

# The Problem of a Flexible Schedule in High School

*Technology may help  
high schools develop  
a more flexible schedule.*

CONDITIONS for educational progress have seldom been more favorable. There is widespread recognition of the clear and present danger now confronting mankind. There is also general agreement that new levels of excellence in education are essential for survival. Furthermore, spurred by the demands of the crisis that confronts us, the serious attention of educators and lay citizens has produced an avalanche of imaginative proposals for solving educational problems, especially for improving the kind of education young men and women receive in high school.

The high school in all of its eventful and tumultuous history in America has never before been confronted with such penetrating analyses and proposals for its reform. Many of the suggestions are those that thoughtful teachers and administrators have long wished to effect but could not for lack of public support. Others of the suggestions are so new and unorthodox as to have aroused skepticism, dismay, and even alarm.

The high school is faced with insistent pressures: to upgrade academic standards for all pupils, especially bright ones; to differentiate more clearly between the needs of pupils of different abilities; to place greater emphasis upon science, mathematics, and foreign language, without neglect of the humanities, the fine and the practical arts; to insist, in the face of a dwindling supply of well-qualified teachers, that it is essential to have teachers qualified both in the subjects they teach and in methodology; to cope with such rapid advances in knowledge that a curriculum is almost outdated before it is written; to use new technical developments in communication, such as television, tape recording, and teaching machines. Gorged with such pressures and opportunities, the high school today, not surprisingly, appears to suffer from indigestion.

## The Bottleneck

An alleged main obstacle to adoption of many suggestions for improving high school education is "the schedule." For example, the most frequently cited reason for failure to incorporate proposals made by a committee in *Images of the Future* is that "they can't be scheduled." Fea-

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tures of Dr. Conant's recommendations are objected to because of scheduling difficulties. With increasing frequency may be heard the call to break the stranglehold of this rigid monolithic structure, the high school schedule.

The essence of the plea is to alter the present plan in which classes in all subjects tend to approximate a standard size (25 to 30), and to meet for a standard period of time (45, 50, or 55 minutes) 5 days per week, for a full semester or a year. Greater efficiency, it is argued, in one type of instruction, e.g., science laboratory, will require one or two meetings per week for a longer block of time than the traditional period; in another kind of instruction, e.g., drill in a foreign language laboratory, better learning would result from a 20 or 30 minute daily period.

Being fully cognizant of the complicated task of fitting the pieces of the mosaic together in a regular high school schedule, administrators understandably shudder at the thought of attempting to alter the present schedule. Unless this bottleneck can be broken, the likelihood of realizing the present potential for a breakthrough in high school education may be irretrievably lost.

### The Prospects

In spite of all difficulties, the sensibleness of having a more flexible schedule remains impressive. Consequently, high school administrators and teachers throughout the country are wrestling with the problem, experimenting with a wide variety of plans. The professional literature is filled with reports.

It is pointed out, too, that classes of variable lengths of time and frequency of meeting per week are regularly provided for in elementary schools, in colleges and universities, and even in many of the secondary schools of other countries. Why, then, is this not possible in the American high school? No logical reason has emerged. The main obstacle is a traditional way of doing things. With such widespread concern and with so many schools experimenting to find solutions, we are optimistic over the prospects.

### Difficulty of the Task

Even so, we are acutely aware of the difficulty of the task and how much more needs to be done before a break-through may be achieved. Those expecting a solution just around the corner are likely to be disappointed. To expect a simple or early answer is unrealistic. One reason is that so much now attempted is piecemeal. Valuable as they are, efforts to make the schedule merely a little more flexible fall far short of the mark.

The introduction of one day in the week that is different, provision for a "floating" period, adding one more period to the day—helpful as these innovations are proving to be, they do not solve the problem as a whole. At times they even create greater difficulties than they solve. For example, adding a period to the day, as Dr. Conant suggests, may solve the problem of enabling pupils to take more subjects, to devote more time to mathematics, science, or foreign language, without sacrificing other subjects. But it may also either markedly increase costs (which are a problem already) or unduly increase teachers' loads (which are already too heavy). An alteration may help one subject, but hin-



der another. A genuine flexibility that enhances all pupils' opportunities, makes more efficient use of staff time, and is financially economical, will require a thoroughgoing, bold, across-the-board approach to the whole schedule.

