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ABSTRACT

Pius X High School in Downey, California, possesses a highly individualized academic program that stresses new roles for teachers and students; a nongraded continuous progress curriculum; varied, multimedia learning materials and activities; and individualized student scheduling and evaluation. Under the direction of the teacher, who acts as an advisor, each student works at his or her own pace through various sequences in each of nine areas of learning. If students and their teacher-advisors are to know where everyone stands in such a system, sophisticated monitoring systems are in order. The Pius X solution was to use the money previously spent on computerized scheduling to monitor student progress. Teacher-advisors working with students themselves assumed responsibility for scheduling while the computer took over the progress-monitoring function. (Author/WM)

USING DATA PROCESSING TO MONITOR STUDENT PROGRESS

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Rev. James W. Keefe Ed.D.
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The most common uses of data processing in today's schools are the generation and printing of student academic schedules and the reporting (not monitoring) of student progress. These uses are readily compatible with more traditional forms of school organization. The emphasis is on the output stage of data processing. The computer shortcuts the clerical aspects of scheduling and grade reporting - a function it performs admirably well.

With the advent of more individualized student programs, however, some of the usual applications of computer technology lose their primacy. The need shifts to the input stage - how to monitor the many directions that student programs and progress take.

Many individualized programs divide the curriculum into units and utilize learning packages to structure for continuous progress. Various kinds of media and materials are provided for each student who works through the sequence of units taking appropriate tests to demonstrate mastery when each skill or concept is completed.

Pius X High School in Downey, California possesses this kind of highly individualized academic program stressing new roles for teachers and students, a non-graded continuous progress curriculum, varied, multi-media learning materials and activities and individualized student scheduling and evaluation. Under the direction of the teacher as an advisor, each student works at his or her own pace through various sequences in each of nine areas of learning (English, Fine Arts, Foreign Languages, Health-Fitness-P.E., Math, Practical Arts, Religion, Science, and Social Studies). Learning sequences or courses are divided into units - each unit with a predetermined point value assigned by the department teaching team. When a student accumulates unit points, in the same sequence, equalling 100, he/she has earned a semester equivalent grade. This

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grade denotes a level of individualized progress equivalent to similar work in a traditional semester length class. Variable credit can be gained for work-in-progress contingent upon the point value of the completed units. The student must achieve a "C" for credit (which signifies the minimum level of competency), or can work for "B", or "A", with more significant levels of performance.

Such a system sounds complicated and indeed it is. If students and their teacher-advisors are to know where everyone stands, sophisticated monitoring systems are in order. The Pius X solution was to use the money previously spent on computerized scheduling to monitor student progress. Teacher-advisors working with students themselves assumed responsibility for scheduling. The computer took over the progress-monitoring function.

The system operates in this way:

Student Testing

The student completes a unit of the individualized program and either takes an objective-type test or submits an essay or project which is evaluated by his/her department subject consultant. Objective tests are corrected and graded by aides using keys prepared by the professional staff. (Incidentally, this whole area of test generation and correction lends itself logically to data processing if budget is available).

Grade Assignment

If the student achieves the minimum level of performance specified by the department for that unit, he/she is assigned a grade of C, B or A. No D or F grades are assigned, nor are they necessary, since the student can repeat the work of the unit until basic competency is achieved. The test is filed by the department for verification purposes and a grade receipt is given to the student both for feedback and as a back-up record. A clerical aide fills in the appropriate data on a specially prepared computer card.

Computer Card Preparation

Completed grade cards are sent to the school office where the cards are key punched or optically scanned by mark sense equipment. Accumulated cards are brought to an off-site computer center once each month for processing.

Computer Processing

All computer work is done on an IBM 360-40. Permanent tapes with student biographical data, old grade records and course catalogue data are first updated for any additions or deletions. New students are listed. The computer reads the old grade record, any submitted grade changes and performs an update. It then sorts and merges the new student additions and all completed unit grades with the unit catalogue and course catalogue data. The result is an extensive capability to monitor and report student progress from many useful points of view.

