YOU PREVIOUSLY APPLIED FOR ADMISSION TO CHICAGO TEACHERS COLLEGE  __________________  IF SO, WHEN?  ☐ CAMPUS  ☐ SOUTH  ☐ CRANE  ☐ NORTH

Yes or No

HAVE YOU PREVIOUSLY TAKEN AN EXAMINATION FOR ADMISSION TO THIS COLLEGE?  __________________

Yes or No

HAVE YOU PREVIOUSLY ATTENDED CHICAGO TEACHERS COLLEGE OR ILLINOIS TEACHERS COLLEGE?  __________________  IF SO, WHEN?  ☐ CAMPUS  ☐ SOUTH  ☐ CRANE  ☐ NORTH

Yes or No

HAVE YOU ANY PHYSICAL HANDICAPS?  ☐ IF "YES" EXPLAIN  __________________

Yes or No
CHECK THE TEACHER-TRAINING CURRICULUM YOU WISH TO FOLLOW: (For information concerning curricula see the current catalog).

- KINDERGARTEN-PRIMARY CURRICULUM (Kindergarten, Grades 1, 2, 3 Open to women only)
- INTERMEDIATE GRADE CURRICULUM (Grades 3 through 8)
- UPPER GRADE TEACHING MAJOR CURRICULUM (Grades 7 and up)
- HIGH SCHOOL INDUSTRIAL EDUCATION CURRICULUM Drafting Sequence Shop Sequence
- HIGH SCHOOL BUSINESS EDUCATION CURRICULUM Accounting Sequence Stenography Sequence
- HIGH SCHOOL HOME ECONOMICS CURRICULUM
- SENIOR COLLEGE LEVEL INTERMEDIATE GRADE CURRICULUM (Grades 3 through 8)
  (Open to students who have completed a minimum of 60 semester hours of college work at an accredited college or university.)

HIGH SCHOOLS ATTENDED: Admission to the College is not official until a transcript is received from the high school from which you graduated):

<table>
<thead>
<tr>
<th>Name of High School</th>
<th>City and State</th>
<th>Dates of Attendance</th>
<th>Date of expected date of graduation</th>
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COLLEGES ATTENDED: (Admission to the College is not official until a transcript is received from EVERY accredited college you have attended. Deliberate omission of previous college record may be cause for immediate rejection or dismissal):

<table>
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<tr>
<th>Name of College or University</th>
<th>City and State</th>
<th>Dates of Attendance</th>
<th>Degree, If any</th>
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INDICATE WHETHER ANY OF THE FOLLOWING SITUATIONS HAVE APPLIED TO YOU AT ANY EDUCATIONAL INSTITUTION:

(If "Yes," Name of Institution)

- Have you ever been dropped for poor scholarship? Yes or No
- Have you ever been placed on scholastic probation? Yes or No
- Have you ever been subject to disciplinary action? Yes or No
- Are you at present in debt to any educational institution? Yes or No

ARE YOU REGISTERED FOR SELECTIVE SERVICE? Yes or No

SELECTIVE SERVICE NUMBER

ARE YOU A VETERAN OF THE U.S. ARMED SERVICES? Yes or No

SPECIFY BRANCH OF SERVICE

DATES OF MILITARY SERVICE: FROM_ TO_ WERE YOU HONORABLY DISCHARGED? 

PLEASE WRITE BELOW A CONCISE STATEMENT IN YOUR OWN HANDWRITING OF YOUR REASONS FOR WISHING TO TEACH. THIS ESSAY IS AN IMPORTANT PART OF YOUR APPLICATION FOR ADMISSION. YOU SHOULD THINK CAREFULLY BEFORE YOU BEGIN TO WRITE.

I understand that the withholding of any information requested herein or the giving of any incorrect statement may render me ineligible for admission or may result in my dismissal from Illinois Teachers College: Chicago - South.

Signed ___________________________ Signature in Ink ___________________________

DATE ________________
APPLICATION FOR ADMISSION TO THE GRADUATE SCHOOL

TO THE APPLICANT: Only candidates for the Master's degree are required to submit an application for admission. Complete this form and return it to the Dean of the Graduate School, Illinois Teachers College: Chicago—South, 6800 South Stewart Avenue, Chicago, Illinois, 60621.

Request each collegiate institution you have previously attended, or are now attending, other than Illinois Teachers College: Chicago—South, to mail a transcript of your record immediately to the Dean of the Graduate School. Do not send transcripts in your possession. If you are now attending college, attach to this application a statement indicating the name of the institution, the course number and title, and number of semester or quarter hours for each class for which you are registered. A transcript or supplement showing completion of this work must also be submitted promptly. Applicants should request that transcripts include or be accompanied by a key to grading.

Entire responsibility for having credentials sent to the Graduate School rests with the applicant. No application is complete until the required documents are received. All transcripts become the property of the College; other documents may be returned. Since only a limited number of applicants can be admitted to the Graduate School, it is necessary to select from among the qualified students who apply. The final decision in all cases rests with the Graduate School faculty.

Answer every question. If a question does not apply to you, please print "Does not apply." Type or print legibly in ink. Incomplete or improper application may delay your admission to the College.

Upon receipt of this application form and the necessary supporting documents, your application will be reviewed in the Graduate School office. If you meet the general admission requirements your records will be sent to the department administering your intended graduate program. After the department has completed its evaluation, you will be notified of your acceptance to the Graduate School and you will be sent an evaluation of your records.

Please note that applications submitted shortly before a new semester begins often cannot be processed prior to the registration period. If your application has not been acknowledged by that time, you may nonetheless enroll in courses, but to facilitate registration be sure to bring some evidence that you possess a Bachelor's degree or are an assigned schoolteacher. Please note, however, that there is a limit on the amount of work you can take as an unclassified student which may subsequently may be credited toward a Master's degree.

Application Fee: A non-refundable application fee of $15.00 will be charged for all applicants to the Graduate School made by students who do not have a previous degree from this college.
Mr.  
Mrs.  
Miss, _______

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>Middle Name</th>
</tr>
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</table>

Former Names (If any):

Permanent Home Address:  
Street & Number  
City  
Zone  
State

Telephone:  
Sex:  
Male  
Female  
Present Age:  
Marital Status:  
Single  
Married

Date of Birth:  
Month  
Day  
Year  
Place of Birth:  
City & State (or Country)

Are you a U.S. citizen?  
Yes  
No

If naturalized, give serial number of final citizenship papers

Describe your general health:  
Excellent  
Good  
Fair  
Poor

Have you ever been seriously interrupted of handicapped by physical or emotional difficulties? If so, describe briefly:

Have you ever been refused admission to, or been asked to withdraw from, any graduate school?  
Yes  
No

If so, give the details:

Person to be notified in emergency:  
Name:  
Street & Number  
City  
Zone  
State

CHECK THE MASTER'S SEQUENCE YOU WISH TO FOLLOW  
(For information concerning curricula see the Graduate School Catalog.)

<table>
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<tr>
<th>MASTER OF SCIENCE IN EDUCATION DEGREES</th>
<th>MASTER OF ARTS AND MASTER OF SCIENCE DEGREES</th>
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<td>School Guidance</td>
<td>English</td>
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<td>School Librarianship</td>
<td>Geography</td>
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<tr>
<td>The Teaching of Industrial Education</td>
<td>History</td>
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<tr>
<td>The Teaching of Mentally Retarded Children</td>
<td>Mathematics</td>
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<tr>
<td>Moderately Retarded</td>
<td>Science</td>
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<td>Severely Retarded</td>
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<tr>
<td>The Teaching of the Socially Disadvantaged Child</td>
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COLLEGES ATTENDED (Including ITC:C-S)

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<th>Name of School</th>
<th>City &amp; State</th>
<th>Dates of Attendance</th>
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Have you ever taken any courses at branches of Chicago Teachers College, specifically Crane, Sabin, or Foreman?

Yes  
No

Have you taken the Graduate Record Examination?  
Yes or No.  
If so, when?  
Date

Where?

Indicate original work or investigations which you have done, and list with title, dates, and place of publication any books or contributions to periodicals:

Indicate, with dates, academic positions you have held, including fellowships and all teaching positions, giving the name of each institution:

Indicate, with dates, business positions you have held, giving the name of the firm and kind of work you did:

What are your professional goals?

What do you expect to gain from graduate study?

Are you currently enrolled at ITC?  
Yes  
No

If not, when do you plan to register?

Have you served in any of the U.S. Armed Services?  
Yes  
No

Specify branch of service:  
Date of entry into active service:  
Date of discharge:  
Were you honorably discharged?

Veterans must submit a copy of their discharge papers with this application; these papers will be returned.

Selective Service Number (If eligible for service):

Selective Service Board Number and Address:

(Attach sheet for additional remarks or for completing items above.)

Are you a legal resident of the State of Illinois?  
Yes  
No

SIGNED:  
DATE:  

Have you ever taken any courses at branches of Chicago Teachers College, specifically Crane, Sabin, or Foreman?

