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ABSTRACT

This paper describes a secondary school in Baltimore, Maryland, and presents a chronological account of how the school developed and implemented course registration and grade reporting procedures. The school aims at (1) providing "focused flexibility" to the students, enabling them to select among quarterly offerings of courses; and (2) effectively monitoring student progress under the quarterly system. With outside aid and within a 2-year period, the school developed and installed workable registration and grade reporting systems that are successfully helping to meet both objectives. (Author/DN)

Center for Social Organization of Schools

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JANUARY, 1973

FOCUSED FLEXIBILITY IN A SECONDARY SCHOOL: A DESCRIPTION AND ANALYSIS

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INTRODUCTORY STATEMENT

The Center for Social Organization of Schools has two primary objectives: to develop a scientific knowledge of how schools affect their students, and to use this knowledge to develop better school practices and organization.

The Center works through five programs to achieve its objectives. The Academic Games program has developed simulation games for use in the classroom. It is evaluating the effects of games on student learning and studying how games can improve interpersonal relations in the schools. The Social Accounts program is examining how a student's education affects his actual occupational attainment, and how education results in different vocational outcomes for blacks and whites. The Schools and Maturity program is studying the effects of educational experience on a wide range of human talents, competencies, and personal dispositions in order to formulate -- and research -- important educational goals other than traditional academic achievement. The School Organization program is currently concerned with authority-control structures, task structures, reward systems, and peer group processes in schools. The Careers and Curricula program bases its work upon a theory of career development. It has developed a self-administered vocational guidance device and a self-directed career program to promote vocational development and to foster satisfying curricular decisions for high school, college, and adult populations.

This report, prepared by the School Organization program, provides a case study of the development and implementation in a secondary school of course registration and grade reporting procedures that helped the school offer a quarterly choice of courses to students and to monitor their progress.

ACKNOWLEDGMENT

The events described in this report, and the resulting administrative systems, are part of a joint effort between Walbrook High School and the CSOS. The success of this venture depended upon the enthusiastic and diligent work of several persons at the school. Dr. Joel S. Carrington, the principal at the time the school began operation, and his successor, Mrs. Anne O. Emery, each contributed ideas as well as support and confidence. Mr. Maurice Wells, Assistant Principal at Walbrook, had the day-to-day responsibility for implementation and operation of the systems. His thoroughness, good sense, and cheerfulness were indispensable. Mr. Luckett of the Business Education Department at Walbrook provided the needed support of his talent and resources. The majority of the computer work at the Center was performed by Truman Prevatt. His competence and dependability are much appreciated.

Finally, although the final responsibility for the actual content of this report must be borne by the author, it is a pleasure to acknowledge with appreciation the editorial suggestions of Gail M. Fennessey.

INTRODUCTION

This paper is a case study describing how Walbrook High school, a representative large-city high school, developed and implemented new procedures for course-registration and grade-reporting. The school worked closely with the School Organization program of the Center for Social Organization of Schools to plan the procedures and make them workable. The success of this school indicates the kinds of organizational changes that are possible in similar schools, when ideal objectives and practical limitations are balanced intelligently.

The paper describes Walbrook High school, then presents a chronological account of the development and implementation of the course registration and grade reporting procedures. Some of the problems encountered and some of the advantages discovered are analyzed.

Walbrook High School - General Description

Walbrook is an almost new secondary school in Baltimore city. It was opened for the first time in September 1971. The school is located on a compact plot of land in the western part of the city. It was designed to serve approximately 2200 students, and its present enrollment is close to that figure. The students are recruited primarily from nearby sections of the city. The student body is almost entirely black, and the faculty and administrative staff is approximately 60% black. The socioeconomic backgrounds of the students

cover a fairly wide range; a substantial percentage come from families of professionals or managers, but there is also a large percentage from families of very low income, many of whom are receiving welfare. The facilities of the school are generally modern and attractive. The operating budget, while austere, is generally adequate.

In short, the school is physically representative of urban secondary schools, having no serious special problems nor major special advantages.