But school traditions of long standing, state legal requirements, and college entrance regulations and expectations do not give way easily. When classes in high school English have been taught for five days per week for generations (even though we loudly proclaim dissatisfaction with the outcome) a proposal that a class meet for four days, or three days, per week and that students study more on their own in the library and outside of school meets with firm resistance—even when it can be demonstrated that no measurable losses in achievement result from the reduced number of class meetings. Even teachers, whose loads might be made more bearable, are reluctant to alter the established frequency of class meetings, especially when a change is proposed for one subject and not for all others at the same time. In spite of difficulties, progress may be noted, but the tempo of improvement should not be overrated.

### Two Fronts Need Attention

Two major fronts may be noted along which essential movement should proceed simultaneously with all possible vigor if the problem of a flexible high school schedule is to be solved. One is to bring modern technology to bear upon the problem, and the other is to muster our professional knowledge and skill to delineate clearly the kind of flexible arrangements we need in the high schools.

#### *Application of Technology*

The possibility of using automation in putting the pieces of the high school

schedule together needs to be explored. Machines and other fruits of modern technology have performed miracles in lifting burdens from the backs of men in all walks of life. Why should not such technological developments also be used to lighten one of the most burdensome, time consuming of all tasks in the operation of a high school, the making of the schedule?

Teachers, counselors, and administrators should be relieved of the onerous routine in schedule making, even where present conventional schedules are retained. The added complexities of fitting all pieces together in a truly flexible schedule will require the use of the storing capacities of our largest known computers.

Preliminary experimentation now under way suggests that the problem of constructing a flexible schedule through the use of high speed electronic computers is capable of solution, but that it is even more complicated than many scheduling problems that have been tackled and solved in business, industry, and government. We recognize that it is promising and necessary to push forward with all possible speed to apply what is known about data processing and the use of modern electronic computers to the problems of making the high school schedule.

#### *Educational Planning*

Machines, it should be emphasized, can do only what men tell them to do—at least as of this writing. Hence, we need to clarify what we want the machine to do. The machine is neutral. It will make a conventional or an unconventional schedule, depending upon our instructions to it. Thus, the second major front along which we need to move is an analysis of the high school curriculum,



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of subject matter, field by field. How, ideally, would we schedule pupils and teachers in their learning and teaching of each subject if we were freed from the limitations of conventional scheduling? The answer will be difficult, for we have so long been following the narrow pathways of conventional schedules that the habit of following the same ruts persists even when we attempt to plan as though they were not there. The clear spelling out of what to tell the machine will in some ways be an even more difficult task than perfecting a machine procedure to carry out our directions. Both jobs are essential and need energetic attention.

For such educational planning, teams should be established in each of the subject fields, taught in high school. Each team would consist of several top scholars in the subject, some imaginative curriculum and methodological specialists in the subject, experienced and highly creative high school teachers of

the subject, and mature, forward looking high school administrators. Each of these teams would be responsible for developing a design for the high school curriculum in its subject field, indicating the number of different ability and interest groups that should be provided for, the various sized groups of pupils best suited to different phases of instruction in the subject, the team of teachers and assistants that could provide the needed instruction and supervision. The teams would work independently part of the time; but they would also collaborate with teams from other subjects so that both common and unique needs of each field might be identified and so that the pieces might be fitted into a general design.

An encouraging number of subject fields—e.g., mathematics, physics, chemistry, and biology—are being subjected to penetrating analysis by scholars and teachers. These groups have been bold and imaginative, even radical, in their approach to content, and in some instances to methodology. But they need to add an equal ingredient of boldness in regard to flexible groupings of pupils and in the deployment of teaching resources. They are at present for the most part tending to think too much within the traditional framework of existing schedules of classes.

When these two phases of the problem of scheduling have been explored—perfecting the technology by which the machines can make whatever kinds of schedules we want, and clarifying in our minds what we want so that we can tell the machine what to do—we may then expect a change to take place in the high school which will be as dramatic in its break-through as have been the achievements in recent years in the physical and biological sciences.

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