Yes  
No

(Attach sheet for additional remarks or for completing items above.)
APPLICATION FOR PERMIT TO REGISTER FOR DAY SESSION

I REQUEST PERMISSION TO ENROLL AT ILLINOIS TEACHERS COLLEGE CHICAGO-SOUTH FOR:

____ FALL TRIM. 196  ____ WINTER TRIM. 196  ____ SPRING TRIM. 196  
____ Summer Term 196

CHECK STATUS:

____ UNCLASSIFIED STUDENT: (A person with a degree from an accredited college.)

(College attended)  (Address of College)  (Degree & date conferred)

Have you previously attended Illinois Teachers College Chicago-South?  ____ YES  ____ NO

If so, when?  (Date)  Former name, if any

Are you a United States citizen?  ____ YES  ____ NO

CAMPUS TRANSFER STUDENT: (A student in good standing at Illinois Teachers College Chicago-Crane Branch - who has already been approved for acceptance.)

SPECIAL STUDENT: (Undergraduate working for a Bachelor's degree at a regionally accredited college or university other than Illinois Teachers College Chicago-South who is in a teacher education program and submits written approval of his Dean stating the specific course or courses he has permission to take at Illinois Teachers College. This approval must bear the signature of the Dean or Registrar and the Seal of the school at which he plans to receive his degree. He must be of Junior or Senior standing and the letter of approval must so state. This letter must be on file before permit is issued.)

(Name of College)  (Address of College)

I CERTIFY THAT I HAVE BEEN A RESIDENT OF THE STATE OF ILLINOIS FOR A PERIOD OF AT LEAST ONE YEAR IMMEDIATELY PRECEDING THE EXPECTED DATE OF ADMISSION.

(Signature of applicant)

(Do not detach)

PERMIT TO REGISTER FOR DAY SESSION
(Present at time of registration)

PERMISSION IS GRANTED TO YOU TO REGISTER ON THE DATE AND TIME INDICATED BELOW:

DATE:  ________ TIME:  ________ PLACE:  ________

NAME

ADDRESS:  ________________________________  TENTATIVE PENDING VERIFICATION

CITY, STATE:  ____________________________________  APPROVED:  ____________________________

(Zip Code)  (Registrar)  (Date)
**APPENDIX 4**

**DAY SESSION REGISTRATION WORKSHEET**

**PROCEDURE FOR REGISTRATION** (Please read before registering)

If you have registration problems, see your Academic Advisor in his office at least two weeks before registration. See reverse side for the list of advisors.

**STEP 1** Present PERMIT TO REGISTER or STUDENT PHOTO ID CARD and obtain a fee assessment form. (See Schedule of Classes for Registration room number.)

**STEP 2** Complete this WORKSHEET in pencil (See INSTRUCTIONS below)

Read carefully information concerning registration in the DAY SESSION Schedule of Classes. CLOSED CLASSES will be announced. NOTE SECTION LETTERS OF CLOSED CLASSES. (A blackboard outside Room 201A also lists closed classes.)

Complete the DAILY PROGRAM section below. Enter in the proper space Dept. Course Number, Section Letter, and the hour of each class session in the proper DAY column. If a class meets more than one hour on a particular day, be certain to so indicate in the proper DAY column. Include LECTURE HOURS and EVENING CLASSES for which you register. Note double class periods. Avoid class hour conflicts.

Print in pencil, the ALPHABETICAL LIST OF COURSES on this WORKSHEET. Indicate your Curriculum and Sequence. Sign your name and date in the space provided.

**BE CERTAIN YOU OBTAIN THE CORRECT CLASS CARDS** in Room 201A. On each CLASS CARD, the SECTION LETTER following the course number should be the SAME as the SECTION LETTER you have indicated in the ALPHABETICAL LIST OF COURSES and in the DAILY PROGRAM section.

Students must register for and carry an 8:00 A.M. or a 3:00 P.M. Class.

**STEP 3** Obtain CLASS CARDS at Class Card Desk in Room 201A. See Class Card Checker 201A.

**STEP 4** Present this WORKSHEET to Fee Assessor. Pay FEE in Room 201A.

**STEP 5** Print in ink, NAME and ADDRESS ONLY on CLASS CARDS. Do not fold or bend cards.

**STEP 6** Obtain KARDEX Card, S-A Card and other forms in Room 201A and complete. Follow instructions on Forms.

**STEP 7** Present all forms to a FINAL CHECKER for approval. Retain Student Section of S-A form—it contains a copy of your program.

**STEP 8** If you do not have a Student Photo ID card, have photo taken in Room 201A.

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**DAILY PROGRAM**

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</tr>
</tbody>
</table>

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**ALPHABETICAL LIST OF COURSES**

<table>
<thead>
<tr>
<th>Dept.</th>
<th>Course Number</th>
<th>Section Letter</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**TOTAL CREDIT HOURS**

I have checked my DAILY PROGRAM and ALPHABETICAL LIST OF COURSES carefully against the printed "SCHEDULE OF CLASSES." I realize that I will be charged $5.00 for each CHANGE OF PROGRAM.

---

**CURRICULUM & SEQUENCE**

( Please Indicate )

<table>
<thead>
<tr>
<th>H. Sch. Bus. Ed.</th>
<th>Freshman (0-32 cr. hrs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steno.</td>
<td>Sophomore (33-64 cr. hrs.)</td>
</tr>
<tr>
<td>Acc't.</td>
<td>Junior (65-96 cr. hrs.)</td>
</tr>
<tr>
<td>H. Sch. Home Ed.</td>
<td>Senior (97 + cr. hrs.)</td>
</tr>
<tr>
<td>H. Sch. Ind. Ed.</td>
<td>Unclassified (Student with Bachelors degree)</td>
</tr>
<tr>
<td>Draft.</td>
<td>Admitted to Graduate School</td>
</tr>
<tr>
<td>Shop.</td>
<td></td>
</tr>
<tr>
<td>Int. Gr.</td>
<td></td>
</tr>
<tr>
<td>KgP</td>
<td></td>
</tr>
<tr>
<td>Tch. Maj.</td>
<td></td>
</tr>
<tr>
<td>Sequence</td>
<td></td>
</tr>
</tbody>
</table>

I have been a legal resident of the State of Illinois for a period of one year immediately prior to the present date

**YES**  **NO**

Student's Signature

Date

---

Registration Worksheet Approval

Date
<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr.</td>
<td>Address</td>
<td>Phone</td>
</tr>
<tr>
<td>Legal guardian, Husband, Wife or Parent. Encircle Name and Address</td>
<td>Phone</td>
<td></td>
</tr>
<tr>
<td>Have you been a legal resident of the State of Illinois for one year previous to present date? Yes No Male Female Veteran Yes No Locker Number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are you employed? Yes No How many hrs. per week? Single Married</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employer, Name of School or Firm: Address Position</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School from which you graduated Location Date of Graduation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>List Below All Colleges You Have Attended (Include ITC: Chicago South Campus and ITC Branches)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NAME OF COLLEGE</td>
<td>LOCATION</td>
<td>DATES OF ATTENDANCE</td>
</tr>
<tr>
<td>--------------------</td>
<td>----------</td>
<td>---------------------</td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is this your first enrollment at ITC South? Yes No Date of first admission to ITC South? Month Year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When were you last enrolled at ITC South? Term Ending Apr. 19 June 19 Aug. 19 Dec. 19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are you working toward a Bachelor's degree at ITC South? Yes No If &quot;Yes&quot; when do you expect to complete requirements for your degree? April 19 June 19 Aug. 19 Dec. 19 If &quot;Yes&quot; check your academic classification: Fresh (0-32 cr. hrs.) Soph (33-64 cr. hrs.) Junior (65-96 cr. hrs.) Senior (97-128 cr. hrs.) If &quot;Yes&quot; encircle your curriculum and indicate your sequence below: INT. GRADE Kgp UG TCHNG. MAJ. BUS. ED. IND. ED. HOME ECON. SEQUENCE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

USE INK — PRINT LEGIBLY

(OVER)
## SCHEDULE OF CLASSES—PRINT YOUR SCHEDULE BELOW AND HAVE IT APPROVED—(SEE INSTRUCTIONS)

<table>
<thead>
<tr>
<th>DEPT. <strong>ART. EDUC., ETC.)</strong></th>
<th>COURSE NUMBER</th>
<th>SEC.</th>
<th>CR. HRS.</th>
<th>Indicate HOUR of class sessions in proper day column</th>
<th>ROOM</th>
<th>DATE DROPPED</th>
<th>DATE ADDED</th>
<th>REASON</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>モン.</td>
<td>TUES.</td>
<td>WED.</td>
<td>THUR.</td>
<td>FRI.</td>
</tr>
</tbody>
</table>

**INSTRUCTIONS**

1. **Use Ink—Print Legibly—Fill Out Completely.** If classes meet double periods use two lines.