In its curriculum and operating program, however, the school does differ from most other high schools in Baltimore. It began operation with, and remains committed to, a program of individualized course sequencing based on quarter courses and quarterly course selection by the students. Under this program, courses are offered on a quarterly (3-month) basis, and students are allowed to choose, within limits, the courses they want to take each quarter.[1]

The flexible course choice program divides the curriculum material into smaller blocks enabling a student to concentrate his efforts more effectively and to know more precisely where he stands at any particular time in relation to his overall goals. The use of quarter courses also exposes the student to more diversified material, or allows him to concentrate on particular areas that interest him.

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[1] This plan originally was adopted partly with a view to operating the school as a year-round school. Subsequent budgetary difficulties for the entire district necessitated postponing the introduction of a full year-round program, but the flexible course choice program was retained.

A final advantage is that a student whose work in a course is inadequate (who receives a "no credit" grade) often can make up the work by adjusting his normal program, and so does not have to attend summer school or drop behind his age-peers in his graduation date.

Coupled with flexibility of course scheduling and choice is a concern with improved communication skills and information processing. These emphases are reflected in the content of course offerings, and also in the school's aim to develop and use more effective methods of monitoring student progress. All of these commitments have led to a particular set of developmental activities, which will be described in the next section.

The staff members at Walbrook, and the school office administrators in particular, are strongly committed to the ideas just described. This commitment, however, is not seen by them as an "ideological position," but rather as a set of common-sense beliefs about the advantages that "focused flexibility" offers to the students. They recognize that this flexibility will not benefit every student in the same way, nor even be equally important to every student. They also recognize that it will introduce a number of complications for the administrators and teachers. Yet, they feel these complications can be dealt with, and that the effort is worthwhile, because the resulting organizational arrangement will be more responsive to the needs of their students.

Their day-to-day reaction to other innovative ideas, like their attitude toward the flexible but structured course offerings, is

pragmatic and eclectic. They recognize the virtues of many of these ideas while remaining aware that the particular circumstances in their school may make the ideas either unhelpful or impossible to adopt. Also, they are alert to discover how an idea can be modified to make it more useful for their particular situation. This pragmatism, and the aim for continued measurable improvement, leads to gradual but steady development. Thus the pragmatic attitude is an important and productive element in the school's success to date.

Developing the Registration and Grade-Reporting Systems -- Initial Work

During the spring and summer of 1971, prior to the original opening of the school, the Walbrook principal worked closely with researchers from the School Organization program of the Center for Social Organization of Schools at The Johns Hopkins University. The aim of this cooperative effort was to develop and document organizational arrangements that would promote the objectives established for the school. In view of the intended emphasis on flexible course offerings and on monitoring student performance, there was general agreement that two administrative areas -- procedures of registration for courses, and procedures of grade-reporting -- would be the focus of initial development efforts.

Offering flexible course choices drastically increases the information processing required of a school, particularly if some students and/or teachers are somewhat "alienated." This is an example of information overload (cf. Future Shock). Information overload of this sort creates (1) tedious clerical chores for professionals; (2) frustration when the system is not adequate; and (3) confusion when the

system contains errors. To make the flexible course choice plan feasible, a set of workable procedures was needed that would minimize the tedious clerical work involved and the confusion which might otherwise be endemic when the course placements of each student were so variable. A concomitant aim was to develop administrative systems capable of generating the kinds of summary information that would permit evaluation and improvement of the procedures and their impacts on students.

During the school's first quarter of operation (September through November, 1971) the initial versions of the systems for registration and for grade-reporting were developed. Both systems were designed to use a combination of human effort and machine processing of data. They were applied in practice for the first time in December, 1971.

The course registration system used two sets of punchcards. The first set, called the name cards, contained six cards for each student. Each card was punched with the student's name and an identification number. The same information also was printed on each card. These name cards were produced by the Center computer and delivered to the school in trays, filed alphabetically by student's last name. The second set of punchcards were called the course cards. These were blank cards (of a different color from the cards used for the student names) arranged in trays in sets of 35. Each set of 35 was separated from the next by an index tab on which the name and number of a particular course was printed.

