



FAST FIGURING -- Bob Tenzer, a senior, didn't say what he asked the Redford Union High computer terminal as part of his computer math course, but Connie Barlow, also a senior, seems to be happy with the answer. (Observer photo by Harry Mauthe)

By DENNIS PAJOT

What has happened in the 10 years since the clamor for more emphasis on science and math teaching in our high schools?

Observer Newspapers asked curriculum administrators in five area school districts questions to find out. Their answers indicate that much has happened.

Numbers of students taking math and science have indeed increased, they estimate. Current enrollments in both areas involve 50% and more of the student bodies. More teachers have been hired to handle the increased student loads and diversified offerings.

AND... A REVOLUTION of a sort has recently developed, according to Dr. Jan Jacobs, South Redford Schools' curriculum coordinator.

"Since Sputnik, the over-emphasis on math and science has been such that people have pushed for renewed emphasis on the humanities," he said. "This, coupled with recent social upheavals, has caused renewed student interest in social studies."

Dr. Don Friedrichs, curriculum administrator of Livonia Schools, agreed and said he believes "it's primarily because students are caught up a lot in national problems."

"Especially with today's student," said Clarenceville High School Principal Anthony Marra, "social studies seem to be the area they feel they can learn what's relevant," using the term that's most often heard from the lips of contemporary teenagers.

James Mathieson, Redford Union Schools curriculum administrator, said, "People probably felt schools went too deeply into the sciences at the expense of social studies."

"Social studies seem to be the area where students feel they can learn what's relevant."

--Anthony Marra



It was mentioned that although they welcome students' looking to social studies as the "relevant concerns," it will continue to take technicians to devise methods of handling many social problems, such as pollution.

File the "revolution" for future reference. The rest of this article will tell it like it has become in the high school science and math arenas.

ABOUT 60% of all high school students in the five districts surveyed are taking at least one math course. Some are taking several, such as students on college preparatory and industrial skills tracks.

The percentage is only slightly lower for science, with about 50% enrolled in at least one course.

Few of the school administrators polled had exact counts. Reporting methods varied, but all except Clarenceville's were close to these percentages. The estimate at Clarenceville for both studies was about 75% of the student body -- for reasons that will be explained later.

Dr. Friedrichs in Livonia had the most precise figures: the math and science area. From 1968, at least one math course was taken by 61%, 57, 58, 64, and 59% of high school students. In the same period, the percentages taking at least one science course were 47, 48, 43, and 51% respectively.

Unfortunately, Dr. Friedrichs didn't have

comparable enrollment data for the years prior to the 1960s. "It takes a lot of staff time. We just don't have it," he explained. The problem was echoed by all interviewed.

JOSEPH NICITA, Farmington Schools curriculum coordinator, reported:

In the ninth grade 95% of all students take both math and science. In the 10th grade math attracts 95% of the students and science about 42%. In the 11th grade, math courses are being taken by 60% and science courses have attracted 50%. The relative enrollment percentages switch in the senior year there, with about 38% taking math and about 62% taking science.

Jacobs at South Redford noted that "over 1,200" of the students in the top three grades are enrolled in a math course this year of approximately 2,000. For science, it's "close to 1,000," he said.

Mathieson at Redford Union said the best estimates are that 50% are taking science and "a little over 50%" taking math.

At Clarenceville High School, Principal Marra said "about 75% of the student body is taking science and more taking math." An obvious reason for the higher percentage is that Clarenceville operates a four-year high school while the other districts include only 10th, 11th and 12th grades in their high schools.

All schools reported 100% student participation in both math and science in their seventh and eighth grades, due directly to the subjects being required in those grades. Also, all reported that enrollments in math and science for the ninth grade are near 100% due to this being the grade at which introductory biology and algebra are offered.

REQUIREMENTS, in addition to the seventh and eighth grade mandates? Here the picture varies quite a bit from school to school.

Only Livonia made a drastic change in the seventh and eighth grade, by the way. From no requirements in either subject, Livonia now requires both in each grade.

Livonia also requires both subjects in the ninth grade.