2. **Be certain SECTION LETTER of course is correct.** Avoid class hour conflicts. Be sure to indicate all class hours in the proper day column. Note especially those courses that meet double class periods.
# ILLINOIS TEACHERS COLLEGE: CHICAGO-SOUTH

Student Statistical Envelope

**INSTRUCTIONS:** PLEASE ANSWER APPLICABLE QUESTIONS. PRINT LEGIBLY. PLACE AN "X" IN THE APPROPRIATE SPACE.

1. **MR.**

2. **MRS.**

3. **MS.**

4. **LAST NAME:**

5. **FIRST NAME:**

6. **MIDDLE NAME:**

7. **姓氏:**

8. **名:**

9. **父称:**

10. **ADDRESS:**

11. **Street:**

12. **City:**

13. **State:**

14. **Zip Code:**

15. **AGE:**

16. **SEX:**

17. **ARE YOU A LEGAL RESIDENT OF ILLINOIS?**

18. **DO YOU LIVE IN CHICAGO?**

19. **IS THIS YOUR FIRST ENROLLMENT AT ITC OR ITS BRANCHES?**

20. **IF YOU HAVE EVER PREVIOUSLY ATTENDED ITC, INDICATE CAMPUS:**

   - **South:**
   - **Crane:**
   - **Sabin or Foreman:**
   - **North (3500 N. St. Louis):**

   (OPEN FIELD)
9. ARE YOU WORKING FOR A DEGREE AT ITC SOUTH? ___ YES ___ NO

10. IF SO, WHICH? ___ 1 BS ___ 2 MA ___ 3 MS ___ 4 MS Ed

11. DO YOU EXPECT TO OBTAIN YOUR BACHELOR'S DEGREE FROM ITC SOUTH AFTER COMPLETING THE COURSES FOR WHICH YOU ARE NOW REGISTERING? ___ YES ___ NO

12. DO YOU EXPECT TO OBTAIN YOUR MASTER'S DEGREE FROM ITC SOUTH AFTER COMPLETING THE COURSES FOR WHICH YOU ARE NOW REGISTERING? ___ YES ___ NO

13. IF YOU ARE WORKING FOR A BACHELOR'S DEGREE AT ITC SOUTH, ENCIRCLE YOUR CURRICULUM:
   *Inter Grade *KgP Bus Educ Ind Educ Tchng Major *Home Econ
   1 2 3 4 5 6

14. IF YOU ARE WORKING FOR A BACHELOR'S DEGREE AT ITC SOUTH, ENCIRCLE YOUR SEQUENCE:
   1 2 3 4 5 6 7 8 9
   Acctg Bus Trng Stenog HS Draft HS Shop EM H Phy Sci
   10 11 12 13 14 15 16

15. IF YOU HAVE BEEN ADMITTED TO ITC SOUTH GRADUATE SCHOOL, ENCIRCLE YOUR PROGRAM OF STUDY:
   Schl Lib Ind Ed Ment Hand Schl Guid Eng Math Science History Geography
   1 2 3 4 5 6 7 8 9

16. WHAT IS YOUR ITC SOUTH ACADEMIC CLASSIFICATION?

   (NOTE: *An Unclassified student is one who has a bachelor's degree and is not formally admitted to the Graduate School)

17. ARE YOU REGISTERING FOR ANY DAY CLASSES THIS TERM? ___ YES ___ NO

18. FOR HOW MANY CREDIT HOURS ARE YOU NOW REGISTERING THIS TERM AT ITC SOUTH: Include Day, Evening and Extension Courses
   TOTAL

19. DOES YOUR REGISTRATION INCLUDE COURSES OFFERED AT WEST EXTENSION (Formerly Crane)? ___ YES ___ NO

20. DO YOU HOLD A SCHOLARSHIP FOR TUITION AT ITC? ___ YES ___ NO

21. ARE YOU CURRENTLY RECEIVING VETERAN'S BENEFITS, EITHER STATE OR FEDERAL? ___ YES ___ NO

22. MARITAL STATUS
   Single Married

(HAVE YOU ANSWERED EVERY QUESTION?)
# APPENDIX 7

## ILLINOIS TEACHERS COLLEGE CHICAGO (SOUTH)

### S-A FORM
See back for instructions

<table>
<thead>
<tr>
<th>Print: Last Name*</th>
<th>First</th>
<th>Middle</th>
<th>Maiden if Married</th>
</tr>
</thead>
<tbody>
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<table>
<thead>
<tr>
<th>Address</th>
<th>Yes</th>
<th>Locker Number</th>
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<table>
<thead>
<tr>
<th>Telephone Number</th>
<th>Married No.</th>
<th>Expected Date</th>
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<table>
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<tr>
<th>Date of Birth</th>
<th>Month Year</th>
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</table>

In Case of Accident Notify

<table>
<thead>
<tr>
<th>Telephone</th>
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</table>

## DAILY PROGRAM

<table>
<thead>
<tr>
<th>COURSE</th>
<th>COURSE NUMBER</th>
<th>SECTION LETTER</th>
<th>Indicate hour of class sessions in proper day column</th>
</tr>
</thead>
<tbody>
<tr>
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<td>MON.</td>
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<table>
<thead>
<tr>
<th>Data</th>
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</table>

(PRINT - USE BALL POINT PEN OR PENCIL - PRESS HARD)
APPLICATION FOR ADMISSION TO THE UNDERGRADUATE SCHOOL

GENERAL INFORMATION

All applications for admission to CHICAGO STATE COLLEGE must be accompanied by a non-refundable $15.00 application fee in the form of a check or money order. Checks should be made payable to CHICAGO STATE COLLEGE.

An applicant is required to list his Social Security number. Applications cannot be processed without this item. If you do not have a Social Security number, obtain an application form at your local post office or nearest Social Security Administration office. Submit the completed form as instructed by your postmaster or district manager. Your Social Security number is important, since it will become your permanent identification number if admitted to the College.

DIRECTIONS

Read these directions carefully before filling out this blank, then complete pages 2, 3, and 4 of this blank. Mail to:

Office of Admissions
Room 103A
CHICAGO STATE COLLEGE
6800 S. Stewart Ave.
Chicago, Illinois 60621

1. Please answer every question on this blank. If a question does not apply to you, print "Does not apply."
2. If you have graduated from high school, request that your transcript be sent to CHICAGO STATE COLLEGE immediately.
3. If you have not graduated, ask your high school to send a seventh semester transcript.
4. If you have attended or are in attendance at an accredited college, university, art, or music school, you must request EACH Institution to send a transcript of your record to the College immediately. A SUPPLEMENTARY TRANSCRIPT must be provided for courses in progress as soon as they are completed.
5. Applicants who have attended other colleges must also provide the College with their high school transcripts.
6. Veterans must submit a photostatic copy of their discharge or separation papers with this application.
7. Applicants must furnish ACT scores and a completed CSC medical form.

Entire responsibility for having credentials sent to the College rests with the applicant. No application is complete until all required documents are received. All documents become the property of the College.

List below all first and last names which may appear on any transcripts sent to this school

1. ____________________________________________
2. ____________________________________________
3. ____________________________________________
4. ____________________________________________
5. ____________________________________________

For Admission 19

☐ Fall Trimester
☐ Winter Trimester
☐ Spring Term (8 wks)
☐ Summer Term (8 wks)

For Attendance at

☐ 6800 S. Stewart
☐ 500 N. Pulaski

APPLICATION NO. ____________________________
SOCIAL SECURITY NUMBER [ ]-[ ]-[ ]

NAME

ADDRESS

PHONE

BIRTHPLACE

ARE YOU A U.S. CITIZEN?

IF ANSWER IS NO, GIVE SERIAL NUMBER OF FINAL CITIZENSHIP PAPERS OR CURRENT CITIZENSHIP STATUS

HAVE YOU LIVED IN ILLINOIS FOR THE PAST 12 MONTHS

ARE YOU REGISTERED FOR SELECTIVE SERVICE

ARE YOU A VETERAN OF THE U.S. ARMED FORCES?

BRANCH

HONORABLE DISCHARGE

FATHER'S FULL NAME

MOTHER'S FULL NAME

PARENTS' LEGAL RESIDENCE

LAST \ FIRST \ MIDDLE

SPouse'S NAME

SPouse'S ADDRESS

SPouse'S FULL NAME

LIVING \ DECEASED

LIVING \ DECEASED

LIVING \ DECEASED

LIVING \ DECEASED

RELATIONSHIP TO YOU

YOUR GUARDIAN FOR

HAS YOUR GUARDIAN LIVED IN ILLINOIS FOR THE PAST 12 MONTHS?

DO YOU PLAN TO ATTEND THE COLLEGE AS A FULL-TIME STUDENT?

DO YOU PLAN TO APPLY FOR STUDENT FINANCIAL ASSISTANCE (STUDENT EMPLOYMENT, WORK STUDY, SCHOLARSHIP, GOVERNMENT)

HAVE YOU ANY PHYSICAL HANDICAPS?

HAVE YOU ATTENDED THIS INSTITUTION BEFORE?

HAVE YOU APPLIED FOR ADMISSION TO THIS INSTITUTION BEFORE?

INDICATE THE TEACHER-TRAINING CURRICULUM YOU WISH TO FOLLOW (SEE CURRENT CATALOGUE FOR DETAILED INFORMATION)

ADOPTION TO THE COLLEGE IS NOT OFFICIAL UNTIL A TRANSCRIPT IS RECEIVED FROM THE HIGH SCHOOL FROM WHICH YOU GRADUATED. LIST BELOW:

HAS ANY EDUCATIONAL INSTITUTION EVER PLACED YOU ON SCHOLARSHIP PROBATION?

HAS ANY EDUCATIONAL INSTITUTION EVER DROPPED YOU FOR POOR SCHOLARSHIP?

HAS ANY EDUCATIONAL INSTITUTION EVER TAKEN DISCIPLINARY ACTION AGAINST YOU?