At the time for registration, the administrators and counselors (assisted occassionally by students) "stuffed" the name cards for

each student into the trays of course cards. That is, each student had previously filled out a sheet on which he indicated the courses he wished to take during the next term. A counselor would pick up the sheet on which one student had written these course requests and go to the trays in which the name cards for each student were filed alphabetically. He would find and remove the six name cards punched with that student's name. Then, he would check the course card trays for each of the courses the student had requested. If there were still blank course cards in the tray behind the index tab, the counselor would remove one and replace it with one of the student's name cards. If no more course cards remained in the section for a particular course, indicating that the course was already filled, then the student would have to be registered in an alternate course.

When the stuffing of cards was completed for all students, the trays were brought to the Center and were processed on the Center computer to yield alphabetized course lists for each course and section, printed copies of each student's individual schedule, and a gummed label (for use by the student) with the student's schedule on it.

The system proved to be basically workable, but stuffing the cards was a very tedious task. It took much longer than anticipated to complete the registration; also, a small percentage of students were given partial schedules, to be resolved after the beginning of the new term. A more serious flaw was that the procedures were inadequate for handling the instances in which the requested class was already

filled. Because the match between the initial master schedule and the actual pattern of requests was not extremely good, many students requested classes which were already full, and the counselor was forced to resolve the problem on the spot, with no rational procedure for doing so.

At the same time that the registration for the winter quarter was being finished, there was also a first trial of a new procedure for creating the grade-reports for the fall quarter which was then ending. This system for grade-reporting was based on the use of "portapunch" cards. These are ordinary tabulating cards which have been partially perforated in certain columns, so that they can be punched with a paper clip or similar object.

The original design for the grade-reporting system was as follows. It was agreed that the school would supply class lists of the enrollment of students in each course for the fall quarter. From this information, the portapunch cards for each course would be prepunched by machine and printed with the name and identification number of each student. Thus, at the close of the grading period, a teacher would receive a packet of portapunch cards for each of his classes. These cards would already be punched and printed with the name and identification number of the student, as well as the course number. The teacher would merely have to use a paper clip to punch out the appropriate holes in several marked columns to indicate the student's grade. Then these cards would be taken to the Center and read into the Center computer.

From the resulting tape with the grade information on it, the Center computer would prepare individual report sheets for each student, an alphabetized list of grades for each class, and gummed labels for use in the cumulative record folder of each student. Thus, the burden of clerical work involved in recording and transcribing grades, as well as the chances for error which are introduced by transcriptions, would be reduced. There was initially some concern as to whether the teachers would be sufficiently careful in punching out the portapunch tabs to keep errors low. This concern was alleviated after contact with a school in Connecticut (Norwich Academy) which had used portapunch cards for a similar purpose with no problems.

In the middle of November, 1971, about two weeks before the time for using the class lists to begin implementing the grade-reporting procedure, school staff members indicated to the Center researchers that there was no way to provide an accurate, machine-readable form of their class enrollments. Partly because this was the first term of operation for the school, there had been a large number of changes of class schedules during the quarter, both for individual students and for entire classes. Thus, the original class lists did not reflect the current situation, and there was no feasible way to obtain up-to-date class lists.

Under these circumstances, the originally planned system had to be modified. Instead of prepunching the portapunch cards in packets for each course, all six cards for a particular student were grouped together, and no information about courses was punched

into them. The cards were machine punched in alphabetical order, with the six cards for a single student together. These prepunched cards were printed, arranged alphabetically in trays, and brought to Walbrook. At the time for recording grades, a teacher would go to the set of trays containing the alphabetized portapunch cards and remove one portapunch card for each student registered in the class. In other words, the teachers had to construct the packets of portapunch cards for each of the courses manually, at the time grades were being recorded.

The teachers were shown how to use a paper clip to punch the actual grades for each student, and then asked to return the cards in a prelabeled envelope which had been provided for the course. The teachers went through the procedure without major crises or confusion. The resulting envelopes of portapunch cards, plus some handwritten "Exception" cards (for use when no prepunched card could be found for a particular student) were brought to the Center and read into the computer. With this data, the Center computer was used to prepare actual report sheets for each student, class lists of grades for each course, and gummed labels.