Computer Print-Out

The computer generates eleven different listings of student progress:

1. Teacher-Advisor Reports. The most basic tool used by teachers in advising their counselees is the T/C Report listing all the work the student has completed since the last printout, the date of each unit completion, the point value and alpha grade for each unit, completed semester equivalent grades and the number of semester equivalents completed toward the graduation requirements of each academic department. Teachers and students go over these reports at least monthly and adjust the student's schedule or work load according to the progress recorded. Parents receive this report quarterly.
2. Department Reports. Each month, all departments receive a print-out of all student work completed in their area of learning. This listing is by student name and unit. It is used to monitor

space availability, quality of learning packets and other materials, staff need and availability, etc.

3. Semester Surveys. Summaries of student work completed in each department differentiated according to college preparatory or basic sequences are generated quarterly and distributed to the Principal, Vice-Principals and Studies Office.
4. Grade Point Average Summary. A current update of each student's departmental and total G.P.A. is generated quarterly.
5. Honors Listings. Four distinct honor rolls are created quarterly based on progress (units completed) and overall G.P.A. A "normal" rate of progress criterion is derived by assuming that most students will take four years to complete grades 9-12. This assumption permits a average rate of progress per quarter to be determined and this rate is used as the cutoff for honor roll eligibility. Both the Honors listing for college preparatory students and Achievement listing for general diploma students are based solely on this pacing factor. High Honors and Honors Basic add a further requirement of at least a 3.50 G.P.A. to qualify.
6. Deficient Progress Listings. Each quarter the computer prints out the names, G.P.A. and total semester equivalents (completed) of all students whose rate of progress is borderline in terms of a normal four-year graduation time frame. It is interesting to note that frequently these students have achieved high grade point averages. Only their rate of progress is suspect, not their achievement.
7. Critical Progress Listings. A similar quarterly report is generated listing all students whose rate of progress will require a delayed graduation time. Usually, appearance of a student's name on this listing will dictate a parental conference and a reassessment of goals and perhaps the student's program.
8. Permanent Academic Record. At the end of a student's 7th semester of work, a listing of his/her completed semester equivalents is generated by department with appropriate G.P.A.s for use in college application. A final form of this record is reprinted at graduation to serve as the student's permanent academic record. The present Plus X Permanent Record includes a). student biographical, general academic and graduation information; b). Curriculum

design and program explanation; c). record of all completed semester equivalents and work in progress (units completed, but not yet sufficient for semester equivalents); and d). a Summary section detailing requirements met, total semester equivalents earned, total credit, overall G.P.A. and class-rank percentile.

Monitoring student progress in an highly individualized program of instruction requires a very flexible approach to data collection, processing and reporting. Teachers acting as personal advisors or subject consultants cannot be expected to assist students very effectively unless the raw data of student progress is readily available to them. The sheer complexity of such a system makes manual data collection simply unworkable. Computerized data processing is the only answer for a school that takes seriously the obligation to monitor individually the progress of individual students.

STUDENT ACADEMIC RECORD
 MISSOURI HIGH SCHOOL

TC 08 MISS COPPOCK
 JAN 27, 75

KURA KAREN MAE 761613

UNIT
 POINT
 VALUE GRADE DATE

UNIT CODE DESCRIPTION

RELIGION DEPARTMENT

-00	B BASIC SEQUENCE	S E GRADE	B	03/30/73
-00	B BASIC SEQUENCE	S E GRADE	A	11/09/73
-00	B BASIC SEQUENCE	S E GRADE	A	01/25/74
-00	B BASIC SEQUENCE	S E GRADE	B	05/02/74
-00	B BASIC SEQUENCE	S E GRADE	A	12/16/74
-0087	BU HOLY ORDERS		13 B	11/22/74
-0093	BU SOCIAL DOCTRINE		13 A	10/08/74
-0099	BU ESCHATOLOGY		13 A	09/20/74
SIC REQ 8 COLL-PREP REQ 8 SEM EQ EARNED TO DATE 5				

ENGLISH DEPARTMENT

-02	B BASIC SEQUENCE	S E GRADE	B	03/30/73
-02	B BASIC SEQUENCE	S E GRADE	B	05/04/73
-02	B BASIC SEQUENCE	S E GRADE	A	03/01/74
-02	B BASIC SEQUENCE	S E GRADE	A	10/18/74
-07	D COMMUNICATION SKILLS	S E GRADE	B	10/18/74
-0441	DU AMER. THEMATIC-ADOLESCENT IN SOCIETY		20 B	09/27/74
0463	DS SEM-AM DRAMA		40 B	03/01/74
0465	DS SEM-SCIENCE FICTION		40 B	01/16/75
SEMESTER EQUIVALENT GRADE B				