ARE YOU PRESENTLY IN DEBT TO ANY EDUCATIONAL INSTITUTION?
### CHICAGO STATE COLLEGE: COMPUTER CENTRE

**APPENDIX 10**

**CARD PUNCHING OR VERIFYING INSTRUCTIONS**

**JOB NAME**

**Student History**

**Card 1 of 7**

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>DUE IN</th>
<th>DUE OUT</th>
<th>ESTIMATED VOLUME</th>
<th>EST. TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TIME</td>
<td>DATE</td>
<td></td>
<td>HOURS</td>
</tr>
<tr>
<td></td>
<td>DATE</td>
<td></td>
<td></td>
<td>TENTHS</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>PROGRAM CARD NO.</th>
<th>CARD ELECTRO (FORM) NO.</th>
</tr>
</thead>
</table>

**SWITCH SETTINGS - ON**

- PROGRAM UNIT
- PRINT
- VERIFY
- LEFT ZERO PRINT
- AUTO FEED
- AUTO SKIP-AUTO DUPL (VER)

**SOURCE DOCUMENTS USED:**

*Application for Admission*

**DISPOSITION OF CARDS:**

*SH100*

**RECEIVED FROM:**

Admissions Office

**DOCUMENTS**

Return to Admissions Office

<table>
<thead>
<tr>
<th>CARD FIELD</th>
<th>FUNCTION</th>
<th>REMARKS</th>
</tr>
</thead>
</table>

1. Social Security Number
2. Last Name
3. First Name
4. Middle Initial
5. Street Address
6. City
7. State
8. Zip Code
9. Legal Resident
10. Phone No.
11. Scholarship
12. Advance Fee
13. Fee Balance
14. Card Code (1)
15. 

**TOTAL KEY STROKES PER CARD**

<table>
<thead>
<tr>
<th>COLUMNS</th>
<th>FUNCTION</th>
<th>REMARKS</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>FROM</th>
<th>THRU</th>
<th>TOTAL</th>
</tr>
</thead>
</table>

**FUNCTION**

- DUPLICATE
- PUNCH
- SKIP
- X-SKIP
- VERIFY
- SELF CK. NO.
- LEFT ZERO

**SYMBOL**

- D
- P
- S
- XS
- V
- CK
- LZ
CHICAGO STATE COLLEGE: COMPUTER CENTRE
CARD PUNCHING OR VERIFYING INSTRUCTIONS

<table>
<thead>
<tr>
<th>JOB NAME</th>
<th>Student History</th>
</tr>
</thead>
<tbody>
<tr>
<td>JOB NO.</td>
<td>FOR</td>
</tr>
<tr>
<td>MACH. TYPE</td>
<td></td>
</tr>
</tbody>
</table>

**FREQUENCY**
- [ ] DAILY
- [ ] WEEKLY
- [ ] BI-WEEKLY
- [ ] SEMI-MONTHLY
- [ ] MONTHLY
- [ ] QUARTERLY
- [ ] ANNUAL
- [ ] OTHER

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>DUE IN</th>
<th>DUE OUT</th>
<th>ESTIMATED VOLUME</th>
<th>EST. TIME</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>TIME</td>
<td>DATE</td>
<td>TIME</td>
<td>DATE</td>
</tr>
</tbody>
</table>

**PROGRAM CARD NO.**

**SOURCE DOCUMENTS USED:**
- Application for Admission

**DISPOSITION OF CARDS:**
- SH100

**RECEIVED FROM:**
- Admissions Office

**DOCUMENTS**
- Return to Admissions Office

**CARD FIELD**

<table>
<thead>
<tr>
<th>CARD FIELD</th>
<th>COLUMNS FROM</th>
<th>THRU</th>
<th>TOTAL</th>
<th>FUNCTION*</th>
<th>REMARKS</th>
</tr>
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<tbody>
<tr>
<td>1. Social Security Number</td>
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</tr>
<tr>
<td>2. Place of Birth</td>
<td>10</td>
<td>29</td>
<td>20</td>
<td>p</td>
<td></td>
</tr>
<tr>
<td>3. Date of Birth</td>
<td>30</td>
<td>35</td>
<td>6</td>
<td>p</td>
<td></td>
</tr>
<tr>
<td>4. Sex</td>
<td>36</td>
<td>36</td>
<td>1</td>
<td></td>
<td>l=Male/2=Female</td>
</tr>
<tr>
<td>5. Marital Status</td>
<td>37</td>
<td>37</td>
<td>1</td>
<td>l=Single/2=Marr</td>
<td>ed</td>
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<tr>
<td>6. Maiden Name</td>
<td>38</td>
<td>51</td>
<td>14</td>
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<td>7. Veteran</td>
<td>52</td>
<td>52</td>
<td>1</td>
<td>l=Yes 2=No</td>
<td></td>
</tr>
<tr>
<td>8. Selective Service No.</td>
<td>53</td>
<td>63</td>
<td>11</td>
<td></td>
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</tr>
<tr>
<td>9. Draft Classification</td>
<td>64</td>
<td>65</td>
<td>2</td>
<td>Exemp 1A, 4F</td>
<td></td>
</tr>
<tr>
<td>10. U.S. Citizen</td>
<td>66</td>
<td>66</td>
<td>1</td>
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</tr>
<tr>
<td>11. Branch of Military Service</td>
<td>67</td>
<td>70</td>
<td>4</td>
<td>USAP, USA, USC, USMC, USN</td>
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</tr>
<tr>
<td>12. Card Code (2)</td>
<td>80</td>
<td>80</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL KEY STROKES PER CARD:**

**FUNCTION* SYMBOL**

- DUPLICATE: D
- PUNCH: P
- SKIP: S
- X-SKIP: XS
- VERIFY: V
- SELF CK. NO.: CK
- LEFT ZERO: LZ
CHICAGO STATE COLLEGE: COMPUTER CENTRE

CARD PUNCHING OR VERIFYING INSTRUCTIONS

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>DUE IN</th>
<th>DUE OUT</th>
<th>ESTIMATED VOLUME</th>
<th>EST. TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAILY</td>
<td>TIME</td>
<td>DATE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WEEKLY</td>
<td>TIME</td>
<td>DATE</td>
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<tr>
<td>BI-WEEKLY</td>
<td>TIME</td>
<td>DATE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEMI-MONTHLY</td>
<td>TIME</td>
<td>DATE</td>
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<thead>
<tr>
<th>JOB NAME</th>
<th>JOB NO.</th>
<th>FOR</th>
<th>MACH. TYPE</th>
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### CARD PUNCHING OR VERIFYING INSTRUCTIONS

**JOB NAME**  
Student History  
Card 4 of 7

**FREQUENCY**  
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☐ WEEKLY  
☐ BI-WEEKLY  
☐ SEMI-MONTHLY  
☐ MONTHLY  
☐ QUARTERLY  
☐ ANNUAL  
☐ OTHER

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**PROGRAM CARD NO.**  
CARD ELECTRO (FORM) NO.

**SWITCH SETTINGS - ON**  
☐ PROGRAM UNIT  
☐ VERIFY  
☐ AUTO FEED  
☐ AUTO SKIP-AUTO DUPL (VER)

**SOURCE DOCUMENTS USED:**  
Application for Admission

**RECEIVED FROM:**  
Admissions Office

**DOCUMENTS**  
Return to Admissions Office

**FUNCTION* SYMBOL**  
DUPLICATE D  
PUNCH P  
SKIP S  
X-SKIP XS  
VERIFY V  
SELF CK. NO. CK  
LEFT ZERO LZ

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**FUNCTION* REMARKS**

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**TOTAL KEY STROKES PER CARD--**
## CARD PUNCHING OR VERIFYING INSTRUCTIONS

### JOB NAME
Student History
Card 5 of 7

### FREQUENCY
- [ ] Daily
- [ ] Weekly
- [ ] Bi-Weekly
- [ ] Semi-Monthly
- [ ] Monthly
- [ ] Quarterly
- [ ] Annual
- [ ] Other

### DUE IN
TIME
DUE OUT
TIME
ESTIMATED VOLUME
EST. TIME

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### SOURCE DOCUMENTS USED:
Application for Admission

### DISPOSITION OF CARDS:
SH100

### RECEIVED FROM:
Admissions Office

### DOCUMENTS
Return to Admissions Office

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- SKIP S
- X-SKIP XS
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- Application for Admission

**DISPOSITION OF CARDS:**
- SH100

**RECEIVED FROM:**
- Admissions Office

**DOCUMENTS:**
- Return to Admissions Office

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**TOTAL KEY STROKES PER CARD:**
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- P
- S
- XS
- V
- CK
CHICAGO STATE COLLEGE | COMPUTER CENTRE

CARD PUNCHING OR VERIFYING INSTRUCTIONS

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<td>15.</td>
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<table>
<thead>
<tr>
<th>FUNCTION*</th>
<th>SYMBOL</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUPLICATE</td>
<td>D</td>
</tr>
<tr>
<td>PUNCH</td>
<td>P</td>
</tr>
<tr>
<td>SKIP</td>
<td>S</td>
</tr>
<tr>
<td>X-SKIP</td>
<td>XS</td>
</tr>
<tr>
<td>VERIFY</td>
<td>V</td>
</tr>
<tr>
<td>SELF CK. NO.</td>
<td>CK</td>
</tr>
</tbody>
</table>

TOTAL KEY STROKES PER CARD
MEDICAL HEALTH RECORD

STUDENT HEALTH SERVICE

CHICAGO STATE COLLEGE

NAME: ___________________________ LAST ______________________ FIRST ______________________ MIDDLE ______________________

HOME ADDRESS: ______________________ PHONE: ______________________

LOCAL ADDRESS: ______________________ PHONE: ______________________

DATE OF BIRTH: ___________________ MO. ___________________ DAY ___________________ YEAR ___________________ AGE: ___________________

PARENT or LEGAL GUARDIAN: ______________________

ADDRESS: ______________________

HOME PHONE: ______________________ BUSINESS PHONE: ______________________

IN CASE OF SERIOUS ILLNESS PLEASE NOTIFY: ______________________

FAMILY PHYSICIAN'S NAME

ADDRESS

PHONE NUMBER
To the Student:

Your pre-entrance physical examination is a required part of your application to Chicago State College. Fill out completely the Medical History on pages 1, 2, 3. Please answer ALL questions. Have your parent or legal guardian sign the consent form if you are under 21 years of age. Take the completed history form to your family doctor and have him complete the physical examination of page 4. PLEASE NOTE that your registration will not be completed until this report of your medical history and physical examination is on file at the College. All information is strictly confidential and is used only by the medical staff. All students recently discharged from the military services may use a copy of their discharge physical if it was accomplished within the past six months of registration.