In actual use, this system had serious problems. First, the teachers had difficulty locating and removing the cards for their students from the alphabetical trays. Many teachers were trying to use these trays at the same time, and in many cases there was also some doubt as to whether a student should be given a grade for a particular course. As a result of these conditions, many of the

cards became misplaced or lost, and the number of Exception cards needed was quite high. This meant that a considerable amount of additional clerical work was necessary at the Center. Also, several of the teachers found the portapunch cards difficult to work with. In addition, they pointed out that this method left them no way to verify the actual grade they had turned in. Finally, in loading the portapunch cards into the computer, it was found that, although the percentage of improper removal of tabs was low, the few errors that did occur created considerable delays and much clerical work.

At this point, in mid-December 1971, optimism among both the school administrators and the Center researchers about the prospects for getting these systems working was not high. Moreover, in late December 1971, the central office of the Baltimore schools announced that budget limitations would necessitate curtailment of plans for the full year-round school program. Finally, the principal at the school was, about this time, promoted to a position in the district office. One of the assistant principals was named to replace him as principal at Walbrook. All of these factors made the situation an uncertain one. It appeared as if perhaps the whole notion of introducing flexibility in course choice and in grading could not be carried into practice without using substantial additional resources, and such resources simply were not available.

It should be mentioned that the various difficulties encountered were not due to lack of foresight, but rather to a lack of specific

knowledge as to the shape and seriousness of various possible problems that might arise. Thus, for example, the problem of courses becoming filled before all students had been registered had been envisioned in the planning, but there was no way to estimate, prior to the actual registration, just how serious it would be. Similarly, the original plan for grade-reporting (in which the cards were prepared in packets) would have eliminated many of the problems that actually arose, but there was no way initially to estimate the likelihood that a large number of changes of class would occur during the quarter. In general, all persons involved underestimated the difficulty of collecting and verifying the routine information as to school and class enrollment. It may seem to a reader that this information is basic and should be readily available with a high degree of accuracy. However, in many school files that simply is not the case. For Walbrook, and for other schools in similar situations, information of this sort is available only on a spotty and somewhat haphazard basis.

Revising the Procedures

Despite the various factors contributing to a feeling of frustration and uncertainty, there were also some reasons for optimism. First, some of the problems encountered had been unique to a new school and would not arise in future work. Second, the new principal quickly made clear her enthusiasm and commitment to continuing the project. Also, there were some new possibilities as far as procedures were concerned. A computer program called

SOCRATES had come to the attention of the Center group, and it seemed as if this program might offer one way to resolve some of the problems of scheduling and registration. Also, several of the Walbrook staff members were formulating an alternative plan for the registration, one that would be modeled basically on the procedures used in registration at colleges. In this procedure, each student is an active participant and performs some of the clerical work for his own registration. It was decided to test the SOCRATES program in another local school, and to test the "walk-around" procedure, as it was then called, in Walbrook, at the end of the winter quarter, in March 1972.

For the grade-reporting, it had become clear that there were two major problems, and a new system was designed which aimed to eliminate both. To create accurate class lists, a procedure was developed that could be carried out during the term with a minimum of disruption, and that would provide accurate, up-to-date class list information. Also, the decision was made not to use portapunch cards again. Instead, a computer-printed class list with spaces on which grades could be written was designed, and the teacher would record grades simply by writing them in on this printed list.

During the period between January and March, 1972, therefore, two new sets of procedures were developed -- one for course registration and one for grade reporting. Both of these were used for the first time at Walbrook in March 1972. The registration system was a completely non-automated version of the usual college registration. The master schedule indicating what courses would be

offered was established through a cooperative effort of the department heads and the assistant principal responsible for the system. Then, just prior to the end of the winter quarter, several days were set aside as registration days. During these days, all the department heads were stationed at tables in the school auditorium, and students were brought to the auditorium in groups of 60-75 to register. Each student had previously worked out with his counselor a program of courses he wished to take, and the student brought a copy of that list with him. In the auditorium, each department head had several sheets to be used as class lists, one for each course to be offered in his department during the spring term. A student would go to the table of a particular department head and ask if he might register for a particular course. The department head would consult the sheet showing enrollment thus far in that course, and, if there were places still available, he would write in the student's name. Also, the department head would initial the student's copy of his course request list to indicate that the student was indeed registered in that course. If the course were full, then the student and the department head, often assisted by a school counselor, would immediately work out some alternative choice. Several school counselors were stationed in the auditorium to assist in this way.