0511	DU ENGLISH NOVEL		20 C	11/13/74
0568	DU SEM/BEDWOLF/CANTERBURY TALES		40 B	06/03/74
0607	DU WLD LIT/CULTURE SHOCK		20 B	12/09/74
TC REQ 6 COLL-PREP REQ 8 SEM EQ EARNED TO DATE 6				

SOCIAL STUDIES DEPARTMENT

00	B BASIC SEQUENCE-SKILLS	S E GRADE	B	03/30/73
01	B SOCIAL STUDIES (BU)	S E GRADE	B	03/30/73
02	B AMERICAN HISTORY (BU)	S E GRADE	B	11/09/73
03	B US GOVERNMENT (BU)	S E GRADE	B	01/25/74
2500	DU PSYCHOLOGY-ADJ. TO YOUR SOCIAL ENV.		20 A	02/08/74
2501	DU PSYCHOLOGY-DATING, COURTSHIP, MARRIAGE AND THE		20 B	03/07/74
2502	DU PSYCHOLOGY-EMOTIONAL PROBLEMS OF HIGH SCHOOL		20 B	03/22/74
2600	DU SOCIOLOGY-CHANGING SOCIETY		20 C	04/25/74
2601	DU SOCIOLOGY-MASS MEDIA		20 A	10/01/74
2602	DU SOCIOLOGY-DEVIATION FROM THE SOCIAL NORM		20 C	11/03/74
2630	DU SOCIOLOGY PROJECT		20 A	01/20/75
IC REQ 4 COLL-PREP REQ 8 SEM EQ EARNED TO DATE 4				

FOREIGN LANGUAGE DEPARTMENT

00	B BASIC SEQUENCE	S E GRADE	A	03/30/73
35	D ITALIAN	S E GRADE	B	12/16/74
3510	DU UNA COLAZIONE		11 B	09/26/74

UNIT CODE DESCRIPTION

FOREIGN LANGUAGE DEPARTMENT

4-3511	DU	VEDUTA DI FIRENZE	11	A	10/16/74
4-3512	DU	NEL RISTORANTE	11	B	10/20/74
4-3513	DU	ANDIAMO AL CINEMA	11	B	11/07/74
4-3514	DU	A UN BAR	11	B	11/13/74
4-3515	DU	JOAN E PARTITA	11	C	12/11/74
4-3516	DU	UNA LETTERA DA VENEZIA	11	B	12/12/74
4-3518	DU	AL MERCATO DEI FIORI	11	A	01/05/75
4-3519	DU	BEN TOINATA	11	B	01/10/75

SEMESTER EQUIVALENT GRADE B

4-3520	DU	UNA CORSA A PISA	11	B	01/17/75
BASIC REQ 1 COLL-PREP REQ 4			SEM EQ EARNED TO DATE 3		

MATHEMATICS DEPARTMENT

5-00	B	BASIC SEQUENCE	S E GRADE	A	01/24/73
5-00	B	BASIC SEQUENCE	S E GRADE	A	11/09/73
5-11	D	ALGEBRA I	S E GRADE	A	01/24/75
5-1118	DU	FUNCTIONS	06	B	01/17/75
5-1119	DU	SLOPES AND LINEAR FUNCTIONS			
5-1120	DU	GRAPHS OF LINEAR FUNCTIONS			
5-1122	DU	DIRECT VARIATION	06	B	01/17/75

BASIC REQ 2 COLL-PREP REQ 6			SEM EQ EARNED TO DATE 3		
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SCIENCE DEPARTMENT

6-00	B	BASIC SEQUENCE	S E GRADE		02/10/73
6-00	B	BASIC SEQUENCE	S E GRADE		02/10/73
6-0121	DU	INTRODUCTION TO BIOLOGY	05	A	02/26/74
6-0122	DU	BASIC BIOCHEMISTRY	15	B	03/11/74
6-0123	DU	CELL STRUCTURE			
6-0124	DU	CELL FUNCTION			
6-0125	DU	GENETICS I			
6-0126	DU	GENETICS II	10	A	11/22/74
6-0127	DU	EVOLUTION	10	B	12/06/74
6-0128	DU	CLASSIFICATION	10	A	12/06/74
6-0190	DU	BIOLOGY-SEM EQUIV ADJUSTMENT			