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<table>
<thead>
<tr>
<th>Date</th>
<th>Date of expected entrance</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

<table>
<thead>
<tr>
<th>Name (print)</th>
<th>Sex: M        F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last</td>
<td>First</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Home Address</th>
<th>Marital Status:</th>
<th>Phone No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>W</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>Birth Mo. Day Year</th>
<th>Year in school (circle)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Fr. So. Jr. Sr. Gr.</td>
</tr>
<tr>
<td>Date</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Do you plan to work while in school? Yes _____ No. _____. If "yes," how many hours per week? ____________________________

Kind of work ________________________________________________________

Name of parents (guardian or spouse) __________________________________

Address ____________________________________________________________

Phone _____________________________________________________________

---

PARENTAL PERMIT

The law requires that parental permission be obtained for medical procedures on minors. The following consent should be signed by the parents or legal guardian so that ordinary medical care may be given without undue delay. However, no operation will be performed without specific prior consent by parent or guardian.

CONSENT:

“I do hereby authorize the Chicago State College Health Service Staff or their consultants to render whatever medical care they deem desirable for the health of my son/daughter ____________________________ .

<table>
<thead>
<tr>
<th>Date</th>
<th>Signed</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

Do you or your family carry hospitalization or medical insurance? (such as Blue Cross-Blue Shield)

Name of company ____________________________ Identification # _____
The following information is desired only as an aid in the consideration of your health. Therefore, do not hesitate to give a complete history. Please answer all questions.

### FAMILY HISTORY

<table>
<thead>
<tr>
<th>AGE</th>
<th>OCCUPATION</th>
<th>STATE OF HEALTH</th>
<th>AGE &amp; YR. OF DEATH</th>
<th>CAUSE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

**FATHER**

**MOTHER**

**SISTERS**

**BROTHERS**

**CHILDREN**

Has any member of your immediate family (those listed above) had any of the following conditions:

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>GIVE DETAILS OF QUESTIONS ANSWERED &quot;YES&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>CANCER</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DIABETES</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HEART DISEASE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HIGH BLOOD PRESSURE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MENTAL OR EMOTIONAL PROBLEMS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TUBERCULOSIS</td>
</tr>
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<td></td>
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<td>ALLERGIES</td>
</tr>
</tbody>
</table>

### IMMUNIZATION HISTORY

<table>
<thead>
<tr>
<th>HAVE YOU BEEN IMMUNIZED AGAINST?</th>
<th>YES</th>
<th>NO</th>
<th>DATE</th>
<th>ARE YOU ALLERGIC TO?</th>
<th>YES</th>
<th>NO</th>
<th>EXPLANATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMALL POX</td>
<td></td>
<td></td>
<td></td>
<td>PENICILLIN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TETANUS</td>
<td></td>
<td></td>
<td></td>
<td>SULFA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIPHTHERIA</td>
<td></td>
<td></td>
<td></td>
<td>OTHER DRUGS</td>
<td></td>
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</tr>
<tr>
<td>TYPHOID</td>
<td></td>
<td></td>
<td></td>
<td>FOODS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POLIO</td>
<td></td>
<td></td>
<td></td>
<td>POLLEN</td>
<td></td>
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<td></td>
<td></td>
<td>OTHER</td>
<td></td>
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</tr>
</tbody>
</table>

**H ave you had: YES NO RESULTS YR.**

- CHEST X-RAY
- TB SKIN TEST

**DO YOU HAVE ANY ILLNESS OR CONDITION FOR WHICH YOU ARE NOW BEING TREATED? IF SO, GIVE DETAILS**

**ARE YOU NOW TAKING REGULARLY ANY MEDICATIONS PRESCRIBED FOR YOU? IF SO, DESCRIBE**

**HAVE YOU BEEN HOSPITALIZED FOR ANY MEDICAL DISEASE OR OPERATION? IF SO, LIST, WITH DATES**

**HAVE YOU HAD ANY BROKEN BONES? IF SO, LIST, WITH THE DATES**

**HAVE YOU BEEN CLOSELY ASSOCIATED WITH ANYONE HAVING TUBERCULOSIS?**

**ARE YOU NOW ON A SPECIAL DIET? WHAT KIND?**

**DO YOU SMOKE CIGARETTES? HOW MANY DAILY?**

**HAVE YOU EVER RECEIVED TREATMENT FOR MENTAL OR EMOTIONAL DISORDERS? DO YOU HAVE ANY HEALTH, PERSONAL OR FAMILY PROBLEMS WHICH YOU WOULD LIKE TO DISCUSS WITH HEALTH SERVICE?**

**DO YOU HAVE AN ARMED FORCES MEDICAL REJECTION? 4F ☐ MEDICAL DISCHARGE? ☐**
<table>
<thead>
<tr>
<th>Name of Student</th>
<th>Date</th>
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</table>
TO THE EXAMINING PHYSICIAN:

Please fill in completely this examination form. Your examination and recommendations are the basis of the medical care of the student at the College. **ALL** information is confidential and will not affect his College standing. **SMALLPOX VACCINATION AND EITHER A TB SKIN TEST OR CHEST X-RAY ARE REQUIRED AT THE TIME OF EXAMINATION. TETANUS TOXOID AND POLIO VACCINE ARE HIGHLY RECOMMENDED.** The student’s registration is not completed until this form is on file at the College. Please complete, sign and return it to the Health Service immediately.

**PHYSICAL EXAMINATION**

<table>
<thead>
<tr>
<th>NAME (print)</th>
<th>Last</th>
<th>First</th>
<th>Middle</th>
<th>DATE</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>AGE</th>
<th>SEX</th>
<th>HT.</th>
<th>WT.</th>
<th>BP.</th>
<th>PULSE</th>
<th>HEMATOCRIT OR HEMOGLOBIN</th>
</tr>
</thead>
</table>

**DISTANT VISION**

<table>
<thead>
<tr>
<th>R:20/</th>
<th>CORR. TO 20/</th>
<th>L:20/</th>
<th>CORR. TO 20/</th>
</tr>
</thead>
</table>

**HEARING:**

<table>
<thead>
<tr>
<th>R: HEARD</th>
<th>NOT HEARD</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>L: HEARD</th>
<th>NOT HEARD</th>
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</thead>
</table>

**URINALYSIS**

<table>
<thead>
<tr>
<th>S.G.</th>
<th>ALB.</th>
<th>SUG.</th>
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</thead>
</table>

**CLINICAL EVALUATION**

<table>
<thead>
<tr>
<th>NORMAL</th>
<th>ABNORMAL</th>
<th>PLEASE MARK (x) EACH ITEM</th>
<th>Describe any abnormality in detail at right of item.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. HEAD, NECK</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2. EYES (LIDS, REFLEXES)</td>
<td></td>
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<tr>
<td>3. EARS (CANALS, DRUMS)</td>
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<tr>
<td>4. NOSE, SINUSES</td>
<td></td>
<td></td>
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<tr>
<td>5. MOUTH, THROAT, TEETH, SPEECH</td>
<td></td>
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<td></td>
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<tr>
<td>6. CHEST, LUNGS, BREASTS</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>7. HEART (RHYTHM, MURMURS, SIZE)</td>
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<tr>
<td>8. ABDOMEN (INCLUDING HERNIA)</td>
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<tr>
<td>9. GENITALIA</td>
<td></td>
<td></td>
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<tr>
<td>10. UPPER EXTREMITIES</td>
<td></td>
<td></td>
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<tr>
<td>11. LOWER EXTREMITIES, FEET</td>
<td></td>
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<tr>
<td>12. SPINE</td>
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<tr>
<td>13. SKIN</td>
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<td>14. REFLEXES</td>
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<td>15. EMOTIONAL</td>
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**DATE OF LAST CHEST X-RAY RESULTS**

**DATE OF IMMUNIZATIONS**

<table>
<thead>
<tr>
<th>Small Pox</th>
<th>Polio—Salk</th>
<th>Polio—Oral</th>
<th>Dip.—Tet.</th>
<th>Tetanus</th>
<th>Typhoid Para.</th>
<th>Other</th>
<th>Tuberculin</th>
<th>Other</th>
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</thead>
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**SKIN TESTS**

<table>
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<tr>
<th>Other</th>
<th>Tuberculin</th>
<th>Other</th>
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**RECOMMENDATION FOR PHYSICAL EDUCATION ACTIVITY:**