This registration system, created on their own initiative by the Walbrook staff members, and in particular by the assistant principal responsible for scheduling and grade reporting, worked quite well.

Also at this time, a different procedure for recording and reporting student course grades was being developed. As mentioned, this new procedure differed in two major ways from the one used in December. First, it did not depend upon the accuracy of the class lists created at the beginning of the term, but instead added a separate step of creating new class lists just prior to the end of the term. These new lists were created by having each student pick up a set of six cards punched with his name and identification number in his homeroom class one morning about two weeks before the end of the term, and then deliver one of these cards to each of the teachers whose classes he attended that day. These cards then constituted a set of class lists. They were brought to Hopkins and used to prepare grade submittal sheets for each course. A second difference in procedure was the use of grade submittal sheets rather than portapunch cards. The teachers found it easier and more convenient to write the grades, and the resulting sheets were easily keypunched by a commercial service firm. One attractive aspect of using the computer printed class lists for submitting grades is that the keypunching was kept to a minimum. It was not necessary to punch a separate card for each student in a course, since his position on the printed list served to identify him precisely. Thus, the total number of cards to be punched was approximately 3 per course, or a total of about 1100 cards. This new system for grade reporting also worked quite well.

Thus, in March 1972, the general level of morale among those involved in this project was considerably higher than it had been three months earlier. The new systems were working, and proving quite effective. Each still contained a number of problematic areas,

but these could be corrected and did not seriously interfere with the accomplishment of the main objectives. The continuation of flexible course offerings could be regarded as feasible, and the task remaining was to improve an obviously viable set of procedures.

One major but subtle advantage of the new registration system soon became apparent to the Walbrook staff and the Hopkins group. Participation in this procedure, for both the students and the staff members, created a definite sense of the reality and importance of the course choice program. In other words, the student (and his teacher as well) became aware for the first time that he really was making a choice, that other students also were choosing from the same set of options, and that the whole process was aimed at providing him with greater variety and self-determination in his courses than he would have received under more conventional procedures. Casual interviews with several students chosen at random indicated a sharp contrast between their generally vague and unfavorable impressions of the initial registration and their vivid and positive reactions to this revised procedure.

Many teachers remarked that they had not previously appreciated the complexity of the scheduling and choice of courses, nor the importance of having all information about expected course enrollment prepared as accurately and as early as possible.

A second important benefit of the Walbrook registration procedure was that, if a course was already filled, the problem was a clear, real, but manageable one for both the department head and the student. It was perceived not in terms of cards to be placed in

a tray, but in terms of helping a student to realize his own personal ambitions. The reason why a student could not be given his first choice in a course did not appear mysterious to him, but was quite apparent. Thus, the need to choose an alternative provoked much less confusion or resentment. Moreover, the student himself then took an active part in selecting an alternative, and so could feel that he was in control of the situation.

For the department heads and counselors who had been involved in both registration systems, the later one was far preferable. For them, the work of registering students, although still in many respects a clerical task, also became one with real professional interest. The loading of each course could be monitored minute by minute, and additional sections could be added as needed. Also, the department heads were acting as helpful decision makers assisting the students, not merely as clerks with an arbitrary and unpleasant decision to make. Because the whole operation was concentrated in one room and one week of time, the communication problem was minimized. The social solidarity of working in the company of other professionals was also an advantage of this later system.

Two limitations, both fairly minor, were noted about the new registration procedure. First, it did not generate multiple copies of student schedules or class lists, nor did it generate a machine file that could be used for further checking or summary reports. Second, this procedure was not able to yield schedules for those students (fairly numerous) who were chronic absentees, and so never

came to the auditorium to be registered.