SEMESTER EQUIVALENT GRADE B

6-1129	DU	MICROBIOLOGY	10	B	01/20/75
BASIC REQ 2 COLL-PREP REQ 4			SEM EQ EARNED TO DATE 3		

HEALTH FITNESS DEPARTMENT

7-00	B	BASIC SEQUENCE-PHYSICAL FITN	S E GRADE		01/24/73
7-20	B	BASIC TEAM SPORT	S E GRADE		01/24/73
7-52	B	DRIVER EDUCATION REQUIREMENT	S E GRADE	B	06/10/74
7-21	B	BASIC TEAM SPORT	S E GRADE	B	10/18/74
7-0101	BU	TO SMOKE OR NOT TO SMOKE			
7-0102	BU	YOU AND YOUR HEART			
7-0103	BU	ALCOHOLISM			
7-0104	BU	YOU VS VIRUS	10	B	12/05/74
7-0106	BU	MENTAL HEALTH	10	B	01/09/75
7-0108	BU	DRUG ABUSE	10	B	01/14/75



COURSE CODE	DESCRIPTION	POINT VALUE	GRADE	DATE
HEALTH FITNESS DEPARTMENT				
7-1345 DU	STUDENT SPIRIT/SONG/YEAR I/VRT I	50	A	11/27/
7-1346 DU	STUDENT SPIRIT/SONG/YEAR I/VRT II	50	A	01/13/
SEMESTER EQUIVALENT GRADE A				
7-2311 BU	TEAM SPT-FOOTBALL/PASSING	06	A	02/21/
7-2312 BU	TEAM SPT-FOOTBALL/PUNTING	06	B	03/05/
7-2314 BU	TEAM SPT-FOOTBALL/PASS CATCHING	06	A	02/21/
7-2360 BU	TEAM SPT-SOFTBALL/BASERUNNING	07	A	01/24/
7-2361 BU	TEAM SPT-SOFTBALL/THROWING	07	B	01/31/
7-2362 BU	TEAM SPT-SOFTBALL/HITTING	07	A	01/24/
7-2363 BU	TEAM SPT-SOFTBALL/CATCHING	07	A	01/31/
7-2364 BU	TEAM SPT-SOFTBALL/TERMS AND RULES	07	A	02/07/
7-2365 BU	TEAM SPT-SOFTBALL/TEAM PLAY	07	B	04/10/
7-2366 BU	TEAM SPT-SOFTBALL/FIELDING	08	B	01/31/
BASIC/COLL-PREP 4 + DR/ED SEM EQ EARNED TO DATE 5				

PINE ARTS DEPARTMENT				
8-00	B BASIC SEQUENCE		S E GRADE	C
8-00	B BASIC SEQUENCE		S E GRADE	B
8-15	D BEGINNING GLEE		S E GRADE	C
8-1519 DU	BEGINNING VOCAL TECHNIQUES/APPLIED	10	C	06/06/
8-1520 DU	BEGINNING SOLO PERFORMANCE	10	C	06/12/
BASIC REQ 2 COLL-PREP REQ 4 SEM EQ EARNED TO DATE 3				

PRACTICAL ARTS DEPARTMENT				
9-01	B BASIC SEQUENCE		S E GRADE	A
9-04	D OFFICE PRACTICE		S E GRADE	A
9-02	B BASIC SEQUENCE		S E GRADE	A
9-04	D OFFICE PRACTICE		S E GRADE	A
9-03	E TEACHER ASSISTANCE/PRACTICAL		S E GRADE	A
9-0111 DU	BUS.WORLD, PROD.AND MARKETING	25	A	03/05/
9-0112 DU	FREE ENTERPRISE/ORGANIZING BUS	25	B	03/05/
9-0114 DU	NATURE AND FUNCTION OF MONEY	13	B	03/05/
9-0510 DU	PERS.TYP/CENTERING	17	A	10/15/
9-0511 DU	PERS.TYP/PERS.NOTES, POST CARDS	17	A	01/07/
9-0512 DU	PERS.TYP/PERSONAL LETTERS	17	B	11/26/
9-0513 DU	PERS.TYP/INTRO TO BUS. LETTERS	17	A	12/20/
BASIC REQ 2 COLL-PREP REQ 4 SEM EQ EARNED TO DATE 5				

STUDENT GPA IS 3.36