UNLIMITED

LIMITED: 

**IF LIMITED, CHECK ACTIVITIES IN WHICH STUDENT MAY NOT PARTICIPATE:**

**PHYSICAL FITNESS:**

CALISTHENICS, GROUP GAMES, FOLK AND SOCIAL DANCING

(REQUIRED OF STUDENTS PREPARING TO TEACH IN THE ELEMENTARY SCHOOL)

BADMINTON, DANCING, GOLF, SWIMMING, TENNIS, RECREATIONAL GAMES

**STATE REASONS FOR LIMITATIONS:**

**RESTRICTED 100% — STATE REASON**

**NAME (print)_________________ ADDRESS ____________ PH.NO. ________**

**SIGNATURE__________________**
APPLICATION FOR ADMISSION TO THE GRADUATE SCHOOL

To the Applicant: Only candidates for the Master’s degree are required to submit transcripts for admission. Complete this form and return it to:

OFFICE OF THE GRADUATE SCHOOL
CHICAGO STATE COLLEGE
6800 S. Stewart Ave.
Chicago, Illinois 60621

Request each collegiate institution you have previously attended, or are now attending, other than Chicago State College, to mail a transcript of your record immediately to the Office of the Graduate School. Do not send transcripts in your possession. If you are now attending college, attach to this application a statement indicating the name of the institution, the course number and title, and number of semester or quarter hours for each class for which you are registered. A transcript or supplement showing completion of this work must also be submitted promptly. Applicants should request that transcripts include or be accompanied by a notation to grading.

Entire responsibility for having credentials sent to the Graduate School rests with the applicant. No application is complete until the required documents are received. All transcripts become the property of the College; other documents may be returned.

Answer every question. Type or print legibly in ink. Incomplete or improper application may delay your admission to the College.

If you are applying for a Master’s degree sequence, upon receipt of this application form and the necessary supporting documents your application will be reviewed in the Graduate School office. If you meet the general admission requirements, your records will be sent to the department administering your intended graduate program. After the department has completed its evaluation, you will be notified of your acceptance. You will be sent an evaluation of your records.

Please note that degree applications submitted shortly before a new semester begins often cannot be processed prior to the registration period. If your application has not been acknowledged by that time, you may nonetheless enroll in courses. Please note, however, that there is a limit on the amount of work you can take as an unclassified student which may subsequently may be credited toward a Master’s degree.

Application Fee: A non-refundable one-time application fee of $15.00 will be charged for all applicants to the Graduate School made by students who do not have a previous degree from this college.

List below all first and last names which may appear on any transcripts sent to this school

1. _______________________________________
2. _______________________________________
3. _______________________________________
4. _______________________________________
5. _______________________________________
<table>
<thead>
<tr>
<th>SOCIAL SECURITY NUMBER</th>
<th>111-11-1111</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME</td>
<td>LAST FIRST MIDDLE</td>
</tr>
<tr>
<td>ADDRESS</td>
<td>NUMBER AND STREET</td>
</tr>
<tr>
<td>CITY</td>
<td>STATE ZIP CODE</td>
</tr>
<tr>
<td>TELEPHONE</td>
<td>AREA CODE NUMBER</td>
</tr>
<tr>
<td>SEX</td>
<td>BIRTHDATE</td>
</tr>
<tr>
<td>BIRTHPLACE</td>
<td>NUMBER</td>
</tr>
<tr>
<td>STATE OR COUNTRY</td>
<td></td>
</tr>
<tr>
<td>ARE YOU A U.S. CITIZEN?</td>
<td>YES NO</td>
</tr>
<tr>
<td>HAVE YOU LIVED IN ILLINOIS FOR THE PAST 12 MONTHS</td>
<td>YES NO</td>
</tr>
<tr>
<td>ARE YOU REGISTERED FOR SELECTIVE SERVICE</td>
<td>YES NO</td>
</tr>
<tr>
<td>ARE YOU A VETERAN OF THE U.S. ARMED FORCES?</td>
<td>YES NO</td>
</tr>
<tr>
<td>BRANCH</td>
<td>DATES OF SERVICE FROM TO</td>
</tr>
<tr>
<td>HONORABLE DISCHARGE</td>
<td>YES NO</td>
</tr>
<tr>
<td>MARRIED</td>
<td>YES NO</td>
</tr>
<tr>
<td>SPOUSE'S NAME</td>
<td></td>
</tr>
<tr>
<td>LAST</td>
<td>FIRST MIDDLE</td>
</tr>
<tr>
<td>SPOUSE'S ADDRESS</td>
<td></td>
</tr>
<tr>
<td>NUMBER AND STREET</td>
<td></td>
</tr>
<tr>
<td>CITY</td>
<td>STATE ZIP CODE</td>
</tr>
<tr>
<td>HAS YOUR HUSBAND LIVED IN ILLINOIS FOR THE PAST 12 MONTHS?</td>
<td>YES NO</td>
</tr>
<tr>
<td>SPOUSE'S TELEPHONE</td>
<td></td>
</tr>
<tr>
<td>EMERGENCY TELEPHONE</td>
<td></td>
</tr>
<tr>
<td>DO YOU PLAN TO ATTEND THE COLLEGE AS A PART-TIME STUDENT? (TAKE LESS THAN 12 HOURS)</td>
<td>YES NO</td>
</tr>
<tr>
<td>HAVE YOU ANY PHYSICAL HANDICAPS?</td>
<td>YES NO</td>
</tr>
</tbody>
</table>

**UNCLASSIFIED GRADUATE STUDENTS NEED NOT COMPLETE THIS BOX**

CHECK THE MASTER'S SEQUENCE YOU WISH TO FOLLOW
(For information concerning curricula see the Graduate School Catalog.)

<table>
<thead>
<tr>
<th>MASTER OF SCIENCE IN EDUCATION DEGREES</th>
<th>MASTER OF ARTS AND MASTER OF SCIENCE DEGREES</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Guidance</td>
<td>English</td>
</tr>
<tr>
<td>School Librarianship</td>
<td>Geography</td>
</tr>
<tr>
<td>The Teaching of Industrial Education</td>
<td>History</td>
</tr>
<tr>
<td>The Teaching of Mentally Retarded Children</td>
<td>Mathematics</td>
</tr>
<tr>
<td>Moderately Retarded</td>
<td>Science</td>
</tr>
<tr>
<td>Severely Retarded</td>
<td></td>
</tr>
<tr>
<td>The Teaching of the Socially Disadvantaged Child</td>
<td></td>
</tr>
</tbody>
</table>

ADMISSION TO A MASTER'S SEQUENCE IS NOT OFFICIAL UNTIL A TRANSCRIPT IS RECEIVED FROM EVERY ACCREDITED COLLEGE YOU HAVE ATTENDED. DELIBERATE OMISSION OF PREVIOUS COLLEGE RECORD MAY BE CAUSE FOR IMMEDIATE REJECTION OR DISMISSAL.

<table>
<thead>
<tr>
<th>NAME OF COLLEGE</th>
<th>CITY STATE</th>
<th>DATES OF ATTENDANCE</th>
<th>DEGREE OR NUMBER OF CREDIT HOURS EARNED</th>
</tr>
</thead>
</table>

HAS ANY, EDUCATIONAL INSTITUTION EVER

| PLACED YOU ON SCHOLARSHIP PROBATION? | YES NO |
| DROPPED YOU FOR POOR SCHOLARSHIP? | YES NO |
| TAKEN DISCIPLINARY ACTION AGAINST YOU? | YES NO |
| ARE YOU PRESENTLY IN DEBT TO ANY EDUCATIONAL INSTITUTION? | YES NO |
APPLICATION FOR ADMISSION AS A SPECIAL STUDENT

(A SPECIAL STUDENT is an undergraduate working for a Bachelor's degree at a regionally accredited college or university other than Chicago State College. See attached information for "Special Student.")

SOCIAL SECURITY NUMBER

NAME

ADDRESS

TELEPHONE

BIRTHPLACE

Are you a U.S. citizen? ☐ Yes ☐ No

If answer is no, give serial number of final citizenship papers or current citizenship status ________________________

Have you lived in Illinois for the past 12 months? ☐ Yes ☐ No

If "No" indicate date of entry to the state of Illinois ________________________

Date of first enrollment at CSC ________________________ Date of last withdrawal from CSC ________________________

PURPOSE OF ENROLLMENT AT CHICAGO STATE COLLEGE: ________________________

COLLEGE FROM WHICH YOU PLAN TO RECEIVE YOUR DEGREE:

(Name of College) (Address)

Junior ☐ Senior ☐ Sem. hrs. earned

Are you a student in good standing at above college? ☐ Yes ☐ No

You must submit written approval of the Dean or Registrar of the college from which you plan to receive your degree, indicating your academic status and the specific course or courses you have permission to take at Chicago State College. Only students in good standing at their college are eligible to attend as Special Students. This approval must bear the signature of the Dean or Registrar and the Seal of the College. Application cannot be approved until such letter is received.

I understand that the deliberate withholding of any information requested herein or the giving of any falsified statement may render me ineligible for admission or may result in my dismissal from Chicago State College.