The grade-reporting procedures used in March, 1972 also were basically successful. They required minimal clerical work by the teachers in order to transmit their grade reports, and provided routine and complete information reports in the form of multi-copy report sheets for each student, multi-copy class lists of grades, and gummed labels that could be affixed to the student's cumulative record. The printed grade submittal sheet and the ordinary written grades were more familiar to the teacher, and so easier to use. The sheets could not be lost without the loss being obvious, and they provided a convenient master document for checking in case there was any question about a grade. The major problem with this new system was that it still depended upon a fairly cumbersome procedure for obtaining the class enrollment lists, and these lists still were incomplete to the extent that they depended upon the student being present in school. Thus, the chronically absent student created problems in this procedure as well as in the registration.

Further Refinements -- Present and Future

In June 1972, registration was held for the term which would begin in September 1972. In this registration, the previous system was improved through the supportive use of data processing equipment. For this June registration, the basic procedure was the same as it had been in March. However, the resulting data was obtained in the form of punchcards, ready for machine processing.

The system was as follows. When a student entered the auditorium, he received seven name cards, each punched with his name and an identifi-

cation number. At the tables for each department, there were card trays filled with course cards. These cards were separated into packets of 35 each, and had been punched ahead of time with a serial number identifying the particular course. When a student registered in a course, he turned in one of his name cards and received one of the course cards. His name card was placed in the tray of the packet for that course. When he had finished registering, a student would still have one of his name cards and six course cards. He turned these seven cards in at a check-out desk, and the registration was complete. Neither students nor department heads needed to write on the cards, and the entire file of data was ready for machine processing. After registration, the cards were taken to the Center and used to prepare class lists, individual schedules showing the courses being taken by each student each period, and gummed labels for use by the students.

During the summer of 1972, Walbrook received an important new piece of data processing equipment -- an accounting machine which could read punchcards and provide a printed listing of their contents. The school already had keypunches on the premises, and this additional equipment provided the basis for a further improvement to the system. Staff members of the Business Education Department at the school agreed to work with these school operating materials as part of their projects in the Business Education courses. This provided the necessary conditions for creation of procedures that make Walbrook highly self-sufficient in its registration, maintenance of updated class lists, and grade reporting. The Center computer is still used to process the files and to print the class lists, schedules, and grade-report materials; but this is now a

routine operation that could be handled by any commercial service bureau. The operating control of these systems now rests fully with Walbrook, and the systems have become an integral part of the school's operations. In addition to the general benefits of keeping responsibility for these operations within the school as much as possible, there is an additional advantage in that delays and confusions created in the process of transferring individual items of information between Walbrook and the Center are eliminated.

The systems of registration and grade-reporting utilized in December 1972, one year after the initial effort, were easier and simpler than the preceeding ones, and are a close approximation of what the fully mature system will be. During the months from September through December 1972, a punchcard file of class enrollment was maintained for the first time at Walbrook, and continually updated by transferring cards as changes occurred. Using these card files to prepare the grade submittal sheets, the Center researchers had only to pass the punched cards through the processing programs. Similarly, the registration was performed using a single set of cards to create student schedules, so there was no need to prepare many copies of the cards with student names on them. Both of these systems worked well, and are in the process of further refinement.

Although several improvements still can be, and will be, made in these systems, they have now reached the stage where they are functioning satisfactorily with only modest and routine support from the Center. The Center contribution now involves carrying out computer processing, but does not require any administrative decisions or clerical checking.

In short, these systems are now being operated by Walbrook, with specific assistance from the Center. The responsibility for and control over the various files is basically carried by the Walbrook staff. This is the only kind of arrangement that could be viable on a long-term basis.

Future refinements will include further changes in the details of procedure, and specification of decision rules for those situations in which there remains some ambiguity. Most of these situations arise in connection with students who are chronically absent from the school, so the general principle to be adopted in dealing with them is to give them low-priority treatment. An additional direction to be pursued is to develop richer programs for using the data provided by these systems; a variety of reports for use in the school could be prepared to indicate course loadings, grade distributions, and longitudinal trends. At the end of the 1972-73 academic year, when it is expected that this remaining work will have progressed substantially, these systems will be mature enough for transition to another computer system, either at the central school district office, or at a commercial service organization.