At the other schools, except Redford Union, both disciplines were and continue to be required, both in the early years: Redford Union requires seventh and eighth grade math and one year of science.

Redford Union makes no requirement for either in the ninth grade or the upper three grades, alone among the five schools polled. RU does require those students on the college preparatory track to take two years of both math and science in high school. Vocational and business administration students must take some.

In Livonia, high school requirements remain at one credit in each area for graduation, the same as 10 years ago.

To graduate at Farmington both are required of all ninth graders and one year in the upper three grades. This also is the same at Farmington required 10 years ago.

South Redford has no ninth grade requirement, but about 85% elect biology. One year of math is required of all students in the upper three grades, but there is no science requirement. This is the same as 10 years ago. However, despite a decreasing total school enrollment, the school employs seven high school science teachers now, compared to "no more than three" 10 years ago.

Clarenceville requires all high school students (9-12) to complete two credits in each area for graduation, another reason for their higher percentage of enrollments in these classes. Ten years ago that school required one credit in each.

ALL SCHOOLS contacted have changed their science and math programs drastically in the past 10 years.

They had been offering general math to students from elementary through junior

"There's still a lack of candidates for engineering schools and the advanced sciences."

--Donald

Friedrichs



high, then the basic algebra, plane geometry, advanced algebra and trigonometry in high school. The same with the sciences, in which general survey courses preceded high school, to be followed with the basic trivium of biology, chemistry and physics.

Three trends are obvious when comparing curriculum changes in all five schools.

First, there has been a clear attempt to offer "high powered" subjects formerly thought of as college material. Second, an equally clear attempt has been made to offer topical math material in a framework attractive to and directly related to a student's future non-college needs.

Third, in doing these two things, the curriculums have pushed survey type courses down into the junior high and added a wider range of intensive treatment specialty courses for students' selective needs.

Some schools have built their programs around the "New Math" concept that gained much publicity in the middle of the decade. Farmington and Redford Union reported this.

MOST RECENTLY, the schools have added or are adding computer related courses to their curriculums. Redford Union has a computer math program, complete with an in-school computer terminal at which the students can dictate their material for a computer center, and later receive the results.

"Math is no longer something to study out of a book," said Mathieson at RU. "The kids like to see if it (the computer) can do this for me."

Similarly, a developing pattern is for schools to offer courses dealing extensively in conservation of natural resources and pollution control. South Redford, for instance, offers "conservation." Livonia is offering "horticulture."

A change that was tried, regretted by several schools, and abandoned was movement of the first year of formal algebra down to the seventh and eighth grade level. It was found that students had difficulties.

HERE'S A QUICK rundown of course offerings in the five schools, in addition to the customary trivium:

• Livonia: Advanced placement math -- for the advanced student; basic algebra -- for the vocational student; technical math; applied math; modern topics in math and computer math; seventh and eighth grade laboratory science, ninth grade biology and project science and physical science, high school earth science, applied science, electronics and electricity, horticulture.

• Farmington: Advanced algebra, solid geometry, introductory analysis, analytical geometry (including some calculus), refresher arithmetic and business math, seventh and eighth grade life science, ninth grade earth science and biology, high school laboratory biology series, and electronics from scientific and vocational viewpoints.

• Clarenceville: remedial math, commercial math, industrial math, advanced general math, advanced topics in solid geometry and advanced placement math via a cooperative plan at Schoolcraft Community

College (6 students this year); physical science, life science, advanced (third year) biology and space age science.

• South Redford: Consumer-business math, topics in advanced algebra (includes differential calculus), topics in geometry, computer math (1970-71); life science, health, earth science (geology), conservation, advanced chemistry, lab skills, digital computers, advanced biology.

• Redford Union: Solid geometry, calculus and computer math (one year), advanced math; advanced physics, biology series and physics series.

Mathieson at Redford Union gave a note that may indicate the most significant result of the math-science boom of a decade ago as it relates to the emerging "revolution" to social sciences.

It seems "scientific" methods are being used, and appreciated by the students, in social studies... "investigation, discussion and action."

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