(Signature) (Former Name, if any) (Date)

Letter of permission received ________________________ Approved ________________________

(Do not write below this line)

Permit mailed ________________________ Registration ________________________
REGISTRATION CARD

DO NOT WRITE ON THIS CARD

TO THE STUDENT

CHECK TO SEE THAT THIS CARD IS FOR THE CLASS YOU WANT. PUT ONE REGISTRATION CARD FOR EACH CLASS ON YOUR WORK SHEET IN YOUR REGISTRATION ENVELOPE AND TURN IN THE ENVELOPE BEFORE PAYING FEES.

YOU WILL BE REGISTERED ONLY IN COURSES FOR WHICH YOU HAVE REGISTRATION CARDS.
**Print new information for change of records here:**

<table>
<thead>
<tr>
<th>SOCIAL SECURITY NO.</th>
<th>STUDENT NAME</th>
<th>CLASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>STREET ADDRESS</td>
<td>CITY</td>
<td>STATE</td>
</tr>
</tbody>
</table>

**Change emergency info hereafter:**

<table>
<thead>
<tr>
<th>MR. MRS. MISS</th>
<th>LAST NAME</th>
<th>FIRST NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>STREET ADDRESS</td>
<td>CITY</td>
<td>STATE</td>
</tr>
<tr>
<td>AREA CODE</td>
<td>TELEPHONE</td>
<td></td>
</tr>
</tbody>
</table>
**CHICAGO STATE COLLEGE**  
**ENROLLMENT ENVELOPE**

**IMPORTANT:** ALL PREPRINTED INFORMATION COMES FROM YOUR ADMISSIONS OR LAST ENROLLMENT. REVIEW ALL INFORMATION AND MAKE ANY CORRECTIONS OR CHANGES IN THE ASSIGNED AREAS.

<table>
<thead>
<tr>
<th>1. NAME</th>
<th>2. SOCIAL SECURITY NO.</th>
<th>3. MARITAL STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>(PRINT)</td>
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<thead>
<tr>
<th>1-A CHANGE TO:</th>
<th>2-A CHANGE TO:</th>
<th>3-A CHANGE TO:</th>
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<thead>
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</thead>
<tbody>
<tr>
<td>1. YES</td>
<td>1. YES</td>
<td>1. BS ED</td>
</tr>
<tr>
<td>2. NO</td>
<td>2. NO</td>
<td>2. MA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4-A CHANGE TO:</th>
<th>5-A CHANGE TO:</th>
<th>6-A CHANGE TO:</th>
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</table>

<table>
<thead>
<tr>
<th>7. IF YOU ARE WORKING FOR A BACHELOR'S DEGREE AT C.S.C.</th>
</tr>
</thead>
<tbody>
<tr>
<td>YOUR CURRICULUM IS:</td>
</tr>
<tr>
<td>1. KGP</td>
</tr>
<tr>
<td>2. UG</td>
</tr>
<tr>
<td>3. MAJ</td>
</tr>
<tr>
<td>4. ED</td>
</tr>
<tr>
<td>5. HOME ECON.</td>
</tr>
<tr>
<td>6. ED</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7-A CHANGE TO:</th>
<th>8. VETERAN?</th>
<th>9. ON SCHOLARSHIP?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10. INTERMEDIATE AND UPPER GRADE OR KGP STUDENTS SHOULD CHECK GEN. ED. (4) AS THEIR SEQUENCE (HOME ECON. HAS NO SEQUENCE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>YOUR SEQUENCE IS:</td>
</tr>
<tr>
<td>1. ART</td>
</tr>
<tr>
<td>2. ENG</td>
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<tr>
<td>3. GEO</td>
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<tr>
<td>4. ED</td>
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<tr>
<td>5. HIST</td>
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<tr>
<td>6. MATH</td>
</tr>
<tr>
<td>7. MUS</td>
</tr>
<tr>
<td>8. SCI</td>
</tr>
<tr>
<td>9. PHYS</td>
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<td>10. ACCT</td>
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<tr>
<td>11. TRNG</td>
</tr>
<tr>
<td>12. STENOGR.</td>
</tr>
<tr>
<td>13. DRAFT</td>
</tr>
<tr>
<td>14. H.S.</td>
</tr>
<tr>
<td>15. E.M.H</td>
</tr>
<tr>
<td>16. SCI</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10-A CHANGE TO:</th>
<th>8-A CHANGE TO:</th>
<th>9-A CHANGE TO:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>11. IF YOU HAVE BEEN ADMITTED TO THE C.S.C. GRADUATE SCHOOL YOUR PROGRAM OF STUDY IS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. SCHL.</td>
</tr>
<tr>
<td>2. IND.</td>
</tr>
<tr>
<td>3. MENT.</td>
</tr>
<tr>
<td>4. SCHL.</td>
</tr>
<tr>
<td>5. 4. GUID.</td>
</tr>
<tr>
<td>6. ENG.</td>
</tr>
<tr>
<td>7. MATH</td>
</tr>
<tr>
<td>8. SCIENCE</td>
</tr>
<tr>
<td>9. HISTORY</td>
</tr>
<tr>
<td>10. GEOGRAPHY</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>11-A CHANGE TO:</th>
<th>OTHER</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>12. YOUR C.S.C. ACADEMIC CLASSIFICATION IS: (NOTE: AN UNCLASSIFIED STUDENT IS ONE WHO HAS A BACHELOR'S DEGREE AND HAS NOT BEEN FORMALLY ADMITTED TO GRAD. SCHOOL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRESHMAN</td>
</tr>
<tr>
<td>1-0:32 CR. HRS.</td>
</tr>
<tr>
<td>JUNIOR</td>
</tr>
<tr>
<td>3-65-96 CR. HRS.</td>
</tr>
<tr>
<td>SPECIAL</td>
</tr>
<tr>
<td>UNDERGRAD.</td>
</tr>
<tr>
<td>5- UNCLASSIFIED</td>
</tr>
<tr>
<td>8- MASTERS DEGREE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12-A CHANGE TO:</th>
<th>12-A CHANGE TO:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>13. FOR HOW MANY CREDIT HOURS ARE YOU NOW REGISTERING THIS TERM AT C.S.C., INCLUDING DAY, EVENING AND EXTENSION COURSES?</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL I HAVE CHECKED THE ENROLLMENT REGISTRATION CARDS INITIALS</td>
</tr>
</tbody>
</table>
CHICAGO STATE COLLEGE
PRE-REGISTRATION FORM
SEPTEMBER 1968 ENTERING FRESHMEN

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>Middle Initial</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Street Address</th>
<th>Telephone Number</th>
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<tbody>
<tr>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>City</th>
<th>State</th>
<th>Zip Code</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

Name of High School

Please check the curriculum in which you wish to enroll:

- Kindergarten Primary
- Intermediate-Upper Grade
- Secondary Teaching Major
- Industrial Education
- Business Education
- Home Economics


One of the following courses is required in every curriculum except Business Education and Home Economics. Please check the course you prefer.

- Econ. 151, Principles of Economics
- Geog. 104, World Regional Geography

Unless you indicate otherwise, you will be registered for a full academic program of 16 credit hours. If you wish a reduced program, please so indicate below:

Please register me for a reduced program of ___ credit hours.

A freshman applicant who has been approved for the Fall Trimester must make an advanced payment of $20, which will apply to the regular fees charged at registration. This payment is non-refundable unless the student presents a scholarship covering all registration and activity fees. The college reserves the right to cancel the admission of students who do not remit the $20 fee within fifteen days after notification of eligibility. All fees must be paid in full or scholarships placed on file with the Office of Financial Aid no later than August 15, 1968. Applicants who prefer to make immediate payment in full of registration and activity fees may do so in accordance with the fee schedule shown below. Checks or money orders should be made payable to Chicago State College.

### RESIDENTS OF ILLINOIS

<table>
<thead>
<tr>
<th>Full Program (7 credit hours or more)</th>
<th>Partial Program (6 credit hours or less)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration fee $60</td>
<td>Registration fee $ 9 per credit hour</td>
</tr>
<tr>
<td>Activity fee $20</td>
<td>Activity fee No fee</td>
</tr>
</tbody>
</table>

| NON-RESIDENTS OF ILLINOIS
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Program (7 credit hours or more)</td>
</tr>
<tr>
<td>Registration fee $300</td>
</tr>
<tr>
<td>Activity fee $ 20</td>
</tr>
</tbody>
</table>

Partial Program (6 credit hours or less)

Registration fee $ 23 per credit hour
Activity fee No fee

I am enclosing:

- $20 Advanced payment for the 1968 Fall Trimester
- $80 Payment in full for the 1968 Fall Trimester
- I have received a scholarship from __________ and have submitted it to the Office of Financial Aid at Chicago State College.

Your class schedule will be mailed you after July 15, 1968 if you have paid all registration and activity fees.

Your registration is not complete until your medical report is on file with the Student Health Service.

RETURN BOTH COPIES OF THIS FORM WITH YOUR CHECK, MONEY ORDER, OR SCHOLARSHIP IN THE ENCLOSED ENVELOPE.
# CHICAGO STATE COLLEGE
## CLASS SCHEDULE

<table>
<thead>
<tr>
<th>NAME</th>
<th>SOCIAL SECURITY NO.</th>
<th>DATE OF BIRTH</th>
<th>LOCKER NO.</th>
<th>TELEPHONE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAST</td>
<td>FIRST</td>
<td>M.I.</td>
<td>MO.</td>
<td>DAY</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>ADDRESS</th>
<th>IN CASE OF ACCIDENT NOTIFY</th>
<th>TELEPHONE NO.</th>
<th>VETERAN</th>
<th>ON SCHOLARSHIP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CURRICULUM</th>
<th>DEPARTMENT</th>
<th>COURSE NUMBER</th>
<th>SECTION</th>
<th>HOUR OF CLASS SESSIONS</th>
<th>ROOM</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-KGP</td>
<td>2-INT. UG</td>
<td>3-SEC. MAJ.</td>
<td>4-BUS. EDUC.</td>
<td>5-HOME ECON.</td>
<td>6-IND. ED.</td>
<td>7-SPECIAL</td>
</tr>
</tbody>
</table>

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**APPENDIX 22**

183
PROGRAM CHANGE □ or
COMPLETE WITHDRAWAL □

SOC. SECURITY NO. ____________________

NAME ____________________ ADDRESS ____________________


CHANGE OF PROGRAM REASON ______________________________________________________

<table>
<thead>
<tr>
<th>COURSES DROPPED</th>
<th>COURSES ADDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>COURSE NAME</td>
<td>CRSE NO.</td>
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Is this your first change during this registration? YES □ NO □ Prev. Number ______

COMPLETE WITHDRAWAL FROM CSC FOR CURRENT TRIMESTER

Reason for withdrawing ____________________________________________________________

Are you receiving any of the following benefits from CSC? If so, indicate below:  
  Nat. Def. Loan □  Vet. Ed. Assistance □  Scholarship □  Grant □

If "Yes" you must discuss matter with Financial Aid Officer whose initials are required before this withdrawal is official.

Financial Aid Officer ____________________

Student's Signature ____________________ APPROVED BY: ____________________ Date __________

Student Schedule proc. & copy to CC ____________________ PRC & folder processed ____________________
EASTERN ILLINOIS UNIVERSITY STUDENT CLASS SCHEDULE

(THIS CARD MUST BE PRESENTED TO OBTAIN TEXTBOOKS)

<table>
<thead>
<tr>
<th>BUILDING AND ROOM</th>
<th>MONDAY START TIME AND LENGTH</th>
<th>TUESDAY START TIME AND LENGTH</th>
<th>WEDNESDAY START TIME AND LENGTH</th>
<th>THURSDAY START TIME AND LENGTH</th>
<th>FRIDAY START TIME AND LENGTH</th>
<th>SATURDAY START TIME AND LENGTH</th>
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<tbody>
<tr>
<td>SECTION</td>
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</tbody>
</table>

* DENOTES SUBSTITUTION OF AN ALTERNATE COURSE

EASTERN ILLINOIS UNIVERSITY STUDENT CLASS SCHEDULE

<table>
<thead>
<tr>
<th>SECT.</th>
<th>DEPT.</th>
<th>COURSE</th>
<th>MONDAY START TIME AND LENGTH</th>
<th>TUESDAY START TIME AND LENGTH</th>
<th>WEDNESDAY START TIME AND LENGTH</th>
<th>THURSDAY START TIME AND LENGTH</th>
<th>FRIDAY START TIME AND LENGTH</th>
<th>SATURDAY START TIME AND LENGTH</th>
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</table>

* DENOTES SUBSTITUTION OF AN ALTERNATE COURSE
<table>
<thead>
<tr>
<th>DEPARTMENT</th>
<th>COURSE</th>
<th>SECTION</th>
<th>HOUR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

*List alternate courses below in the order of preference. These courses cannot be scheduled for any academic term and must be signed by your adviser.*

---

**APPEXIX 25**
### Student Master Name Card

**Print Your Major Below**

- B.S. in Education
- B.S. in Business
- Bachelor of Science
- Bachelor of Arts
- B.A. in Education
- M.S. in Education
- M.S. in Business
- BACHELOR OF ARTS
- BACHELOR OF SCIENCE
- SPECIALIST IN EDUCATION
- OTHER

**Print Your Minor Below**

- M.S. in Education
- M.S. in Business
- B.S. in Education
- B.S. in Business
- BACHELOR OF ARTS
- BACHELOR OF SCIENCE
- SPECIALIST IN EDUCATION
- OTHER

### Telephone Directory Information Card

**Name**
(Please Print) Last First Middle

<table>
<thead>
<tr>
<th><strong>On Campus Address</strong></th>
<th><strong>Off Campus Address (If Applicable)</strong></th>
<th><strong>Parents Address</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of ITC</td>
<td>Street &amp; No.</td>
<td>Parents Name</td>
</tr>
<tr>
<td>Residence Hall</td>
<td>City</td>
<td>Street &amp; No.</td>
</tr>
<tr>
<td>Room No.</td>
<td>State</td>
<td>City</td>
</tr>
<tr>
<td>University Apts.</td>
<td>State</td>
<td>State</td>
</tr>
<tr>
<td>Apt. No.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telephone No.</td>
<td>Area Code</td>
<td>Telephone No.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Area Code</td>
</tr>
</tbody>
</table>
I.-O~
NUMBER
00 NOT WRITE ABOVE THIS LINE
ALPHA NO. SEX CLASS YR. BIRTH DATE ROLL CODE QUARTER

IF YOUR NAME, I.D. NUMBER, SEX, AND BIRTHDATE ARE PRINTED ABOVE, YOU MAY LEAVE THIS SECTION BLANK.

NAME LAST FIRST MIDDLE (WOMEN: MAIDEN NAME, IF MARRIED) BIRTHDATE MONTH DAY YEAR

ADDRESS CARD
STUDENT I.D. NUMBER SEX MALE FEMALE CHECKER'S STAMP:
ENROLLED □ YES MAJOR □ MALE □ FEMALE □ DEGREE □ MALE □ FEMALE □ NUMBER OF HOURS THIS QUARTER □ MAJOR □ SINGLE □ MALE □ FEMALE □ CLASS: □ FR. □ SO. □ GRAD. □ OTHER

Housing Code
SELECT THE NUMERICAL CODE FROM THOSE LISTED ON THE REVERSE SIDE OF THIS CARD. WRITE THE CORRECT NUMERICAL CODE FOR YOUR HOUSING IN THIS BLOCK:

IMPORTANT!!! "LOCAL ADDRESS"(BELOW) REFERS TO THE ADDRESS AT WHICH YOU WILL RESIDE DURING THE QUARTER PRINTED IN THE ABOVE RIGHT HAND CORNER. IF YOU DO NOT KNOW THIS ADDRESS, LEAVE THIS LINE BLANK! REPORT THIS ADDRESS BY THE TENTH DAY OF THE QUARTER TO THE OFFICE OF THE DEAN OF MEN OR OFFICE OF THE DEAN OF WOMEN.

LOCAL ADDRESS (IF YOU COMMUTE, LIST THAT ADDRESS HERE):
ROOM OR STREET NUMBER __________________________________________________________
HALL OR STREET NAME __________________________________________________________
CITY: CHARLESTON ________________ TELEPHONE NUMBER ________________

STUDENT'S HOME ADDRESS:
ADDRESS __________________________________________________________
CITY _____________________________________________ STATE __________ ZIP CODE ________________

PARENT OR GUARDIAN:
NAME _________________________________________ ADDRESS __________________________
CITY _____________________________________________ STATE __________ ZIP CODE ________________

DATE OF BIRTH ____________________ MARITAL STATUS ____________________ DATE FIRST ENTERED EASTERN ____________________ QTR __________ YEAR __________

MAJOR _____________________________________________ MINOR _____________________________________________

STUDENT ADVISER RECORD
NAME _____________________________________________ STUDENT NUMBER __________________

Last First MI Parents' Name __________________________
Local Address ____________________________________ Parents' Address __________________________
Local Phone No ___________________________ Date of Birth ____________________ Date First Entered Eastern ____________________ Qtr __________ Year __________
Marital Status ___________________________ Major _____________________________________________
Minor _____________________________________________ Adviser __________________________

Do Not Write Below This Line

---
<table>
<thead>
<tr>
<th>State No.</th>
<th>Student Name</th>
<th>Alpha</th>
<th>Quarter</th>
<th>Year</th>
<th>Selective Service Number</th>
</tr>
</thead>
</table>

**EASTERN ILLINOIS UNIVERSITY**  
Charleston, Illinois

Men wishing to have the Selective Service System notified of their status as a student should supply the following information:

- **SELECTIVE SERVICE NUMBER**

**Name of Student**

**Home Address**

**Address of Local Board**

**Beginning Date of Current Quarter**

**Date of Expected Graduation**

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**UNIVERSITY AUTHENTICATION:**

Maurice W. Manbeck, Assistant Dean, Records Office

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**SOCIAL SECURITY NUMBER**

**STUDENT NAME**

**CHARLESTON OR HOME ADDRESS**

**EASTERN ILLINOIS UNIVERSITY STUDENT NO.**

**RETURN TO:** OFFICE OF REGISTRATION & RECORDS  
EASTERN ILLINOIS UNIVERSITY  
CHARLESTON, ILLINOIS
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**BIRTH PLACE AND DATE** | **NAME, CITY AND STATE OF LAST HIGH SCHOOL ATTENDED** | **GRADUATION, MO. VR.** |
|                  |                                              |                         |

See explanatory notes on form attached.

Unless otherwise noted below, student is in good standing.

REGISTRAR

DATE

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APPENDIX 27
The dissertation submitted by Walter John Heinzel has been read and approved by members of the Department of Education.

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Education.

May 9, 1968

Date

Signature of Adviser